Analysis of Cost of Living in Malaysia: States and Urbanisation Comparison

Nor Asmat Ismail [1]
norasmat@usm.my
ORCID id: https://orcid.org/0000-0001-9314-1600

Lynda Daud [1]
lyndadaud2015@gmail.com *(corresponding author)*
ORCID id: https://orcid.org/0000-0001-5339-8508

Saidatulakmal Mohd [1]
eieydda@usm.my
ORCID id: https://orcid.org/0000-0002-7947-7324

Narimah Samat [2]
narimah@usm.my
ORCID id: https://orcid.org/0000-0002-7540-0717

Abdul Rahim Ridzuan [3]
rahim670@uitm.edu.my
ORCID id: https://orcid.org/0000-0002-1510-895X

[1] School of Social Sciences, Universiti Sains Malaysia
[2] School of Humanities, Universiti Sains Malaysia
[3] Faculty of Business and Management, Universiti Teknologi MARA

Abstract

Malaysia is a growing nation with consistent income growth. Rising cost of goods and services, particularly for basic needs such as food, housing, and transportation, make the cost of living problem inevitable for Malaysian household. There is price difference between urban and rural regions, which raises the inquiry of the cost of living faced by households in the nation due to the urbanisation level. This research aims to analyse the household cost of living based on urbanisation while comparing the methodologies used to analyse the cost of living. The findings suggest that the cost of living for urban families is greater on basic needs spending than for those in medium and low urban states. However, there is no denying that low and medium urban states, such as Terengganu, Kelantan, Sabah, Sarawak, and Pahang, confront high basic need costs. Comparing analysis based on the consumer price index, the cost of living analysis based on microdata from the Malaysian Household Expenditure Survey 2016 may offer a more detailed figure. The research proposes that policymakers and government to pay attention to basic need expenditures, particularly housing since families in low, medium and high urban states spend much more on housing than on food and transportation.

Keywords: Cost of living, household expenditure, urbanisation, CPI

1. Introduction

Malaysia is a developing country in the Asia Pacific region. The uneven development of urbanisation caused the cost of living difference among states. The cost of living is increasing every year, especially on basic needs. Rising prices of goods and services are a problem that can affect the well-being of households due to the rising cost of living that occurs. This study aims to analyse the cost of living based on states urbanisation level in Malaysia, which aims to answer the question of the difference in cost of living faced between the states.

1.1 Household expenditure

Household expenditure is any form of financial transaction made by households to obtain goods and services to meet their needs and wants (Department of Statistics Malaysia, 2017; OECD, 2013). Household expenditure is household members total expenditure to meet daily needs (Manajit et al., 2020).

Table 1 shows the basic need expenditure and non-basic need expenditure of Malaysian households. The average amount of basic need and non-basic need expenditure recorded an increase from year to year, with the total basic need expenditure being higher than non-basic need expenditure. Expenditure on basic needs, especially housing, recorded the highest increase, which concerns a household cost of living burden. Food and transportation expenditures also record a steady increase, an inevitable burden as necessities. Apart from that, the total expenditure on non-basic needs increased although it was always lower than the expenditure on necessities. The rising expenditure provides an overview of the rising cost of living that households are currently facing.

Table 1: Total average basic need expenditure and non-basic need expenditure of Malaysian households

Expenditure group	Year			
	2009	2014	2016	2019
Basic need expenditure	Amount (RM)			
Food	444	676	726	783
Housing	495	853	969	1,068
Transportation	327	523	553	611
Basic needs total amount	1,266	2,052	2,248	2,462
Non-basic needs total amount	924	1,526	1,785	2,073
Amount	2,190	3,578	4,033	4,535

Source: DOSM (2020)

1.2 Price of goods and services

The CPI is an indicator that can be used as a reference to determine the change in the cost of living of households if there is no significant difference in the pattern of household spending

(BNM, 2015b; Wahab et al., 2018b). Table 2 shows the Malaysian CPI in urban and rural areas. There are differences in the overall CPI of goods and services in urban and rural areas, with the CPI recording a continuous increase from year to year. The urban CPI recorded a higher value than rural areas, indicating that households in urban areas experience higher prices of goods than in rural areas.

Table 2: Malaysian, urban and rural consumer price index 2010-2020

Year	Malaysia	Urban	Rural
2010	100	100	100
2011	103.2	103.2	103.1
2012	104.9	105	104.7
2013	105.8	107.2	106.8
2014	108.2	110.7	109.8
2015	111.6	113.1	111.7
2016	114.3	115.5	113.6
2017	117	119.9	117.8
2018	118	121.1	118.7
2019	119.3	122	119.1
2020	120.6	120.7	117.3

Source: DOSM (2010-2021)

The price levels of goods and services in urban and rural areas differ due to the transportation cost of goods Krugman (1991); Krugman & Venables (1993), the amount of supply and demand that leads to the existence of price level differences of goods and services (Navamuel et al., 2019). Navamuel et al. (2019) argue that price levels of goods and services and differences in household lifestyles in urban and rural areas have created different environments that influence household spending. In addition, the price level of goods and services differs according to strata, where the price of goods in urban areas is higher than in rural areas. The situation raises the question of the difference in cost of living borne by households according to strata due to the price difference faced. Figure 1 shows the states in Malaysia. Malaysia divides into 14 states with states in the high urban category comprising the states of Selangor, Johor, Penang and Melaka. The medium urban states are Negeri Sembilan, Kedah, Terengganu, Perak, and Perlis while the low urban states are Kelantan, Pahang, Sabah and Sarawak (BNM, 2015b).

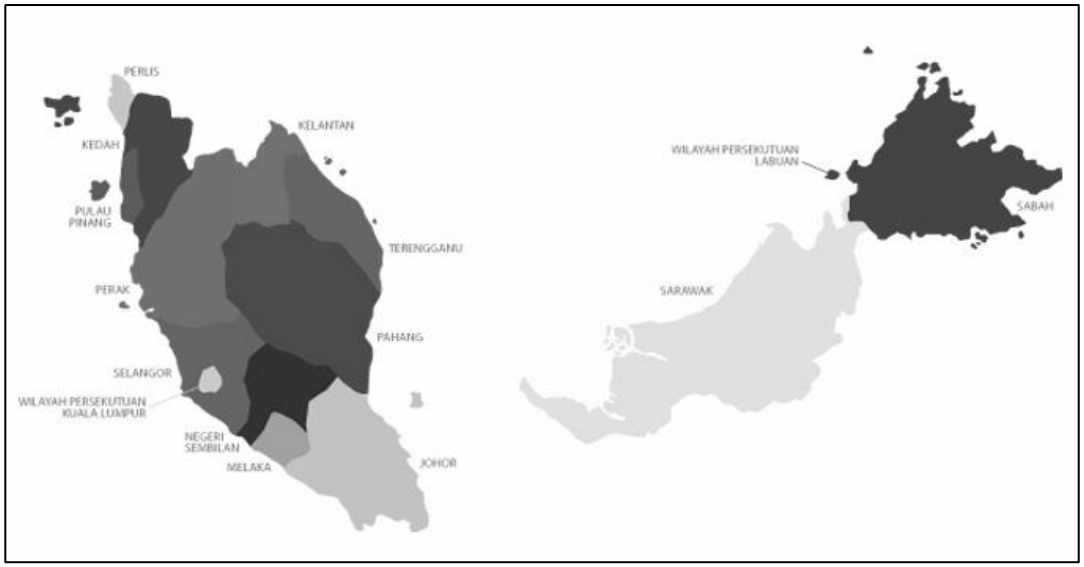

Figure1: States of Malaysia

2. Literature review

Cost of living is defined as the amount borne by an individual or a household to meet basic needs such as food, drink, clothing and shelter, and other needs for continued survival and comfort (Sabri et al., 2018; Wahab et al., 2018a). BNM (2015a) states that the cost of living in all forms of expenditure on goods and services for households to remain at a certain level of living standard.

2.1 Cost of Living Theory

According to Konus (1939), the cost of living is the minimum amount of expenditure required by a family in a given period to achieve the standard of living desired by the household. Konus argues that the cost of living should be in line with the foundations of microeconomic theory and must consider differences in tastes between consumers. This concept applies through the utility determination method instead of the fixed goods basket method. The Konus method of determining the cost of living fits in measuring differences or comparisons between locations, subgroups and changes in periods (Navamuel et al., 2017).

2.2 Cost of living and urbanisation

Household strata is a significant factor in determining the living cost (AlAzzawi, 2020). Urban population density plays a role in the demand for goods and services that exist, causing goods in large cities to become expensive (Navamuel et al., 2019). The study of Blien et al. (2009); Kosfeld et al. (2008) found a significant difference in the cost of living due to the difference in population density in urban areas compared to rural areas in Germany. Other than that, population size is a significant factor and positively impacts the household cost of living (Atuesta & Araya, 2012). Kurre (2003) also found that population growth and population density factors are positively related to the cost of living in a region, while the

increase in population twice from the original number negatively affects the household cost of living.

Additionally, different environments in urban and rural areas in terms of infrastructure and economic activities have created differences in the cost of living. Public transport facilities and transportation network systems are among the characteristics of the urban environment that significantly affect the cost of living of households. Timmins (2006) found that the distance of residence to the port and public transportation influences the cost of living. According to Campbell & James (2020), the cost of living in urban areas is influences by labour participation, level of education and supply in the employment industry. Navamuel et al. (2017) stated that economic activities between regions cause the cost of living in some regions will be higher, especially the regions that carry out tourism activities.

However, Macdonald's (1984) obtained different results where living in rural areas is higher than in urban areas. Chung & Myers (1999) also found that low-income households living in areas surrounded by a huge market will experience an increase in spending on food items, which usually occurs in rural areas. Kaufman et al. (1997) explained that price differences in urban and rural areas exist due to the small size of grocery stores. Grocery stores operate on a small scale and cannot enjoy the benefits of economies of scale like hypermarkets. This affects retailers' production costs, causing the selling price to be higher. Fried & Robinson (2006) also found that Alaska households have to bear to maintain the same standard of living if they live in different cities. Navamuel et al. (2019) argue that differences in urban and rural household lifestyles and price levels of goods and services have created, unlike environments that influence household spending.

The states in Malaysia differ in terms of urban strata where there are states categorised as high urban, medium urban and low urban. Higher cost of living values occurs in high urban states (BNM, 2015b). Households feel burdened by the cost of living they are experiencing at this point. A survey of the cost of living by Sabri (2017) found that 70% of households living in Kuala Lumpur feel burdened by the cost of living incurred.

2.3 Empirical review on cost of living

This section describes the empirical highlights of studies related to the cost of living and its relationship with urbanisation factors. Based on the literature review conducted, urbanisation strata are significantly related to the cost of living and household expenditure. Furthermore, there is a gap in the cost of living difference between urban and rural households.

However, there is a difference in findings between the higher total expenditure costs for food, housing, and transportation. There is no agreement on the findings. This raises the question of the cost of living borne by households in Malaysia, given the cost of living gap. Households in urban and rural areas are likely to face a high cost of living at certain spending groups that require specialised analysis to substantiate the actual findings.

Campbell & James (2020) researched the factors that determine income and cost of living to determine if income factors determine the difference in cost of living between regions. The study used time series data from 1996 to 2016 for analysis. OLS regression analysis found a

significant relationship between income and cost of living but the change in the cost of living was not elastic to the change in income. The household size in urban areas affects the level of cost of living. Labour participation, level of education and supply in the employment industry influence cost of living. There is a significant cost of living gap between regions that requires careful urban development planning to control the cost of living.

Navamuel et al. (2019) also have found differences in household food expenditure costs due to urbanisation. The study found that less populated areas enjoy lower food expenditure costs than areas with a high population. Navamuel et al. (2015) also analysed the difference in cost of living impact of location difference by using the food item expenditure method. The study used the AIDS model to estimate and determine the household cost of living. Analysis of Spanish HES data in 2010 found that there were differences in the cost of living due to geographical differences and income levels. Murcia is the city with the highest cost of living in the region of Madrid in comparison. According to the researchers, the difference in cost of living between regions is influenced by price differences and household spending and substitution effects.

Additionally, Saari et al. (2013) had researched the cost of living of households in peninsular Malaysia with input-output method. Analysis of HES 2005 data found that the increase in electricity charges and petrol prices affected the cost of housing, food and transportation expenses. A comparison of the cost of living based on the strata of urban and rural locations found that the increase in electricity charges affected the higher cost of housing expenditure for urban households than rural. For food expenditure, rural households experienced a higher increase in expenditure costs than rural areas, while for transportation expenditure, households in both areas experienced the same increase in expenditure costs. Analysis of the impact of rising petrol prices and electricity charges simultaneously caused the cost of housing and food expenditure of rural households to increase over urban households. As for transportation expenditure, the expenditure cost of urban households increased more than that of rural households. The increase in electricity charges increased the overall cost of living by 3.2%, while the increase in electricity and petrol charges affected the increase in the cost of living of urban households by 4.02% and rural by 3.99%.

Atuesta & Paredes Araya (2012) had researched the cost of living of households using the expenditure method. The study produced an actual cost of living index to determine the cost of living in 23 provinces in Colombia. The AIDS model is used to estimate the cost of living of households. The study results found that the total population is a significant factor and positively impacts the cost of living of households. Comparing the cost of living between regions found that Bogota has the highest cost of living.

3. Methodology

Based on the literature review conducted, several methods of determining the cost of living of households were identified. Kurre (2003) describes four methods of measuring the cost of living used in research. The first method is collecting price data of goods and services in the research area with the assumption that the goods are goods used by households. The second method uses demand analysis through estimating the demand equation of goods in the

research area. This method was used by Ravallion & Walle (1991) to analyse the cost of household housing expenditure in Indonesia. Navamuel et al. (2017, 2019) also used a similar method to estimate the cost of living in the provinces found in Spain using food item expenditure data. The third method of measuring the cost of living is a regression analysis of factors that can estimate (predict) the cost of living in an area. A model is formed based on data of factors influencing the cost of living of households in one area, and the application of the model is used to estimate the cost of living in another area (Cebula & Todd, 2004; Kurre, 2003). The fourth method in estimating the cost of living uses total expenditure data (price * quantity), which compares the cost of living between regions using the total expenditure of goods and services based on household subgroups and expenditure quantities. AlAzzawi (2020); Voicu & Lahr (1998) also use this method to determine the cost of living between Egypt and the U.S regions.

3.1 Data

This study uses Malaysian household expenditure survey data in 2016 and consumer price index data in 2016 to determine the cost of living index. A comparison of the cost of living index between the states was conducted and compared based on state urbanisation level.

3.2 Method of estimating the cost of living

The cost of living index is the ratio of the cost of expenditure on goods and services the effect of price level differences to be at the same level of living standards (Konus, 1939; Mudgett, 1945). This cost-expenditure ratio is not subject to the purpose of comparison between a period alone. However, it can also be carried out for comparison between one area with another, based on subgroups of socioeconomic and demographic characteristics such as B40, M40 and T20, male and female, urban and rural city, household size as well as age group (Emery & Guo, 2019).

The Department of Statistics Malaysia (2020) reports that the CPI value recorded in the Malaysian consumer price index report is a weighted price index value that considers household spending patterns and not merely price changes. CPI Malaysia was calculated using the weighted Laspeyres chain index method (Department of Statistics Malaysia, 2017). The cost of the living calculation method used in this study will use the Malaysian CPI as the cost of living index as the CPI calculated by the Department of Statistics Malaysia has complied with the cost of living calculation method, which takes into account household spending patterns in determining price level changes through the weighted method. The calculation formula for Laspeyere's price index is as follows:

$$\sum p_1 q_o = \text{Current expenditure}$$

$$\sum p_0 q_0 = \text{Base expenditure}$$

$$\text{Cost of living index} = \text{Expenditure ratio}$$

$$\text{CPI} = \frac{\sum p_1 q_0}{\sum p_0 q_0}$$

In addition, the study also analyses the cost of living of households by comparing the total expenditure of basic needs and non-basic needs between states based on the level of urbanisation. The high urbanisation states consist of Johor, Melaka, Selangor and Penang, while the medium urbanisation states are Kedah, Perak, Perlis and Terengganu. The lower urban states are Kelantan, Pahang, Sabah and Sarawak.

4. Result and discussion

Based on the analysis of household expenditure and CPI data used to measure the cost of living in comparison between states, the study found that the total household expenditure in high urban states consistently exceeds the low and medium urban states. The perception that high-urban states are worse off bearing the cost of living should be defined as households residing in non-high urban states also incur high total expenditure on some spending groups, especially basic needs. Households in the state of Terengganu, for example, face high food expenses. On the other hand, households in Sabah and Sarawak face high housing costs. In addition, in terms of cost of living measurement tools, the CPI underestimates the role of municipalities in influencing the cost of household expenditure. Interstate analysis can provide a clear picture of the expenditure costs faced.

Table 4 displays the average amount of basic need expenditure, the average amount of non-basic need expenditure and the percentage of expenditure based on urbanisation level for each state. The highest average amount of basic need expenditure is in the state of Selangor, which is in a state of high urban status. The state of Terengganu is the state with the highest basic need expenditure cost for medium urban state. Sarawak has the highest total cost of basic need expenditure record for the lower urban states.

Based on household expenditure data, it can be observed that high expenditure costs are also felt by households living in low and medium urban states. The results were also reported by AlAzzawi (2020); Saari et al. (2013), who found that households in rural areas experience a relatively high cost of living problem.

Table 4: Average amount of basic and non-basic need expenditure

Urbanisation level	Basic need		Non-basic need		Expenditure amount
	Amount (RM)	Per cent	Amount (RM)	Per cent	
High					
Johor	2,272.48	45.69	1,911.75	54.31	4,184.23
Melaka	2,296.26	48.24	2,139.77	51.76	4,436.03
P.Pinang	2,343.98	45.43	1,951.00	54.57	4,294.98
Selangor	2,624.30	46.29	2,262.05	53.71	4,886.35
Medium					
Kedah	1,773.25	44.09	1,398.23	55.91	3,171.47
Perak	1,669.78	48.25	1,557.05	51.75	3,226.83

Perlis	1,748.50	46.78	1,536.87	53.22	3,285.37
Terengganu	2,154.72	45.28	1,782.89	54.72	3,937.62
Low					
Kelantan	1,570.16	45.62	1,317.18	54.38	2,887.34
Pahang	1,771.80	49.39	1,729.17	50.61	3,500.97
Sabah	1,756.75	41.87	1,265.35	58.13	3,022.10
Sarawak	1,820.63	44.91	1,484.43	55.09	3,305.05

The cost of living analysis results using the CPI is almost identical to the total expenditure method. The CPI data in Table 5 displays the average CPI value based on the basic need expenditure group by state municipality status. Food expenditure is the group of expenditure with the highest weighted value amounting to (30.2) followed by housing expenditure (23.8) and transportation expenditure (13.7). The states of Johor and Penang recorded the highest CPI compared to other states for food expenditure. The food CPI in the low urban states also recorded a higher value than the medium urban states as recorded in the states of Kelantan and Pahang. For the Housing Expenditure Group, the highest CPI was recorded in the state of Melaka, while the lowest CPI was recorded in the state of Sabah. CPI Housing expenditure in the states of Kedah and Perlis recorded a value similar to the state of Johor, which is in the high urban group. This indicates that households in Kedah and Perlis face rising house prices, affecting the cost of housing expenditure. The CPI for transportation expenditure records Selangor with the highest transportation costs. Apart from that, the state of Sarawak, which is in the low-income group, also recorded a relatively high CPI compared to other states which are in the group of medium and low urban states as well as the states of Melaka, Johor and Penang, which are each in the high urban group.

Table 5: CPI basic need expenditure group based on urbanisation level

Urbanisation level	Average CPI	Basic need expenditure group		
		1	2	3
High				
Johor	118	128	116	103
Melaka	115	126	117	100
Pulau Pinang	116	128	115	102
Selangor	116	125	114	107
Medium				
Kedah	114	121	116	101
Perak	112	119	112	100
Perlis	114	121	116	101
Terengganu	113	120	112	101
Low				
Kelantan	115	124	111	102

Pahang	114	126	112	100
Sabah	111	116	107	100
Sarawak	113	121	108	104

Note:
Expenditure group 1 Food
Expenditure group 2 Housing
Expenditure group 3 Transport

The CPI values of non-basic need expenditure in Table 6 show the CPI of the expenditure groups for health, education, clothing, communications, household equipment, restaurants and hotels, alcohol and tobacco, recreation and culture, and miscellaneous goods. The recorded data shows that the CPI for alcohol and tobacco is the non-basic need with the highest value. The state of Kelantan recorded the highest CPI value for alcohol and tobacco compared to other states.

Table 6 Consumer price index of non-basic need expenditure group based on urbanisation level

Urbanisation level	Non-basic need expenditure group								
	4	5	6	7	8	9	10	11	12
High									
Johor	123	119	99	98	112	124	168	112	122
Melaka	115	124	87	100	115	119	167	110	112
Pulau Pinang	122	113	98	96	111	126	160	108	115
Selangor	115	115	100	99	116	128	167	108	109
Medium									
Kedah	113	106	95	99	111	122	170	109	116
Perak	113	112	96	100	111	122	163	106	113
Perlis	113	106	95	99	111	122	170	109	116
Terengganu	116	119	98	97	110	113	178	104	115
Low									
Kelantan	118	124	102	99	109	115	179	105	112
Pahang	116	114	99	97	114	117	172	105	111
Sabah	123	109	97	100	111	129	169	115	114
Sarawak	120	108	97	97	106	120	149	104	112

Note:
Expenditure group 4 Health
Expenditure group 5 Education
Expenditure group 6 Clothing
Expenditure group 7 Communication
Expenditure group 8 Equipment
Expenditure group 9 Restaurant and hotel
Expenditure group 10 Alcohol and tobacco
Expenditure group 11 Recreation
Expenditure group 12 Miscellaneous

The total cost of household expenditure recorded household expenditure in Selangor as the state with the highest average expenditure with an expenditure value of RM4,886.35 per month. Comparison of cost of living using CPI found that the highest cost of living occurred in Johor with CPI value 118 compared to Selangor with CPI value 116. Terengganu state recorded the highest total expenditure cost for medium urban states compared to the CPI method, which recorded Kedah and Perlis with the highest CPI. Terengganu also has the highest expenditure on basic and non-basic needs. Low-urban states also record different findings on both measurement methods. The expenditure method records the state of Pahang has the highest expenditure cost compared to the CPI value, which records the state of Kelantan as the state with the highest cost of living in the low urban group. There is a gap in the cost of living analysis results using the method of measuring expenditure data and CPI data. This situation is in line with AlAzzawi (2020), who explained that measuring the cost of living using the CPI will overestimate the actual cost of living in an area. This study found differences in the cost of living experienced by Malaysian households influenced by urbanisation status and the cost of living measurement methods used.

5. Conclusion

Based on the total expenditure data, it is found that the total expenditure on basic needs is larger than the non-basic expenditure in high, medium and low urban states. This indicates that the influence of the cost of basic need expenditure faced by households is higher and has a more significant impact and influence on households. The inter-state expenditure cost analysis conducted is based on the status of state urbanisation level to compare the difference between the value of total expenditure and the value of the CPI. It is suggested that further researchers focus on urban and rural strata for each state or an analysis based on population density in an area that represents a proxy of the urbanisation level.

6. Acknowledgement

This research was funded entirely by USM RUI grant code UO1897 Grant no. 8016102
Countless appreciation goes to the School of Social Sciences, Universiti Sains Malaysia for the support provided.

References

1. AlAzzawi, S. (2020). Regional and income disparities in the cost of living changes: evidence from Egypt. Middle East Development Journal, 12(2), 243–267. https://doi.org/10.1080/17938120.2020.1770476
2. Albouy, D., Ehrlich, G., & Liu, Y. (2015). Housing demand and expenditures: how rising rent levels affect behaviour and costs of living over space and time. CPE/ LSE, Labor Seminar, London, Vol.28. http://www.andraghent.com/HULM/Albouy.pdf
3. Atuesta, L. H., & Araya, D. P. (2012). Colombia's spatial cost of living index using a microeconomic approach and censored data. Applied Economics Letters, 19(18), 1799–1805. https://doi.org/10.1080/13504851.2012.657347
4. Badari, S. A. Z., Arcot, J., & Sulaiman, N. (2013). Food consumption patterns of lower-income households in rural areas of peninsular Malaysia. Jurnal Pengguna Malaysia, 21(1), 122–141. https://doi.org/http://macfea.com.my/wp-content/uploads/2018/11/Artikel-8-JPM-Jilid-21-Dis-2013.pdf
5. Blien, U., Gartner, H., Stüber, H., & Wolf, K. (2009). Regional price levels and the agglomeration wage differential in western Germany. Annals of Regional Science, 43(1), 71–88.

https://doi.org/10.1007/s00168-007-0205-8
6. BNM. (2015a). Inflasi dan kos sara hidup. Quarterly Buletin, 1–7(Bank Negara Malaysia), 1–7. https://doi.org/10.1080/10168737.2014.928894
7. BNM. (2015b). Inflation and cost of living. Annual Report 2015, Section D:(64–69).
8. Campbell, H. S., & James, R. D. (2020). A look at geographic differences in income and cost of living. Papers in Applied Geography, 6(1), 4–18. https://doi.org/10.1080/23754931.2020.1725604
9. Cebula, R. J., & Todd, S. (2004). An empirical note on determinants of geographic living cost differentials for counties in Florida, 2003. The Review of Regional Studies, 34(1), 112–119.
10. Chung, C., & Myers, S. L. (1999). Do the poor pay more for food? An analysis of grocery store availability and food price disparities. Journal of Consumer Affairs, 33(2), 276–296. https://doi.org/10.1111/j.1745-6606.1999.tb00071.x
11. Emery, H., & Guo, X. (2019). True cost of living measures for 10 provinces: Using an Engel curve approach. In University of New Brunswick. http://blogs.unb.ca/newsroom/_media/images/2019/06/true-cost-of-living.pdf
12. Fried, N., & Robinson, D. (2006). The cost of living in Alaska. Alaska Department of Administration, July, 4–16.
13. Ishida, A., Law, S. H., & Aita, Y. (2003). Changes in food consumption expenditure in Malaysia. Agribusiness, 19(1), 61–76. https://doi.org/10.1002/agr.10038
14. Department of Statistics Malaysia. (2017). Indeks Harga Pengguna (Issue Januari). http://www.statistics.gov.my/portal/download_Prices/files/CPI/2014/FEB/BI/01Summary.pdf
15. Kaufman, P. R., MacDonald, J. M., Lutz, S. M., & Smallwood, D. M. (1997). Do the Poor Pay More for Food? Item Selection and Price Differences Affect Low-Income Household Food Costs. Journal of Interferon Cytokine Research the Official Journal of the International Society for Interferon and Cytokine Research, 31(1), 941. https://doi.org/10.4155/fmc.12.40
16. Konus, A. A. (1939). The problem of the true index of the cost of living. Econometrica, 7(1), 10. https://doi.org/10.2307/1906997
17. Koo, J., Phillips, K., & Sigalla, F. (1997). Measuring regional cost of living (No. 97–13; Issue December).
18. Kosfeld, R., Eckey, H. F., & Türck, M. (2008). New economic geography and regional price level. Jahrbuch Fur Regionalwissenschaft, 28(1), 43–60. https://doi.org/10.1007/s10037-007-0022-7
19. Krugman, P. (1991). Increasing return and economic geography. NBER Working Paper Series, 99(3), 483–499. https://www.nber.org/system/files/working_papers/w3275/w3275.pdf
20. Krugman, P., & Venables, A. (1993). Integration, specialisation and adjustment. NBER Working Paper Series, 4559, 1–32.
21. Kurre, J. A. (2003). Is the cost of living less in rural areas? Journal of International Regional Science Review, 26(1), 86–116. https://doi.org/10.1177/0160017602238987
22. Macdonald, K. M. K. (1984). The cost of living in rural areas of Scotland. University of Edinburgh.
23. Manajit, S., Samutachak, B., & Voelker, M. (2020). Socioeconomic determinants of consumption patterns in Thailand. Asia-Pacific Social Science Review, 20(2), 39–51.
24. Mien, T. S., & Said, R. (2018). A cross-sectional household analysis of household consumption patterns: an indirect approach to identify the possible factors of personal bankruptcy. Jurnal Ekonomi Malaysia, 52(3), 231–246. https://doi.org/10.17576/JEM-2018-5203-18
25. Mudgett, B. D. (1945). The Cost-of-Living Index and Konüs' Condition. Econometrica, 13(2), 171–181.
26. Navamuel, E. L., Araya, D. P., & Fernández Vázquez, E. (2015). An Almost Ideal Cost of Living Index for Food in Spain Using a Microeconomic Approach and Censored Data. Spatial Economic Analysis, 10(4), 408–427. https://doi.org/10.1080/17421772.2015.1076573
27. Navamuel, E. L., Morollón, F. R., & Vázquez, E. F. (2019). Does the urban population pay more for food? Implications in terms of poverty. Applied Spatial Analysis and Policy, 12(3), 547–566. https://doi.org/10.1007/s12061-018-9254-x
28. Navamuel, E. L., Vazquez, E. F., & Morollon, F. R. (2017). Higher cost of living in urban areas? An AIDS-based analysis of food in Spain. Regional Studies, 51(11), 1665–1677. https://doi.org/10.1080/00343404.2016.1228870
29. Rashid, N. K. A., Nasir, A., Anang, Z., & Alipiah, R. M. (2018). Determinants of Muslim Household Basic

Needs Consumption Expenditures. Jurnal Ekonomi Malaysia, 52(1), 309–323.
30. Ravallion, M., & Walle, D. van de. (1991). Urban-rural cost-of-living differentials in a developing economy. Journal of Urban Economics, 29(1), 113–127. https://doi.org/10.1016/0094-1190(91)90030-B
31. Saari, M. Y., Shuja, N., & Rahman, I. A. (2013). Evaluation of impacts of the rise in energy prices on costs of production and living expenses in Malaysia. Malaysian Journal of Economic Studies, 50(1), 1–20.
32. Sabri, M. F. (2017). Cabaran kewangan isi rumah miskin bandar. Bank Negara Malaysia & Gabungan Persatuan-Persatuan Pengguna Malaysia, 1–12(April 2017), Ringgit. Rakan Kewangan Anda. https://doi.org/10.1507/endocrj.EJ15-0226
33. Sabri, M. F., Yahaya, N., Othman, M., Hashim, A., Salleh, N., & Sabri, B. (2018). Status sosioekonomi isi rumah Melayu bandar Malaysia. Malaysian Journal of Consumer & Family Economics, 9, 11–25.
34. Tey, Y. S., Shamsudin, M. N., Mohamed, Z., Abdullah, A. M., & Radam, A. (2008). A complete demand system of food in Malaysia. ICFAI Journal of Agricultural Economics, 5(3), 17–29.
35. Timmins, C. (2006). Estimating spatial differences in the Brazilian cost of living with household location choices. Journal of Development Economics, 80, 59–83. https://doi.org/10.1016/j.jdeveco.2005.02.006
36. Voicu, A., & Lahr, M. L. (1998). Expenditure based inter-area cost of living index. Center for Urban Policy Research. https://econwpa.ub.uni-muenchen.de/econ-wp/urb/papers/0403/0403006.pdf
37. Wahab, M. A. A., Shahiri, H. I., Mansur, M., & Zaidi, M. A. S. (2018a). Kos sara hidup tinggi di Malaysia: Pertumbuhan pendapatan isi rumah yang perlahan atau taraf hidup yang meningkat? Jurnal Ekonomi Malaysia, 52(1), 125–139. http://www.ukm.my/fep/jem/pdf/2018-52(1)/jeko_52(1)-10.pdf
38. Wahab, M. A. A., Shahiri, H. I., Mansur, M., & Zaidi, M. A. S. (2018b). Kos sara hidup tinggi di Malaysia: Pertumbuhan pendapatan isi rumah yang perlahan atau taraf hidup yang meningkat? Jurnal Ekonomi Malaysia, 52(1), 125–139. http://www.ukm.my/fep/jem/pdf/2018-52(1)/jeko_52(1)-10.pdf
39. Yogesh Hole et al 2019 J. Phys.: Conf. Ser. 1362 012121
40. Yusof, S. A., & Duasa, J. (2010a). Consumption patterns and income elasticities in Malaysia. Malaysian Journal of Economic Studies, 47(2), 91–106.
41. Yusof, S. A., & Duasa, J. (2010b). Household decision-making and expenditure patterns of married men and women in Malaysia. Journal of Family and Economic Issues, 31(3), 371–381. https://doi.org/10.1007/s10834-010-9200-9