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Baby Boom Generation in Singapore and Its Impact on Ageing

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***Abstract*—**In Singapore, there are about 1 million baby boomers, defined as those born between 1947 and 1964. They constitute a sizeable proportion (about 30 per cent) of the resident population comprising Singapore citizens and permanent residents. The first batches of these baby boomers have already 65 years old by 2012. Thereafter, baby boomers will swell the ranks of the elderly population in Singapore until 2030. The baby boomers in this study are divided into broad groups, namely, the early baby boomers (born 1947-54) and late baby boomers (1955-64). Continuing decline in fertility and mortality rates in the past three decades as well as improvements in health care facilities and services have changed the demography of Singapore from a "pyramid-shape" young, post war baby boomers population to a rapidly ageing population. With the ageing of the baby boom generation, the population of Singapore is about to grey rapidly over the next three decades. As such, there is a need for Singapore to understand the profile, perceptions and aspirations of this group, and devise strategies to address the needs and concerns as well as opportunities that arise with the ageing of baby boomers are discussed and presented in this work.

***Keywords*—**Ageing index, Baby boomers, Demographic dependency ratio (DDR), Fertility and mortality rate, Life expectancy, Singapore.

I. Introduction

BABY boom was an after effect of Second World War when the war affected countries with their fractured economies increased the needs for goods and services to rebuild their own economy. Consequently, the industrially developed countries started the production of goods and materials for export to rebuild their own economies. This fact led to an unprecedented bubble of vigorous economic growth that did not slow down until 1958. This led to an increase in education and granted higher incomes to families allowing them the resources to give birth of more children. By the year of 1946 to 1964, world population suddenly boom up, than it was ever before. In the history of population, the particular time span or cohort (1946 to 1964) is well known as "Baby Boom Generation" or "Baby Boom Cohort" and the babies born in that particular time span are known as "Baby Boomers". The baby boom was brought to the public's attention in 1960 with the publication of Landon Y. Jone's Great Expectations: America and the Baby Boom Generation [1].

Generally in 1946, the concept of baby boom grow up mainly in western or developed countries but it was also happened in east and south-east Asian countries like Japan and Singapore etc. though country wise the time span may be different or the cause of baby boom is quite different from the previous one. Various dates for the baby boom period have been suggested and used by different demographers and other researchers in Singapore and overseas, including 1946 to 1964 (United States of America), 1947 to 1964 (Canada), 1946 to 1965 (Australia and New Zealand), 1947 to 1964 (Japan) and 1946 to 1965 in Singapore. An important reason for these different periods is because of varying fertility and migration patterns in different countries.

The Republic of Singapore is a small island located between latitudes 1°09 N to 1º29 N and 103°36 E to104º25 E, at the tip of the Malay peninsula (see Fig. 1). In 2007, the land area of Singapore is approximately 707.1 square kilometers with a total population of 4588.6 thousands of which resident population comprises 3583.1 thousands [2].

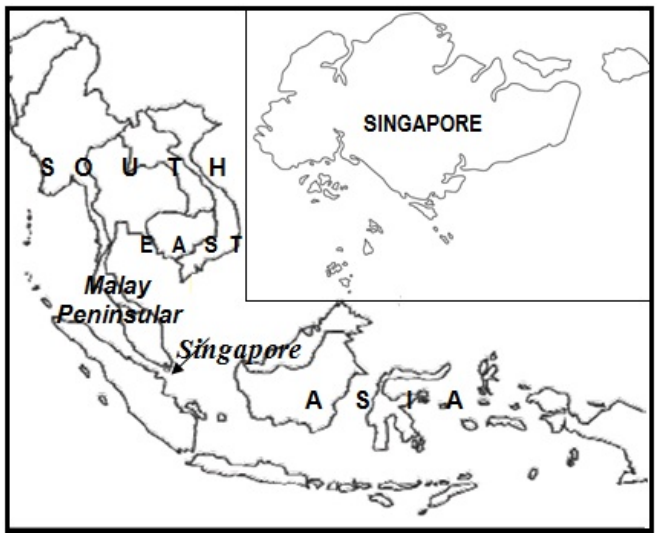

Fig. 1 Location map of Singapore

Singapore experienced its first baby boom in 1946 with a 58 percent increase in live births from 24,441 in 1945 to 38,654 in 1946 and baby boom period has been extended for almost two decades. According to the Department of Statistics, Singapore, people born in the earlier period of baby boom generation that is from 1946 to 1954 are known as 'elder boomers' whereas people born in the latter half of the period that is from 1955 to 1965 are known as 'younger boomers' [3]. According to the census data, in 2000, there were a total of 1,105,820 persons born during the baby boom period (1946 to 1965). This accounts for 33.89%of the total resident population in Singapore, of which 17.07% of the boomers

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were male and 16.82% were female; 19.49%were older boomers and the rest 14.4% were younger boomers [4].

The elder baby boom generation had already reached their 60's in 2007 and by the end of 2030; the younger baby boomers will also reach their age of retirement whereas elder boomers will be reached at their age-aged population at that time. So, from now the coming two decades is very much important in Singapore's demographic profile as the boomer population have direct impact on the ageing population as it will accelerate in future. The percentage of ageing population is expected to increase from 8.4 in 2005 to 18.7 in 2030 [5]. That is, the actual number of resident population aged 65 years or older expected to increase three times from 296,900 in June 2005 to 873,300 in 2030. With the ageing the baby boom generation, the population of Singapore is about to gray rapidly over the next three decades. By then one out of every five residents will be a senior.

II. Demography

In Singapore, baby boom period has been extended for almost two decades that is from 1946 to 1965. 1965 was an important year as because the country achieved its independence into this year and for the first time introduced family planning to decline the high fertility rate which gave the birth of the boomer population.

A. Tracking Boomers from 1946 to 2007

The number of births in any given period is influenced by two demographic factors, numbers of women of reproducing age in the population and the fertility rate prevailing at the time. According to Table I, in 1946, the first year of the Baby Boom, the number was 38,654 births; it marked the beginning of the baby boom and it was leading to the peak in the late 50's with 62,495 births in 1957. The number of births remained at the level of about 60,000 until 1964. Births fell to 44,562 in 1969 only to rise again the next three years to 49,678 in 1972. It will be better to mention here that, the large number of births during the period 1969 to 1972 was primarily due to an increase in the number of females of reproductive age (15-44 years) rising from 284,700 in 1957 to 547, 100 in 1975. Since 1980, the trends of the number of live births further increased which was continued till 1995 and the birth curve slowly move downwards since the year of 2000. These facts are shown in Fig. 2. The sudden number of increase in births during this long period (1957 to 1965) may be a result of the number of new born babies of the boomer generation. Some demographer marked this phenomenon as "echo of baby boom generation". While the baby boom lasted for twenty years the echo was quickly curtailed.

The total fertility rate of Singapore (Table I) remained at a high level that is around 6.5 during the period of 1947 to 1957. Thereafter, the TFR began to decline particularly during the periods of 1966 to 1969 and 1972 to 1975 respectively. The huge baby boom was changed to a baby bust, with fertility falling rapidly to reach just under two children in the early 1980s and a large number of female baby boomers reaching their peak of reproductive age together with the influence of a range of demographic, social and technological factors. The late 1960s and the early 1970s saw major changes in access to birth control. This was accompanied by changing laws and attitudes surrounding the role of women in society, allowing women greater reproductive choice and greater freedom to pursue education and employment. In 2000, the fertility rate was declined to 1.6 (see Fig. 2).

TABLE I
BIRTH AND TOTAL FERTILITY RATE (1947-2007)

Year	Number of Births	Total Fertility Rate	Year	Number of Births	Total Fertility Rate
1945	24,441	Na	1963	59,530	5.17
1946	38,654	Na	1964	58,217	4.95
1947	43,045	6.55	1965	55,725	4.62
1948	44,450	6.46	1966	54,680	4.42
1949	46,169	6.42	1967	50,560	3.95
1950	46,371	6.20	1968	47,241	3.50
1951	48,116	6.18	1969	44,561	3.15
1952	51,196	6.30	1970	45,934	3.10
1953	54,548	6.47	1971	47,088	3.06
1954	57,028	6.52	1972	49,678	3.07
1955	57,812	6.39	1973	48,269	2.81
1956	60,892	6.54	1974	43,268	2.37
1957	61,757	6.56	1975	39,948	2.07
1958	62,495	6.39	1980	41,217	1.82
1959	62,464	6.14	1990	51,142	1.83
1960	61,775	5.80	2000	46,997	1.60
1961	59,930	5.46	2005	37,492	1.26
1962	58,977	5.26	2007	39,490	1.29

Source: [6].
Note: Figures prior to 1980 refer to total population. From 1980, figures refer to Singapore residents (citizens and permanent residents).

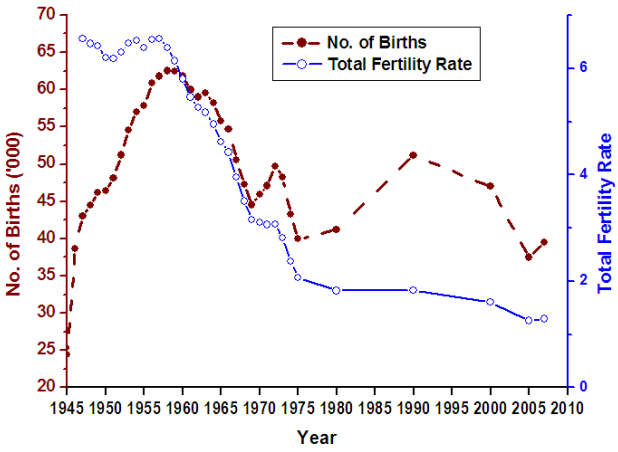

Fig. 2 Births and total fertility rate in Singapore (1945 – 2007)

Declining fertility and improved life expectancy in recent decades has contributed to this trend. During the year 1957, average life expectancy at birth in Singapore was 60.5 years for males and 66.6 years for females. At the end of the baby boom generation, total life expectancy rate was 69.0 (65.9 for males and 72.2 for females). Total life expectancy rate was reached at 80.4 in 2000, the highest than ever before in country's population history. An improvement in life expectancy reflects a generally consistent decrease in

mortality rates. A rise in living standards, improvement nutrition level and better health education contributed strongly to lower mortality rates during the first half of the 20th century, while medical advances in the second half of the country continued the trend.

The number of baby boomers residing in Singapore has increased every decade till 1980s (see Table II). In 1957, number of boomer population was 482800, which contained 33.39% of total population. By the end of 1960s, the boomer population was increased to 1,056,800 that is 54.04% of total population. Boomers population contains about 49.14% of the total resident population in 1970 and 50.40% in 1980 respectively.

TABLE II
PERCENTAGE OF BOOMER POPULATION TO TOTAL POPULATION IN SINGAPORE (1957-2005)

Year	Total Population	Boomer Population	% of Boomer to Total Population
1957	1445.9	482.8	33.39
1967	1955.6	1056.8	54.04
1970	2074.5	1019.4	49.14
1980	2413.9	1048.2	43.42
1990	2735.9	1051.3	38.43
2000	3263.2	1105.8	33.89
2005	3553.5	1109.0	31.21

Note: Figures prior to 1980 refer to total population. From 1980, figures refer to Singapore residents (citizens and permanent residents).

Between 1970 and 2000, Singapore's population increased by 193.67% from 2.07 million persons to 4.02 million persons. The proportion of baby boomers in the population has declined since 1990. In 1990, 39.38% of the country's total population was baby boomers. By 2000 baby boomers comprised 34.67% of the population, though the number of baby boomers will rose from 1,199,921 to 1,399,720 (Fig. 3). It is interesting to note here that, in 1970, both male and female population was contributing 49.14% in boomer population with respect of total residing population whereas in 2000, 17.07% of males and 16.82% of females comprises 33.89% boomer population.

B. Profile of Singapore's Boomer Population by Age Group (1957 to 2005)

The effect of baby boom on Singapore's age-sex distribution is highlighted in the series of population profiles presented in Figs. 4 (a) and (b). These profiles use age ranges that approximate to the baby boom cohort. The start of the baby boom forms a prominent bulge at the base of the pyramid (as reflected in the age ranges 5 to 9 in the 1957 profile) due to an increased number of births within the period of 1946 to 1950. The end of the baby boom, however, is not clearly identified as the start.

Population pyramid are the best way to see the ageing of baby boom generation as because it helps to understand how Singapore's population will change with the ageing of the baby boom is to examine the place of this generation within the broad age distribution. Figs. 4 (a) and (b) have shown the progressive growth of boomer population by examining age-sex population pyramids for the years of 1957 to 2000.

The 1957 age structure was the product of increasing birth trends with a broad based age pyramid. The 5-9 age group that is the 'essentially school-going population' contains the largest portion of population in respect of the other age groups which was the result of high fertility rate from the year of 1947 due to the baby boom effect. Population in the broad age group or less than 15 years, normally regarded as young dependents constituted 42.8% of the total population in 1957 (Fig. 4 (a) (i)).

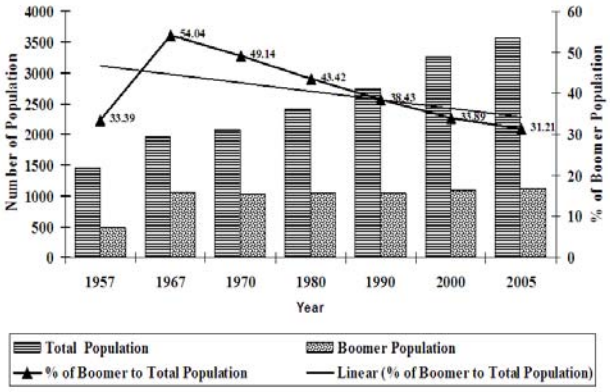

Fig. 3 Percentage of boomer population to total population in Singapore (1957-2005)

As the baby boom generation, the age sex structure changed remarkably. According to Fig. 4 (a) (ii), in 1967, the boomer population covers 54.04% of the total population within the age group of below 20. It's important time for baby boom period, as because the youngest boomers were already born and at the same time the elder boomers were entering into the working group and started to contribute for their community as well as the country. It can be mention here that, in 1967, the young dependency ratio was higher than the working age group, which was affected in the country's economy but it happened for a short period of time as the boomer population steadily move towards the working age group over time.

The 1970 age–sex structure is similar to the previous one. The main differences are that, boomer population contains about 49.14% of the total resident population in 1970 of which 27.44% were the elder boomers and 21.70% are younger boomers. The young generations aged 15 to 24 started to enter the workforce and contribute positively to the economic development of the nation (Fig. 4 (b) (i)).

In 1980, the population structure shows a bulge in the working age group (20-24 years). By then baby boomers consisted 54.50% of the total population. Interestingly, it was found that, the elder and younger boomers both were entering into the working age group which was inspired country's economy as the work-force was actively taken part into the different sectors of economy of Singapore (Fig. 4 (b) (ii)).

In 1990, the baby boom bulge appeared in the ages of 25 to 44. In the 1990s, baby boomers were in their economically productive years and represent 39.38% of Singapore's total population. It can be assumed that, the elder boomers were

more experienced and matured as they were entered previously into the working age-group than the younger boomers and hold the top positions of the different sectors of economic and industrial sector with a real contribution in the progress of Singapore's development (Fig. 4 (b) (iii)).

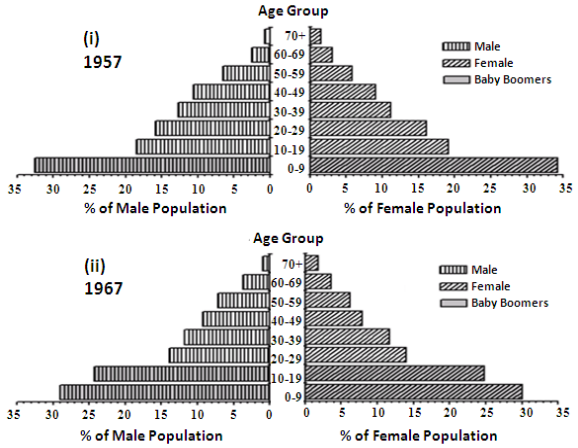

Fig. 4 (a) Age-Sex structure of baby boom period in Singapore (1957 and 1967)

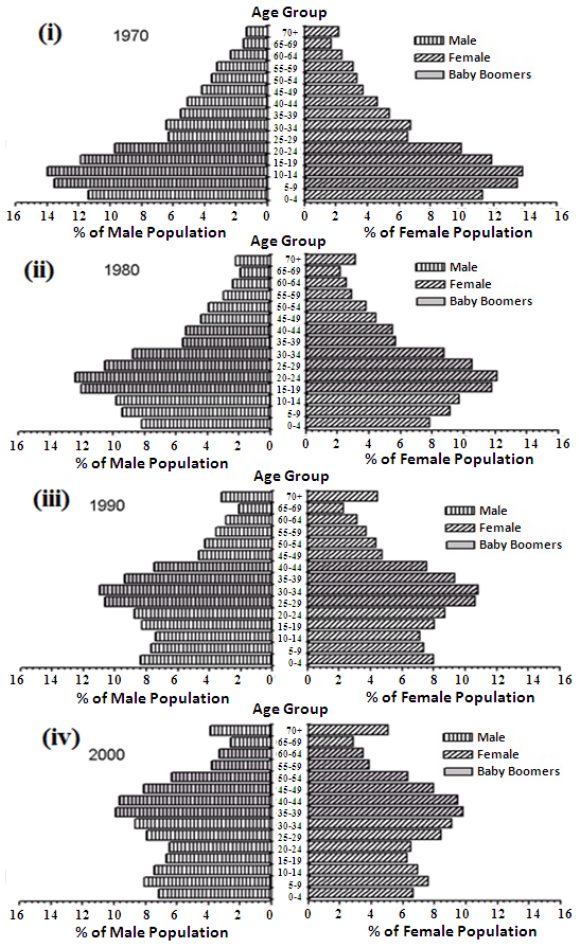

Fig. 4 (b) Age-Sex structure of post baby boom period in Singapore (1970-2000)

In 2000, baby boomers, aged between 35 to 53 years, accounting for 34.67%of the total residential population in Singapore. There were 636,112 younger baby boomers aged 35 to 45 years, and 469,708 older baby boomers, aged 46 to 54 years, representing 57.52% and 42.48% 0f the baby boomer cohort respectively (Fig. 4 (b) (iv)).

Singapore's boomer population has been grown older with time. Boomers were reaching at the age of 40 to 59 in 2005 and they comprised 31.21% of the total residential population. Individually, the elder boomers within the age of 50-59, who are near about their retirement age comprised 13.04% while their younger counterparts within the age group of 40-49, were containing 18.17% of the total resident population of Singapore.

There will be a rapid growth in the number of persons age 60 and over as the baby boomers began to turning 60 in 2007and entering into the pre-retirement stage. By 2025, the entire baby boom generation will cross the age of 60. It was projected that, the boomer population will contain 24.2% of the total projected population at the end of 2025 (for details see at U.S. Census Bureau, International Data Base). During this period due to the fluctuation of births and improve health status, the percentage of elderly population will be grow and as a result of this, Singapore will face ageing problem in the near future.

TABLE III
ELDERLY AS A PROPORTION OF TOTAL POPULATION IN SELECTED COUNTRIES OF SOUTH- EASTERN ASIA (2005, 2025 AND 2050)

Country	Aged 60 and Older (%)		
	2005	2025	2050
Cambodia*	5.1	7.9	15.2
Indonesia*	8.3	13.7	24.8
Lao Peoples Dem. Rep.*	5.2	7.6	16.3
Malaysia*	6.7	13.2	22.2
Myanmar*	8.0	13.9	25.6
Philippines*	6.0	9.8	18.2
Singapore*	12.3	31.6	39.8
Thailand*	11.3	21.5	29.8
Viet Nam*	7.6	13.4	26.1

Note:* Participated in the ESCAP regional survey of 2005.
Source: [1].

III. AGEING IN SINGAPORE

Population ageing is the most significant result of the process known as demographic transition. This process which is first started in low fertility western societies and in Japan is now spreading to the developing countries of Asia, Africa and Latin America. The 21st century will witness a gradual transition towards an aging society the world over.

In 1980, the United Nations defined 60 years as the age of transition to the elderly segment of the population. This definition was adopted at the World Assembly on Ageing convened by the United Nations in Vienna in 1982. The UN defines a country as 'ageing' where the proportion of people over 60+ reaches 7 percent. The confluence of lowered fertility and improved health and longevity has generated growing numbers and proportions of older population

throughout most of the world.

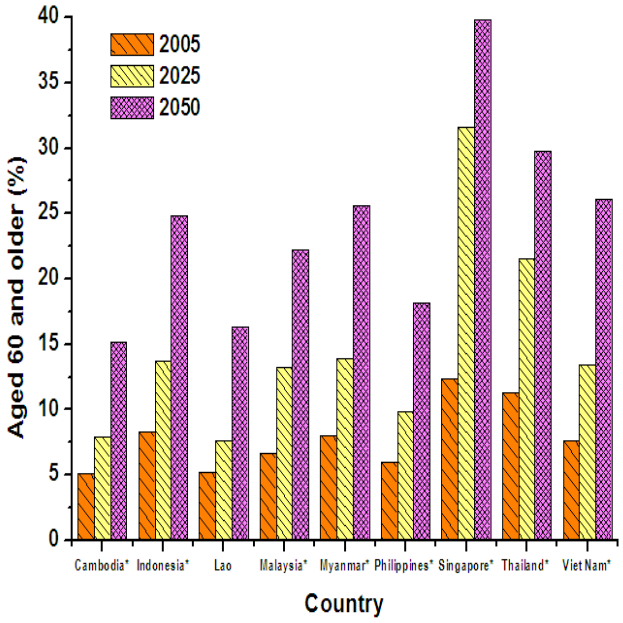

Fig. 5 Elderly as a proportion of total population in selected countries of South-Eastern Asia (2005, 2025 and 2050)

Table III shows that, among the ten ASEAN countries, Singapore has the highest proportion of the population that is elderly or aged. According to the United Nations, Singapore's elderly made up nearly 12.3 per cent of the population in 2005, compared with about 11.3 per cent and 8.3 per cent for the next two "oldest" countries – Thailand and Indonesia – and only 5 per cent for Cambodia, the Youngest of the ten countries (United Nations 2007a) (Fig. 5).

A. Causes of Ageing

Like in many countries, the fertility rate is the primary force behind the ageing of Singapore population at present. A secondary factor is the mortality rate. According to IMC, Report on Ageing Population, published by Singapore Government, 2000 [7], the rapid increase in the proportion of older persons is due to three main reasons [4]. First, the present post-war baby boomers are in the 42-61 age range. By 2030, this generation will be moved on to the age range of 65 and over. Secondly, Singaporeans are living longer than before because of improvements in health and nutrition. Life expectancy has been increasing over time and thirdly birth rates are declining drastically over time [4].

1. Fertility Rate

Table IV shows trend of fertility rate of Singapore with a time span of 1947 to 2030 years. A huge baby boom followed by the end of Second World War, with fertility rising to 6.56 births per woman in Singapore, early 1960s. This was then followed by the baby bust, with fertilely falling rapidly to reach just under two children in the early 1980s. Since then the fertility decline has been much more gradual, but has still inched down to about 1.1 children per woman today (Fig. 6).

TABLE IV
FERTILITY RATE OF SINGAPORE (1947-2030)

Year	Fertility Rate
1947	6.55
1950	6.20
1955	6.39
1960	5.80
1965	4.62
1970	3.10
1980	1.82
1990	1.83
2000	1.60
2005	1.26
2007	1.29
2030	1.30

Note: Figures prior to 1980 refer to total population. From 1980, figures refer to Singapore residents (citizens and permanent residents).

2. Mortality Rate

The fall in mortality rate also exerts a greater influence in the creation of an older age structure. In 2007, the infant mortality rate in Singapore is extremely low, only 2.3 per thousand live births in 2007 (Table V). It may be assumed that, future improvement i.e. declines in mortality of the older age group, will fastening the process of ageing in this country.

TABLE V
MORTALITY RATE OF SINGAPORE (1965-2030)

Year	Mortality Rate
1965	26.20
1970	20.50
1980	12.80
1990	7.10
2000	3.00
2005	2.79
2007	2.3
2030	2.4

Source: [8].

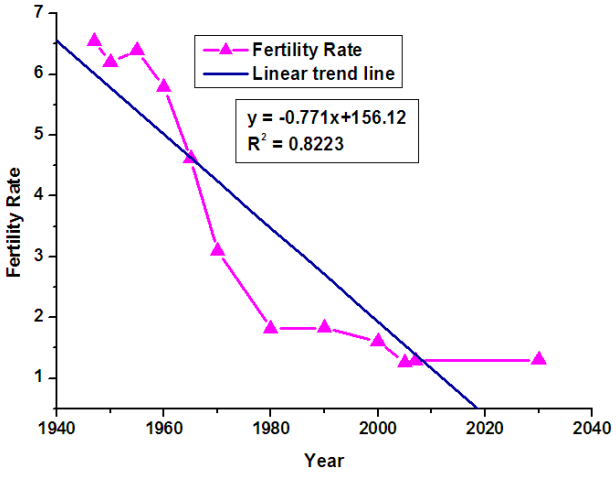

Fig. 6 Fertility Rate of Singapore (1947-2030)

The outcome of this rapid rise and then fall in the birth rate in Singapore was the baby boom generation – the large slice of the population born between 1946-1965. Singapore's

population is still relatively young today but this will change significantly over the next 6 – 24 years.

3. Life Expectancy

The past 50 years have seen remarkable improvements in life expectancy. During the year 1957, average life expectancy at birth in Singapore was 60.5 years for males and 66.6 years for females [6]. Table VI shows that, at the end of the Baby boom generation, total life expectancy rate was 69.0 (65.9 for males and 72.2 for females). Total life expectancy rate was reached at 80.4 in 2000, the highest than ever before in country's population history. By the end of 2030, it is estimated that, a new born baby could expect to live 83.4 years (80.7 years for males and 86.3 years for females) (see Fig. 7).

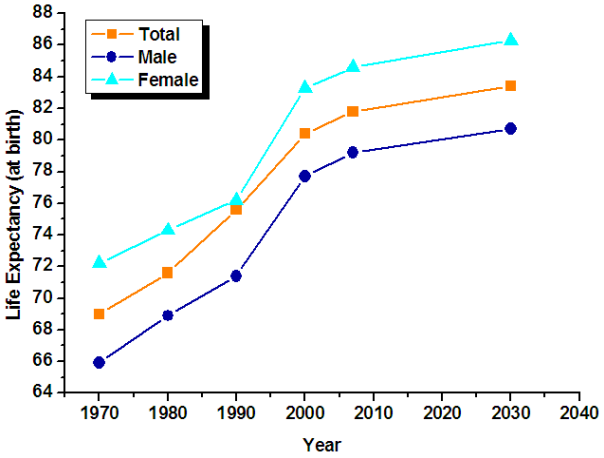

Fig. 7 Life Expectancy of Singapore (1970-2030)

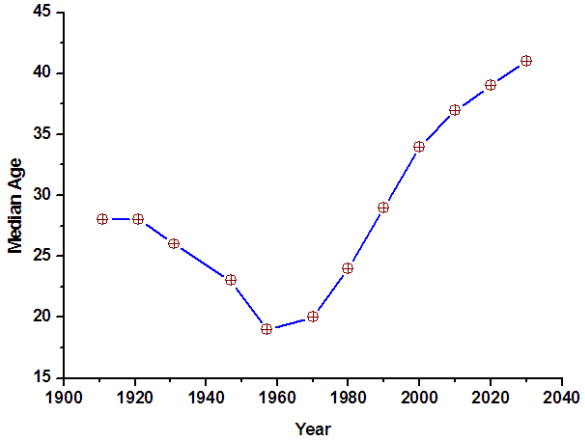

Fig. 8 Median Age, Singapore (1911-2030)

TABLE VI
LIFE EXPECTANCY OF SINGAPORE (1970-2030)

Year	Total	Male	Female
1970	69.0	65.9	72.2
1980	71.6	68.9	74.3
1990	75.6	71.4	76.2
2000	80.4	77.7	83.3
2007	81.8	79.2	84.6
2030	83.4	80.7	86.3

Source: [8].

TABLE VII
MEDIAN AGE, SINGAPORE (1911-2030)

Census Year	Median Age
1911	28
1921	28
1931	26
1947	23
1957	19
1970	20
1980	24
1990	29
2000	34
2010	37
2020	39
2030	41

Source: [3].

Improvements in life expectancy reflect a generally consistent decrease in mortality rates. A rise in living standards, improvement nutrition levels and better health education contributed strongly to lower mortality rates during the first half of the twentieth century, while medical advances in the second half of the century continued the trend.

As shown in Figs. 7 and 8, ageing of the population has had the cumulative effect of raising the median age of the population from 19 in 1957 to 34 in 2000 (Singapore Census of the Population 2000) and Singapore is on track to become the 6th oldest country in 2050 with an estimated median age of 52.0 years (Table VII).

The continued decline in fertility in the past two and a half decades and the improvement in health of Singaporeans, the Singapore population will undergo rapid ageing. This will be particularly evident after the turn of the century. The retirement of the baby boom (those people born between 1946 and 1965), the leading edge of this famous cohort turns 60 in 2006 and gradually reach 65 years of age in 2012. Senior citizens aged 65 years and above, who formed 4.1 per cent of the population in 1975 increased to 6.8 per cent of the population in 2000. Percentage of ageing population will increase from 8.4% in 2005 to 14.8 per cent in 2030, and it is estimated to increase further to 39.8 per cent by 2050. With the ageing of the baby boom, the population of Singapore is about to gray rapidly over the next three decades. By then, one out of every five residents will be a senior. During this period, the proportion of senior citizens in the older age group of 75 years and above is projected to increase from 1.3% in the 1980 population to 7.6% of the population by the year 2030.

Singapore's population is ageing rapidly can be clearly seen by the population pyramid. The pyramid is becoming a population rectangle as the post-war baby boom generation ages over time (Fig. 9). Over the next thirty years, the population ageing will accelerate. As shown in Fig. 9, the crest of the age profile representing the baby boom cohort would surge progressively towards the older ages. In twenty years time, the baby boomers either near or in the retirement age groups. This has important implications for the business community in the planning and provision of services to meet the housing, transportation, health care and personal needs of

the elderly population.

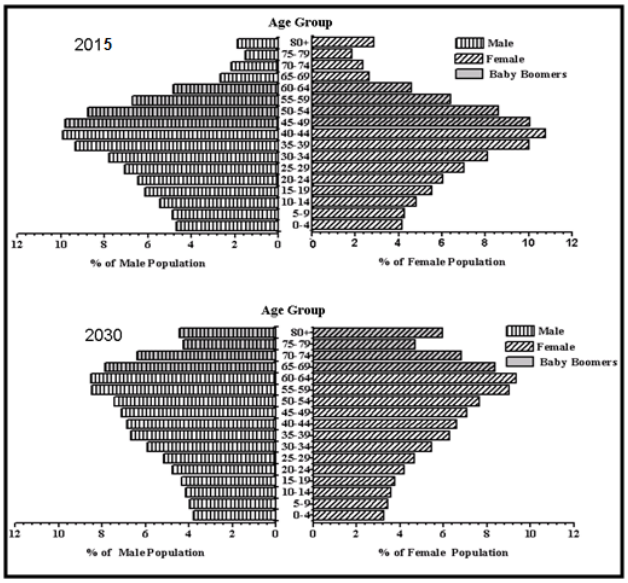

Fig. 9 Projected Age-Sex structure and baby boom generation in Singapore (2015 and 2030)

B. Index of Ageing

The fertility rate in Singapore dropped from 1960s, as a result of this younger percentage has been fallen down with time (Table VIII). Consequently, older percentage has been grown up since 1957. The rate of increase has more than doubled over a 23year period from 2.1 per cent in 1957 to 4.9 per cent in 1980. It reached 7.3 percent by 2000. It is projected that the percentage will increase between 3.4 to 4.3 per cent from 2015 to 2030 (Fig. 10).

TABLE VIII
YOUNG AND OLD PERCENTAGE, SINGAPORE, (1957 – 2030)

Year	Young Percentage	Old Percentage
1957	42.8	2.1
1970	38.8	3.3
1980	27.6	4.9
1990	23.2	6.1
1995	22.9	6.5
2000	21.5	7.3
2005	19.8	8.7
2010	17.1	10.3
2015	15.3	13.7
2020	13.7	18.1
2025	12.9	23.4
2030	12.4	28.0

Source: [2].

The conventional method of measuring ageing is to estimate the index of ageing, The index of ageing is a useful measure of the ageing process because it both defines the structure of the "dependent" population and is very sensitive to changes in that age structure. The ratio of the number of elderly persons to the number of children in a population is defined as the index of ageing.

The ageing index, calculated here as the number of people aged 65 divided by the younger population of a country aged between 0-14 which can be defined as: Index of ageing = Persons of aged 65 years and over/ children under 15 years.

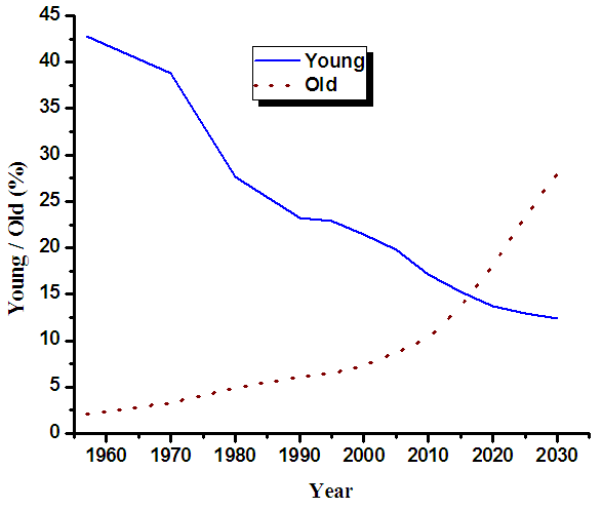

Fig. 10 Young and old percentage of population, Singapore, (1957-2030)

In defining above index of ageing, it is assumed that old age begins at the age of 65 years. This assumption is consistent with the U.N convention. In World data sheets annually published by U.N, the major age groups of the population for all countries are given in terms of those less than 15 years and those aged 65 and above years. So for the purpose of comparing ageing patterns of different countries, U. N's criterion should be followed.

The index of ageing also shows an ever increasing trend since 1957 (Table IX). There was relatively a low ratio of the aged against child population during the period from 1957 to 1980. However, the index is increasing at an alarming rate after 2020 (Fig. 11).

TABLE IX
INDEX OF AGEING, SINGAPORE (1957 – 2030)

Year	Index of Ageing (%)
1957	5.0
1970	8.6
1980	17.7
1990	26.2
1995	28.9
2000	33.9
2005	44.1
2010	60.1
2015	89.4
2020	132.0
2025	181.8
2030	224.7

Source: [2].

In Fig. 11, the best fit of non-linear trend in exponential regression analysis shows that in Singapore, from the year of 1950, ageing population increases rapidly over time. The exponential growth of ageing index from the year 1950 to

2030, we obtained the value of correlation coefficient that is, R^2= 0.98, showing a very strong correlation between the actual data points of growth and the exponential growth curve i.e. ageing population will be increasing as an alarming rate from the census year 2010 and onwards.

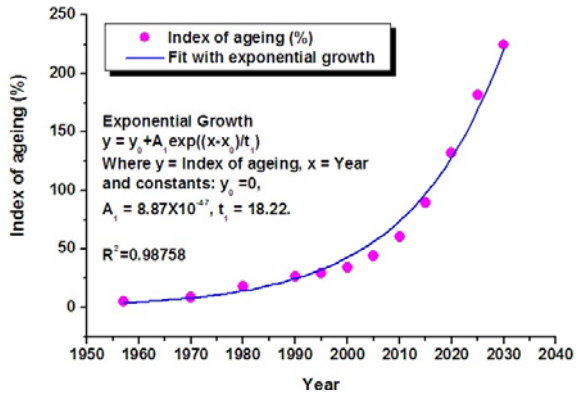

Fig. 11 Index of Ageing with exponential growth curve, Singapore, (1957-2030)

C. Demographic Dependency Ratio (DDR)

The impact of the age structure on economic well-being could be observed through demographic "dependency ratios". Three such ratios have been defined: the child dependency ratio is defined as the number of persons under age 15 per 100 persons aged 15-59, the elderly dependency ratio is defined as the number of persons aged 60 and older per 100 persons aged 15-59; the total dependency ratio is defined as the sum of the child and elderly dependency ratios. Dependency ratios are another means of describing age structures. The age dependency ratio compares the number of people of working age with those whom are older than working age. The working age population is generally regarded as those aged between 15 to 64 years.

TABLE X
YOUNG, OLD, TOTAL DEMOGRAPHIC RATIO (DDR), SINGAPORE
(1957 – 2030)

Year	Dependency Ratio (%)		
	Young	Old	Total
1957	77.8	3.9	81.7
1970	67.1	5.8	72.8
1980	41.0	7.3	48.2
1990	32.7	8.6	41.3
2000	30.1	10.2	40.4
2010	23.5	14.1	37.6
2020	20.1	26.5	46.7
2030	20.9	46.9	67.8

Source: [3].

Table X shows the demographic dependency ratio (DDR) of Singapore, since 1957-2030. The young DDR experienced a more than 50 percentage fall between 1957 and 1990. The largest fall occurred between 1970 to 1980. Whereas the older dependency ratio is vary between 2.1 to 8.7 from the year of 1957 to 2005. The projected increases in this ratio however are quite drastic in nature. It is expected to rise by 3.9 per cent between 2000 and 2010, 12.4 per cent between 2010 and 2020 and 20.4 per cent between 2020 and 2030.

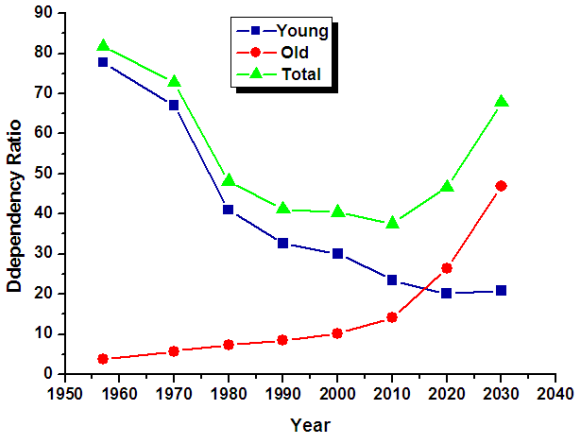

Fig. 12 Demographic Dependency Ratio, Singapore, (1957-2030)

Total Demographic Dependency Ratio (DDR) is projected to fall gradually between 1957 to 2010, with the largest fall of almost 25% being recorded between 1970 to 1980. In the last decade, it is expected that the increase in the total ratio will be increase about 21 per cent. From the above discussion, it is clear that the Singapore economy would be facing problems associated with an increasingly higher old and total demographic dependency ratio beyond 2020 (Fig. 12).

IV. CONCLUSION

The graying of the boomer population, which is occurring in Singapore, constitutes a demographic revolution and presents the most critical public policy issue at present time. While many experts have made predictions about how the ageing of the baby boomers will affect the economically developed countries, like Singapore, in actuality, no one really knows with any certainty what will happen. This inevitable demographic reality will fundamentally change the socio-economic, demographic and cultural aspects into the twenty-first century. To prepare for future and avoid a national crisis, boomer countries must develop a radically new vision that transcends outdated policies and generational biases and thinking creative 'systems' policy development, and innovative multidisciplinary research to effectively address the transformational societal shock of the nation's ageing baby boomers.

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