

Longevity and diversity: Life expectancy trends in Malaysia across ethnicities and genders

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ABSTRACT

Malaysia has undergone a demographic transition associated with economic development. One of the factors that contributes to this transition is increased longevity. Thus, this study aims to examine trends and differences in life expectancy by ethnicities, genders and states in Malaysia from 1991 to 2020 using trend analysis. This study uses secondary data obtained from the Department of Statistics Malaysia (DOSM). The findings show that between 2000 and 2020, the life expectancy of males and females in Malaysia had lengthened by almost 3 years from 70.0 to 72.6 and 74.6 to 77.6 respectively. It is also found that the Chinese have a higher life expectancy compared to other ethnic groups for both sexes. Indian males have a life expectancy of less than 70 years throughout the years, while females show a tremendous improvement, with a 5-year increase from 71.2 in 1991 to 76.2 in 2020. The Bumiputera life expectancy reached 71.3 years and 76.1 years in 2020 for male and female, respectively. The successive improvements in life expectancy are evidence of an increasingly health-conscious community, a stable political administration committed to better health care and Malaysia's economic wealth.

1. INTRODUCTION

Life expectancy is commonly used as a summary indicator of a country's health and the well-being of its population. When used in combination with other measures, such as Gross Domestic Product (GDP), it can help capture a country's prosperity and serves as an important indicator of social progress (Myriam & Anna, 2024). A United Nation report entitled 2010 World Population Prospects: The 2010 Revision revealed that life expectancy at birth for the world's population increased from 48 years during the period 1950-1955 to 68 years during the period 2005-2010, with the tremendous advance in health and medical technologies in

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recent decades acts as the major factor that led to this improvement (United Nations, Department of Economic and Social Affairs, Population Division, 2011).

While longevity has improved in virtually all blocs, progress in some regions have outpaced that of others. For example, the Asian region experienced a 26-year increase in life expectancy at birth from 43 years in 1950-1955 to 69 years in 2005-2010 (United Nations, Department of Economic and Social Affairs, Population Division, 2011). The life expectancy at birth for females is, on average, 4 to 6 years longer than for males in almost every country in the world. Malaysia is also subjected to rising life expectancy. There have been extraordinary gains in longevity in Malaysia, with an average life expectancy at birth increasing from 66 years in 1970 to over 74 years in 2010. The median age of Malaysia's population has also increased for each census year from 17.4 years in 1970 to 26.3 years in 2010; with the figure projected to continue rising for the next three decades indicating the progressive growth of elderly population in Malaysia (Department of Statistics Malaysia, 2013). However, Malaysian life expectancy still trails that of advanced countries, including Singapore. This difference can be attributed to many factors such as healthcare access, socio-economic conditions, and public health policies. Thus, this paper examines the trends and differences in life expectancy of the Malaysian population from 1991 to 2020 for both sexes according to ethnic groups and states.

2. LITERATURE REVIEW

Life expectancy, also known as longevity, is a mathematical concept applied to survival. It is defined as the average remaining years of survival for a group or an individual. It may generally approach the same value as median survival time, but it remains a fundamentally different concept (Vachon & Sestier, 2013). According to Moini et al. (2021), life expectancy is calculated by creating a life table that records the numbers of deaths and survivors within a specific year, for successive life span intervals. In addition, Arthur and Steven (2003) defined life expectancy of humans as a mean number of years of life remaining at a given age and is increased when the person survives at the higher mortality rates related to his childhood.

Except for Sub-Saharan Africa, life expectancy at birth has generally increased worldwide since the early 20th century. The gender gap in life expectancy has been converging in most developed countries, which has been attributed to decreasing cardiovascular and cancer mortality in males, as well as narrowing disparity in chronic disease risk factors such as smoking (Meslé, 2004; Trovato & Lalu, 2007). Walczak et al. (2021) stated that life expectancy at birth for females is longer than for males by a few, but in highly developed countries, the difference is even greater by a few years. A study by Woolf et al. (2022) found that life expectancy for the United States (US) population decreased by a median of 1.87 years from 78.86 years to 76.99 years, with larger decrease recorded among males as compared to females. Declines in the US life expectancy also varied by race and ethnicity.

During the last few decades, Malaysia has undergone changes in its population structure. In 1957, the total population was 6.3 million and rose to 8.9 million in 1963 after Sabah and Sarawak joined Malaysia (Department of Statistics Malaysia, 2001, 2006). The population of Malaysia had increased rapidly from 10.4 million in 1970 to 28.3 million in 2010 (Department of Statistics Malaysia, 2013).

A recent study by Ibrahim et al. (2020) revealed that life expectancy for both males and females increases almost in a linear pattern by age, associated with health problems that generally occur at later ages. For instance, elderly females have lower mortality rates than males, nonetheless, mortality improvement is higher for males and recent elderly generations tend to live significantly longer than previous generations. In addition, Tafran et al. (2020) added that life expectancy in Malaysia is higher than world average and some developing countries in the region, although lower than the developed countries. Reducing poverty and unemployment and increasing income are three effective channels to enhance longevity.

3. DATA AND METHODS

This study uses secondary data obtained from the population census and estimation for 1991 to 2020 published by the Department of Statistics Malaysia (DOSM) and National Population and Family Development Board (NPFDB). The data consist of life expectancy at birth by sexes, ethnic groups and states. The ethnic groups consist of three major groups: Bumiputera, Chinese, and Indian. In the data, Malays and indigenous groups are combined to form the Bumiputera group. Prior to 1991, the life expectancy data were only available for Peninsular Malaysia. Thus, the comparative analysis in this study was conducted on 12 states excluding Sabah and Sarawak. Analysis was using Microsoft Excel 2024 to explain the expectancy at birth by sexes, ethnic groups, and states for Malaysia's population through graphical techniques.

4. RESULTS AND DISCUSSION

Over the last 20 years, there has been an upward trend in life expectancy in Malaysia. Fig. 1 shows life expectancy in Malaysia by sex from 1991 to 2020. The overall health status of Malaysians, especially females, has improved substantially over the last 50 years. Between 2000 and 2020, life expectancy for males and females in Malaysia had lengthened by almost 3 years from 70.0 to 72.6 and from 74.6 to 77.6, respectively. However, average life expectancy gap between males and females remains at 4 to 5 years. For example, life expectancy at birth for males was 69.2 years in 1991, compared to 73.4 years for females. Hence, it seems that males inherently have a shorter life expectancy than females.

Fig. 2 and Fig. 3 illustrate life expectancy of major ethnic groups in Malaysia according to sex. The Chinese have a higher life expectancy compared to other ethnic groups for both sexes. In 1991, life expectancy at birth for males was 70.7 years and increased to 75.4 years by 2020, while females' life expectancy improved from 76.4 years to 80.5 years over the same period. For the Indian population, life expectancy at birth for both sexes was the lowest among the three ethnic groups, with males had life expectancy of less than 70 years throughout the years, while females showed a significant improvement, with an increase of 5 years from 71.2 in 1991 to 76.2 in 2020. Bumiputera life expectancy was closer to the national level, reaching 71.3 years for males and 76.1 years for females in 2020. Among the males' population, the Chinese recorded the highest increment at 4.2 years followed by Indian (3.7 years) and Bumiputera (1.9 years). The pattern was different for females; where the Indians have the greatest improvement in life expectancy, with an increment of 4.9 years, followed by Bumiputera (3.8 years) and Chinese (3.3 years). According to Islam et al. (2017), the Chinese population, particularly females, live longer than that of other ethnic groups because

they are more likely to be aware of their health. They adopt healthy dietary habits, go for routine medical check-ups, and give priority to a healthy lifestyle.

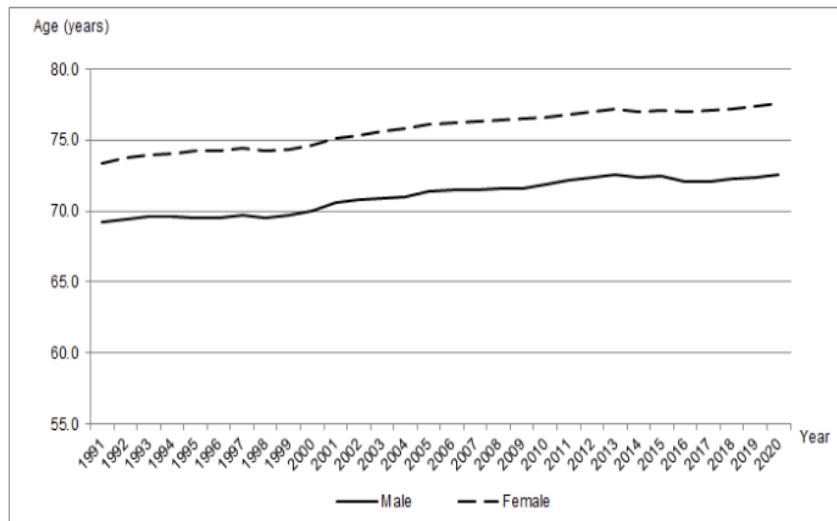


Fig. 1. Life expectancy at birth according to gender from 1991 to 2020

Source: Department of Statistics Malaysia (various year)

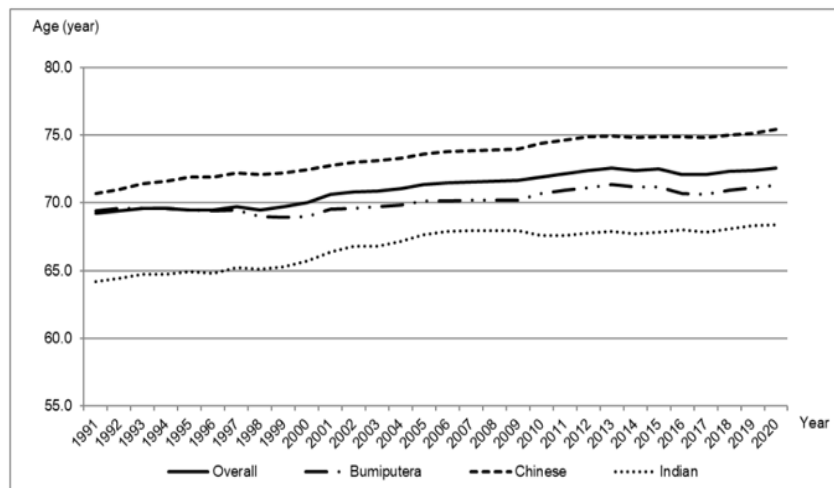


Fig. 2. Male life expectancy at birth according to ethnic group, 1991 to 2020

Source: Department of Statistics Malaysia (various year)

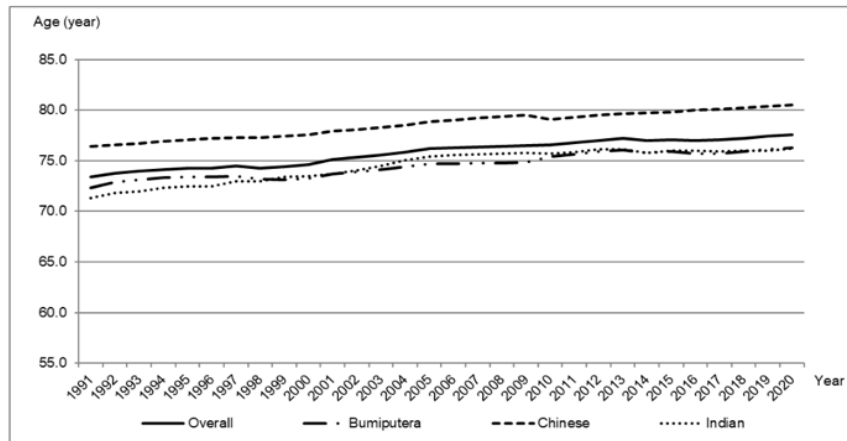


Fig. 3. Female life expectancy at birth according to ethnic group, 1991 to 2020

Source: Department of Statistics Malaysia (various year)

Further comparative analysis was conducted among ethnic groups by sex to examine the life expectancy gap between males and females. Fig. 4, Fig. 5 and Fig. 6 illustrate the life expectancy at birth by sex for Bumiputera, Chinese and Indian groups, respectively. Generally, males' life expectancy is lower than that of females. A huge gap in life expectancy between males and females was seen in the Indian population and the gap increased continuously over the period, where the difference was 7.1 years in 1991, 7.8 years in 2000 and 8.2 years in 2020. A similar pattern can be observed in the Bumiputera population, but the gap is less than 6 years. In 1991, the gap was 2.9 years, increased to 4.3 years in 2000 and increased further to 5.0 years in 2020. As for the Chinese population, the gap in life expectancy between males and females has dropped to less than four years. From 1991 to 2020, the life expectancy at birth for Chinese males increased by 4.2 years, while for females it increased by 3.3 years. These sex differences in life expectancy are partly due to greater risk exposure among males, including higher tobacco consumption, excessive alcohol use and less healthy diets.

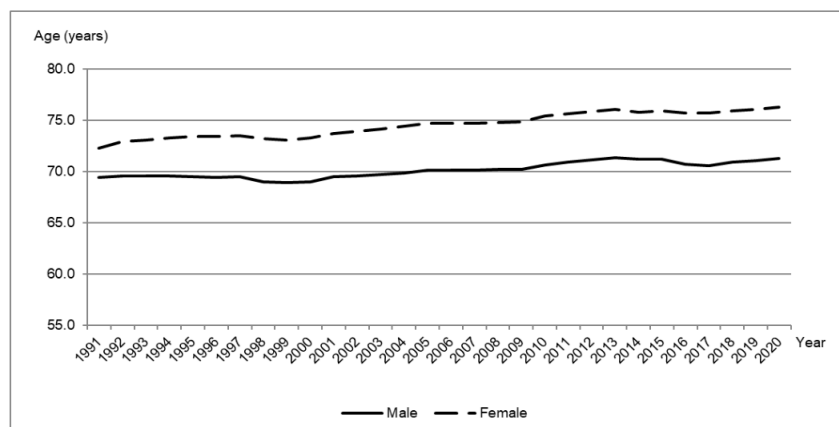


Fig. 4. Bumiputera life expectancy at birth according to sex, 1991 to 2020

Source: Department of Statistics Malaysia (various year)

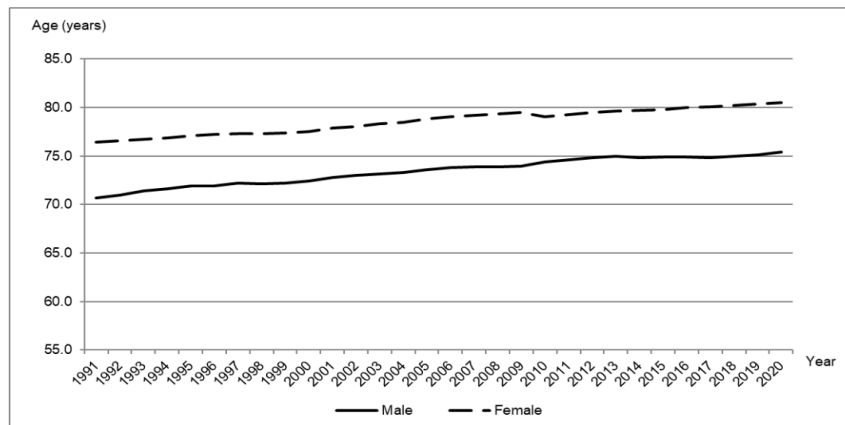


Fig. 5. Chinese life expectancy at birth according to sex, 1991 to 2020

Source: Department of Statistics Malaysia (various year)

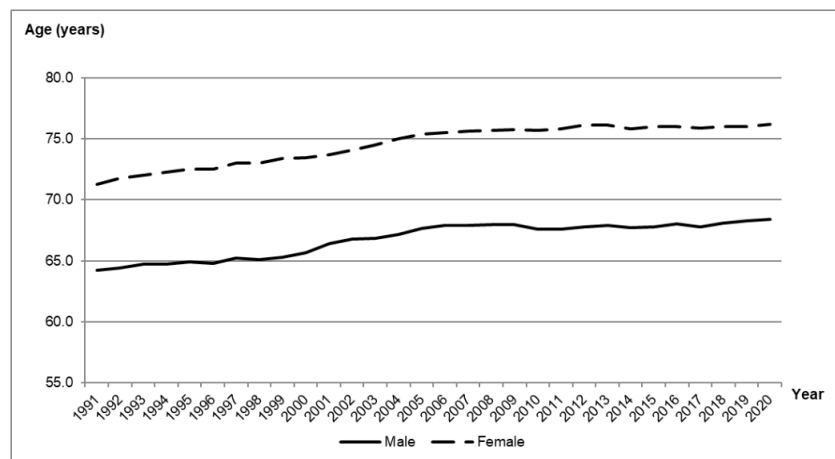


Fig. 6. Indian life expectancy at birth according to sex, 1991 to 2020

Source: Department of Statistics Malaysia (various year)

Table 1 highlights a comparative analysis by sex and state in Peninsular Malaysia for the years 1991, 2000, 2010, and 2020. From the table, it was observed that life expectancy for females significantly exceeded that for males in every state. Even though life expectancy has improved for Malaysian, not all states experienced the same increment. In 2000, only three states had males' life expectancy over 70 years old namely Pulau Pinang, Selangor and Federal Territory (FT) Kuala Lumpur. However, for Kedah, Kelantan, Perlis and Terengganu, there were significant drops in males' life expectancy. Perlis had the highest life expectancy for males, while FT Kuala Lumpur had the highest life expectancy for females. In contrast, Perak had the

shortest life expectancy among male, at 68.14 years, whereas Terengganu recorded the lowest among females, at 71.96 years.

Interestingly, females' life expectancy has steadily increased over the years in all states. FT Kuala Lumpur had the highest life expectancy with 79.80 years in 2020, and Perlis had the lowest with 75.70 years. At the same time, life expectancy of males' population reached more than 70 years except for three states which were Kelantan, Perlis and Terengganu. The discrepancy between states is due to many factors such as healthier lifestyle practised by the states' populations.

Table 1. Life expectancy by sex and states in Peninsular Malaysia, 1991-2020

State	1991		2000		2010		2020	
	Male	Female	Male	Female	Male	Female	Male	Female
Johor	69.10	73.79	69.86	74.79	71.81	76.44	72.30	77.60
Kedah	69.28	73.03	67.18	72.55	70.10	75.78	71.00	76.80
Kelantan	68.99	72.02	66.55	72.40	68.06	74.40	69.80	76.10
Melaka	68.31	73.21	68.91	73.76	71.10	76.41	72.60	78.10
Negeri Sembilan	68.84	73.46	68.49	74.23	70.25	75.89	71.20	77.40
Pahang	69.15	72.40	69.3	73.55	70.15	75.54	72.10	77.10
Perak	68.14	73.10	68.12	74.04	70.71	76.42	71.70	77.60
Perlis	70.23	73.51	68.79	74.11	69.56	76.98	69.50	75.30
Pulau Pinang	68.61	73.64	71.53	76.80	71.94	76.98	73.30	78.60
Selangor and Putrajaya	68.86	73.53	71.81	76.07	73.17	77.29	74.20	78.70
Terengganu	69.26	71.96	67.12	72.30	68.42	74.08	69.90	75.70
FT Kuala Lumpur	69.41	73.94	70.02	74.61	73.51	77.83	74.90	79.80

Source: Department of Statistics Malaysia (various year)

5. CONCLUSION

This study examines the trends and differences in life expectancy at birth by ethnicity, gender and state from 1991 to 2020. From the trend analyses, it was found that the Chinese population gained the highest life expectancy compared to other ethnic groups for both sexes. The results also reveal that females tend to live longer than males, regardless of ethnic groups. From a comparative analysis across states, the findings show that all states experience increase in life expectancy where males' life expectancy reached over 70 years, except for Kelantan, Perlis and Terengganu.

Life expectancy in Malaysia has improved due to several factors. While there is no consensus on which factors contributed the most, there is some general agreement on the main causes. According to Pollard and Scommegna (2013), the successive improvements in life expectancy are due to factor such as education, income, health-risk behaviour, psychosocial, quality of healthcare, culture, genetic, nutrition, diet, lifestyle and living environment.

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7. CONFLICT OF INTEREST STATEMENT

The authors agree that this research was conducted in the absence of any self-benefits, commercial or financial conflicts and declare the absence of conflicting interests with the funders.

8. AUTHORS' CONTRIBUTIONS

Mazura Mokhtar: Data collection, methodology and writing original draft; **Saharani Abdul Rashid:** Conceptualisation, writing-review and editing, and validation; **Norshahida Shaadan:** Conceptualisation, formal analysis and validation.

9. DATA AVAILABILITY/SUPPLEMENTARY MATERIALS

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

10. ETHICS STATEMENT

The authors declare that this research did not involve human or animal subjects.

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