



Demographic Trends in Peninsular Malaysia, 1947-75

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DATA AND PERSPECTIVES

Demographic Trends in Peninsular Malaysia, 1947–75

The Japanese Occupation during World War II marks the major turning point of twentieth century Malaysian history. Politically, economically, and socially, the postwar era was different in character, not just degree, from prewar society. Although the British were able to maintain 12 shaky years of colonial rule until 1957, it was not possible to recast colonial society. The open political struggles between social classes, ethnic communities, and political parties during the postwar era bear little relationship to the almost unquestioned British rule of the first four decades of this century.

Prewar social and economic structure was sharply divided into two segments: the traditional villages of the rural countryside contrasted in almost every dimension with the foreign-dominated export enclaves of rubber and tin and with the urban areas of the west coast. The subordination of the former to the latter was no longer a tenable proposition in the postwar society, which had been exposed to the modernizing influences of the external world. And so the dominant theme of Malaysian history since World War II has been the adoption of political, economic, and social institutions geared toward realization of the popular goals of political independence, socio-economic development, and the more equitable sharing of the benefits of economic progress across ethnic groups and social classes. The means whereby the goals are to be achieved are in dispute, giving rise at times to turbulent political and social currents.

Concurrent with social, economic, and political changes have been major changes in demographic patterns and trends in Malaysia. Population growth in the first four decades of this century was rapid, though cyclical, depending upon the needs for labor in the export enclave sector, and was maintained by flows of immigrants from the poorer regions of Asia, particularly China, India, and the then Dutch East Indies. This large-scale immigration, consisting almost exclusively of adults and

primarily of males, gave rise to varied demographic patterns during the colonial era. Moderately high fertility and mortality were the basic characteristics of the largely indigenous Malay population, which was concentrated in rural villages. Within the immigrant communities, mortality was also high, but fertility was low because of the preponderance of male immigrants and the maintenance of family life in the countries of origin. Migration was not a local process of population redistribution from areas of labor surplus to areas of labor shortage, but rather a process of international labor movements, directly or indirectly organized by powerful economic interests to supply cheap sources of labor for the growing colonial economy. The cessation of immigration during the Japanese Occupation and its virtual prohibition thereafter created a very different climate of demographic change.

The late 1940s began a period of rapid population growth based entirely upon natural increase. Fertility remained at very high levels until the early 1960s; then a marked decline began, which has continued to date. Changes in fertility were preceded by a very sharp reduction in mortality levels beginning in the late 1940s and early 1950s.

The patterns of population growth in Malaysia since World War II—fertility, mortality, population redistribution, and urban growth—are the subject of this review. Demographic patterns are of interest not only for their own sake but also because they shed light upon the other social and economic changes that are occurring. Some have argued that changes in infant mortality, the average number of children born per couple, and the probability of movement from farm to city are among the best indicators of the social and economic changes in society. Moreover, population trends often create structural challenges, problems, and opportunities. In particular, a rapid pace of population growth tends to exert tremendous pressures in the labor market and on other social institutions that are age-graded. The objective here is to review population trends as both indicators of and contributors to the social and economic changes that have occurred in Peninsular Malaysia during the past 30 years.

The Federation of Malaysia is composed of Peninsular Malaysia (1970 population 8,809,000, area 132,000 square kilometers) and the states of Sabah (1970 population 650,000, area 76,000 square kilometers) and Sarawak (1970 population 977,000, area 125,000 square kilometers) on the island of Borneo. The focus here is on Peninsular Malaysia,¹ and the primary data sources are the three population censuses of 1947, 1957, and 1970, and vital statistics data on births and deaths that have been available annually since 1946.² The country is fortunate in having relatively complete records permitting analysis by age, sex, and ethnic group over the period.³ Even were it not for problems of the availability and comparability of data, the differences between Sabah, Sarawak, and Peninsular Malaysia in socioeconomic conditions, ethnic composition, and history, and the lack of contact between them until fairly recently, would argue against the combined analysis of population trends.⁴

Population Growth and Natural Increase

The Malaysian peninsula has historically been sparsely settled. In 1911, after a century of fairly rapid growth, with considerable immigration during the preceding 50 years,⁵ the population of Peninsular Malaysia numbered only 2.3 million.⁶ Over the next 36 years the population more than doubled, to 4.9 million. This growth was

almost entirely due to net immigration. In many years prior to 1930, there were more deaths than births among immigrant communities.⁷ Mortality rates were high and effective fertility was restrained by the unbalanced age-sex composition of the period.⁸

Population growth after World War II, shown in Table 1, was even more rapid, despite severe restrictions on immigration from 1945 on and a net loss of population through international migration to Singapore, India, China, and other destinations.⁹ More than one million were added to the population during 1947-55 and another two million during 1955-65. This growth of 2.5-3.0 percent per annum was entirely attributable to natural increase—the surplus of births over deaths.

The trends in natural increase, fertility, and mortality over the past 30 years are shown annually in Figure 1 and for five-year intervals in Table 1. Fertility was high in 1947, with a crude birth rate of over 40. (More refined measures of fertility suggest that even this high level of fertility was constrained by the unbalanced age-sex structure of the period.¹⁰ The Chinese and Indian populations, still shaped by the era of heavy immigration, had relatively small shares of women in the childbearing ages.) During the 1950s the crude birth rate and the rate of natural increase inched upward. The birth rate first began to drop in the late 1950s. The downward trend accelerated during the 1960s and early 1970s, until by 1975 the crude birth rate was slightly above 30, a 25 percent decline from 1960.

In raw numbers, the total number of births was at an annual level in the late 1940s of around 210,000-220,000. As the birth rate rose in the 1950s and the number of women in the childbearing years increased sharply, the number of annual births rose to 283,000 in 1960. While the birth rate declined in the 1960s and early 1970s, the number of women in the childbearing years continued to increase; this resulted in a fairly stable number of about 300,000 births per year during the past decade.

While the explanation for the recent slow-down in population growth is the decline in fertility rates, the reason for the rise in the rate of population growth in the 1950s was a very dramatic reduction in mortality levels. The crude death rate was cut in half in the late 1940s and 1950s (from 20 to 10). It has continued to decrease in recent years, even as the death rate has reached very low levels. Computation of life-expectancy measures is hampered by changes in the detail of available data from the late 1940s to later years. But from 1957 to 1970, official life tables showed an increase in life expectancy of seven years (from 55.8 to 62.2) for men and eight years (from 58.2 to 66.5) for women.¹¹ The number of deaths dropped from over 90,000 annually in the immediate postwar years to about 60,000-65,000 annually during 1960-75. The most dramatic decline in mortality was in the infant mortality rate, which fell from 130 in 1947 to 37 in 1975.

Natural increase of over 200,000 annually, over a million persons every five years, has marked effects on Malaysian society. Most simply, it represents an annual addition of 2.5-3 percent to the population that needs to be fed, clothed, educated, and otherwise provided the essentials of life. Although steady economic growth of 6-7 percent per annum has been maintained during most of the 1960s and 1970s, population growth has reduced comparable gains in per-capita gross national product.¹² From 1960 to 1972, the Peninsular Malaysian GNP rose from \$5,626,000 (in Malaysian dollars, during the period when US\$1 = M\$3) to M\$11,059,000 for an average annual gain of 5.6 percent. Per-capita GNP rose from M\$813 in 1960 to M\$1,148 in 1972, which only yielded an average annual increase of 2.9 percent.¹³

Despite continuing controversy over the effects of population growth on eco-

Table 1
Basic Population Trends
and Rates of Change:
Peninsular Malaysia, 1911-75

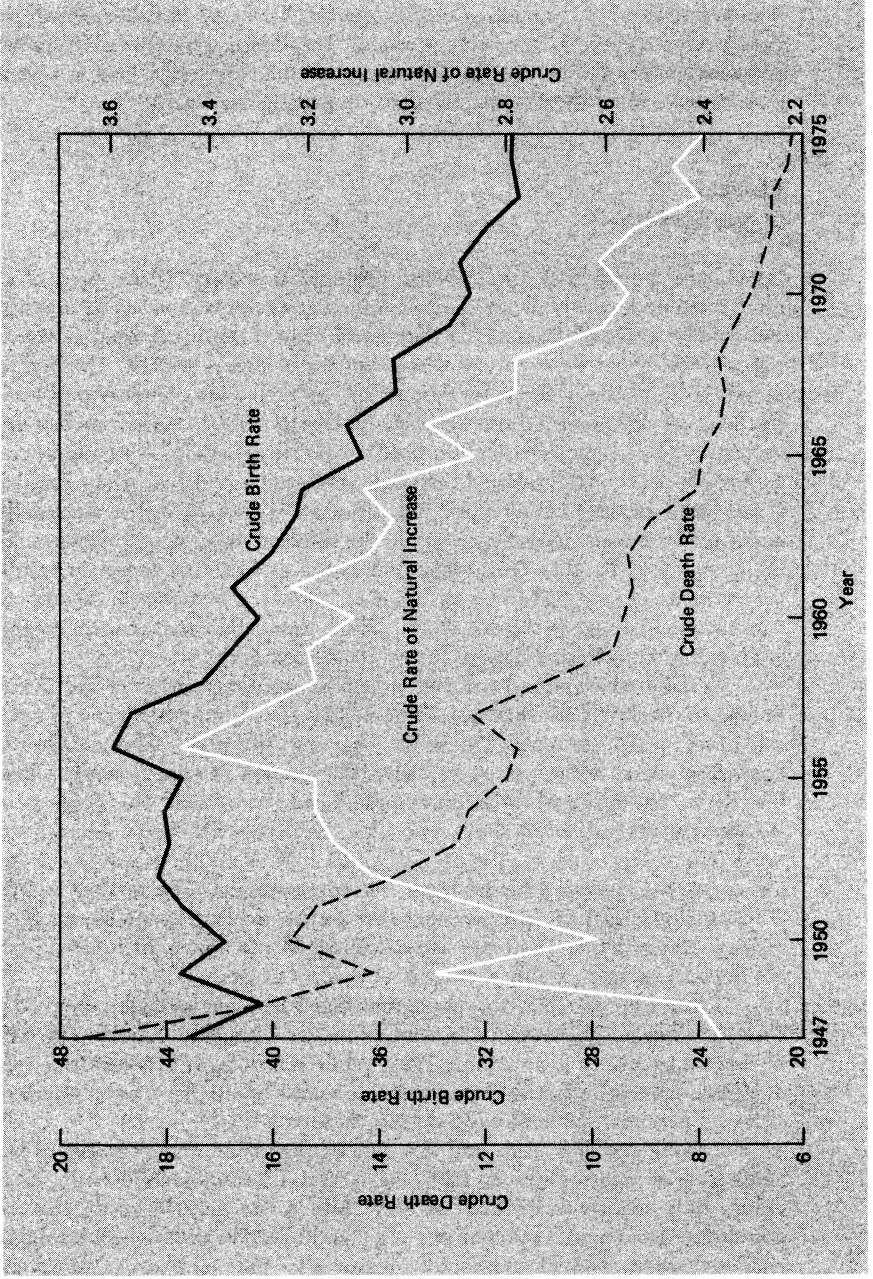
Year ^a	Population		Births		Deaths		Crude Birth Rate		Crude Death Rate		Natural Increase	
	Number (000)	Percent Change ^b	Number (000)	Percent Change ^b	Number (000)	Percent Change ^b	per 1,000	Percent Change ^b	per 1,000	Percent Change ^b	per 100	Percent Change ^b
1911	2,339	—	—	—	—	—	—	—	—	—	—	—
1921	2,907	2.2	—	—	—	—	—	—	—	—	—	—
1931	3,788	2.6	—	—	—	—	—	—	—	—	—	—
1947	4,893	1.6	211	—	95	—	43.1	19.4	15.7	2.61	2.37	3.2
1950	5,247	2.3	220	1.3	83	-4.5	41.8	-0.9	15.7	-7.1	2.61	3.2
1955	6,011	2.7	261	3.4	69	-3.5	43.4	0.7	11.6	-6.2	3.18	4.0
1960	6,989	3.0	283	1.6	66	-1.1	40.5	-1.4	9.4	-4.1	3.11	-0.4
1965	8,074	2.9	295	0.9	64	-0.6	36.6	-2.0	7.9	-3.5	2.87	-1.6
1970	9,147	2.5	297	0.1	64	0.1	32.5	-2.3	7.0	-2.4	2.55	-2.4
1975	10,369	2.5	313	1.1	64	0.1	30.3	-1.4	6.2	-2.4	2.41	-1.1

^aThe populations for 1911, 1921, and 1931 are reported for the date of the census; the populations of 1947 and subsequent years are adjusted to mid-year.

^bRate of average annual percent change = $\frac{\ln(P_2/P_1)}{N}$, where P_2 and P_1 are population figures or rates at times 1 and 2, respectively, and N is the number of years in the interval between 1 and 2.

SOURCES: For years 1911, 1921, and 1931, the population data are census counts as reported in Department of Statistics, cited in note 6, p. 268. For 1947 and subsequent years, the data are based on intercensal and postcensal estimates of adjusted 1947, 1957, and 1970 census populations and on births and deaths from the annual vital statistics publications. For details, see Hirschman, cited in note 3.

Figure 1
 Trends in the Crude Birth Rate, Crude Rate of Natural Increase, and Crude Death Rate: Peninsular Malaysia, 1947-75



conomic development,¹⁴ most developing countries, regardless of their political views, have explicit or implicit policies to slacken the pace of population growth. Peninsular Malaysia is no exception and has had active programs, with both private and governmental sponsorship, to reduce fertility levels. The goal of the national population policy is to achieve a 2.0 percent annual population growth rate by 1985—a not unrealistic objective in view of current trends in crude rates, but an objective that may become more elusive with changes in the age structure.

Changes in Age Structure

Population growth is not felt evenly throughout society. If the pace of growth is moderate and regular, stable institutional arrangements develop to support and accommodate new additions to the population. But if there are rapid shifts in population growth over a short period of time, systemic strains are felt. The fluctuations of growth in Malaysia in the early part of this century were certainly problematic, but the fact that they were a direct response to labor needs (in certain sectors for specific wages) and could just as easily flow in the opposite direction—by emigration—alleviated much of the organizational response, if not the human hardship. Employers and the colonial government assumed only minimal responsibility for displaced workers and actively encouraged repatriation as the solution to surplus population. The rapid population growth after World War II was not so easily managed. It resulted from natural increase and had to be absorbed by domestic institutions. Moreover, it was concentrated in specific birth cohorts, which gradually aged, placing disproportionate burdens on different aspects of the social structure.

Several measurements of the changing age composition of the population of Peninsular Malaysia are shown in Table 2. The population is distributed into five age categories, which represent functional groupings in society. The youngest age category, 0–4 years, is the period in which the burden of high fertility is borne most heavily by mothers and other immediate family members. The 5–14 age category contains the majority of students, whose numbers bear heavily on educational institutions. The young adult age category of 15–24 represents the transitions from schooling to work and from parental home to independence. The mature adult years of 25–54 include workers and parents, who are generally responsible for the maintenance of dependents. The older age category, 55 and above, includes a portion who are dependent upon family members or society at large.

From 1947 to 1955, the population aged 0–4 increased by over 75 percent. From another perspective, the fraction of the total population below age 5 rose from 13 percent in 1947 to 19 percent in 1955. While it is difficult to measure the social cost of a large portion of young dependents, it seems likely there were significant pressures on parental and family life during these years.

During the late 1950s and throughout the 1960s, the numbers of school-age children grew enormously. In 1955, there were 1.5 million children in the 5–14 age group, only slightly more than in 1947. But in the next 15 years, the school-age population grew over 3 percent per year, and by 1970, there were 1.2 million more children than in 1955. Demographic pressures for the expansion of educational institutions intensified the problems posed by the need to reform the urban orientation of the educational system of the colonial era. In the first few years after Independence

Table 2
Age Composition
and Changes in Age Composition:
Peninsular Malaysia, 1947-75

Year	Age					All Ages
	0-4	5-14	15-24	25-54	55+	
Population (000)						
1947	633	1,315	817	1,777	353	4,893
1950	845	1,290	934	1,790	389	5,247
1955	1,116	1,488	1,091	1,876	438	6,011
1960	1,277	1,911	1,210	2,072	519	6,989
1965	1,410	2,230	1,415	2,308	642	8,074
1970	1,390	2,644	1,811	2,551	751	9,147
1975	1,493	2,753	2,255	2,999	870	10,369
Percentage Distributions						
1947	13	27	17	36	7	100
1950	16	25	18	34	7	100
1955	19	25	18	31	7	100
1960	18	27	17	30	7	100
1965	17	28	18	29	8	100
1970	15	29	20	28	8	100
1975	14	27	22	29	8	100
Changes in Absolute Numbers						
1947-50	212	-25	117	13	36	354
1950-55	271	198	157	86	49	764
1955-60	161	423	119	196	81	978
1960-65	133	319	205	236	123	1,085
1965-70	-20	414	396	243	109	1,073
1970-75	103	109	444	448	119	1,222
Average Annual Growth Rate (Percent)						
1947-50	9.6	-0.6	4.5	0.2	3.2	2.3
1950-55	5.6	2.9	3.1	1.0	2.4	2.7
1955-60	2.7	5.0	2.1	2.0	3.4	3.0
1960-65	2.0	3.7	3.1	2.2	4.2	2.9
1965-70	-0.3	2.8	4.9	2.0	3.1	2.5
1970-75	1.4	0.8	4.4	3.2	2.9	2.5

SOURCE: Same as Table 1.

in 1957, governmental expenditures on education expanded greatly.¹⁵ But the pressures to build additional classrooms, train teachers, and support the costs of a rapidly growing educational system continued throughout the 1960s.¹⁶ Although, as the growth of the young student population slowed in the 1970s, the pressures for expansion of primary schools were reduced, the need for expansion at the secondary and tertiary levels remained strong.

Just as the 1950s brought demographic pressures into educational institutions,

the 1960s saw the initial surge of the postwar baby-boom cohorts into the labor market. If we assume that the 15–24 age group roughly represents those entering the working ages, additions to the numbers of potential young workers more than tripled from the late 1950s to the late 1960s. The annual increase in this age group was just below 5 percent during 1965–70 and only slightly lower in the early 1970s. Without a doubt, this expansion of potential labor supply contributed to the problem of unemployment and underemployment in the young age groups in the 1960s and early 1970s.¹⁷ Over the same period, there was a sharp reduction in early marriage and early childbearing, suggesting that the demographic pressures that affected employment opportunities may also have served to postpone the beginnings of family life. Young adults may have chosen to delay marriage and childbearing until economic opportunities were secured.

As population growth has slowed in the 1970s, the bulge in the age structure has been shifting into the middle-age years. This will have several consequences. Most simply, it will swell the number of potential parents and probably increase birth rates, even if the total fertility rate continues to decline. It may also bring the problems of marginal employment and unemployment to those in the prime working years. On the other hand, the increase in the number of working-age adults relative to children and older persons has the potential to reduce the dependency burden. In several decades, the population increases of the recent past will be reflected in a proportional increase in the older age group, likely to place different kinds of pressures on the social institutions of the country.

Thus far we have reviewed demographic patterns across the total population of Peninsular Malaysia; but the population is made up of three distinct ethnic groups—Malay, Chinese, and Indian—each characterized by different demographic patterns. We now turn to a consideration of the ethnic composition of the population and then the differential contribution of ethnic groups to patterns and trends in fertility, mortality, and urbanization.

Ethnic Composition

Except in the marketplace and among the English educated, there was little contact across ethnic communities in colonial Malaya. Malays, Chinese, and Indians were separated not only by residence, but also by workplace, language, and social organization. Colonial rule perpetuated these divisions or, at least, did little to promote ethnic integration. The effective closing of further immigration in the late 1940s, however, solidified the already increasing permanency of the immigrant communities in Peninsular Malaysia (Chinese, Indians, and Indonesians).

Table 3 presents data on the absolute and relative size of ethnic groups, sex ratios, the proportion foreign born, and the proportions literate in Malay. As the population doubled between 1947 and 1975, all ethnic communities generally maintained their relative shares of the total. The Malay proportion increased slightly from 49 to 53 percent, and the Chinese fraction decreased slightly from 38 to 35 percent. Indians formed about 10–11 percent, and others comprised about 1 percent of the population. The relative Malay gain is attributable to a somewhat higher rate of natural increase for Malays, although it also reflects modest out-migration of Chinese, the second largest ethnic group.¹⁸ But stability, more than change in ethnic composition, seems to be the dominant trend.

Table 3
Characteristics of the Population
by Ethnic Community:
Peninsular Malaysia,
1947-75

Year	Total Population		Malay		Chinese		Indian		Other	
	Number (000)	Percent	Number (000)	Percent	Number (000)	Percent	Number (000)	Percent	Number (000)	Percent
1947	4,893	100	2,418	49	1,871	38	531	11	73	1
1957	6,385	100	3,149	49	2,398	38	723	11	115	2
1970	9,147	100	4,822	53	3,274	36	948	10	103	1
1975	10,369	100	5,526	53	3,672	35	1,092	11	79	1
Year	Total	Malay		Chinese		Indian				
		Number	Percent	Number	Percent	Number	Percent			
1947	113	99	123	148						
1957	106	99	107	134						
1970	102	99	103	116						
1947	78	Percentage Born in Malaysia or Singapore								
1957	85	90	64	52						
1970	92	97	76	65						
		98	87	82						
		Percentage of Population, Aged 10 and above, Literate in Malay								
1957	25	46	3	4						
1970	40	62	11	22						

SOURCES: The top two panels are from the same sources as Table 1. Panels three and four are from Department of Statistics, 1977, cited in note 6, vol. 1, pp. 294 and 329; and Department of Statistics, Federation of Malaya, 1957 *Population Census of the Federation of Malaya*, Report No. 14, by H. Fell (Kuala Lumpur: Department of Statistics, 1960), p. 15.

In earlier times, it was possible to claim that the Chinese and Indian populations were only sojourner communities, with closer attachments to their homelands than to Malaysia.¹⁹ Yet such a statement, even in earlier times, lumped together individuals who had several generations of Malaysian residence with recent immigrants and was a coarse generalization at best. For the modern era, it is difficult to cite any demographic indicators that do not reveal permanent settlement of all ethnic communities in Peninsular Malaysia. For instance, consider the sex ratios in panel 2 of Table 3. Whereas male selectivity was dominant among Chinese immigrants prior to the 1930s and among the Indians for a longer period, by 1970 there was an approximately equal number of Chinese males and females and only a slight excess of Indian males, almost exclusively concentrated among the older ages. The succession of domestically born generations has erased the sex-selective character of the immigrant waves.

The third panel shows the fraction of each ethnic community that was born in Malaysia or Singapore. (Because Singapore was part of the Federation of Malaysia until 1965, because many families are divided between these two countries, and because movement has been fairly easy, it seems appropriate to consider those born in Singapore to be "locally born.") Even in 1947 a majority of Malaysian Chinese and Indians in Peninsular Malaysia had been born locally. By 1970 more than 80 percent of all ethnic groups were native-born. It is only among the older generations that one finds immigrants. And even most of the foreign-born came to Malaysia at a young age and have spent their entire lives in the country.

It is possible for an ethnic group to be settled in a country and have strong local roots, yet to remain segmented in a separate social and cultural world. Suggestive of the extent of segmentation are data in the last panel of Table 3 on the proportion literate in Malay, the official language of the country since Independence in 1957. With English as the unofficial language of social mobility and with the educational system divided into four language streams, it was historically unnecessary and rather difficult for many Chinese and Indians to acquire more than a rudimentary knowledge of Malay. With the gradual elimination of the English stream of schooling (begun in 1970), there will certainly be changes in these patterns, but we can see that there was already a notable change between 1957 and 1970. Literacy among Malays increased as younger generations had improved access to schooling.²⁰ And literacy in Malay among Chinese and Indians increased from insignificance to 11 percent for Chinese and 22 percent for Indians. Among young adults, the figures are certainly much higher and represent a sign of the beginnings of a potential common cultural framework among all Malaysians.²¹

Marriage and Fertility

The family is the primary social unit in almost all societies, regardless of the stage of development. Yet, the family is an adaptive social institution that changes structure and function as social change occurs. Thus, we look to some salient demographic indicators of family life, the timing of marriage and fertility levels, to examine the course of social change in modern-day Peninsular Malaysia.

Table 4 shows the proportion of women ever-married in two age groups, 15–19 and 20–24, for the censuses of 1947, 1957, and 1970. While cohort data on age at first

Table 4
Indicators of Change in Marriage
by Ethnic Group:
Peninsular Malaysia, 1947–75

Year	Percent Ever-Married, Aged 15–19				Percent Ever-Married, Aged 20–24			
	Total	Malay	Chinese	Indian	Total	Malay	Chinese	Indian
1947	42	59	18	52	87	93	74	93
1957	37	54	10	53	79	91	57	91
1970	16	23	6	17	57	68	40	63

	Singulate Mean Age at First Marriage			
	Total	Malay	Chinese	Indian
1947	18.5	17.4	20.5	17.6
1957	19.4	17.9	22.1	17.9
1970	22.3	21.1	24.2	21.7

SOURCE: Von Elm and Hirschman, cited in note 23.

marriage are not available, it is possible to calculate the cross-sectional summary measure of the proportion ever-married by age group—the singulate mean age at first marriage—from each of the three censuses.²²

Teenage marriage was the norm among Malay and Indian women in 1947, with the mean age at marriage about 17.5 years. Chinese women, even in 1947, tended to marry later, with a mean above 20 years of age. Among women in their early 20s in 1947, fewer than 10 percent of Malay and Indians were still single, while one-quarter of Chinese women had yet to marry. From 1947 to 1957, there was only a very slight trend toward delayed marriage among Malay and Indian women, but a considerable shift toward marital postponement among Chinese women. The ethnic gap in mean age at marriage widened from three to four years. But then during the intercensal period 1957–70, young Malay and Indian women began to marry later. In 1970, more than 75 percent of Malay and Indian teenage women and over 90 percent of Chinese teenage women were still single. In 1970 the mean age at marriage was over 21 for Malay and Indian women and over 24 for Chinese women. Even with the rise in marriage age, the proportions married at older ages suggest that marriage remains universal for all ethnic communities in Malaysia.²³

Accompanying these changes in the timing of marriage were comparable shifts in fertility patterns. Table 5 shows the trend in two indicators of period fertility, the crude birth rate and the total fertility rate. The total fertility rate is a refined measure that statistically eliminates the effects of age-sex structure that partially influence crude birth rate measures. The total fertility rate divided by 1,000 would be the number of births a woman would have if she experienced the age-specific rates in the current year for her entire childbearing career.

Observing the crude birth rates, it is questionable if there were any declines in fertility through the mid-1950s—perhaps only for the Chinese. By the late 1950s, however, changes in crude birth rates and total fertility rates clearly show that the fertility transition had begun. The declines continued at an accelerating pace

Table 5
Crude Birth Rate and Total Fertility Rate
by Ethnic Group: Peninsular Malaysia, 1947–75

Year	Crude Birth Rate				Total Fertility Rate ^a			
	Total	Malay	Chinese	Indian	Total	Malay	Chinese	Indian
1947	43.1	41.6	44.3	49.1	—	—	—	—
1950	41.8	42.1	41.6	43.7	—	—	—	—
1955	43.4	45.3	40.8	46.4	6,187	5,881	6,546	7,216
1960	40.5	42.6	36.9	43.3	5,976	5,719	6,211	7,142
1965	36.6	37.9	34.2	38.9	5,621	5,331	5,586	6,672
1970	32.5	34.2	30.5	31.8	4,886	5,090	4,623	4,960
1975	30.3	33.3	26.2	29.3	4,162	4,580	3,537	3,870
	Percent Decline							
1960–65	– 10	– 11	– 7	– 10	– 6	– 7	– 10	– 6
1965–70	– 11	– 10	– 11	– 18	– 13	– 5	– 17	– 26
1970–75	– 7	– 3	– 14	– 8	– 15	– 10	– 23	– 22

^a1958 was the first year for which age-specific fertility data were available.

SOURCE: Same as Table 1.

throughout the 1960s and early 1970s. Declines were evident for all ethnic groups, although there were important differences. In 1958, Chinese and especially Indian total fertility rates were considerably above Malay levels—and this in spite of later marriage among Chinese than among Malays. The most rapid declines in fertility since 1960 have been among Chinese and Indian women, leaving Malay fertility somewhat higher in 1975. Decomposition of the 1957–70 decline in the crude birth rate reveals that changes in the age-sex structure had no appreciable effect, changes in proportions ever-married accounted for more than 80 percent of the overall decline, and changes in marital age-specific birth rates were responsible for almost 20 percent of the decline.²⁴ For the Malay and Indian populations, changes in proportions married were by far the most important influence on fertility decline, while among Chinese, changes in marital fertility had an effect equal to that of proportions married.

A final indicator of fertility-related behavior is shown in Table 6—the proportion of married women who have used contraceptive methods. These data are available from fertility surveys conducted in 1966–67 and 1974. The 1966–67 survey sample was of currently married women, while the 1974 survey included all ever-married women, but this difference has only a slight effect on the reported figures. Over this brief eight-year period, the proportion of current users of contraceptives rose from 9 to 33 percent, and the proportion of married women who had never used any contraceptive declined from 86 to 52 percent. The increased use of contraception is evident among all age groups and in all three ethnic communities. In less than a decade the proportion of Malay women currently using contraception rose from less than 5 percent to more than 20 percent. The use of contraception is more widespread among Indian women and especially among Chinese women. More than half of Chinese women above age 25 are currently using some sort of contraception. The large

Table 6
Percentages of Married Women Who Are Using
or Who Have Used Contraception:
Peninsular Malaysia, 1966–67 and 1974

Age	Total		Malay		Chinese		Indian	
	1966–67	1974	1966–67	1974	1966–67	1974	1966–67	1974
All wives								
Current User	9	32	—	22	—	48	—	40
Past User	5	15	—	12	—	20	—	19
Under age 25								
Current User	5	25	3	21	12	40	9	23
Past User	5	15	5	10	6	23	3	23
25–34								
Current User	11	38	4	28	27	51	14	43
Past User	5	20	3	17	10	24	5	26
35–44								
Current User	9	36	3	23	27	53	7	49
Past User	6	14	5	11	7	17	2	14

NOTE: The 1966–67 sample includes currently married women aged 15–44, and the 1974 sample includes ever-married women below age 50.

— = unavailable.

SOURCES: National Family Planning Board of Malaysia, *Report on West Malaysian Family Survey 1966–67* (Kuala Lumpur: National Family Planning Board, 1968), pp. 79 and 289; and Department of Statistics and National Family Planning Board, Malaysia, *Malaysian Fertility and Family Survey—1974: First Country Report*, by R. Chander, V. T. Palan, Datin (Dr.) Nor Laily Aziz, and Tan Boon Ann (Kuala Lumpur: Department of Statistics, 1977), pp. A359–A360.

increases among older Indian women suggest use of contraception to avoid higher parity births.

The primary modern method of family planning used by married women in Malaysia is the oral contraceptive. The National Family Planning Board of Malaysia supplies oral contraceptives at a charge of US\$0.25, which is waived for those unable to pay. IUD insertions and sterilization are free of charge, but these methods are still used by few. (For example, in 1976, the national program reported a total of 75,000 current users, of whom 65,000 were using the oral contraceptive, 1,100 the IUD, 3,700 female sterilization, 200 male sterilization, and the remainder “other” methods.²⁵

These data indicate broad changes in family life in Peninsular Malaysia during the 1960s and 1970s. Women (and men) are marrying later and planning to have fewer children. Declines in infant mortality have made it unnecessary to have many births to achieve a moderate number of surviving children. Recent social changes affecting the roles of women, including improved education and employment opportunities, have probably fostered postponement of marriage and childbearing. Additionally, the high levels of unemployment among youths in urban areas and unpromising economic opportunities for many rural youth may have discouraged early marriage. The active family planning programs of both private and public sectors have probably

helped to legitimate smaller families and provide contraceptive information and materials to married couples.²⁶

Mortality Trends

Mortality levels in Malaysia have declined steadily since World War II. Table 7 presents the trend in the crude death rate and the infant mortality rate, the latter a particularly sensitive indicator of population well-being. Because comparisons in crude death rates between years and across ethnic communities are influenced by differences in age structure, standardized crude death rates have been computed as well. The standardization process assumes all populations have the age structure of the 1970 total (both sexes) population. Thus the intergroup (or intertemporal) differences in the standardized rates are due solely to mortality levels.

The reductions in mortality since 1947 have been remarkable. The crude death rate fell from 20 in 1947 to 6 in 1975. Similarly, the infant mortality rate was over 100 in 1947 but steadily declined over the next quarter of a century to a level of 33 in 1975. While similar trends have been observed in other developing countries, the Malaysian rates are exceptionally low.²⁷ In the late 1940s, Chinese mortality was considerably below Indian and especially Malay levels. But all groups shared in the rapid declines of the 1950s and 1960s. Improvement in the Indian crude death rate seems to have slowed during 1955–65, but the reduction in Indian infant mortality continued during this period. Malay infant mortality has shown sharp reductions since 1960, perhaps as a response to the spread of rural health clinics that began in the early 1960s. By 1975 Malay mortality was below Indian levels, but both were significantly above the extremely low Chinese rates (see the ratios of Malay and Indian rates to Chinese rates in the middle panel of Table 7).

Improvements in nutritional levels, preventive health programs, and greater accessibility to curative medicine have probably contributed to these improvements in mortality. The questionable quality of "cause of death" information in the vital statistics data of Peninsular Malaysia precludes a more detailed examination of the causes of reduction of mortality.

The bottom panel of Table 7 presents the trend in ratios of male mortality rates (both standardized crude death rates and infant mortality rates) to female rates. The infant death rates reveal the expected higher mortality experience of male babies—with the gap between male and female rates widening over the years. Such patterns of higher male mortality are found almost everywhere²⁸ and are a sign of the superior resistance to death of women, at all ages. The ethnic differences in the sex ratios of infant mortality are too small to represent any cultural difference in child care of male and female infants. But the standardized crude rates, influenced by adult mortality, tell quite a different story. Female mortality was higher than male mortality among Malays in 1947 and among Indians up to the 1970s, when the trend reversed. Higher female than male mortality has been found in other South Asian populations²⁹ and has been noted as a possible exception to the almost universal pattern of female advantage. The occurrence of this reversal among Indian women in Peninsular Malaysia (and in the late 1940s for Malay women) and the relatively greater gains in longevity of women over men over time as mortality decreased indicate that the apparent female disadvantage was social, not biological. As other research has shown,³⁰ higher female mortality is generally a sign that women and young girls receive an inferior diet and experience worse social conditions than men and boys.

Table 7
Indicators of Change in Mortality Levels
and Differentials:
Peninsular Malaysia, 1947–75

Year	Total Population			Standardized CDR ^a			Infant Mortality Rate		
	CDR	CDR ^a	IMR	Malay	Chinese	Indian	Malay	Chinese	Indian
1947	19.4	20.3	102	25.1	14.8	18.2	130	71	100
1950	15.7	15.3	102	18.4	11.8	13.4	121	74	114
1955	11.6	10.9	79	13.3	8.1	9.6	97	54	78
1960	9.4	9.1	69	10.6	7.1	9.5	88	43	66
1965	7.9	7.8	50	8.5	6.3	9.6	61	32	53
1970	7.0	7.0	41	7.5	5.7	9.0	48	29	46
1975	6.2	6.1	33	6.9	5.3	8.4	37	24	38
Percent Decline									
1950–55	–26	–29	–23	–28	–31	–28	–20	–27	–32
1955–60	–19	–17	–13	–20	–12	–1	–9	–20	–15
1960–65	–16	–14	–28	–20	–11	+1	–31	–26	–20
1965–70	–11	–10	–18	–12	–10	+6	–21	–9	–13
1970–75	–11	–13	–20	–8	–7	+7	–23	–17	–17

Ratio of Ethnic Mortality Rates to Chinese Rates

Year	Standardized CDR ^a			Infant Mortality Rate		
	Malay	Chinese	Indian	Malay	Chinese	Indian
1947	170	100	123	183	100	141
1950	156	100	114	163	100	154
1955	164	100	119	180	100	144
1960	149	100	134	205	100	153
1965	135	100	152	191	100	106
1970	132	100	158	166	100	159
1975	130	100	158	154	100	158

Ratio of Male Mortality Rates to Female Rates

Year	Standardized CDR ^a				Infant Mortality Rate			
	Total	Malay	Chinese	Indian	Total	Malay	Chinese	Indian
1947	105	96	128	84	115	115	114	112
1950	112	108	140	89	123	125	116	131
1955	109	104	135	85	119	129	122	125
1960	116	105	146	91	129	132	124	120
1965	122	108	155	98	126	127	129	114
1970	128	110	161	120	130	131	131	124
1975	134	117	163	126	129	129	137	121

^aThe age-standardized death rate, directly standardized on the 1970 age structure of the total (both sex) population.

SOURCE: Same as Table 1.

Urbanization Trends

Over time, population structure changes by redistribution as well as by growth. In fact, the population changes brought about by migration between geographical areas may be much more consequential for local areas than changes due to natural increase. Population movements are limited not by the initial size of the population or biological processes but by the differential availability of opportunities across space. Economic and social conditions may change rapidly and inspire a significant migratory response.

Here only changes in urban-rural population distribution are reviewed. Rather than a simple urban-rural dichotomy, the analysis rests on a size of place classification: (1) large towns, above 25,000, (2) medium sized towns, 5,000–24,999, (3) small towns, 1,000–4,999, and (4) a residual category of towns of less than 1,000 and rural areas (which may include many large villages that are not gazetted).³¹

Table 8 presents the distribution of the population across this size-of-place classification for the past three censuses. Changes in the distribution of the population across size-classes could occur because towns in a given class are growing (or declining) or because towns cross size-class boundaries. New towns are included in the universe of towns by achieving the minimum size of 1,000. For instance, there were 157 towns in the comparable census towns list in 1947, 386 in 1957, and 409 in 1970 (see last panel of Table 8). Another important point to keep in mind is that town populations grow not only through migration, but also by natural increase (which varies between towns), and by annexation of surrounding areas and their populations.³²

The 1947–57 intercensal period was marked by sharp increases in the population living in urban areas of all sizes—the proportion of the population in towns above 1,000 rose from 26 to 42 percent. As reported in earlier studies,³³ much of this urbanization was a direct or indirect result of the program of resettlement of the rural population into “new villages” during the “Malayan Emergency.” The Malayan Emergency was the term applied to the war between the colonial government and communist insurgent forces, primarily composed of Malaysian-Chinese. The Emergency began in 1948 and gradually slowed down in the early to mid-1950s, although it was not officially terminated until 1960. In order to deny to the insurgent forces a rural base of support, the colonial government resettled rural residents who lived in contested areas. Sandhu reports that over 573,000 persons were relocated—which would mean about 10 percent of the population of the country.³⁴ Many of the new villages were adjacent to larger towns and were later absorbed directly into the larger towns.

The resettlement program was particularly directed at rural Chinese residents who did not have legal claim to their farm land. Sandhu reports that 86 percent of those resettled in “new villages” were Chinese. This selectivity is evident in Table 8. The proportion of rural Chinese (in areas of less than 1,000) dropped from 57 percent in 1947 to 27 percent in 1957. The urbanward population shifts for Malays and Indians were considerably more modest, with redistributions of less than 10 percentage points. The net result of this era was a significant widening of the Chinese-Malay gap in urbanization. For instance, in towns above 5,000, the Malay-Chinese percentage point difference widened from 27 in 1947 to 41 in 1957.

The 1957–70 intercensal period was one of marked contrast, with a slow-down

Table 8
Percentage Distribution of the Population,
by Size of Place, by Ethnic Community:
Peninsular Malaysia, 1947, 1957, 1970

Size of Town	Total Population			Malay			Chinese			Indian			Number of Towns		
	1947	1957	1970	1947	1957	1970	1947	1957	1970	1947	1957	1970	1947	1957	1970
25,000 or more	16.1	22.0	24.5	5.9	8.8	11.9	26.8	37.0	41.1	22.0	26.5	31.0	12	16	23
5,000-24,999	5.2	10.0	9.6	2.4	4.8	5.6	8.3	17.7	15.6	6.4	8.3	8.8	23	64	90
1,000-4,999	5.2	10.5	7.9	3.0	5.5	4.4	8.0	18.6	14.2	5.3	6.5	4.9	122	306	296
Balance of country	73.5	57.5	58.0	88.7	80.9	78.1	57.0	26.8	29.1	66.2	58.7	55.3			
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	157	386	409
Total Population (000)	(4,908)	(6,279)	(8,810)	(2,428)	(3,125)	(4,672)	(1,885)	(2,334)	(3,131)	(531)	(696)	(936)			

SOURCE: Hirschman and Yeoh, cited in note 32.

in the pace of urbanization.³⁵ The only notable proportional gains for urban areas were in the large towns, above 25,000. And most of this rise was attributable to an increase in the number of towns in this size-class rather than to exceptional growth of the largest towns. It is important to note that these figures do not mean that urban growth was slow (in fact, most towns in Malaysia have annual growth rates of 2–3 percent), but rather that urban growth was not significantly larger than rural growth. It is possible that a certain amount of rural-to-urban migration was cancelled out by differential natural increase between urban and rural areas, but it seems that overall urbanward migration was not exceptionally high.

Malays and Indians experienced larger shifts from rural to urban areas from 1957 to 1970 than did Chinese. In fact, there were proportional reductions of Chinese in medium-sized and small towns. But the Malay and Indian relative gains in urbanization were not very large. In percentage points, they were similar to their 1947–57 changes, described earlier as modest. In sum, the Malay-Chinese urbanization gap narrowed only slightly during the 1960s.

Discussion

What do the demographic trends reviewed here tell us about social and economic progress in Peninsular Malaysia? Are the patterns and changes in population trends indicators of and/or major influences on the level of socioeconomic welfare and inequality, particularly among ethnic communities? A number of general observations can be made on the basis of the current evidence.

First, it seems clear that great progress has been made in the improvement of living standards since World War II. This interpretation is consistent with the trend in per-capita gross domestic product and per-capita gross national income.³⁶ National income figures show a period of erratic instability, with only modest net gains in the 1950s but fairly consistent growth since then. Evidence on household income data shows an impressive increase from 1957 to 1970, although the evidence also indicates that most of the improvement in economic levels went to the upper half of the income distribution.³⁷ But the major decline in death rates, especially in infant mortality, over the past quarter century, is telling evidence of a significant improvement in living conditions. For the country as a whole, the infant mortality rate of slightly over 30 is close to the level attained by the United States and other advanced countries in the late 1940s.³⁸ Although mortality is higher among Indians and Malays than among Chinese, the magnitude of the declines suggests a rather pervasive impact of improved health conditions and nutritional levels in the past three decades.

Similarly, the declines in fertility suggest that major structural changes are occurring in Malaysian society, affecting in particular the family and the roles of women. The over 25 percent decline in fertility from the late 1950s to the early 1970s means that Peninsular Malaysia is undoubtedly well along the course of demographic transition. Once such a process begins, there may be fluctuations, but there is not likely to be a return to high fertility.

The impact of population growth on economic progress is much less clearcut. It is difficult to assert that the rapid population growth of the postwar era has been a major drag on economic growth. While population growth of 2.5–3.0 percent per year has meant that the fruits of economic growth have to be distributed to a greater number of people than would have been the case with slower growth rates, it seems

that the real question for Malaysian economic history has been the slower economic growth than has been achieved elsewhere in Asia (Taiwan, Korea, Singapore).

Nonetheless, the population growth patterns have undoubtedly had repercussions on the economic opportunities of different age groups, particularly those in the large birth cohorts of the late 1940s, 1950s, and 1960s. Although these cohorts have achieved higher educational levels than earlier generations, now that they are moving through the labor market, they are experiencing severe problems of unemployment and underemployment. Job opportunities in urban areas and the availability of land in rural areas have not kept pace with the numbers seeking productive and rewarding employment opportunities. These problems are not unique to Malaysia, and neither is the over-supply of young workers in the last decade. Although fertility is declining, the effect on the labor supply will not be noticeable for 15 years.

The goals of most societies, including Malaysia, include not only socioeconomic development, but also some redistribution of wealth—in short, greater equality. In Malaysia, this basic issue is intertwined with the traditional disparities between ethnic groups, especially between the predominately rural Malay community and the Chinese and Indians. The population trends reviewed here can only address this issue in part because inequality is only indirectly revealed in most of these statistics. But a number of important, if not surprising, conclusions can be drawn.

Trends in mortality and fertility have been very similar for Malays, Chinese, and Indians. Although ethnic differences have not been eliminated, a narrowing of differentials is inevitable as very low levels are reached. For instance, Chinese mortality is extremely low at the present time and it seems that further progress will occur more slowly than past gains. Proportional reductions can be more easily achieved by Malays and Indians, whose rates are 30-50 percent higher. This expectation assumes that past trends in the expansion of health facilities and improvements in diet and living standards will continue in the future. The social forces that have lowered fertility have been very similar across ethnic groups. In fact, the Chinese pattern of later age at marriage has spread to the Indian and Malay social structures during the 1960s.

There is, however, little evidence on the direction of economic or social inequality within ethnic communities. It would be possible to achieve roughly comparable ethnic averages and still have great differences between rich and poor or between urban and rural within ethnic communities.

It is difficult to characterize the socioeconomic implications of population distribution trends over the period. The 1947-57 intercensal period was not one of significant economic growth nor of structural change, but rapid urbanization was fostered by the colonial government's resettlement program. Directed almost entirely at Chinese, this policy made the Chinese population a predominantly urban community, though life in "new villages" may not have been a real improvement for most of those who were forced to move. The 1957-70 intercensal period was one of much greater economic progress, expansion of educational opportunities, and improved transportation facilities. Most cities grew, but there was only modest population redistribution during this period. The ethnic gap narrowed slightly, but remained wide. One is tempted to apply a negative interpretation to these facts—that urban areas did not become centers of economic growth and opportunities and simply preserved their role as service and commercial centers for rural areas, leaving geographical segregation underpinning ethnic inequality. At the same time, it is pos-

sible that rural areas continued to provide viable opportunities for many. In spite of declining prices, higher productivity has maintained rubber smallholdings as modestly profitable enterprises for families that own their farms. And the creation of land development schemes throughout the country has also provided employment opportunities for many rural residents, mainly Malays who might have otherwise migrated to cities. This does not necessarily imply that most rural residents are fully employed but only that relative opportunities in towns and cities are not sufficient to attract substantial migration.

The demographic transition—from high birth and death rates to low birth and death rates—appears to be well under way in Peninsular Malaysia. The rapidity of the changes in the last two decades suggests a continuation of low mortality and progressively lower fertility. These demographic trends parallel the earlier experience of Taiwan, Singapore, and Korea. A fuller explanation of these demographic trends and their impact on social and economic change hold out the promise of a formulation of a modern demographic transition theory, richer both in the detail of its data base and the scope of interrelationships available to study than the historical framework that has guided demographic research in this area to date.

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Notes

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1. Although the term Peninsular Malaysia has only been widely used since 1975, it is used here for earlier times when the official designation was West Malaysia or Malaya.

2. For earlier surveys of demographic patterns and trends, see T. E. Smith, *Population Growth in Malaya: An Analysis of Recent Trends* (London: Royal Institute of International Affairs, 1952); J. C. Caldwell, "The demographic background," in *The Political Economy of Independent Malaya*, ed. T. H. Silcock and E. K. Fisk (Berkeley: University of California Press, 1963); T. G. McGee, "Population: A preliminary analysis," in *Ma-*

laysia: A Survey, ed. Wang Gungwu (New York: Praeger, 1964); James Palmore, Ramesh Chander, and Dorothy J. Fernandez, "The demographic situation in Malaysia," in *Population and Development in Southeast Asia*, ed. John F. Kantner and Lee McCaffrey (Lexington, Mass.: D. C. Heath, 1975).

3. For this project, the author created a machine- (computer-) readable data file of census figures and intercensal estimates of the population by sex, ethnic community, and age group for each year from 1947 to 1975. The data were conservatively adjusted, primarily on the basis of information available in published census reports. To this data file were added figures on births and deaths by the same variables (to the extent of availability) for the same years. Fuller documentation of all data adjustments and copies of the complete data file are available from the author upon request.

4. What is needed is a parallel study of population trends in Sabah and Sarawak. For an introduction to the demography and geography of Sabah and Sarawak, see Lee Yong-Leng, *North Borneo, A Study in Settlement Geography* (Singapore: Eastern Universities Press, 1965) and *Population and Settlement in Sarawak* (Singapore: Asia-Pacific Press, 1970).

5. Saw Swee-Hock, "Trends and differentials in international migration in Malaya," *Ekonomi* 4, no. 1 (1963):87-113; and Kernal Singh Sandhu, *Indians in Malaya: Some Aspects of Their Immigration and Settlement (1786-1967)* (Cambridge, Eng.: Cambridge University Press, 1969).
6. Department of Statistics, Malaysia, *1970 Population Census of Malaysia, General Report*, volume 1, ed. R. Chander (Kuala Lumpur: Department of Statistics, 1977), p. 268.
7. British Malaya, *A Report on the 1931 Census and on Certain Problems of Vital Statistics*, by C. A. Vlieland (London: Crown Agents for the Colonies, 1932), Chapter 8.
8. Palmore, Chander, and Fernandez, cited in note 2, Table 1.
9. Caldwell, cited in note 2; and Charles Hirschman, "Net external migration from Peninsular Malaysia, 1957-1970," *Malayan Economic Review* 20 (October 1975):38-54.
10. Charles Hirschman and Dorothy Fernandez, "The decline of fertility in Peninsular Malaysia," *Genus* 35, no. 3-4 (1979).
11. Department of Statistics, Malaysia, *Abridged Life Tables, Malaysia, 1970* (Kuala Lumpur: Department of Statistics, 1974), pp. 22-23 and 43-44.
12. V. V. Bhanoji Rao, *National Accounts of West Malaysia, 1947-1971* (Singapore: Heinemann, 1976).
13. Charles Hirschman, "Economic progress in Malaysia: How widely has it been shared?" *UMBC Economic Review* (Kuala Lumpur) 10, no. 2 (December 1974):35-44. The GNP figures are in current (not constant) Malaysian dollars, but inflation was almost negligible during this period.
14. See, for example, National Academy of Sciences, *Rapid Population Growth*, 2 volumes (Baltimore: Johns Hopkins University Press, 1971); Ansley Coale and Edgar M. Hoover, *Population Growth and Economic Development in Low Income Countries* (Princeton: Princeton University Press, 1958); Ansley Coale, "Population growth and economic development: The case of Mexico," *Foreign Affairs* 56 (January 1978):415-429; Allen Kelley, "Population growth, the dependency rate, and the pace of economic development," *Population Studies* 27 (November 1973):405-414; Richard Bilborrow, "Fertility, savings rates, and economic development in less developed countries," in *International Population Conference, Liege 1973*, volume 1 (Liege, Belgium: International Union for the Scientific Study of Population, 1973); Colin Clark, *Population Growth and Land Use* (New York: St. Martin's Press, 1967); and Julian Simon, *The Economics of Population Growth* (Princeton: Princeton University Press, 1977).
15. See Gayl D. Ness, "Economic development and the goals of government," in *Malaysia: A Survey*, ed. Wang Gungwu (New York: Praeger, 1964), pp. 307-320.
16. See Ministry of Education, Malaysia, *Educational Statistics of Malaysia, 1970* (Kuala Lumpur: Dewan Bahasa dan Pustaka, 1972), pp. 8-15.
17. The concentration of unemployment among 15-19- and 20-24-year-olds is documented for this period in Department of Statistics, cited in note 6, and Department of Statistics, *Socioeconomic Sample Survey of Households—Malaysia, 1967-1968*, by N. S. Choudhry (Kuala Lumpur: Department of Statistics, 1970). For further analysis of unemployment in Malaysia, see the articles in *Readings of Malaysian Economic Development*, ed. David Lim (Kuala Lumpur: Oxford University Press, 1975), part V; and Charles Hirschman, "Unemployment among urban youth in Peninsular Malaysia: A multivariate analysis of individual and structural effects," paper presented to a seminar at the Faculty of Economics and Administration, University of Malaya, Kuala Lumpur, 10 August 1979.
18. See Caldwell, cited in note 2, and Hirschman, cited in note 9.
19. C. A. Vlieland, "The 1947 census of population," *Pacific Affairs* 22 (1947): 59-62.
20. Charles Hirschman, "Political independence and educational opportunity in Peninsular Malaysia," *Sociology of Education* 52 (April 1979):67-83.
21. For more comprehensive analysis of socioeconomic divisions between ethnic communities, see J. P. Arles, "Ethnic and socioeconomic patterns in Malaysia," *International Labour Review* 104 (December 1971):527-554; and Charles Hirschman, *Eth-*

nic and Social Stratification in Peninsular Malaysia (Washington, D.C.: American Sociological Association, 1975).

22. For more detail on the methodological aspects of this index, see Henry S. Shryock and Jacob S. Siegal, *The Methods and Materials of Demography*, volume 1 (Washington, D.C.: US Government Printing Office, 1973), p. 295.

23. Barbara Von Elm and Charles Hirschman, "Age at first marriage in Peninsular Malaysia," *Journal of Marriage and the Family* 41, no. 4 (November 1979):877-891; and Gavin Jones, "Trends in marriage and divorce in Peninsular Malaysia," *Population Studies* 34, no. 2 (July 1980): forthcoming.

24. Hirschman and Fernandez, cited in note 10. For comparable interpretations, see Robert Retherford and Lee Jay Cho, "Comparative analysis of recent fertility trends in East Asia," in *International Population Conference, Liege, 1973*, volume 2 (Liege: International Union for the Scientific Study of Population, 1973), pp. 163-181; and Gavin Jones, "Population growth and fertility change in Peninsular Malaysia since 1957," paper presented at the Research Seminar on Fertility and Family/Population and Development at Penang, Malaysia, 7-10 June 1979.

25. Dorothy Nortman and Ellen Hofstatter, *Population and Family Planning Programs*, 9th edition (New York: The Population Council, 1978), Table 16, p. 55.

26. For more detailed studies of marriage and fertility in Peninsular Malaysia, see J. C. Caldwell, "Fertility decline and female chances of marriage in Malaya," *Population Studies* 17 (July 1963):20-32; Lee Jay Cho, James Palmore, and Lyle Saunders, "Recent fertility trends in West Malaysia," *Demography* 5, no. 2 (1968):732-744; James A. Palmore and Ariffin Marzuki, "Marriage patterns and cumulative fertility in West Malaysia, 1966-67," *Demography* 6 (November 1969):383-401; Saw Swee-Hock, "Patterns of fertility decline in Malaya, 1956-1965," *Kajian Ekonomi Malaysia* (Kuala Lumpur) 3, no. 1 (June 1966):7-14; and Saw Swee-Hock, "Fertility differentials in early postwar Malaysia," *Demography* 4, no. 2 (1967):641-656.

27. Economic Commission for Asia

and the Far East, *Comparative Study of Mortality Trends in ECAFE Countries*, Asian Population Studies Series, no. 14 (Bangkok: United Nations, 1973).

28. Shryock and Siegel, cited in note 22.

29. M. A. El-Badry, "Higher female than male mortality in some countries of South Asia: A digest," *Journal of the American Statistical Association* 64, no. 328 (December 1969):1234-1244.

30. Robert E. Kennedy, *The Irish: Emigration, Marriage, and Fertility* (Berkeley: University of California Press, 1973), chapter 3.

31. From the three postwar censuses, a complete listing of all census towns was compiled, and towns were individually matched across censuses, if possible. A "comparable census towns" data file was then constructed that included adjustments to ensure that towns merged at a later census were added together for earlier censuses. The adjustments were relatively few in number and relied heavily on footnotes in published census reports.

32. In a longer analysis, some of these issues are considered in more detail than is reported here. See Charles Hirschman and Suan-Pow Yeoh, "Ethnic patterns of urbanization in Peninsular Malaysia, 1947-1970," *Southeast Asian Journal of Social Science* (Singapore) 7, no. 1-2 (October 1979).

33. Kernal Singh Sandhu, "Emergency resettlement in Malaya," *Journal of Tropical Geography* 18 (August 1964):157-183; Suresh Narayanan, "Patterns and implications of urban change in Peninsular Malaysia," *Malayan Economic Review* 20, no. 2 (October 1975):55-71; J. C. Caldwell, "Urban growth in Malaya: Trends and implications," *Population Review* 7, no. 1 (January 1963):39-50; and Hamzah Sendut, "Patterns of urbanization in Malaya," *Journal of Tropical Geography* 16 (October 1962):114-130.

34. Kernal Singh Sandhu, cited in note 33.

35. Robin J. Pryor, "The changing settlement systems of West Malaysia," *Journal of Tropical Geography* 37 (December 1973):

53-67; Ooi Jin-Bee, *Peninsular Malaysia*, 2nd edition (New York: Longman, 1976), chapter 6; Saw Swee-Hock, "Patterns of urbanization in West Malaysia, 1911-1970," *Malayan Economic Review* 17, no. 2 (October 1972): 114-120; Suresh Narayanan, cited in note 33; Charles Hirschman, "Recent urbanization trends in Peninsular Malaysia," *Demography* 13, no. 4 (November 1976):455-462.

36. V. V. Bhanoji Rao, cited in note 12, p. 102.

37. Hirschman, cited in note 13.

38. Sam Shapiro, Edward R. Schlesinger, and Robert E. L. Nesbitt, Jr., *Infant, Perinatal, Maternal, and Childhood Mortality in the United States* (Cambridge: Harvard University Press, 1968), p. 6.