CHAPTER 2

DEMOGRAPHIC CHANGES AND POPULATION AGING

2.1 INTRODUCTION

The aging of population is an inevitable consequence of the transition from high level to low level of fertility and adult mortality. In many of the developing countries, the demographic transition began with rapid decline in mortality due to improvement and importation of medical technology. At the early stage of the transition, mortality decline tended to be more significant among the young rather than the old, resulting in a younger age structure. However, following the shift towards a smaller family size norm consequent upon socio-economic development, fertility has also been declining over the past few decades. The lowering of fertility and mortality result in significant changes in the age structure of the population, with a decline in the relative size of the younger proportion and an increase in elderly population.

2.2 CHANGES IN AGE STRUCTURE AND DEMOGRAPHIC PROCESSES

2.2.1 Past and Prospective Changes in Age Structure

While the total population of Malaysia had increased 2.8 times between 1957 and 1990, the elderly population had increased by 3.1 times during the same period (Table 2.1). The differential rate of growth results in changes in the age structure. The proportion of young persons aged below 15 fell from 39.5 per cent in 1980 to 36.8 per
<table>
<thead>
<tr>
<th>Year</th>
<th>All ages</th>
<th>0 - 14</th>
<th>15 - 59</th>
<th>60+</th>
<th>0 - 14</th>
<th>15 - 59</th>
<th>60+</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>6278.8</td>
<td>2752.2</td>
<td>3238.6</td>
<td>288.0</td>
<td>43.8</td>
<td>51.6</td>
<td>4.6</td>
</tr>
<tr>
<td>1970</td>
<td>10319.3</td>
<td>4638.3</td>
<td>5141.9</td>
<td>539.1</td>
<td>45.0</td>
<td>49.8</td>
<td>5.2</td>
</tr>
<tr>
<td>1980</td>
<td>13136.1</td>
<td>5195.8</td>
<td>7195.1</td>
<td>745.1</td>
<td>39.5</td>
<td>54.8</td>
<td>5.7</td>
</tr>
<tr>
<td>1990</td>
<td>17763.0</td>
<td>6542.0</td>
<td>10143.5</td>
<td>1077.4</td>
<td>36.8</td>
<td>57.1</td>
<td>6.1</td>
</tr>
<tr>
<td>2000</td>
<td>22299.0</td>
<td>7870.0</td>
<td>12979.0</td>
<td>1450.0</td>
<td>35.3</td>
<td>58.2</td>
<td>6.5</td>
</tr>
<tr>
<td>2025</td>
<td>31577.0</td>
<td>7486.0</td>
<td>20130.0</td>
<td>3961.0</td>
<td>23.7</td>
<td>63.7</td>
<td>12.6</td>
</tr>
</tbody>
</table>


...
**Figure 2.1** Average Annual Growth Rate of Total Population and 3 Broad Age Groups, Malaysia, 1957-2025

Source: Computed from Table 2.1.

Economic and social condition. Generally, a decline in mortality rates has only a marginal effect on population aging. This may be explained by the fact that a general decline in mortality levels would not contribute to a rise in the proportion of the aged population unless the decline is concentrated in the older ages. In Malaysia, mortality declines are often heavily concentrated at the youngest ages (see Appendix 1). This in effect is similar to a rise in birth rate, resulting in more people at the base of the age pyramid. However, in the long run, improvement in adult mortality and stabilization of infant mortality at a low level would increase the relative share of the elderly.
population. Therefore, mortality decline may result in both the juvenation and the aging of a population.

In contrast, a decline in fertility rate almost invariably results in population aging. This can be explained by the decrease in the proportionate share of the young relative to the elderly. It is therefore pertinent in a study on aging that some discussions be placed on the trends in the demographic processes, particularly fertility and mortality. As the extent of international migration is largely unknown, and data source is not readily available, this demographic process will not be considered in the following analysis.

2.2.2. Trends in Fertility and Mortality

In Malaysia, significant decline in mortality took place around the 1950s while the decline in fertility became prominent only in the 1960s following the inception of the National Family Planning Programme (Chan, 1992c). The young age structure of the population is a direct consequence of changes in these demographic processes.

The decline in fertility has taken place for all ethnic groups, although the rate of decline varies rather widely across ethnic groups (Table 2.2). In Peninsular Malaysia, fertility decline since 1970 has been much more rapid among the non-Malays as compared to the Malays. The more gradual decline in Malay fertility may be attributed to its age-sex structure which was conducive to higher fertility and cultural norms favouring large families. The Malays while entering marriage at an earlier age than the
non-Malays, are also less likely to practise contraception and hence have higher marital fertility (Chan, 1992a). As such, population aging is occurring at a slower pace among the Malays as compared to the non-Malays, particularly the Chinese.

<table>
<thead>
<tr>
<th>Year</th>
<th>Malay</th>
<th>Chinese</th>
<th>Indian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>47.7</td>
<td>42.1</td>
<td>48.6</td>
<td>45.4</td>
</tr>
<tr>
<td>1970</td>
<td>34.2</td>
<td>30.5</td>
<td>30.8</td>
<td>32.5</td>
</tr>
<tr>
<td>1980</td>
<td>34.6</td>
<td>26.7</td>
<td>29.8</td>
<td>31.6</td>
</tr>
<tr>
<td>1990</td>
<td>32.8</td>
<td>19.4</td>
<td>23.0</td>
<td>27.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Malay</th>
<th>Chinese</th>
<th>Indian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>6.0</td>
<td>7.3</td>
<td>7.9</td>
<td>6.7</td>
</tr>
<tr>
<td>1970</td>
<td>5.1</td>
<td>4.6</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td>1980</td>
<td>4.5</td>
<td>3.1</td>
<td>3.4</td>
<td>3.9</td>
</tr>
<tr>
<td>1990</td>
<td>4.1</td>
<td>2.3</td>
<td>2.6</td>
<td>3.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Malay</th>
<th>Chinese</th>
<th>Indian</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>14.9</td>
<td>9.8</td>
<td>11.1</td>
<td>12.4</td>
</tr>
<tr>
<td>1970</td>
<td>7.6</td>
<td>6.6</td>
<td>8.5</td>
<td>7.3</td>
</tr>
<tr>
<td>1980</td>
<td>5.5</td>
<td>5.8</td>
<td>7.6</td>
<td>5.9</td>
</tr>
<tr>
<td>1990</td>
<td>4.6</td>
<td>5.0</td>
<td>6.1</td>
<td>4.9</td>
</tr>
</tbody>
</table>

Source: Department of Statistics, various years.

The lower fertility rate in Malaysia may partly be explained by higher socio-economic development since the 1960s, which has enhanced the roles of women in employment (Tan et al., 1992d: 31). This together with rising education have postponed marriage and childbearing (Tey, 1994). Lower fertility has also resulted from higher contraceptive prevalence (Tey, 1994: 41). Furthermore, improvement in infant mortality
has made it unnecessary for couples to have many births to achieve a moderate number of surviving children (Chan, 1985, 1992c).

Reduction in family size has significantly altered the demographic foundation of the old kinship system with fewer care-providers available for the old. For instance, in Japan where there is a large aging population, those aged around 60 years would have only half as many children to care for them as compared to their parents' generation (Tey and Abdullah, 1993: 5). In Malaysia, the number of children ever born by married women in their late thirties has declined from 5.7 in 1970 to 4.7 in 1980 (Hamid and Tey, 1988) and to 4 in 1988 (MFLS-II). In other words, fertility has dropped by some 30 per cent in a short span of 18 years. Hence, the reduction in family size coupled with increased longevity is likely to increase the burden of the young in caring for the elderly.

The life expectancy for males and females at age 55 shows that a man can live on average another 20 years and a woman another 22 years (see Table 2.3). This however varies across ethnic groups, with Chinese female having the longest life span, that is, another 24 years at age 55. Malaysia's official retirement age of 55 years may have to be reviewed in light of the increased life expectancy and labour shortage.
Table 2.3  
Life Expectancy at Age 55 for Males and Females by Ethnic Group, Peninsular Malaysia, 1989

<table>
<thead>
<tr>
<th>At Age</th>
<th>Malay Male</th>
<th>Malay Female</th>
<th>Chinese Male</th>
<th>Chinese Female</th>
<th>Indian Male</th>
<th>Indian Female</th>
<th>Total Male</th>
<th>Total Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>19.8</td>
<td>21.5</td>
<td>20.2</td>
<td>24.2</td>
<td>17.3</td>
<td>19.8</td>
<td>19.6</td>
<td>22.3</td>
</tr>
<tr>
<td>65</td>
<td>13.0</td>
<td>13.9</td>
<td>13.2</td>
<td>16.1</td>
<td>11.3</td>
<td>12.6</td>
<td>12.8</td>
<td>14.7</td>
</tr>
<tr>
<td>75</td>
<td>7.8</td>
<td>8.2</td>
<td>7.8</td>
<td>9.4</td>
<td>6.7</td>
<td>7.5</td>
<td>7.6</td>
<td>8.6</td>
</tr>
<tr>
<td>80</td>
<td>5.5</td>
<td>5.9</td>
<td>5.6</td>
<td>6.7</td>
<td>4.8</td>
<td>5.4</td>
<td>5.4</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Source: Department of Statistics, 1992b.

2.3 POPULATION AGING IN MALAYSIA

Compared with developed countries, such as Japan and Australia, Malaysia has a youthful population. In Malaysia, elderly population aged 60 and over constituted only 6 per cent of the total population in 1993, a level which is much lower than that recorded in developed countries, ranging between 15 and 21 per cent (Table 2.4). On the other hand, the proportion of population aged below 15 was much higher in Malaysia than in the developed countries. Among the ASEAN countries, the population of Malaysia has the second youngest age structure after the Philippines.

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* Cowgill and Holmes (1970) have proposed that populations be considered as "young", "youthful", "mature" and "aged" if the proportion of total population aged 65 and above is less than 4 per cent, 4 to 6 per cent, 7 to 9 per cent and 10 per cent respectively. Using a younger cut-off point, a country with less than 6 per cent aged 60 and over is considered "young", 6 to 10 per cent as "youthful", 11 to 14 per cent as "mature" and 15 per cent and over as "aged" (Chen and Jones, 1989).
<table>
<thead>
<tr>
<th>Country</th>
<th>All ages (Thousand)</th>
<th>0 - 14 years (Per Cent)</th>
<th>60+ (Per Cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan</td>
<td>124,729</td>
<td>17</td>
<td>19</td>
</tr>
<tr>
<td>Australia</td>
<td>17,809</td>
<td>22</td>
<td>16</td>
</tr>
<tr>
<td>France@</td>
<td>56,718</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>Ireland@</td>
<td>3,503</td>
<td>27</td>
<td>15</td>
</tr>
<tr>
<td>United States@</td>
<td>249,975</td>
<td>22</td>
<td>17</td>
</tr>
<tr>
<td>United Kingdom@</td>
<td>57,411</td>
<td>19</td>
<td>21</td>
</tr>
<tr>
<td>Developing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASEAN Countries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td>19,239</td>
<td>38</td>
<td>6</td>
</tr>
<tr>
<td>Philippines</td>
<td>66,543</td>
<td>39</td>
<td>5</td>
</tr>
<tr>
<td>Indonesia</td>
<td>189,456</td>
<td>34</td>
<td>7</td>
</tr>
<tr>
<td>Thailand</td>
<td>58,584</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>Brunei Darussalam</td>
<td>275</td>
<td>36</td>
<td>4</td>
</tr>
<tr>
<td>Singapore</td>
<td>2,833</td>
<td>23</td>
<td>9</td>
</tr>
<tr>
<td>Other Developing Countries</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>India</td>
<td>896,567</td>
<td>35</td>
<td>7</td>
</tr>
<tr>
<td>China</td>
<td>1,205,181</td>
<td>27</td>
<td>9</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>23,055</td>
<td>29</td>
<td>7</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>17,692</td>
<td>31</td>
<td>9</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>5,779</td>
<td>20</td>
<td>14</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>116,700</td>
<td>45</td>
<td>5</td>
</tr>
</tbody>
</table>

@ Medium variant projection for 1990.

2.3.1 Trends in Median Age of Population

The median age of a population may be used to indicate the extent of population aging. Data show that the median age of the Malaysian population has been increasing since 1970. In Peninsular Malaysia, the decrease in median age between 1957 and 1970 was a result of high fertility prevailing during that period (Table 2.5).
<table>
<thead>
<tr>
<th>Year</th>
<th>Malaysia</th>
<th>Peninsular Malaysia</th>
<th>Sabah</th>
<th>Sarawak</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957</td>
<td>-</td>
<td>18.2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1970</td>
<td>17.3</td>
<td>16.7</td>
<td>15.3</td>
<td>16.9</td>
</tr>
<tr>
<td>1980</td>
<td>19.7</td>
<td>19.8</td>
<td>18.3</td>
<td>18.5</td>
</tr>
<tr>
<td>1990</td>
<td>20.8</td>
<td>21.9</td>
<td>17.1</td>
<td>21.3</td>
</tr>
<tr>
<td>2000</td>
<td>22.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2010</td>
<td>26.6</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2020</td>
<td>32.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2025</td>
<td>34.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- Not available


The decline in the proportion of youths resulted in the gradual aging of population since 1980. However, by the first quarter of the next century, the rapid increase in the elderly population will contribute significantly to population aging, as fertility is expected to stabilize at a low level.

The populations of Peninsular Malaysia and Sarawak are relatively older than that Sabah. In 1980, the median age was lowest in Sabah because of the influx of immigrants from neighbouring countries, particularly from Indonesia and the Philippines (Chan, 1992b, 1992c).

Table 2.6 shows that the median age is lowest among the Malays and highest among the Chinese since 1970. The age differences may be attributed both to lower fertility and a longer life expectancy of the Chinese compared with the Malays and Indians.
Table 2.6  Median Age by Ethnic Group, Peninsular Malaysia, 1957-1990

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Malay</td>
<td>17.9</td>
<td>16.9</td>
<td>19.0</td>
<td>19.5</td>
</tr>
<tr>
<td>Chinese</td>
<td>17.8</td>
<td>18.2</td>
<td>21.0</td>
<td>24.1</td>
</tr>
<tr>
<td>Indian</td>
<td>19.6</td>
<td>17.2</td>
<td>20.1</td>
<td>22.4</td>
</tr>
<tr>
<td>All</td>
<td>18.2</td>
<td>17.5</td>
<td>19.8</td>
<td>21.4</td>
</tr>
</tbody>
</table>


2.3.2 Age-Sex Composition of the Elderly Population

Young-Old and Old-Old

Improvement in mortality and extension of life have led to the aging of the elderly (60+ years), with a rise in the proportion of the old-old (that is those aged 75 and over) between 1970 and 1990 (Table 2.7). Hence, the number of "old-old" is increasing more rapidly than the "young-old" aged 60-74. In 1970, the old-old comprised 16 per cent of the total elderly population but this had increased to 21 per cent in 1990. In absolute term, there were 847 thousand "young-old" in 1990 and this is projected to increase to 1.1 million in the year 2000 and 3.1 million in 2025. The number of "old-old" was estimated at 230 thousand in 1990, and is projected to reach 306 thousand in the year 2000 and 853 thousand in 2025. Hence, more and more elderly may themselves have to support very old parents. There are also implications in terms of health care and socio-economic support of this very old group as they are likely to be frail and require more intensive physical and medical care, which would not just affect the immediate family, but also the community and the state at large.
Table 2.7  Age Structure of Population Aged 60 and Above, Malaysia, 1970-2025

<table>
<thead>
<tr>
<th>Year</th>
<th>60+</th>
<th>60 - 74</th>
<th>75+</th>
<th>Proportion (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>75+ x 100</td>
</tr>
<tr>
<td>1970</td>
<td>539.1</td>
<td>452.7</td>
<td>86.4</td>
<td>16.0</td>
</tr>
<tr>
<td>1980</td>
<td>745.1</td>
<td>604.5</td>
<td>140.6</td>
<td>18.9</td>
</tr>
<tr>
<td>1990</td>
<td>1077.4</td>
<td>847.2</td>
<td>230.2</td>
<td>21.3</td>
</tr>
<tr>
<td>2000</td>
<td>1450.0</td>
<td>1144.0</td>
<td>306.0</td>
<td>21.1</td>
</tr>
<tr>
<td>2025</td>
<td>3961.0</td>
<td>3108.0</td>
<td>853.0</td>
<td>21.5</td>
</tr>
</tbody>
</table>


Sex Ratio

The sex ratio* of the elderly has fallen over time indicating the feminization of the elderly population (Table 2.8). The excess of females over males has increased progressively with age because of differential mortality and life expectancy between the sexes. In 1990, there were 95 males for every 100 females in the age group of 60-64 years but this ratio fell to 76 in the oldest age group of 80 years and over.

The preponderance of females, particularly in the oldest ages, has important implications for old age care and welfare. Elderly women in this group are most vulnerable as they are often widows and they lack economic and social support, due in part to their low education and labour force participation when young. Thus, the emotional stability, care and support in old age may be jeopardized especially when there are none or few living relatives to provide such needs (Chan, 1982).

* the number of males per 100 females.
Table 2.8  Sex Ratio of Age Groups 60 and Over, Malaysia, 1970-2025

<table>
<thead>
<tr>
<th>Year</th>
<th>60 - 64</th>
<th>65 - 69</th>
<th>70 - 74</th>
<th>75 - 79</th>
<th>80+</th>
<th>Total 60+</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>108</td>
<td>123</td>
<td>106</td>
<td>103</td>
<td>79</td>
<td>101</td>
</tr>
<tr>
<td>1980</td>
<td>95</td>
<td>99</td>
<td>97</td>
<td>103</td>
<td>81</td>
<td>100</td>
</tr>
<tr>
<td>1990</td>
<td>95</td>
<td>89</td>
<td>85</td>
<td>83</td>
<td>76</td>
<td>88</td>
</tr>
<tr>
<td>2000</td>
<td>97</td>
<td>87</td>
<td>84</td>
<td>74</td>
<td>66</td>
<td>86</td>
</tr>
<tr>
<td>2025</td>
<td>92</td>
<td>84</td>
<td>81</td>
<td>77</td>
<td>63</td>
<td>83</td>
</tr>
</tbody>
</table>


With the widening gap between male and female life expectancy, the feminization of the elderly population is likely to continue rising over the next few decades. In 2025, among the oldest age group of 80 years and over, it is estimated that there will only be 63 males per 100 females compared to 79 males per 100 females in 1970. In the younger age group of 60-64 years, the sex ratio of 108 males per 100 females in 1970 also projected to decline to 92 in 2025.

Differentials in sex ratio also occur across ethnic groups (Table 2.9). Among the aged Malay and Chinese groups, females are relatively more numerous than the males. In 1990, Malays and Chinese aged 80 and over exhibited a sex ratio of 84 and 67 respectively. For the Indians, however, the sex ratio is over 100 in all the older age groups. This may partly be a legacy of the immigration of single Indian males to Malaysia prior to Independence, where wives and family members were left behind in India. Although the Chinese are also of immigrant stock, they were less likely to leave
their women folk and family members behind when they migrated to Malaysia (Chan, 1992 c).

**Table 2.9** Sex Ratio of the Elderly by Ethnicity and Age Group, Peninsular Malaysia, 1990

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Malay</th>
<th>Chinese</th>
<th>Indian</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 - 64</td>
<td>93.0</td>
<td>87.1</td>
<td>123.3</td>
<td>93.8</td>
</tr>
<tr>
<td>65 - 69</td>
<td>88.7</td>
<td>75.7</td>
<td>120.6</td>
<td>87.2</td>
</tr>
<tr>
<td>70 - 74</td>
<td>89.3</td>
<td>67.8</td>
<td>136.9</td>
<td>84.3</td>
</tr>
<tr>
<td>75 - 79</td>
<td>95.9</td>
<td>69.5</td>
<td>132.4</td>
<td>84.8</td>
</tr>
<tr>
<td>80+</td>
<td>84.3</td>
<td>66.9</td>
<td>136.4</td>
<td>72.8</td>
</tr>
<tr>
<td>Total 60+</td>
<td>100.3</td>
<td>101.2</td>
<td>102.7</td>
<td>100.8</td>
</tr>
</tbody>
</table>

Source: Department of Statistics, 1992a.

2.4 IMPLICATIONS OF POPULATION AGING

2.4.1 Trends in Dependency Ratios

The old dependency ratio refers to the number of persons aged 60 and over per 100 persons in the working age group, 15-59 years. This dependency ratio is a type of societal dependency ratio, as a surrogate for the economic support borne by those in the working age group aged 15-59 for those aged 60 and over.

The old dependency ratio is projected to increase from 10.4 per cent in 1980 to 19.7 per cent in 2025 (Table 2.10). This means that in 2025 every 100 persons in the working age group have, on average, to support 20 elderly persons. Beyond 2025, the old dependency ratio will most probably accelerate. Malaysia may have some 30 years
in which the total dependency burden will become more favourable due to a declining young dependency ratio before an inevitable rise in old dependency ratio sets in (Chen and Jones, 1989). The total dependency ratio comprises the young and old dependency, where the young dependency ratio refers to the number of persons under age 15 per 100 persons in the working age group. Hence, while it has been suggested that the burden on the working-age population will not be much affected by the aging of the population, since old dependents will merely replace young dependents, this inference is less likely to be true for Malaysia in the long run.

**Table 2.10  Dependency Ratio, Malaysia, 1970-2025**

<table>
<thead>
<tr>
<th>Year</th>
<th>15 - 59</th>
<th>60+</th>
<th>Old Dependency Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>5141.9</td>
<td>539.1</td>
<td>10.5</td>
</tr>
<tr>
<td>1980</td>
<td>7195.1</td>
<td>745.1</td>
<td>10.4</td>
</tr>
<tr>
<td>1990</td>
<td>10143.5</td>
<td>1077.4</td>
<td>10.6</td>
</tr>
</tbody>
</table>

Projected:

<table>
<thead>
<tr>
<th>Year</th>
<th>15 - 59</th>
<th>60+</th>
<th>Old Dependency Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>12977.0</td>
<td>1450.0</td>
<td>11.2</td>
</tr>
<tr>
<td>2025</td>
<td>20130.0</td>
<td>3961.0</td>
<td>19.7</td>
</tr>
</tbody>
</table>


The higher the old dependency ratio, the greater will be the pressure to provide adequate goods and services needed by the elderly. The greater the public finance required to support the elderly, the higher the burden on the working population. It has been estimated that in the United States, the per capita cost of the elderly is about 3
times that expended on young persons aged less than 15, and in Australia it is about 2.3 times more (Chen and Jones, 1989). It must be noted that while expenditures on the youth represent an investment in human capital, expenditures on the elderly are primarily maintenance costs. While expenditures on the youth are likely to influence society's future earnings, expenditures on the elderly may not have much productive potential and may even affect future income. In addition, the demand of health care by the elderly population may exert excessive pressures such that socio-economic development becomes adversely affected. As such, life-long preventive health should be promoted to avert the health problems in old age.

An increase in the old dependency ratio is observed for all ethnic groups (Table 2.11). Compared to the other ethnic groups, the Chinese exhibited the highest old dependency ratio throughout the period.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Malay</td>
<td>9.7</td>
<td>9.6</td>
<td>10.5</td>
</tr>
<tr>
<td>Chinese</td>
<td>13.2</td>
<td>12.8</td>
<td>11.4</td>
</tr>
<tr>
<td>Indian</td>
<td>8.2</td>
<td>9.0</td>
<td>9.3</td>
</tr>
<tr>
<td>Total</td>
<td>10.8</td>
<td>10.6</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Note: Total includes ‘others’.

Sabah exhibited a much lower old dependency ratio than Peninsular Malaysia or Sarawak during 1970-1990 (Table 2.12). The lower old dependency ratio in Sabah was
apparently the result of the influx of mostly adult immigrants from neighbouring Indonesia and the Philippines (Chan, 1992b).

<table>
<thead>
<tr>
<th>Region</th>
<th>1970</th>
<th>1980</th>
<th>1990</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peninsular Malaysia</td>
<td>10.8</td>
<td>10.0</td>
<td>10.7</td>
</tr>
<tr>
<td>Sabah</td>
<td>7.0</td>
<td>6.7</td>
<td>8.2</td>
</tr>
<tr>
<td>Sarawak</td>
<td>10.2</td>
<td>10.9</td>
<td>11.7</td>
</tr>
<tr>
<td>Malaysia</td>
<td>10.5</td>
<td>10.4</td>
<td>10.6</td>
</tr>
</tbody>
</table>


Besides the old dependency ratio, it is relevant to also discuss the familial dependency ratios. A familial dependency ratio measures the social and psychological support of the elderly by family members. The first type of measure is the ratio of persons aged 60-74 years to those aged 40-44 years, that is relating the elderly to their middle-aged children. The second measure is the ratio of persons aged 80 years and over to persons 60-64 years relating the 'old-old' to their 'young-old' children (Rajan, 1989).

In Malaysia, children are often considered as the main care-providers for the elderly (Tey and Cho, 1992; DaVanzo and Chan, 1994). With the aging of the elderly population, the familial dependency ratio is expected to increase. Table 2.13 shows that with increased longevity, the number of very old person who would have to be cared for by elderly children will increase rapidly. By the year 2000, 100 persons aged 60-64 years will have to care for 27 very old persons aged 80 years and over. With
longer female life expectancy, the familial dependency ratio would also be higher for them: 100 female aged 60-64 will have to take care of 54 very old elderly aged 80 and over in 2000.

**Table 2.13 Familial Dependency Ratio, Malaysia. 1970-2025**

<table>
<thead>
<tr>
<th>Year</th>
<th>Female (1)</th>
<th>Total (2)</th>
<th>Female (3)</th>
<th>Total (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>206.7</td>
<td>103.0</td>
<td>45.4</td>
<td>21.7</td>
</tr>
<tr>
<td>1980</td>
<td>197.1</td>
<td>96.9</td>
<td>47.0</td>
<td>23.9</td>
</tr>
<tr>
<td>1991</td>
<td>177.4</td>
<td>86.6</td>
<td>61.0</td>
<td>31.4</td>
</tr>
<tr>
<td>2000</td>
<td>171.3</td>
<td>88.3</td>
<td>53.5</td>
<td>27.1</td>
</tr>
<tr>
<td>2025</td>
<td>273.8</td>
<td>133.4</td>
<td>54.6</td>
<td>28.5</td>
</tr>
</tbody>
</table>

Note: (1) Number of persons in 60 to 74 years per 100 women 40 to 44 years.  
(2) Number of persons in 60 to 74 years per 100 person 40 to 44 years.  
(3) Number of persons 80 years and over per 100 women 60 to 64 years.  
(4) Number of persons 80 years and over per 100 person 60 to 64 years.  
Source: Computed from Department of Statistics, 1975, 1983, 1995;  

2.4.2 Trends In Aging Index

The aging index is a demographic measure which compares the size of the elderly to those below 15 years. In effect, this index shows the number of persons aged 60 and over for every 100 persons aged under 15 years. This index has implications on the cost of care and support as a rising index may necessitate a higher public sector expenditure as the requirements and needs of the old are quite different from the young.
In Malaysia, the aging index has increased progressively from 11.6 in 1970 to 16.5 in 1990 (Table 2.14). This index is expected to rise further and accelerate in the early part of the next century. In the year 2025, it is expected that there will be one old person of age 60 and over to one young person below 15 years.

**Table 2.14 Aging Index by Region, Malaysia, 1980-2025**

<table>
<thead>
<tr>
<th>Year</th>
<th>Malaysia</th>
<th>Peninsular Malaysia</th>
<th>Sabah</th>
<th>Sarawak</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>11.6</td>
<td>12.0</td>
<td>7.3</td>
<td>10.9</td>
</tr>
<tr>
<td>1980</td>
<td>14.3</td>
<td>14.2</td>
<td>8.4</td>
<td>13.7</td>
</tr>
<tr>
<td>1990</td>
<td>16.5</td>
<td>17.0</td>
<td>9.4</td>
<td>19.2</td>
</tr>
<tr>
<td>2000</td>
<td>18.5</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>2025</td>
<td>53.9</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>1970 - 1990 Percentage Change</td>
<td>4.9</td>
<td>5.0</td>
<td>2.1</td>
<td>8.3</td>
</tr>
</tbody>
</table>

n.a.: not available.


The aging index has increased in all parts of Malaysia. Sarawak seems to show a higher percentage change in the aging index in 1970-1990 compared with the other regions of Malaysia.

For Peninsular Malaysia, the aging index is highest for both females and males among the Chinese (Table 2.15). This index has been rising rapidly particularly for the Chinese females, suggesting that aging is most rapid in this group.
Table 2.15  Aging Index by Sex and Ethnic Group, Peninsular Malaysia, 1970-1989

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Both</td>
</tr>
<tr>
<td>Malay</td>
<td>10.4</td>
<td>10.3</td>
<td>10.4</td>
</tr>
<tr>
<td>Chinese</td>
<td>15.1</td>
<td>16.2</td>
<td>15.6</td>
</tr>
<tr>
<td>Indian</td>
<td>12.4</td>
<td>6.0</td>
<td>9.2</td>
</tr>
<tr>
<td>Total</td>
<td>12.3</td>
<td>11.8</td>
<td>12.0</td>
</tr>
</tbody>
</table>

Note: Total includes ‘others’

The implications of rapid aging on the family and the society would indeed be quite substantial in view of the different requirements and demand of the elderly in relation to those of children. Moreover, while care of children is the direct legal responsibility of parents, care of the old depends on the feelings of social obligation of children and other relatives as there is no legal sanction to enforce such care.

Components of Population Aging

As discussed earlier, population aging is a consequence of declining fertility and mortality. We now turn to an examination of the effects of mortality and fertility on the aging of the Malaysian population, assuming that migration is negligible. A set of four comparative projections are prepared using different assumptions of fertility and mortality and 1957 population as the base. They are:

(i) FVMV variant, that is applying the observed fertility and mortality rates. This is similar to the medium variant projection of the United Nations;
(ii) FCMC variant, where both fertility and mortality are assumed constant at the level of the initial year;

(iii) FVMC variant, by applying observed fertility and keeping mortality constant at the level of the initial year;

(iv) FCMV variant, by holding fertility constant at the base year level and applying observed mortality.

The aging index is derived for the four sets of population projection for the period 1957-1992 (see Table 2.16). The aging index estimated at 10.46 in 1957 would increase to 18.61 under projection (i), 9.76 under projection (ii), 17.80 under projection (iii), and 10.17 under projection (iv) in 1992. Using a modified decomposition technique as proposed by Ogawa (1984; 1986) as follows:

\[
\text{Change in Aging Index} = \text{fertility component} + \text{mortality component} + \text{residual}
\]

where the difference between FVMC and FCMC variant measures the fertility effect and difference between FCMV and FCMC variant measures the mortality effect. For 1992, substituting the index of aging yields the following result:

\[
18.61 - 9.76 = (17.80 - 9.76) + (10.17 - 9.76) + \text{residual}
\]

\[
8.85 = 8.04 + 0.41 + 0.4
\]

The decomposition procedure shows that, both fertility and mortality contributed to population aging in 1957-1992, but the fertility effect is 19.6 times more
dominant than the mortality effect. Hence, fertility reduction was the main cause of aging in Peninsular Malaysia in the period 1957-1992, while the effect of improved mortality was rather negligible. This may be explained by the fact that fertility decline results in relatively fewer young persons, while mortality decline particularly in infant mortality results in a younger population.

Table 2.16 Aging Index for Projected Population (in thousand), 1957 - 1992

<table>
<thead>
<tr>
<th>Base/Projection</th>
<th>Age Group</th>
<th>Aging Index (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 - 14</td>
<td>60+</td>
</tr>
<tr>
<td>1957 Census</td>
<td>2752.20</td>
<td>288.00</td>
</tr>
<tr>
<td>1992</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) FVMV</td>
<td>5547.27</td>
<td>1032.34</td>
</tr>
<tr>
<td>(ii) FCMC</td>
<td>9085.46</td>
<td>886.55</td>
</tr>
<tr>
<td>(iii) FVMC</td>
<td>4981.09</td>
<td>886.55</td>
</tr>
<tr>
<td>(iv) FCMV</td>
<td>10155.67</td>
<td>1032.34</td>
</tr>
</tbody>
</table>