

Trend of Poverty among Elderly: Evidence from Household Income Surveys

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ABSTRACT

Elderly poverty is a major concern because of the changing in demographic pattern and the fact that elderly people have limited capacity and capability to prolonged employment. This article investigates poverty incidence among people who are elderly and nonelderly in Malaysia and analyzes the factors influencing elderly poverty. This article uses household income surveys of 2009 and 2012. Data indicates that poverty incidence among elderly heads of households is relatively low. Elderly poverty is high among elderly's female head of household, other marital status, rural area, no or informal education, live alone, not working and in states whose main economic activity is agriculture.

KEYWORDS

economic well-being; elderly poverty; quantitative data

Introduction

There is no one static definition of *poverty* as poverty is a multidimensional concept (Chamhuri, Karim, & Hamdan, 2012; Cobbinah, Black, & Thwaites, 2013). Nevertheless, the most common measurement of poverty uses per capita income (Hope, 2004). Using 2005 purchasing power parity, the World Bank (2008) replaces a poverty line of US\$1 with US\$1.25 as a measurement of absolute poverty and US\$2 as a measurement of relative poverty. Despite globalization and improvement in general standard of living worldwide, the number of people living in extreme poverty (living on US\$1.25 per day) is still alarming, close to 1.2 billion of global population (United Nations, 2013). The situation is worse in many developing countries especially in Asia and Africa where approximately 620.3 million of population in South Asia and 369.5 million populations in Africa live below the poverty line (Alkire & Santos, 2011).

With the implementation of the Millennium Development Goals (United Nations, 2015), all countries have given their fullest commitment to eradicate extreme poverty where 43 countries with more than 60% of the world's

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population have already met the goal of cutting hunger in half by 2015 (United Nations, 2015). This is achievable through continuous efforts by international organizations, local nongovernmental organizations, local authorities and many parties. Beginning with the introduction of the New Economic Policy (NEP) in 1970 with main aims to eradicate poverty and correct economic imbalances in the society, poverty incidences in Malaysia has reduced dramatically over the years. Poverty incidence has dropped from a high 50% in early 70 s to a low 10% in 2012. The measurement of poverty is still based on the absolute poverty of income measurement of RM 760 (Peninsular Malaysia), RM 1,050 (Sabah) and RM 910 (Sarawak) in 2009 and RM 830 (Peninsular Malaysia), RM 1,090 (Sabah) and RM 920 (Sarawak) in 2012 (Economic Planning Unit, 2013).

Similar to the world trend of poverty, poverty incidences remain high in underdeveloped or rural areas. Not only that rural areas lack many employment opportunities, the areas also have limited economic growth with low value-added economic activities. The poverty incidences in the rural areas remain high at 8.4% in 2009 and 3.4% in 2012 as compared to the poverty incidences in the urban areas at 1.7% in 2009 and 1.0% in 2012 (Economic Planning Unit, 2013). But it is important to note that with increasing cost of living, a new concept of poverty that is urban poverty is on the rise (Ravallion, Chen, & Sangraula, 2007). Moreover, as emphasized by Baker (2008), not everyone living in urban areas are receiving all the benefits of economic expansion. The disadvantaged groups such as the elderly, women, children, and the disabled may either be denied the full benefits or be excluded from receiving the assistance to rise out of poverty. With the changes in the demographic profile of the nation and the world, it is imperative that the well-being of the elderly is well taken care of, ensuring that they receive the minimum standard of living to be out of poverty.

Elderly poverty has significant impact on public policy and well-being. With limited employment opportunities at old age thus limiting the availability of income, highly reliable on pension income, consumption expenditure increases especially for health care. Quite often, the increase in health care expenses reduces the consumption of other goods and services and with limited or no income at retirement; this further pushes the elderly into poverty. As such, as put forward by Hurd (1990), the poverty incidence among elderly tends to be more permanent than among the nonelderly as it is least likely for elderly to come out of the poverty trap. Countries with weak and almost nonexistence social security systems there appear to be no significant difference between old age poverty and overall poverty rates, but for countries with well-developed social security systems, poverty incidences among elderly are higher than the nonelderly (Gasparini, Alejo, Haimovich, Olivieri, & Tornarolli, 2007).

The main purpose of this article is to assess the trend of poverty among elderly and nonelderly using the 2009 and 2012 Household Income Survey

(HIS) data. A simple logistic probability function is then estimated to understand the sociodemographic factors that affect the probability of elderly living in poverty.

Poverty Incidence in Malaysia

As noted earlier, poverty incidence in Malaysia has reduced tremendously from more than 50% in 1970 to less than 10% in 2012 (Table 1). Although poverty incidence in rural areas remains high in comparable to the urban areas, its poverty incidence too has shown a remarkable reduction. As poverty incidence in Malaysia is a monetary-based measurement, the reduction in poverty incidence is in line with the increase in the mean household income. Although income in the rural areas has also shown some improvement over the years, it remains low of at least 50% from the urban mean household income. Although many countries and literature observe and analyze the differences in urban–rural income divide and poverty incidence, interestingly, Malaysia adds up the analysis into ethnic and states categories.

Malaysia is a multiracial country with three main ethnic groups: Bumiputera, Chinese, and Indian. During the British occupancy from 1945 to 1957, the adopted “rule-and-divide” policy has in some ways shaped the economic divide of the ethnic composition of the population. The Bumiputera, literally known as the “son of the soil,” was left to reside in the rural areas in agriculture, the Chinese in the town area in commercial and mining, whereas the Indians in rural and suburban areas on plantation and as general workers. The ethnic-based economic activities directly influence and affect the income composition and economic position of the ethnic groups. The groups more susceptible to poverty were the Bumiputeras and Indians. Incidentally, the poverty incidence over the years has indicated a

Table 1. Incidence of Poverty and Mean Monthly Gross Household Income, 1970–2012.

	1970	1980	1989	1995	1999	2002	2007	2009	2012
Poverty incidence Malaysia (%)	49.3	29.0	16.5	8.7	8.5	6.0	3.6	3.8	1.7
Poverty incidence urban (%)	21.3	12.6	7.1	3.6	3.3	2.3	2.0	1.7	1.0
Poverty incidence rural (%)	58.7	37.4	21.1	14.9	14.8	13.5	7.1	8.4	3.4
Poverty incidence Bumiputera (%)	64.8	49.2	23.0	12.2	12.3	9.0	5.1	5.3	2.2
Poverty incidence Chinese (%)	26.0	16.5	5.4	2.1	1.2	1.0	0.6	0.6	0.3
Poverty incidence Indian (%)	39.2	19.8	7.6	2.6	3.4	2.7	2.5	2.5	1.8
Mean monthly gross households income Malaysia (RM)	264	678 ^a	1,169	2,020	2,472	3,011	3,686	4,025	5,000
Mean monthly gross households income urban (RM)	428	1045 ^a	1,606	2,589	3,103	3,652	4,356	4,705	5,742
Mean monthly gross households income rural (RM)	200	523 ^a	957	1,326	1,718	1,729	2,283	2,545	3,080

Source. Economic Planning Unit (nd). <http://www.epu.gov.my/publicationarchives> accessed on 28/09/2015.

Note. ^aData for year 1979.

high poverty incidence between the Bumiputeras and Indians. Nevertheless, the poverty gap among the ethnic groups, has in some ways narrowed.

With 14 states of various economic and social standing, poverty incidences among the states differ tremendously. The differences in poverty incidence are much influenced by the location of the states and their economic activities. [Figure 1](#) shows the map of Malaysia with all the 14 states. In general, states in the Klang Valley that include Federal Territory (F.T.) of Kuala Lumpur, F.T. of Putrajaya, and Selangor are considered developed within the locality of development. States up north that include Perlis and Kedah, on the east coast that include Kelantan and Terengganu and the East of Malaysia that include Sabah and Sarawak, are often left out of development partly due to their location that is further away from the country's capital city.

States that are considered developed are commonly seen to have low poverty incidence whereas states that are considered underdeveloped are the ones having high poverty incidence. [Table 2](#) shows that states with low poverty incidence below 1% are Johor, Malacca, Negeri Sembilan, Penang, Selangor, F.T. Kuala Lumpur, and Malacca. The percentage of poor is a percentage of population. All states with low poverty incidence, except Malacca and Negeri Sembilan, are densely populated with productive economic activities, high manufacturing, and services. Malacca and Negeri Sembilan rely much on services. The other states like Kedah, Kelantan, Pahang, Perak, Perlis, and Terengganu rely much on agriculture and plantation activities. Sabah and Sarawak, being in the east of Malaysia, are commonly neglected from development and have often reported high poverty incidence. The two states focused on agriculture and forestry activities. Nevertheless, regardless of their economic activities and location, the poverty incidences in all states have shown a tremendous drop over the years.

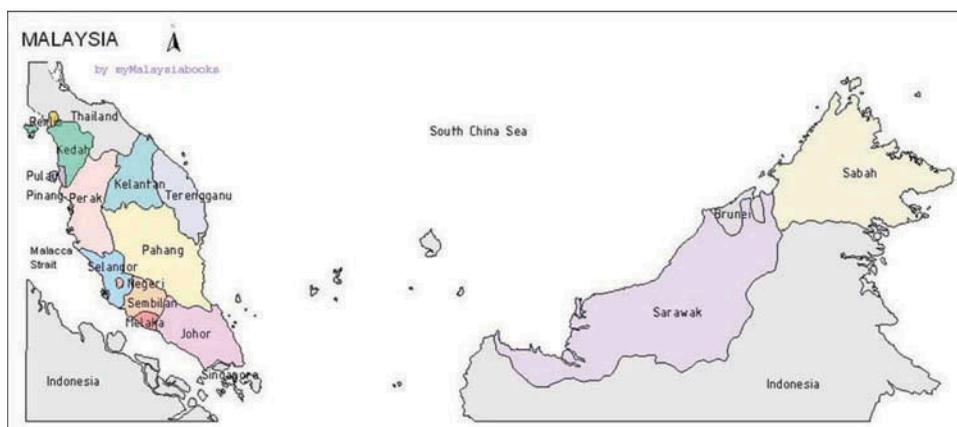


Figure 1. Map of Malaysia.

Source. Text citation is MyMalaysiabooks - travel guide on Malaysia and Singapore. (n.d.)

Table 2. Poverty Incidence by States in Malaysia, 1970–2012.

State	1970	1979	1989	1995	1999	2002	2007	2009	2012
Johor	45.7	18.2	9.8	3.1	3.1	2.5	1.5	1.3	0.9
Kedah	63.2	53.8	29.9	12.2	14.2	9.7	3.1	5.3	1.7
Kelantan	76.1	55.0	29.6	22.9	25.2	17.8	7.2	4.8	2.7
Malacca	44.9	20.4	12.4	5.3	2.9	1.8	1.8	0.5	0.1
Negeri Sembilan	44.8	26.3	9.1	4.9	4.1	2.6	1.3	0.7	0.5
Pahang	43.2	26.9	10.0	6.8	9.8	9.4	1.7	2.1	1.3
Penang	43.7	19.7	8.7	4.0	0.7	1.2	1.4	1.2	0.6
Perak	48.6	30.5	19.2	9.1	6.8	6.2	3.4	3.5	1.5
Perlis	73.9	63.1	17.4	11.8	13.6	8.9	7.0	6.0	1.9
Selangor	29.2	14.5	7.6	2.2	1.9	1.1	0.7	0.7	0.4
Terengganu	68.9	53.1	31.3	23.4	22.7	14.9	6.5	4.0	1.7
Sabah & F.T. Labuan	n.a	40.7 ^b	29.7	22.6	23.4	16.0	16.0	19.2	7.8
Sarawak	n.a	47.8	21.0	10.0	10.9	11.3	4.2	5.3	2.4
F.T. Kuala Lumpur	n.a	a	3.7	0.5	0.4	0.5	1.5	0.7	0.8
F.T. Putrajaya	n.a	c	c	c	c	c	0.0	0.0	0.0

Source. Economic Planning Unit, 2016. <http://www.epu.gov.my> accessed on 28/09/2015

Notes. a. Kuala Lumpur is gazetted as a Federal Territory (F.T.) on February 1, 1974. Data for F.T. Kuala Lumpur is part of Selangor.

b. Labuan is gazetted as a F. T. on April 16, 1984. Data for F.T. Labuan is part of Sabah.

c. Putrajaya is gazetted as as F. T. on February 1, 2001. Data for W.P. Putrajaya is part of Selangor.

Table 3. Number of Elderly, 1960–2020.

Year	Number of elderly ('000)
1960	386.6
1970	546.1
1980	745.2
1991	1,032.3
2000	1,398.5
2010a	2,134.0
2020a	3,439.6

Source. Department of Statistics Malaysia (2005).

Note. a. Forecast.

It has been proven by many researchers (Adams & Page, 2005; Grindle, 2004; Kirkpatrick & Parker, 2004) that governance plays a central part in poverty eradication in many developing countries. The remarkable reduction in poverty incidence in Malaysia owes much to the successful poverty eradication programs as stipulated in many of Malaysia development plans based on long-term or outline perspective plans (OPP) and the 5-year development plans. The first outline perspective plans (OPP1) or the NEP covers 1971–1990, as it focuses on reducing poverty and ensuring a fair income distribution among Malaysians regardless of ethnicity. Detailed implementation formulas of the policies under the NEP are in the second to fourth development plans (1971–1975, 1976–1980, 1981–1985, and 1986–1990). Each of the plans spans a period of 5 years.

The National Development Policy (NDP) (1991–2000) replaces the NEP and forms the sixth (1991–1995) and seventh (1996–2000) Malaysia plans.

Thereafter, the NDP is replaced with National Vision Policy (NVP) (2001–2010), which compliments NEP and NDP. The NVP guides the eighth (2001–2005) and ninth (2006–2010) Malaysian Plans. In 2000, the New Economic Model (NEM) (2011–2015) was endorsed. NEM signals a new platform through which Malaysia seeks to achieve a high-income status by 2020. Its policies and programs guide the 10th (2011–2015) and 11th (2016–2020) Malaysia Plans, as templates for rapid growth, balanced development, equitable distribution, and national unity across Malaysian states. Following this, the government focuses on two crucial goals, which are poverty eradication and societal restructuring.

The NEP introduces new ideas, which project the government as a key player in poverty eradication through job creation and acquisition for all Malaysians. The policy sets to enhance the living standard and quality of life of the people who are poor and the marginalized groups by increasing their chances and opportunities to access land, physical capital, training, and other public facilities. As majority of people who are low income live in rural areas and are mostly involved in the agricultural sector, the government provides aids, supports, and opportunities to acquire and achieve modern farming or value-added agricultural product processing as well as off-farm activities to them. This is done through the Ministry of Rural Development, which is saddled with the responsibility of poverty alleviation at the grass root levels whereas Ministries of Health, Welfare, and Education contributed to the eradication of poverty in Malaysia indirectly.

The NEP is not only successful in poverty alleviation, but also accounts for the introduction of the NDP, as government shifts focus from wealth redistribution and societal restructuring in NEP to rapid and continuous economic growth in NDP. The NDP focuses on industrialization and the private sector, while reducing the role of public sector. The NDP is out to achieve a balanced development to create a more united and just society. As such, it succeeded and is complimented by the NVP, a plan described in the Third Outline Perspective Plan 2001–2010. The main objective of the NVP is to link all the previous development policies to achieve a united, progressive and prosperous *Bangsa* Malaysia. Poverty eradication, societal restructuring, balanced and continuous development remained its core goals. Consequently, the NEM transformed Malaysia from a middle-income to high-income nation through achieving higher value added and knowledge-intensive activities. It also touches on poverty eradication, seeing that special programs and schemes are introduced to tackle poverty through sustained income-generating opportunities. The rapid and continuous economic growth associated with the four development policies (1971–2010) and the successes linked to various strategies and programs, such as the Federal Land Development Authorities (FELDA), Development and Wellbeing Scheme (Skim Pembangunan Kesejahteraan Rakyat [SPKR]), Integrated Development of Remote Area and Poor Development Program (*Program*

Table 4. Incidence of Poverty by Age Group of Head of Household, Malaysia, 2009 and 2012.

Age Group	2009	2012
	Poor	Poor
Total	3.8	1.7
15–24	2.7	1.6
25–29	1.4	0.6
30–34	3.3	1.3
35–39	4.5	2.4
40–44	5.5	2.5
45–64	3.8	1.6
65 and older	3.6	1.4

Source. Department of Statistics (2012, 2013).

Sepadu Pembangunan Desa Terpencil, and *Program Pembangunan Rakyat Termiskin* [PPRT]) indicate the government's drive for poverty reduction.

There is approximately 1.4 million people who are elderly in the year 2000, an increase of approximately 30% in 10 years. Table 3 shows the number of elderly in Malaysia for 1960–2020. The number of elderly has shown an increase trend over the years and is expected to increase to 7.4% in 2010, and 9.9% in 2020.

Incidence of poverty among elderly has always been negligible (Table 4) with 3.6% and 1.4% in 2009 and 2012, respectively, for elderly age 65 years and older. This figure underestimates the poverty rates in developing countries using the US\$1.25 per day measurement by Organization for Economic Co-operation and Development (OECD) of 4.6% (Batana, Bussolo, & Cockburn, 2013). Age group between age 45 and 64 years reported a 3.8% and 1.6% poverty incidence in 2009 and 2012, respectively. There is no published data to portray and explain the poverty incidence of elderly specifically.

Method

The 2009 and 2012 HIS data indicate that there are 6 and 1.9 million household observations with 1.6 and 0.6 million elderly in the data set for the years of 2009 and 2012, respectively. Although the 2009 data uses the complete observation, the 2012 data set only has data on head of household of 30% observations. Hence, to make the comparison between the years, only data on elderly as head of household is reported.

The national poverty line income (PLI) is used as a measurement to determine whether the head of household is living in poverty. If the household income falls below the national PLI, the household is considered poor and to be assigned a value 1. If the household income is above the national PLI, the household is not considered as poor and is assigned a value 0.

Following Wooldridge (2010), logistic probability function could be explained as follows. The binary values of 1 and 0 are treated as the

dependent variables in the regression estimation. Hence, the regression equation to be estimated is the logistic probability function.

Suppose that latent variable y_i^* follows

$$y_i^* = x_i\theta + e_i \quad (1)$$

where e_i is independent of x_i (which is a $1 \times K$ vector with first element equal to unity for all i), θ is a $K \times 1$ vector of parameters, and $e_i \sim N(0,1)$. Instead of observing y_i^* we observe only a binary variable indicating the sign of y_i^* :

$$y_i = \begin{cases} 1 & \text{if } y_i^* > 0 \\ 0 & \text{if } y_i^* \leq 0 \end{cases} \quad (2)$$

where $y_i = 1$ if poor and $y_i = 0$ if nonpoor

The binary response model is therefore represented as

$$P(y = 1|x) = G(x\beta) \equiv p(x) \quad (3)$$

where x is $1 \times K$, β is $K \times 1$, and take the first element of x to be unity. For the linear probability model, $G(z) = z$ is the identity function, which means that the response probabilities cannot be between 0 and 1 for all x and β . Assume that $G(\cdot)$ takes on values in the open unit interval: $0 < G(z) < 1$ for all $z \in \mathbb{R}$.

The model in Equation (3) is generally called an index model because it restricts the way in which the response probability depends on x : $p(x)$ is a function of x . The function G maps the index into the response probability. In most applications, G is a cumulative distribution function whose specific forms can sometimes be derived from an underlying economic model. The binary indicator y equals 1 if the elderly is poor and zero otherwise. The vector x contains the independent variables to be tested. Index models where G can be derived more generally from an underlying latent variable model, as in Equation (1):

$$y^* = x\beta + e, y = 1[y^* > 0] \quad (4)$$

where e is a continuously distributed variable independent of x and the distribution of e is symmetric about zero. If G is the cumulative distribution function of e , then, because the probability distribution function (p.d.f.) of e is symmetric about zero, $1 - G(-z) = G(z)$ for all real numbers z . Therefore,

$$P(y = 1|x) = P(y^* > 0|x) = P(e > -x\beta|x) = 1 - G(-x\beta) = G(x\beta)$$

Which is exactly Equation (3)

The logit model is a special case of Equation (3) with

$$G(z) = \Lambda(z) \equiv \exp(z)/[1 + \exp(z)] \quad (5)$$

This model arises from the model (4) when e has a standard logistic distribution.

Various factors are considered to be included in the estimated equation to determine the factors influencing the poverty incidence of the elderly. The independent variables and their explanations are as shown in Table 5. Although there are many variables that may influence elderly poverty, this study only investigates seven main sociodemographic and socioeconomic variables that are gender, ethnicity, marital status, education, working status, strata, and states. Income is not included as one of the independent variables given that income has already been used to measure the incidence of poverty and included as the dependent variables. This study is constrained by the

Table 5. Independent Variables and Their Explanations.

Variables	Description	Measurement
Gender	Gender of respondents	Categorical variable taking the values of 1 if the head of household is female and 0 if the head of household is male (reference category)
Marital status	Marital status of respondents	Categorical variable taking the values of 1 if the elderly was married and 0 for other marital status (reference category)
Ethnicity	Ethnic groups for respondents	Categorical variable taking the values of 1. Other ethnic groups (reference category) 2. Bumiputera 3. Chinese 4. Indian
Education	Education level of respondents	Categorical variable taking the values of 1. Informal or no education or not reporting education level (reference category) 2. No certificate (for 1989 data) /Primary education 3. Secondary education 4. Tertiary education
Strata	Strata for respondents	Categorical variable taking the values of 1 if head of household lived in the rural area and 0 if head of household lived in the urban area (reference category)
Working status	Employment status of head of household	Categorical variable taking the values of 1 if head of household was still working and 0 if head of household was no longer working or involved in other forms of employment (reference category)
States	State for respondents	Categorical variable taking the values of: Johor (reference category) Kedah Kelantan Melaka Negeri Sembilan Pahang Penang Perak Perlis Selangor Terengganu Sabah Sarawak Federal Territory of Kuala Lumpur Federal Territory of Labuan Federal Territory of Putrajaya

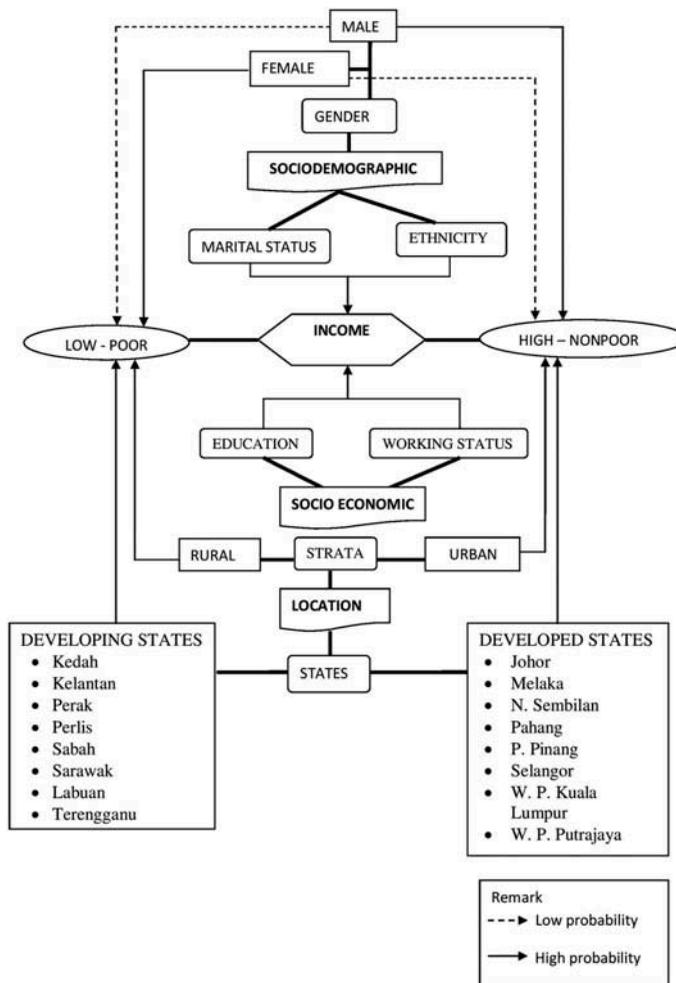


Figure 2. Conceptual Framework of Elderly Poverty.

type of variables provided to researchers by the Department of Statistics from the HIS data. Although HIS is comprehensive enough to investigate individuals and households expenditure and income, data provided to researchers are limited that prevent us from analyzing other variables, in addition to the ones explaining earlier. **Figure 2** shows a simple conceptual framework that influences elderly poverty.

Results

As can be seen from **Figure 3**, the incidence of poverty among elderly and nonelderly are negligible. In 2009, the percentage of nonelderly poverty was 2.71% slightly higher than the poverty incidence of elderly (2.05%). In 2012, the poverty incidence of both groups reduced, but the reduction of

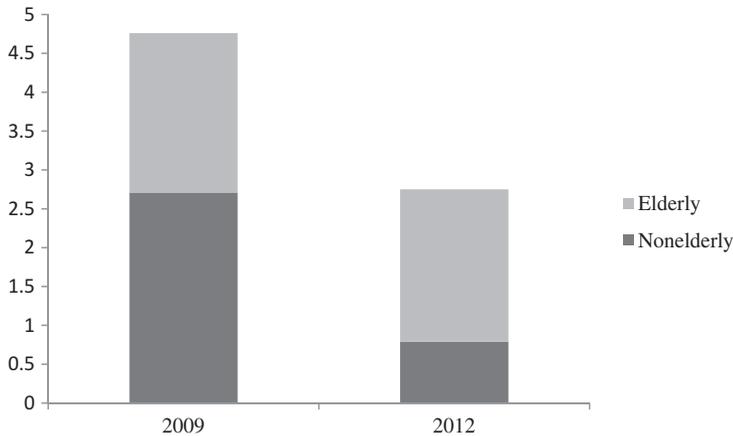


Figure 3. Poverty Incidence of Elderly and Nonelderly.
Source. Authors' own calculation based on 2009 and 2012 HIS data.

the nonelderly was more than the reduction in poverty incidence of the elderly. Poverty incidence of elderly (1.96%) in 2012 was higher than the poverty incidence of nonelderly (0.79%). This can be explained by the fact that nonelderly has more opportunities to escape poverty than elderly has in Malaysia. This is because nonelderly are still active people and mostly enjoy human capital such as health and education. Elderly lack of such human capital as their health status is weak compared to nonelderly. As nonelderly are healthy they have the potential to engage in multiple jobs, agricultural activities as well as migrate if necessary to search for job opportunities. This is resulted in a reduction of their poverty in rural and urban areas. The incidences of nonelderly poverty reduced even though nonelderly were not working. But incidence of poverty for elderly is worsened when the elderly is not working (it increases from 0.55% in 2009 to 1.58% in 2012) (Table 6). This is because nonelderly health status allows them to engage in several part-time activities such as collecting and selling natural resources, helping friends and relative in their businesses and other activities that may generate income for them (Abdelhak, Sulaiman, & Mohd, 2012). All these factors led to reduction in the incidence of poverty for nonelderly in urban and rural areas. Table 6 illustrated those poverty incidences for nonelderly decreased from 1.79% in 2009 to 0.32% in 2012 in urban area and decreased from 0.93% in 2009 to 0.47% in 2012 in rural area. But incidence of poverty for elderly almost remains unchanged for urban and rural area. This is confirmed that human capital (health) played a significant role if decreasing nonelderly poverty but not elderly poverty.

It is commonly thought that elderly have no incentive to invest in education. They may think that even if they have higher level of education,

Table 6. Descriptive Statistics (%).

	2009		2012 ^a	
	Poor Nonelderly	Poor Elderly	Poor Nonelderly	Poor Elderly
Strata				
Urban	1.79	0.93	0.32	0.92
Rural	0.92	1.12	0.47	1.04
Gender				
Male	1.67	1.04	0.50	0.95
Female	1.04	1.01	0.30	1.01
Ethnicity				
Bumiputera	2.40	1.73	0.66	1.41
Chinese	0.19	0.27	0.06	0.48
Indian	0.10	0.06	0.08	0.08
Others	0.02	0.00	0.00	0.00
Education				
Primary	1.13	0.86	0.24	0.80
Secondary	1.15	0.10	0.45	0.07
Tertiary	0.03	0.00	0.02	0.00
Others	0.39	1.09	0.08	0.01
Marital status				
Married	1.60	0.81	0.35	0.67
Others	1.11	1.24	0.45	1.29
Working status				
Working	2.33	1.50	0.59	0.38
Not working	0.39	0.55	0.21	1.58

Source. HIS Data. (Department of Statistics, 2009, 2012)

Note. ^abased on 30% of total observations.

this may not help them in finding job opportunities, as most employers prefer young employees that could attain higher productivity. Data of [Table 6](#) revealed that poverty incidence for nonelderly with primary education, secondary education, and tertiary education decreased from 1.13% to 0.24%;, 1.15% to 0.45%, and 0.03% to 0.02%, respectively, within the period of 2009 to 2012. Meanwhile, poverty for elderly with primary education and secondary education also decreased slightly for the period of 2009 to 2012. This shows that education could be key factor in elderly poverty eradication.

Because elderly mostly depend on social security, elderly poverty incidences in Malaysia did not significantly reduced compared to nonelderly. This is because social protection programs in Malaysia do not significantly help the elderly. There is no universal pension for elderly in Malaysia that protect elderly from falling below poverty line. At present there is a program called the Senior Citizen Allowance (BOT) that provide a monthly stipend of RM300 to elderly poor. Nevertheless, this amount is far away from the PLI set by government. Engelhardt and Gruber (2004), Case and Deaton (1998), and Subbarao and Kakwani (2005) reveal that social security programs and cash transfers played a fundamental role in reducing elderly poverty over the time in the world.

Poverty incidences of nonelderly reduced more than poverty incidences of elderly between 2009 and 2012 can be explained by the fact that nonelderly females are more active than elderly female. This is clear as [Table 6](#) revealed that incidence of poverty of nonelderly females decreased from 1.04% in 2009 to only 0.30% in 2012. But poverty incidence for female elderly remained unchanged. This is because women have lower lifetime earnings than men ([Anzick & Weaver, 2001](#)). When females are young they may live out of poverty as they earn income, but as they get elder, their savings reduce, and they may face poverty when they retire. As women have longer life expectancy than men, they are more likely to outlive their resources and slip into poverty ([Anzick & Weaver, 2001](#)). Poverty incidence for Bumiputera is higher among other ethnic groups for elderly and nonelderly. Even though data of [Table 6](#) showed that poverty incidence decreased for elderly and nonelderly during the period of 2009 and 2012, elderly and nonelderly Bumiputera remained the most deprived compared to other ethnics group. This disparity still exists even though government did lot of effort to boost Bumiputera income and livelihoods.

Poverty incidence decreased for married elderly and married nonelderly during the period of 2009 and 2012 as shown in [Table 6](#). Although poverty incidence for nonelderly of other marital status decreased from 1.11% in 2009 to only 0.45% in 2012, poverty incidence for elderly of other marital status slightly increased from 1.24% in 2009 to 1.29% in 2012. This could be linked to female elderly poverty. Studies have shown that elderly females are more likely to be unmarried than male elderly. Female elderly are more likely to be widowed or divorced ([Hurd & Wise, 1989](#); [Rupp, Strand, & Davies, 2003](#)). As females elderly lose their partners, their income dramatically will decline, and this will negatively affect their living standards. Thus they are more vulnerable.

[Table 7](#) shows the logistic probability of elderly poverty. From [Table 7](#) it could be seen that marital status, education level, strata, and a few states are found to be statistically significant in influencing poverty incidence of household headed by elderly. Interpretation of coefficient and marginal effect would be limited to the discussion of statistically significant variables.

Marital status has a negative effect with poverty incidence of household headed by elderly. The same trend is observed for the 2 years of analysis. If elderly head of household is still married, we expect a 1.28 and 1.34 reduction in the log odds of poverty in 2009 and 2012, respectively. As such, the change in probability of poor when elderly's marital status changed from other marital status to still marry reduces by 8.9 and 0.089 percentage points in 2009 and 2012, respectively. Although the sign is the same for both years of analysis, the point change is smaller for 2012. As highlighted by [Cherchye, De Rock, and Vermeulen \(2012\)](#) that a major concern in light of aging

Table 7. Logistic Probability Function of Elderly Poverty.

	2009		2012	
	Coefficient	Marginal effect	Coefficient	Marginal effect
Gender	0.1850	0.0096	-0.0171	-0.0003
Marital status	-1.2848***	-0.0891***	-1.3416***	-0.0089***
Ethnicity				
Bumiputera	0.4421	0.0219	-0.1544	-0.0004
Chinese	-0.3854	-0.0189	-1.3400**	-0.0063**
Others	0.1051	0.0057	0.0000	
Education				
Primary	-1.0169***	-0.0555***	-0.4036	-0.0010
Secondary	-2.3153***	-0.0861***	-0.8843***	-0.0059***
Tertiary	-	-	-3.1466***	-0.0127***
Strata	0.5043***	0.0262***	0.8984***	0.0039***
Working Status	-0.0169	-0.0009	-1.6841***	-0.0184***
States				
Kedah	1.1913***	0.0999***	-0.5116	-0.0022
Kelantan	0.8768***	0.0643***	-0.3341	-0.0018
Melaka	-0.2655	-0.0124	-0.6899	-0.0029
N_Sembilan	-0.2262	-0.0108	-1.7778*	-0.0050*
Pahang	-2.4924**	-0.0587**	0.0000	
P_Pinang	-0.2652	-0.0124	-2.2111**	-0.0056**
Perak	0.9868***	0.0718***	0.2795	0.0022
Perlis	1.1942***	0.1051***	-0.2150	-0.0010
Selangor	0.5077	0.0322	-1.4860**	-0.0054**
Terengganu	0.6604*	0.0453*	0.3612	0.0015
Sabah	1.4760***	0.1344***	1.3561***	0.0149***
Sarawak	-0.3365	-0.0158	-1.4386***	-0.0040***
WP_KL	-1.1312	-0.0381	-1.5276	-0.0051
WP_Labuan	0.1887	0.0107	0.0000	
WP_Putrajaya	0.0000		0.0000	
_cons	-2.0517		-1.4674	
	Hosmer-Lemeshow		Hosmer-Lemeshow	
	$\chi^2(8) = 4.32$		$\chi^2(8) = 6.57$	
	Prob > $\chi^2 = .8268$		Prob > $\chi^2 = .5836$	

***p<.01, **p<.05, *p<.10 indicates significant at 1%, 5% and 10% significance level respectively

population is poverty incidence among widows and widowers (coded as other marital status in this article). Widows and widowers may often lack the economic resources and the social support to sustain life at old age. The lack of economic resources lead to poverty and lack of social support could lead to other detrimental effects at old age that include psychological stress of loneliness and social exclusion.

Having received at least some form of education reduces the probability of living in poverty. The logistic probability estimation show that if elderly's education level changes from receiving any education or informal education to primary or secondary education, we would expect a reduction in the log odds of poverty by 1.01 and 2.31 in 2009. For year of analysis 2012, the log odds of poverty reduces by 0.40, 0.88, and 3.14 if elderly's education level changes from receiving any education or informal education to primary,

secondary, or tertiary education, respectively. Education is often regarded as an outcome and means to poverty alleviation (Gounder & Xing, 2012). Education provides essential knowledge and the necessary skills to enter labor market not only to ensure a good income to be out of poverty but also to increase one's productivity. In many developing countries, education has played important roles as a crucial strategy against poverty and economic growth (Tarabini, 2010).

It is notable that the incidence of poverty in developing countries has spatial (location) and gender dimension (Cobbinah, Erdiaw-Kwasie, & Amoateng, 2015). Nevertheless, in this study, age is found to be statistically insignificant in influencing elderly poverty for both years of analysis. Nevertheless spatial is an important determinant of elderly poverty. It is notable that poverty incidence is higher in rural areas as compared to urban areas (Milbourne & Doheny, 2012). The logistic probability estimates show that if household headed by elderly resides in rural areas relative to urban areas the change in probability of poor increases by 2.62 and 0.039 percentage points for 2009 and 2012.

Households headed by elderly in Kedah, Kelantan, Perak, Perlis, Terengganu, Sabah, Labuan F.T. all have a positive probability of living in poverty. This is particularly true given that these states have quite a high percentage of poverty incidences in 2009. The situation is different in 2012 where households headed by elderly residing in Negeri Sembilan, Pulau Pinang, Selangor, and Sarawak have significant negative relationship with the probability of living in poverty. With exception to Sarawak, Negeri Sembilan, Pulau Pinang, and Selangor are among the developed states with low reported poverty incidence. Only households headed by elderly in Sabah report a significant positive relationship with the probability of living in poverty. In fact, Sabah remains one of the states with the highest poverty incidence in Malaysia.

Conclusion and Policy Implications

This article shows that poverty incidence among elderly in Malaysia, similar to other developing countries currently stands at low rates. What is more, with the good governance in Malaysia through various effective intervention policies of various development programs, poverty incidence among elderly and as a whole has been reduced remarkably. Nevertheless, poverty remains a major concern among elderly due to the fact that elderly has limited energy to prolong their labor efforts and that the limited income received during retirement is mostly used up for health care expenditure. If the elderly fall into poverty, it is most likely that they remain in the poverty cycle as compared to the nonelderly who still have various alternative means and possibilities to be out of poverty.

Although there is an extensive literature on poverty and elderly poverty, less is devoted to the microanalysis of elderly poverty incidence, what more in Malaysia. This article has bridged the gap in providing microanalysis of poverty incidence by showing the differences of poverty incidence between elderly and nonelderly through various socioeconomic indicators. The microanalysis revealed that education does help nonelderly and elderly to escape poverty. But the effect of education is more pervasive in reducing nonelderly poverty than elderly poverty. This is because educated nonelderly are more likely to make use their educational level to boost their income. Meanwhile, elderly may think that higher level of education may not help them in securing jobs after retirement, as most employers prefer young employees that could attain higher productivity. Female elderly are the more vulnerable groups. Although nonelderly managed to escape poverty, elderly females are trapped in poverty. The incidence of poverty for female elderly increased during the period of 2009 and 2012. This is due to many reasons such as they have lower lifetime earnings than men, they have longer life expectancy than men, and elderly females are more likely to be unmarried than male elderly. From this analysis, it is clear that to effectively reduce elderly poverty, government should provide adequate social security to elderly.

The results of logistic probability function implied many areas for policy implications to further tackle the issue of poverty among elderly in Malaysia. Education has been proven to reduce poverty among elderly. Hence, there is no harm in ensuring continuous investment in education. Investment in education makes it possible to empower the poor, to enhance their opportunities, and to increase their capacity to create income and participate in economic growth (Tarabini & Jacovkis, 2012). Spending on education is a long-term investment with return to be gained at a later stage of life. Investment on a child's education may not ensure her a rich and luxury life but would at least ensure that she be out of poverty at old age.

The logistic analysis also shows that poverty is highly influenced by location, that is, States in the North (Kedah and Perlis), East Coast (Kelantan), and East Malaysia (Sabah), as it is, are the states that report low income and high incidence of poverty. Hence, policy measures should continuously concentrates in reducing poverty incidence of these states. The effort done by the Perlis State Government with a vision of "Developed Perlis 2015" should be applauded. The effort has pushed many stakeholders involved to aim in improving the state of Perlis socioeconomic condition in line with NVP and Malaysia's aim to achieve a developed nation by 2020. Such intervention could not only improve socioeconomic condition of states but reduce poverty simultaneously.

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