

Title: Simple Analysis of Household Income Statistics in various states of Malaysia

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Summary: This case study interprets the household income statistics for the states in Malaysia. In this context, the data of income, expenditure, Gini coefficient and poverty rate for each states are gathered to make comparisons and thus produce an inference for users to make accurate decisions on improving the quality of states that are most susceptible to poverty. Key findings shows that 3 out of 16 states in Malaysia have high rate of poverty which is most likely due to low income earnings.

Introduction: Malaysia is a multiracial country with diverse cultural experience. With an approximate population of 34 million¹ as of 9/7/2024, economy is expected to experience growth between 4%-5%² from previous year. Based on the statistics from Malaysia's absolute poverty rate by ethnic group³, the poverty rate has fallen remarkably over the years from 1970 till 2022 which is highly stimulated by better paid employment opportunities. Despite that, there are some states, typically some districts within are still underdeveloped. Therefore, the purpose of this case study is to provide an insightful way to explore and analyze income statistics for different states in Malaysia.

Problem statement: Malaysia has gained improved poverty rate as reported in the recent years since 1970 till 2022 with Chinese race having the lowest followed by Indians, then the Malays⁴. However, these races are populated in a scattered manner throughout Malaysia in different districts within each states. Thus, there is a need to create an interactive and insightful way to analyze income statistics for different district within each states in Malaysia.

Methodology:

1. Data collection

Household income and expenditure data are collected from an open-source Malaysia data set website⁵. The data is updated till the year 2022. The data set contains the total mean value of income and expenditure as well as the Gini coefficient and poverty rate from various states across Malaysia.

2. Data analyzing and dashboard presentation

The data is first processed and aggregated through programming methods using Python language together with the Pandas framework. Then, the results are presented in a dashboard created using Plotly Express framework.

¹ <https://worldpopulationreview.com/countries/malaysia-population>

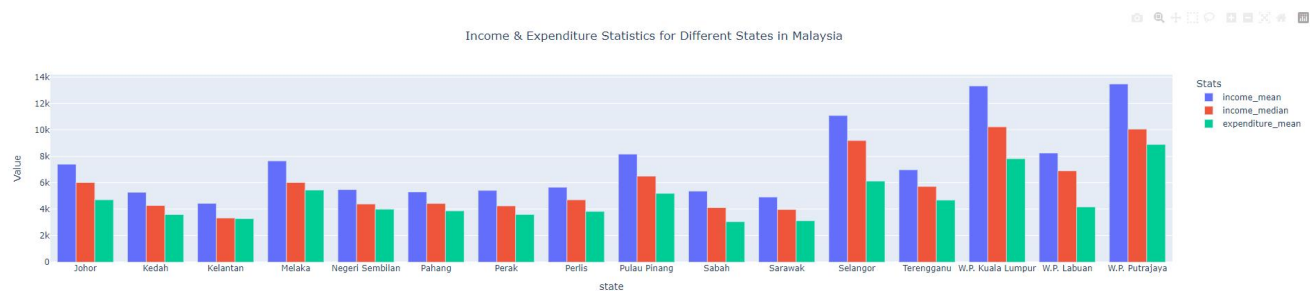
² https://www.bnm.gov.my/documents/20124/12141961/emr2023_en_ch2.pdf

³ <https://www.ehm.my/publications/articles/changing-perspectives-on-malaysias-poverty-line-income>

⁴ <https://www.ehm.my/publications/articles/changing-perspectives-on-malaysias-poverty-line-income>(**Figure 2 Malaysia's absolute poverty rate by ethnic group of head of household, 1970–2022**)

⁵ <https://data.gov.my/>

Data Presentation/Results:



Based on the grouped bar chart above, there are 3 states having the most income and expenditure values starting from Selangor, W.P. Kuala Lumpur and W.P. Putrajaya in ascending manner with Selangor at RM11,087, W.P. Kuala Lumpur at RM13,325 and W.P. Putrajaya at RM13,473. In Malaysia, the 3 states will be categorized under the T20 income category term which means the top tier households whose income is higher than RM10,959. In other words, the population that falls under this category are basically wealthy people.

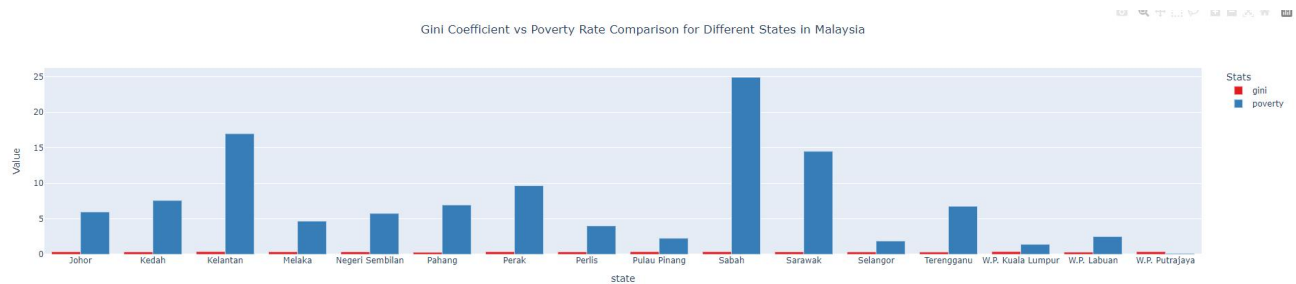
Moving on to the M40 income group, which means the middle-tier 40% of household income groups having an income range between RM4,850 to RM10,959, the states affiliated under this group are Johor, Kedah, Melaka, Negeri Sembilan, Pahang, Perak, Perlis, Pulau Pinang, Sabah, Sarawak, Terengganu and W.P. Labuan. Though, Sarawak just barely passed the T40 to M40 borderline.

Speaking of T40, it is basically the low-tier 40% of the household income groups with income range below RM4,850. Unfortunately, the only state that falls here is Kelantan. Since the average income represents the earnings of a typical employee which is prone to fluctuations of highs and lows due to the vast multiracial population in Malaysia, the income median is studied and plotted on the chart for reference as well but the main focus of elaboration will still be the average or mean income in this case study.

If we take a closer look at the green coloured bar of each of the respective states, it shows the mean or average expenditure which scales proportionally with the average income. Basically, the higher the income rate, the higher the expenditure costs or the capability of spending is greater.

Next, we will be looking into the poverty rate and Gini coefficient for each state. Poverty in layman terms is the lack of wealth or income for basic survival necessities such as food, clothing and shelter. However, in this case study, it refers to the incapability of living luxuriously because in the recent years, Malaysia has undergone profound economic transformation in which most Malaysians should already be able to cover all basic survival necessities at bare minimum. The question is whether they can afford more luxury than what they have at the moment. Gini coefficient in this case study, is the measurement of inequality among the income values of different states. It is typically measured on a scale of 0 to 1. The higher the value means higher income inequality in which should the value reaches 1, it indicates maximal inequality whereby in this analysis, one state gets all the income while the other states have none.

Below shows the bar chart of mean poverty rate and Gini coefficient for each states,



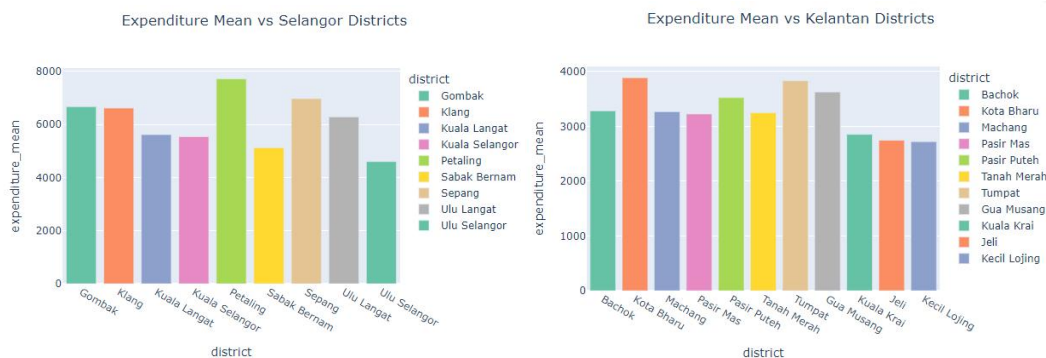
The highest poverty rate goes to Sabah, followed by Kelantan then Sarawak with their respective values at 25, 17 and 14.5 respectively. Aside the 3 states mentioned previously, other states have poverty value below 10. The lowest poverty value comes from W.P.Putrajaya at 0.1. Putrajaya, Selangor and Kuala Lumpur boasts remarkably low poverty rate which is below 2.

Moving onwards, we will be elaborating further about the income and expenditure rates for Selangor, one of the lowest poverty state, while the other is Kelantan, one of the highest poverty rate. The reason Putrajaya and Sabah were not chosen is because the comparison of income and poverty is invalid due to insufficient district data collected.



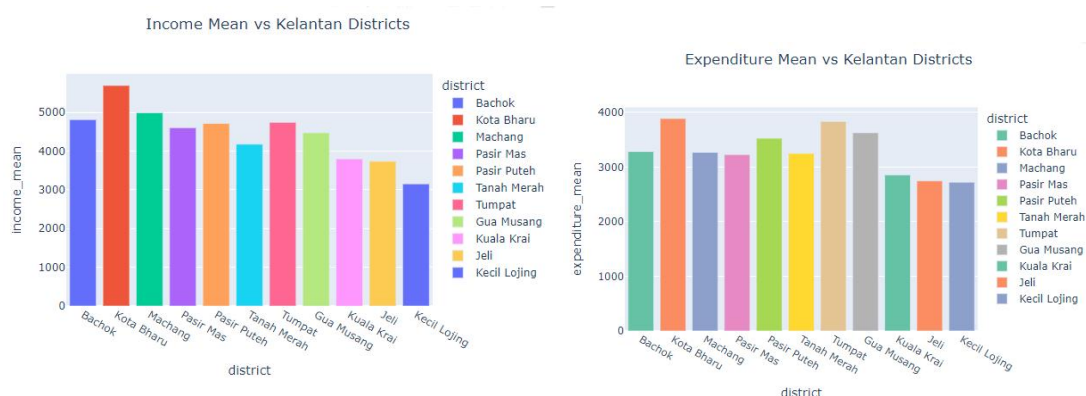
As observe from both bar charts above, the maximum income for Kelantan only peaks at RM5,693 for Kota Bharu district while Selangor tops at RM13,673 for Sepang district. Second in spot for both states are Gombak at RM13,523 and Machang at RM4,987. Even though there are more districts data collected for Kelantan, its income mean could not top that of Selangor based on the graph of income and expenditure statistics for different states in Malaysia that we seen earlier.

Next, let's take a look at the expenditure for this 2 states.

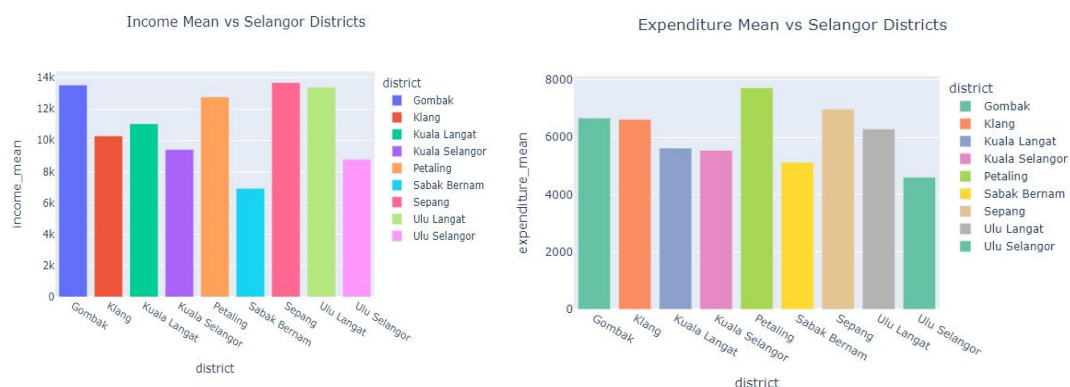


Petaling district has the highest expenditure rate for Selangor at RM7,721 while Kota Bharu at RM3,886 for Kelantan. None of the expenditure value exceeds RM4,000 for Kelantan while Selangor has values reaching RM8,000.

However, if we may notice an aspect regarding the income and expenditure rate for Kelantan, is that the expenditure for some districts are almost as high as the income. Below shows the graph of income and expenditure of Kelantan beside each other for comparison.



Despite having below average income for districts such as Tumpat, Gua Musang and Kuala Krai, the respective expenditure for these districts are quite high and only having a gap difference of RM1,000 or lesser between the income earned. Then again, let's look at the same comparison but for Selangor.



For districts such as Sepang, Ulu Langat and Gombak, the income and expenditure differs around RM7,000 which is absolutely mind-blowing figure compared to Kelantan. Although, there are some districts such as Kuala Selangor, Klang and Ulu Selangor that are not doing greatly well compared to the wealthy districts like Sepang due to their income and expenditure difference are less than or around RM4,000.

The next comparison we will be conducting is on the poverty rate versus income for Selangor and Kelantan states.



Hypothetically speaking, the poverty should be declining with increasing amounts of income. Based on the results, high poverty is caused by low income which solidifies the previous statement. Note that the poverty rate for Kelantan starts at 10 while Selangor's poverty rate does not exceed 5.

After analyzing the relationship between income and poverty, it is only fair that the same is done for expenditure as well. Below shows the expenditure versus poverty graph for Selangor and Kelantan.



Supposedly, poverty should increase proportionally to expenditure because high costs of living will lead to unstable financial lives which will increase poverty rate. However, in this case study, high expenditure corresponds to lower poverty.

Discussion:

Based on the results obtained in the data presentation section, the income rate definitely impacts the poverty as the higher the income, the lower the poverty and vice versa. The expenditure is proportional with income though it will never exceed the maximum income. Most likely the high expenditure is due to either high living cost or the capability to spend more.

The results clearly shown that Putrajaya, Kuala Lumpur and Selangor are the top 3 wealthiest states in Malaysia. It is not a surprise since Kuala Lumpur, enclaved in Selangor state, is the main city for economic drive and an important business hub in the Asia or South East Asia region. Putrajaya is where the Malaysia government personnel and most of their accommodations are located at. Therefore, it is no doubt that these 3 states will have the highest incomes and expenditure statistics.

As for the low income or high poverty states such as Kelantan, Sabah and Sarawak, these states are not as urbanized compared to Kuala Lumpur city. In Kelantan, some populations still rely on non-professional occupations for a living such as fisherman, street food vendor, farmer and so on. Furthermore, government does not take the initiative to develop these states as the location is not strategically good. Even Pulau Pinang is more developed in the recent years compared to Kelantan. Pulau Pinang has abundance of factories which promotes more job vacancies and the income earned is averagely good as well.

Poverty is inversely proportional to the income and expenditure in this case study. However, if we dig deeper, low poverty can also refer to low expenditure because low living cost will decrease expenditure requirements and thus improve the poverty. On the contrary, low poverty equals to high expenditure also stays true due to higher capability of spending and settling high living cost.

Conclusion:

In summary, this case study shows the differences of income and expenditure statistics for each states in Malaysia and how it impacts the poverty and Gini coefficient. Even though the Gini coefficient was not elaborated much in the results section, most states have low Gini rate as it should be because high Gini would mean great inequality in income thus nobody would be able to survive in this condition.

The government should try to put more initiative to develop states with higher poverty rate such as Kelantan, Sabah and Sarawak. There are few methods such as creating new career opportunities in the manufacturing sector, providing monetary aid to assist the low income groups, initiating educational campaigns that can boost intelligence to prepare the rural populations to join the professional workforce and so on. Of course, jobs like fisherman or farmer are still highly required thus government can introduce various new infrastructures to up-skill and ease the work process for them. Another method is to create better services that boost the income of fishing and farming sector.

With various aids provided by the government, the higher poverty states will surely be well-developed over the years and further prosper the economy of Malaysia.