

Socio- economic Development and Mortality Patterns and Trends in Malaysia

While the quality of life in Malaysia has improved tremendously with socio-economic development, it could be enhanced further by reducing the relatively high mortality level of certain disadvantaged groups

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Mortality in Peninsular Malaysia has reached a level which is quite similar to that prevailing in the low mortality countries (World Health Organization, 1982: 17). As in countries such as China, Japan, Singapore and Sri

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Lanka, neoplasms and cardiovascular diseases, which previously had been minor causes of death in Malaysia,^{1/} have become important in recent years (World Health Organization, 1982: 20).

However, Malaysia lags behind the industrialized countries in terms of other social indicators, such as the number of physicians and nursing personnel, potable water supply and proper sewerage facilities. For example, in 1982, the number of persons per physician and nurse in Malaysia were, respectively, 7,910 and 940^{2/} compared with 1,150 and 320 for Singapore and 780 and 240 for Japan (World Bank, 1984: 265). In 1980, a potable water supply was available to only about 59 per cent of the population of Malaysia, with a coverage of about 89 per cent in the urban areas and 43 per cent in the rural areas (Fifth Malaysia Plan, 1986: 474). In 1985, the percentage of the population supplied with potable water was about 71 per cent, with a coverage of about 93 and 52 per cent in the urban areas and rural areas, respectively.

In terms of sewerage facilities, about 31 per cent of the population in 1985 were provided with flush toilets connected to septic and run-off tanks and other communal centralized sewerage systems (Fifth Malaysia Plan, 1986: 474). The percentage of the population with pour-flush toilets increased from 30 per cent in 1980 to 39 per cent in 1985, mainly in the rural areas. In 1985, the proportion of the population without modern toilet facilities was about 15 per cent while those without any access to a sewerage disposal system made up 10 per cent of the population.

How did Malaysia arrive at the present level of mortality? The path taken by mortality decline in the process of development in Malaysia has not been fully documented.^{3/} In the initial phase of mortality decline, mortality levels were found to be less dependent on national development strategies partly because of cost-effective medical technologies. However, the process of development seems to offer some explanation for the more recent decline.

The purpose of this article is to systematically document changes in

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1. Malaysia is made up of Peninsular Malaysia (also known as West Malaysia and previously as Malaya) and East Malaysia consisting of Sabah and Sarawak. Data on Peninsular Malaysia are more complete and reliable and hence most studies concentrate on this part of Malaysia. Registration data are found to be very incomplete in Sabah and Sarawak (Leete and Kwok, 1986). Peninsular Malaysia consists of the Federal Territory and 11 States, namely, Perlis, Kedah, Penang, Perak, Selangor, Negri Sembilan, Malacca, Johore, Kelantan, Terengganu and Pahang.
 2. These figures are much higher than the vital statistics figures. However, this does not change the basic picture as presented.
 3. Trends and differentials in mortality in Peninsular Malaysia have been described in a few studies (e.g. Hirschman, 1980; Kwok, 1982; Noor Laily et al., 1983).

mortality levels and differentials in Malaysia over time and to relate these to changes in development indicators and health-related policies. Much of the discussion necessarily focuses on Peninsular Malaysia in view of the lower reliability and availability of data for Sabah and Sarawak. On the other hand, given the lag in the development of the latter two States, their general state of health and mortality level may be deduced from the early experiences of Peninsular Malaysia.

An overview of mortality patterns and trends

The first half of the century saw a substantial decline in the crude death rate (CDR).^{4/} In part this can be traced to developments in tropical medicine, to improved health facilities and to the benefits of economic development arising from wealth realised from tin and rubber. Mortality decline has been less rapid in recent years because of the relatively low level of mortality; hence, linkages to social and economic development are less easily established. To some extent also, the slower decline has been due to the older age structure of the current population.

In Peninsular Malaysia, the early part of the century saw rapid development of the country through the expansion of the rubber and tin industries. These industries were supported largely by immigrant labour, with estates employing Indian labour and the tin mines Chinese labour.

The Malay community remained largely in the rural areas, occupied by such pursuits as fishing and rice cultivation. Mortality was high owing to the prevalence of tropical diseases such as malaria, beriberi, smallpox, cholera, plague and rabies. The staple diet of the Chinese was polished rice, which, because it lacks thiamine, led to the occurrence of beriberi; as for pioneer estate workers, they were exposed to malaria (Institute for Medical Research, 1951; Strahan, 1948; Jones, 1953). Thus, in the early 1920s the CDR was higher for the Chinese and Indians than for the Malays (see **table 1** on the next page).

Remedial measures undertaken by the authorities included the expansion of hospital and health services into the estates, and the setting up of training centres for anti-malaria and hospital workers. These measures, together with a comprehensive malaria -eradication programme, improvements in sanitation laws and increased provision of public utilities and education, resulted in beriberi being eliminated and the incidence of malaria, typhus and smallpox being greatly reduced by the time of the Second World War. These acti-

^{4/} While the limitations of the crude death rate are well known, it is used in this article because it is the only indicator for which extensive data are available.

Table 1: Crude death rates and infant mortality rates in Peninsular Malaysia*

| Year | Crude death rate | | | | Infant mortality rate | | | |
|------|------------------|--------|---------|---------|-----------------------|--------|---------|---------|
| | Total | Malays | Chinese | Indians | Total | Malays | Chinese | Indians |
| 1921 | 28.5 | 25.4 | 26.8 | 37.2 | | | | |
| 1931 | 19.1 | 18.8 | 18.9 | 20.5 | | | | |
| 1940 | 18.6 | 21.8 | 18.8 | 14.4 | | | | |
| 1947 | 19.4 | 24.3 | 14.3 | 15.8 | | | | |
| 1950 | 15.8 | 18.7 | 12.7 | 13.6 | | | | |
| 1960 | 9.6 | 11.2 | 1.8 | 9.0 | 68.86 | 81.36 | 42.45 | 65.11 |
| 1970 | 1.3 | 1.6 | 6.6 | 8.5 | 40.79 | 41.55 | 28.51 | 46.02 |
| 1980 | 5.9 | 5.5 | 5.8 | 7.6 | 24.87 | 27.53 | 17.11 | 30.33 |
| 1984 | 5.6 | 5.3 | 5.5 | 7.3 | 18.10 | 20.40 | 11.68 | 18.81 |

* *Note:* Data prior to 1947 were for the Federated Malay States, i.e. Perak, Selangor, Negri Sembilan and Pahang, four of the eleven states in Peninsular Malaysia). As such, they are not directly comparable with figures from 1947 for Peninsular Malaysia. Earlier figures also probably suffer from a higher incidence of under-reporting than later figures. However, these figures are presented to ascertain general trends.

Source: Data provided by the Department of Statistics, Kuala Lumpur, Malaysia.

vities, however, had a minimal effect on the rural population. A few travelling dispensaries were available to people in the rural areas, but they were still largely dependent on traditional systems of medical care (Chen, 1981: 5). As such, substantial declines in the CDR were effected by 1940 for the Chinese and Indian population, but not for the Malays.

The Second World War saw a breakdown in many of the medical facilities and the subsequent return of malaria. Malnutrition and cholera were also problems, especially in the rural areas and estates. By 1947, with the decline in importance of other diseases, tuberculosis became a more important cause of death.

The history of public health in Sabah and Sarawak is somewhat similar to that of Peninsular Malaysia. Organised medical care was introduced in Sabah in 1882 soon after the formation of the Chartered Company in 1881 (Virdi and Chan, 1981). The first dispensary was built in 1914, and by 1923, there were nine hospitals, which were confined to the main commercial centres. Travelling dispensary facilities were gradually introduced to cover as

much of Sabah as possible. At this time, both malaria and beriberi were important causes of death.

Conditions in Sabah improved greatly with the implementation of laws governing the provision of facilities on the estates. For example, in 1922, the CDR on the estates was 26.5 per thousand and that for the whole territory was 19.4. By 1940, the rate was 4.4 per thousand on the estates and 20.4 for the whole territory (Virdi and Chan, 1981: 367). Some diseases, such as yaws and beriberi, reappeared during the War, but were subsequently brought under control. The medical department was reorganised and medical facilities extended to a wide segment of the population. The CDR fell from 13.3 per thousand in 1948 to 5.7 in 1963.

Unlike in Sabah, the development of health facilities in Sarawak took place later. In 1949, there were only two government hospitals and 23 rural dispensaries. Medical facilities were extended to the rural population through travelling dispensaries; by 1953, there were 16 of these. Malaria was the most important cause of death until a major malaria-eradication scheme reduced its intensity in 1959 (Jackson, 1968: 190-195).

Thus, for all three regions, Peninsular Malaysia, Sabah and Sarawak, post-war development and independence^{5/} saw a continued decline in the CDR and infant mortality rate. This was a result of improved medical services both in terms of physical facilities and personnel, particularly in the rural areas, and considerable social and economic changes (table 2 on the next page). Per capita gross domestic product (GDP) grew by an average of 7.7 per cent per annum from 1970 to 1982 and stood at \$US1,862 in 1982 (World Bank, 1984: 219-221). In 1985, the per capita income was \$US2,113 (Economic Report 1985/86, table 1.2). Besides the spread of modern medical services, major improvements have been made in terms of transportation and communications, and progress made in social development. For example, about three quarters of contemporary women (aged 15-19 years in 1980) attended secondary school, whereas a generation previously (those aged 35-39 years in 1980) only 15 per cent of women were able to attend secondary school (1980 Population Census 2: 508-511).

In post-independence Peninsular Malaysia, there was also a shift in emphasis from the provision of health facilities in the urban areas and estates to other rural areas. Rural health services involved the setting up of one rural health unit for every 50,000 of the rural population. The units would provide basic health services including maternal and child health, environmental

^{5/} Peninsular Malaysia became independent in 1957. Sabah and Sarawak became independent as part of Malaysia in 1963.

Table 2: Some socio-economic and demographic indicators, Peninsular Malaysia, 1957-1980

| | 1957 | 1970 | 1980 |
|---|------|-------|-------|
| Percentage of females with secondary and tertiary education | 3.5 | 10.8 | 23.3 |
| Percentage urban population | 26.7 | 28.8 | 37.5 |
| Percentage of living quarters with | | | |
| • Piped water: Total | n.a. | 48.0 | 68.0 |
| Rural | n.a. | 37.0 | 59.0 |
| Urban | n.a. | 81.0 | 86.0 |
| • Electricity: Total | n.a. | 44.0 | 68.0 |
| Rural | n.a. | 31.0 | 58.0 |
| Urban | n.a. | 83.0 | 88.0 |
| • Flush/pour-flush toilets: | | | |
| Total | n.a. | 18.0 | 60.0 |
| Rural | n.a. | 11.0 | 54.0 |
| Urban | n.a. | 42.0 | 72.0 |
| GDP per capita | n.a. | 1 167 | 3 344 |
| Physician-population ratio* | 0.14 | 0.27 | 0.28 |
| Crude death rate | 12.4 | 7.0 | 5.6 |
| Infant mortality rate | 75.5 | 40.8 | 24.0 |
| Maternal mortality rate | 2.8 | 1.5 | 0.6 |
| Expectation of life at birth: Male | 55.8 | 62.2 | 66.7 |
| Female | 58.2 | 66.5 | 71.6 |
| Median household income (\$M per month) | n.a. | 166 | 263 |

* Note: per 1,000 population.

Sources: 1957, 1970 and 1980 Population Census; 1980 General Report Housing Census, Vol. 1; Fourth Malaysia Plan; Third Malaysia Plan.

sanitation, curative medicine, the control of communicable diseases, dental care and health education (Chen, 1981: 7). In the estates and mines, the provision of medical care remained the responsibility of the companies that owned them. As a result, medical facilities in the estates deteriorated and were reported to be generally of very poor quality (Ministry of Health, Annual Report 1981: 280). This development in medical care would probably be reflected in the CDR for the ethnic groups during that period (table 1). The greatest decline was registered among the Malays (recall that the Malay population at the time of independence comprised people mostly from the rural areas); the least decline, among the Indians, who generally remained in the

Table 3: Expectation of life at birth (e⁰) for Peninsular Malaysia by sex and ethnic group, 1957-1979

| Year | Total* | | Malays | | Chinese | | Indians | |
|-------------------------------|--------|--------|--------|--------|---------|--------|---------|--------|
| | Male | Female | Male | Female | Male | Female | Male | Female |
| 1957 | 55.8 | 58.2 | 50.2 | 53.7 | 59.5 | 66.7 | 57.1 | 54.6 |
| 1967 | 63.5 | 66.3 | 61.7 | 63.0 | 66.6 | 71.9 | 62.2 | 62.1 |
| 1970 | 63.5 | 68.2 | 63.7 | 65.5 | 65.1 | 73.4 | 60.2 | 63.9 |
| 1975 | 65.4 | 70.8 | 66.1 | 69.0 | 66.7 | 74.8 | 60.7 | 65.1 |
| 1979 | 67.2 | 72.5 | 67.9 | 71.0 | 68.1 | 75.8 | 63.2 | 68.0 |
| Number of years gained | | | | | | | | |
| 1957-1967 | 7.7 | 8.1 | 11.5 | 9.6 | 7.1 | 5.2 | 5.1 | 7.5 |
| 1967-1977 | 2.6 | 5.1 | 5.1 | 6.8 | 0.7 | 3.3 | 0.3 | 4.8 |
| 1969-1979 | 3.4 | 5.8 | 5.5 | 7.2 | 1.5 | 3.8 | 1.6 | 6.8 |
| 1957-1979 | 11.4 | 14.3 | 17.7 | 16.6 | 8.6 | 9.1 | 6.1 | 13.4 |

* Note: Includes "Others".

Source: Selected years taken from Noor Laily et al. (1983, p. 2).

estates. The Malays were subsequently also affected by the Government's efforts to raise their living standard under the New Economic Policy^{6/}

The same trends are seen in figures for expectation of life at birth (table 3). The gain in life expectancy over the period was greatest for the Malay – the most significant period being 1957-1967, which saw the introduction of oral health programmes. The period 1957-1967 also saw the greatest gains within each ethnic group. When comparing groups, however, the use of expectation of life at birth has serious limitations and may result in wrong or different conclusions (cf. Pollard, 1982: 547). In view of this, age-specific death rates are also used for analysis.

^{6/} The New Economic Policy was introduced in 1970 to promote national unity through the strategy of (a) eradicating poverty by raising income levels and increasing employment opportunities of all Malaysians, and (b) accelerating the process of restructuring the society to correct economic imbalances so as to reduce and eventually eliminate the identification of race with economic function (Mid-term Review of Second Malaysia Plan).

Appendix 1: Age-specific death rates (Mx) by sex and ethnic group for Peninsular Malaysia: Average for 1967-1969

| Age | Male | | | | Female | | | |
|-------|---------------------|---------|----------|---------|---------------------|---------|----------|---------|
| | Peninsular Malaysia | Malays | Chinese | Indians | Peninsular Malaysia | Malays | Chinese | Indians |
| 0 | .050350 | .058388 | .035136 | .059429 | .039736 | .045646 | .026538 | .052073 |
| 1 | .005285 | .007098 | .002650 | .005088 | .005165 | .006911 | .002354 | .005682 |
| 5 | .001752 | .002429 | .000887 | .001536 | .001689 | .002346 | .0007517 | .001722 |
| 10 | .001115 | .001367 | .000824 | .001023 | .000932 | .001226 | .000531 | .000940 |
| 15 | .001404 | .001598 | .001165 | .001457 | .001190 | .001489 | .000716 | .001579 |
| 20 | .001912 | .001870 | .001901 | .002015 | .001810 | .002401 | .000920 | .002644 |
| 25 | .001963 | .001994 | .001882 | .002041 | .001938 | .002433 | .001176 | .002824 |
| 30 | .002723 | .003045 | .002276 | .003026 | .002859 | .003844 | .001529 | .003383 |
| 35 | .003552 | .003552 | .003108 | .004726 | .003417 | .004172 | .002165 | .004145 |
| 40 | .005546 | .005721 | .004917 | .006268 | .004458 | .005116 | .003304 | .005108 |
| 45 | .008156 | .008482 | .007240 | .008848 | .006689 | .007556 | .004522 | .009908 |
| 50 | .012410 | .012644 | .011632 | .013702 | .009086 | .010998 | .006239 | .012635 |
| 55 | .018359 | .019450 | .0164087 | .021436 | .013903 | .017025 | .009027 | .022362 |
| 60 | .028347 | .031062 | .026354 | .028483 | .022054 | .028311 | .014428 | .038923 |
| 65 | .041412 | .041529 | .040633 | .046199 | .031477 | .038486 | .023085 | .051856 |
| 70 | .049237 | .042884 | .052648 | .064747 | .034824 | .037497 | .030027 | .074859 |
| 75+ * | .126756 | .135570 | .112894 | .136793 | .124298 | .134324 | .113647 | .136536 |

* Note: The age-specific death rates (M_{75+}) for this oldest, open-ended age group are estimated by dividing d_{75+} by T_{75} in the respective life tables.

Source: Noor Laily et al. (1983, p. 54).

**Appendix 2: Age-specific death rates (Mx) by sex and ethnic group for
Peninsular Malaysia: Average for 1977-1 979**

| Age | Male | | | | Female | | | |
|------|------------------------|---------|---------|---------|------------------------|---------|---------|---------|
| | Peninsular Malaysia | Malays | Chinese | Indians | Peninsular Malaysia | Malays | Chinese | Indians |
| 0 | .03152 | .037059 | .021254 | .031877 | .024439 | .028006 | .015813 | .030262 |
| 1 | .002511 | .003252 | .001193 | .002559 | .002462 | .003160 | .001114 | .002772 |
| 5 | .001030 | .001288 | .000624 | .001016 | .000850 | .001097 | .000429 | .000863 |
| 10 | .000769 | .000828 | .000647 | .000873 | .000560 | .000667 | .000357 | .000642 |
| 15 | .001135 | .001043 | .001198 | .001369 | .000746 | .000767 | .000516 | .001363 |
| 20 | .001607 | .001500 | .001576 | .002168 | .000993 | .001111 | .000656 | .001492 |
| 25 | .001778 | .001716 | .001685 | .002394 | .001122 | .001306 | .000758 | .001493 |
| 30 | .002094 | .002061 | .001837 | .002909 | .001582 | .001945 | .001045 | .001822 |
| 35 | .002838 | .002642 | .002639 | .004897 | .002126 | .002543 | .001451 | .002538 |
| 40 | .004367 | .004255 | .003670 | .007583 | .003050 | .003476 | .002092 | .004356 |
| 45 | .007137 | .006819 | .006482 | .010402 | .004521 | .004994 | .003429 | .005917 |
| 50 | .011419 | .010608 | .010634 | .016967 | .006965 | .007480 | .005381 | .009691 |
| 55 | .018680 | .017935 | .017303 | .024331 | .012404 | .013588 | .009122 | .017871 |
| 60 | .027446 | .026165 | .026629 | .034283 | .018292 | .020679 | .013591 | .027826 |
| 65 | .046862 | .046568 | .044881 | .055409 | .033134 | .040264 | .023884 | .048354 |
| 70 | .060676 | .053643 | .065493 | .069447 | .042549 | .046390 | .036959 | .060474 |
| 75 | .100964 | .081914 | .120175 | .139050 | .082038 | .079566 | .082893 | .097208 |
| 80 + | | | | | | | | |

Source: Noor Laily et al. (1983, p. 55).

A comparison of age-specific death rates by sex and ethnic groups ([appendices 1 and 2](#)) sheds more light on the matter. The figures indicate that for all ethnic groups, the most remarkable gains were in the ages 0-5 years for both sexes and in a large portion of those in the reproductive years (15 - 49) for females (Noor Laily et al., 1983: 48). During the period 1977-1979, in virtually all ages of each ethnic group, male mortality was higher than female mortality ([appendix 2](#)), a pattern consistent with improved maternal and ante-natal care and the availability of child health facilities. The establishment of the National Family Planning Programme as a national policy in 1966 to encourage family planning and the spacing of children for better health and welfare of mothers and children also probably made an important contribution. The maternal mortality rate for all three ethnic groups fell sharply during the period 1970-1971. The introduction of the Applied Food and Nutritional Project, which was launched in 1969 together with the Supplementary Feeding Programme for primary school children, contributed to the improvement of the health status of this group. Mothers may also have benefited from not having to care for malnourished and frequently ill children. In contrast to the Malays and Chinese, the risk of mortality among Indian males in the adult age groups increased during the 1977-1979 period. The deteriorating health services in the estates may be partially responsible, because quite a large number of Indians still live on the estates. However, further investigations are necessary to examine whether this may also be due to poor working conditions, since occupational health and safety of workers on estates are factors seldom seriously taken into consideration.

The improvements in the provision of health-care, especially maternal and child health care, are reflected particularly in the declines in the infant mortality rate ([table 1](#)). They are also reflected in the changes in the principal causes of death. In the early 1970s, the principal cause of death in government hospitals was diseases of early infancy (19.3 per cent in 1971). By 1981, heart diseases (17 per cent) became a more important cause of death than diseases of early infancy (13.9 per cent) (Ministry of Health, Annual Report 1981: 283). The changes in infant mortality and its two components, neonatal and post-neonatal mortality,^{7/} contributed greatly towards the reduction in overall mortality levels and, therefore, deserve closer examination.

Infant mortality

During the period 1957-1984, for which vital registration data are available, the infant mortality rate and its two components, the neonatal and post-

^{7/} Neonatal deaths are those that occur within one week of birth while post-neonatal deaths include those occurring between one and four weeks of birth.

neonatal rates, registered substantial declines for all the three ethnic groups (table 4). The median values for the years noted in table 4 show that infant mortality rates fell by 68-76 per cent, neonatal rates by 52-59 per cent and post-neonatal rates by 78-86 per cent. The largest decline in neonatal rates was registered among the Malays, while the declines in post-neonatal rates for Malays and Chinese were similar and substantially larger than those for Indians. For all three ethnic groups, post-neonatal mortality levels fell faster than the neonatal mortality levels; by the early 1980s, the former were 32-65 per cent of the neonatal rates.

These changes affected relative ethnic differentials in neonatal and post-neonatal rates. Relative differentials between the Indians and Malays in both neonatal and post-neonatal rates narrowed considerably, and by the early 1980s the rates for Malays and Indians were at similar levels. The Chinese-Malay differentials were reduced only in respect of neonatal rates. By the

Table 4: Median values of infant, neonatal and post-neonatal mortality rates by ethnic group, Peninsular Malaysia, 1957-1984

| | Neonatal | | | Post-neonatal | | |
|-----------|------------------|---------|---------|---------------|---------|---------|
| | Malays | Chinese | Indians | Malays | Chinese | Indians |
| 1957-1959 | 34.6 | 22.2 | 30.6 | 61.0 | 24.7 | 40.9 |
| 1960-1964 | 34.3 | 21.1 | 30.1 | 29.0 | 14.2 | 23.4 |
| 1965-1969 | 25.8 | 20.0 | 28.3 | 27.5 | 10.9 | 24.5 |
| 1970-1974 | 24.2 | 19.5 | 26.8 | 18.8 | 7.9 | 18.4 |
| 1975-1979 | 19.8 | 15.6 | 21.4 | 14.6 | 5.6 | 15.2 |
| 1980-1984 | 14.2 | 10.7 | 13.9 | 9.2 | 3.4 | 9.2 |
| | Infant mortality | | | | | |
| | Malays | Chinese | Indians | | | |
| 1957-1959 | 95.6 | 46.9 | 71.5 | | | |
| 1960-1964 | 73.3 | 35.3 | 53.5 | | | |
| 1965-1969 | 53.3 | 30.9 | 52.8 | | | |
| 1970-1974 | 43.0 | 27.4 | 45.2 | | | |
| 1975-1979 | 34.4 | 21.2 | 36.6 | | | |
| 1980-1984 | 23.4 | 14.1 | 23.1 | | | |

Source: Various issues of Vital Statistics and Report of the Registrar-General on Population, Births, Deaths, Marriages and Adoptions.

late 1970s and early 1980s, the neonatal rates for the Chinese were 75-80 per cent of the rates for Malays and in terms of post-neonatal mortality, the rates for the Chinese remained at about 36-40 per cent of the rates for Malays throughout the period under review. The narrowing of the Malay-Chinese differentials in neonatal and post-neonatal rates was partly a reflection of the slower decline in the rates for the Chinese, which were at relatively low levels.

The discussion of some of the factors associated with the changes in ethnic differentials in neonatal and post-neonatal mortality follows three basic notions. Firstly, the general experience has been that while exogenous changes, such as large-scale public, social and health intervention programmes, contribute to the general decline in mortality levels, differentials will persist if the capacities of families, in particular of poorer groups, to control their own environment, are not improved. Secondly, the factors over which families can exercise some control may usefully be classified into socio-economic factors and proximate factors^{8/} (Mosley and Chen, 1984). The socio-economic factors operate through the more basic proximate factors which, in turn, influence the risk of disease and mortality. Thirdly, differentials in social and economic factors are more closely associated with differentials in post-neonatal than in neonatal mortality. Differentials in post-neonatal mortality, which are closely associated with the risks of infection and malnutrition, are most sensitive to improvements in general health conditions. As infant mortality declines, deaths are increasingly concentrated in the neonatal period, particularly the early weeks of life, because of prematurity, birth injury and congenital malformation. Although improvements in social and economic conditions are also conducive to a reduction in neonatal deaths, those improvements are not sufficient by themselves; obstetric and paediatric care and the provision of institutional facilities through the public health system are also required.

The process of socio-economic development in Malaysia over the last 28 years has resulted in changes in several of the factors mentioned. The development and spread of the rural health service since 1957 was a major factor associated with the sharp decline in the neonatal and post-neonatal mortality rates for Malays. The lower birth-weight and shorter pregnancy intervals among the Indians may also be responsible for the higher neonatal rates for Indians (DaVanzo *et al.*, 1983; DaVanzo and Haaga, 1982). The data on average birth-weights from 1977 to 1984 show that Indian babies weighed, on average, 5-6 per cent less than Malay or Chinese babies (**table 5**). The lower

^{8/} The proximate factors may be grouped into the following categories: (a) maternal factors, (b) environmental contamination, (c) nutrient deficiency, (d) injury and (e) personal illness control.

Table 5: Birth-weight (in kg) by ethnic group, Peninsular Malaysia, 1977-1984

| Year | Malays | Chinese | Indians |
|-------------|---------------|----------------|----------------|
| 1977 | 3.10 | 3.10 | 2.90 |
| 1978 | 3.10 | 3.12 | 2.93 |
| 1979 | 3.10 | 3.12 | 2.93 |
| 1980 | 3.10 | 3.12 | 2.93 |
| 1981 | 3.10 | 3.13 | 2.93 |
| 1982 | 3.10 | 3.15 | 2.94 |
| 1983 | 3.10 | 3.15 | 2.94 |
| 1984 | 3.12 | 3.17 | 2.97 |

Source: Vital Statistics, various issues.

average for Indians reflects the higher proportion of Indian births with very low birth-weight (below 2.5 kg). However, it must be pointed out that the results should be treated with caution as only about 57 per cent of births are reported with birth-weight information (Vital Statistics, various issues). Short intervals have been found to be associated with higher neonatal mortality through (a) gestational prematurity, which is related to low birth-weight, or (b) nutritional deficiency of the mother, or (c) competition for the mother's attention of a previous young and surviving infant.

The decline in employment in the agricultural sector during the period 1962-1967, where the majority of rural Indians are employed, could also have affected the neonatal and post-neonatal rates for Indians. It was estimated that some 54,000 workers were displaced from this sector (Second Malaysia Plan, 1971).

Other socio-economic factors are also associated with the decline in infant mortality over the past 28 years. It is not possible to quantify all these factors, but information is available on the distribution of some of them (table 6). These variables are frequently taken as determinants of the level of infant mortality, since they reflect differences in (a) the mothers' choices and skills in health care practices, (b) socio-economic status and condition, and (c) control over the environment.

With the exception of female educational attainment, there are obvious ethnic differences in the other variables. A relatively smaller proportion of

Table 6: Percentage distribution within ethnic group of selected socio-economic variables, 1980, and median household income, 1979: Peninsular Malaysia

| | Malays | Chinese | Indians |
|---|--------|---------|---------|
| Per cent of females with secondary and tertiary education | 24.1 | 25.6 | 24.6 |
| Per cent urban population | 25.2 | 56.1 | 41.0 |
| Per cent living quarters with: | | | |
| • Piped water | 56.8 | 86.0 | 86.0 |
| • Electricity | 57.0 | 90.5 | 75.2 |
| • Flush/pour-flush toilets | 57.6 | 64.8 | 60.6 |
| Median household income (\$M per month) | 327 | 620 | 521 |

Source: Unpublished tabulations, 1980 Population and Housing Census; Mid-term Review of Fourth Malaysia Plan, 1984, p. 94.

the Malays live in urban areas and as a result they have limited access to piped water, electricity and proper toilets. Partly as a consequence of this concentration in the rural sector, the median household income^{9/} of Malays is about half that of the Chinese and 40 per cent that of the Indians. The higher socio-economic status of the Chinese may partly explain the relatively lower infant mortality level among the Chinese, but this same explanation cannot be used for the Indians, since, by the 1980s, their infant mortality rates were similar to those of the Malays. This implies that the influence of socio-economic factors on infant mortality differentials may be mediated by more proximate factors, such as differences in behavioural patterns and cultural practices of families, in particular, their choices and skills in health-care practices.

It is clear that mortality patterns and trends in Malaysia generally are related to economic development and improvement in health facilities and are characterized by ethnic differentials. Further evidence for this can be seen in a comparison of perinatal mortality rates^{10/} across States in Peninsular

^{9/} The manner in which income is measured is not stated; it is assumed that income in kind is imputed. As such, these figures do not indicate real differences as a large proportion of the Malays still live in rural areas where the cost of living is low, and non-Malays, particularly the Chinese, live mainly in urban areas.

^{10/} Perinatal mortality is defined according to the World Health Organization (WHO, 1972) as deaths of fetuses or infants weighing 1,000 grams or more, or, where birth-weight is unavailable, the corresponding gestational age (28 weeks), or body length (25 cm crown to heel). In general terms, these are still-births beyond 28 weeks of pregnancy plus first-week neonatal deaths.

Malaysia and in a study of pregnancy wastage (which includes still-births, spontaneous and induced abortions). High mortality levels are found in States with low levels of development. For example, in 1982, high perinatal mortality was found in States with a low physician-population ratio and a high incidence of poverty (table 7). These included States such as Perlis, Pahang, Kedah, Kelantan and Terengganu. These poorer States are more rural in character, with the majority of the population engaged in primary industries, i.e. in agriculture, forestry, mining and quarrying, and fishing. Access to basic services, such as piped water, electricity and flush/pour-flush toilets, is also lower in those States.^{11/}

Pregnancy wastage was found to be highest among Indians (12 per cent) followed by the Chinese (10 per cent) and lastly the Malays (8 per cent) (Tey, 1985). The low Malay rate was largely a result of their low rate of induced abortion (0.6 per cent), compared with the Chinese (3.4 per cent) and Indians (2.7 per cent).

Summary and conclusion

Malaysia has a fairly low mortality level. However, in terms of social indicators, such as the provision of medical personnel and amenities including potable water supply and sanitation, it lags behind some other countries.

Mortality trends indicate a decline for all ethnic groups and in all regions of Malaysia. However, these declines have not been similar for all sub-groups of the population in all periods. For example, before independence in 1957, there were substantial declines in the CDR for the Chinese and Indians but not for the Malays in Peninsular Malaysia. This was largely a result of the lack of medical and health care facilities in the rural areas, where most of the Malays lived. However, a much larger decline in the Malay CDR was achieved in the post-independence period, largely as a result of improved rural health services, and social and economic conditions. The improvement in health status for Sabah and Sarawak started much later than in Peninsular Malaysia; rural health services in these two States showed substantial improvements only after they joined Malaysia in 1963.

The infant mortality rate and its two components, the neonatal and post-neonatal rates, declined substantially for all ethnic groups in Peninsular Malaysia. As a result, absolute ethnic differentials as a whole were greatly reduced, and both absolute and relative Malay-Indian differentials were almost eliminated.

^{11/} A study by Tey and Noor Laily (1984), using district level data for 1982, showed that socio-economic factors, sanitation, piped water supply, utilization of health facilities and services, and family size were significant in explaining the differentials in mortality level.

Table 7: Selected reproductive and socio-economic indicators by State, 1982 (with rank order in parentheses)

| Region | State | Perinatal mortality (per 1,000 births) | Low birth-weight (per cent) | % of live- births with known weights | Registered physicians per 10,000 population* | Incidence of poverty* |
|---------------------|-------------------|---|--------------------------------|--|--|--------------------------|
| Central | Federal Territory | 24.7 (5) | 9.1 (2) | 90 | 11.5 (1) | 14.0 (1) |
| | Selangor | 14.6 (1) | 10.4 (3) | 53 | 2.1 (4) | 24.2 (2) |
| | Malacca | 20.4 (2) | 8.0 (1) | 29 | 2.7 (3) | 35.9 (6) |
| | Negri Sembilan | 25.8 (6) | 11.0 (7) | 90 | 2.7 (3) | 31.4 (4) |
| South | Johore | 21.7 (3) | 9.1 (2) | 69 | 2.0 (5) | 33.2 (5) |
| North | Penang | 24.5 (4) | 9.1 (2) | 17 | 3.6 (2) | 30.9 (3) |
| | Perlis | 27.0 (9) | 10.6 (4) | 64 | 1.6 (7) | 50.0 (9) |
| | Perak | 26.5 (7) | 10.6 (4) | 74 | 2.7 (3) | 43.1 (8) |
| | Kedah | 28.6 (11) | 11.2 (8) | 40 | 1.4 (8) | 55.4 (12) |
| East | Pahang | 26.8 (8) | 10.7 (5) | 47 | 1.7 (6) | 42.6 (7) |
| | Kelantan | 27.7 (10) | 10.8 (6) | 26 | 0.9 (10) | 50.0 (10) |
| | Terengganu | 29.2 (12) | 11.2 (8) | 32 | 1.3 (9) | 51.2 (11) |
| Peninsular Malaysia | 24.6 | 10.0 | 60 | 2.6 | 38.5 | |

Notes: Perinatal mortality for Federal Territory and Selangor combined = 20.3 per 1,000 births.

% low birth-weight = $\frac{\text{No. of live births (2,500g)}}{\text{No. of live births with known weights}} \times 100$ (i.e. excludes births where birth-weight is not available)

% incidence of poverty - % of households below poverty line

* Mid-term Review of the Fourth Malaysia Plan, 1984.

Perinatal mortality rate: Perinatal deaths per 1,000 births (live births and still-births)

Source: 1982 Vital Statistics.

Several factors contributed to these changes. Among them were the rural health service and the Government's efforts to raise the living standard of the Malays under the New Economic Policy. Although the lower infant mortality of the Chinese can be explained by their advantageous socio-economic position, the same reason cannot explain the lower decline in infant mortality levels of the Indians.

The observed decline in mortality levels in the past 28 years indicates that the quality of life in Malaysia has improved tremendously with socio-economic development. However, much still needs to be done to narrow, if not to eliminate, the existing mortality differentials of different groups in the country. Indeed, the quality of life of the general population can be further enhanced by reducing the high mortality level of disadvantaged groups.

For example, it is clear that the development and the spread of the rural health service since 1957 has contributed substantially to the decline in the mortality levels of Malays, but a further decline can be effected only through the spread of the service to pockets of less accessible families, which currently are not in the mainstream of development. Moreover, it has been noticed that exogenous changes in the control of the environment through large-scale public health intervention programmes alone can succeed only to a certain extent. Mortality differentials tend to persist if the capacities of poorer families to control their own environment are not improved through socio-economic development. However, socio-economic development that improves the socio-economic status of families takes time and is expensive, unless cheaper alternatives are found.

This article has also highlighted the importance of birth-weight data in the study of infant mortality. Currently, the coverage of these data is less than satisfactory and improvements made to their coverage are necessary if they are to be useful for mortality research. The vital registration data in Sabah and Sarawak would also have to be greatly improved in coverage and reliability to be of use for such research.

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On the Move: Migration, Urbanization and Development in Papua New Guinea

*Many people in urban and rural Papua New Guinea have
yet to benefit from the country's
recent independence*

By A. Crosbie Walsh*

Papua New Guinea has seen incredibly rapid social change^{1/} Most of the country's coastal population, however, have had a longer period of time in which to adjust to the "modern" world than many people in the highlands whose existence was unknown to the outside world until the late 1930s. Ex-

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Figure 1: Regions, provinces and towns with populations over 3,000 in 1980

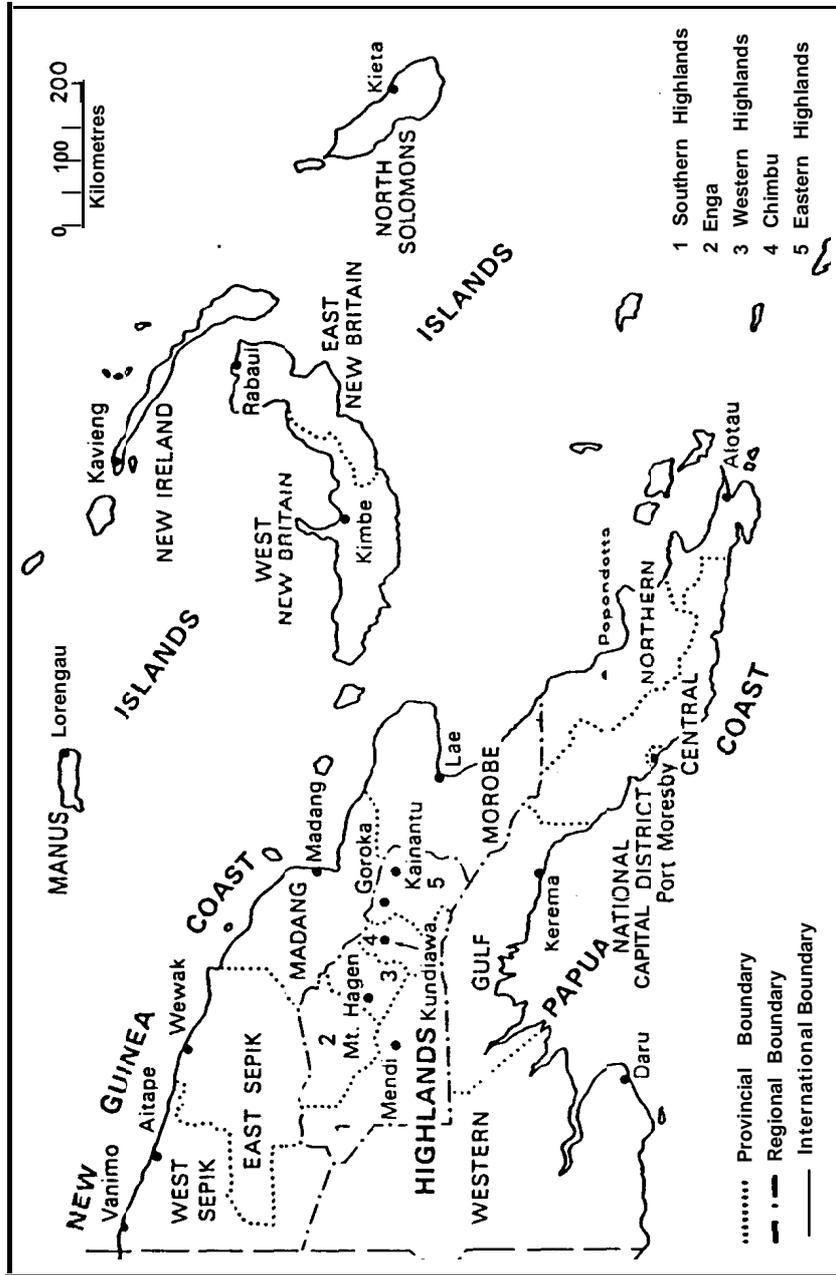


Table 1: Some regional indicators, 1980 Census^{a/}

| | Papua coast | Highlands | New Guinea coast | Islands | Papua New Guinea |
|--|--------------------|-----------|------------------------|---------|------------------------|
| Population (%) | 19.3 | 37.5 | 28.5 | 14.7 | 100.0 |
| Area (%) | 43.3 | 13.5 | 30.8 | 12.4 | 100.0 |
| Density (km ²) | 2.9 | 17.9 | 6.0 | 7.6 | 6.4 |
| Population change (1971-1980) | 2.1 | 2.0 | 2.5 | 2.7 | 2.2 |
| Urban (%) | 25.1 ^{b/} | 4.6 | 13.9 | 11.8 | 12.3 |
| Largest town (1,000) | 123.6 | 18.5 | 61.6 | 20.5 | |
| No. of towns over 10,000 | 1 | 2 | 3 | 2 | 8 |
| Rural non-village (%) ^{d/} | 5.5 ^{c/} | 4.5 | 4.1 | 13.1 | 5.8 |
| Wages/Econ. Active (%) ^{e/} | 14.7 ^{c/} | 5.6 | 8.1 | 17.1 | 9.7 |
| Distribution of wages (%) | 28.8 | 22.2 | 23.5 | 25.5 | 100.0 |
| No schooling (%) ^{f/} | 69.3 | 93.2 | 84.8 | 63.4 | 81.8 |
| School population: females (%) ^{g/} | 41.9 | 36.7 | 37.7 | 45.0 | 40.5 |
| Migrants (%) ^{h/} | 12.6 | 8.0 | 8.4 | 8.9 | 9.1 |

- Notes:**
- a/** All indices (except Nos. 6 and 7) concern the citizen population only.
 - b/** Only 6.9 per cent excluding National Capital District.
 - c/** Only 7.4 per cent excluding National Capital District.
 - d/** Mainly plantations, missions, work camps and the like.
 - e/** Wage earners of the economically active population aged 10 years and over, excluding students, houseworkers and those too old, too young or too handicapped to work.
 - f/** Mean of provincial percentages, "not at school" population.
 - g/** Mean of provincial percentages, "at school" population.
 - h/** People not living in their province of birth; many migrated within the same regions.

Source: Walsh (1985).

tensive areas of the highlands were connected to the rest of the country by road less than two decades ago.

Papua New Guinea is a country of vast physical and human contrasts. Extensive swamps, impenetrable bush-tangled rocky terrain and high mountains have until recently been most effective barriers to human settlement and communication. Malaria and other tropical diseases have kept most coastal populations low; in the more densely populated highlands, settlement has been restricted to the valley floors. Traditionally, people lived in small clan groups. Complex trade networks existed in some areas but there was generally limited contact, other than in warfare, with other groups. Physical and social isolation has produced a situation where some 700 distinct languages are spoken by fewer than three million people.

Developed country contact^{2/} and post-independence developments have acted to reduce isolation and bring about the reduction of some contrasts of a traditional nature, but they have also created new contrasts and inequalities, especially in relation to access to the money economy. Something of these contrasts, which originate in physical geography and in the imprint of traditional and modern technology and social organization upon local environments, can be seen at a regional level (**table 1**).

Much of the Papua coastal region (**figure 1**) comprises mangrove and forest swamp, rough hill country and extensive areas of savanna. Population densities are low and, if Port Moresby (the National Capital District) is excluded, the level of urbanization and wage employment is low. Longer “contact” has produced higher general levels of schooling, and more schooling for girls. Out-migration from provinces close to Port Moresby has been relatively high. The highlands region contains over one third of the country’s population at locally high density levels; it was the last region to be “contacted” and it is currently the least urbanized. Proportionately fewer of its people are educated or in wage employment. Until recently, out-migration mainly involved single males on labour contracts who worked in coastal and island copra plantations. Today, much migration is to towns and coffee plantations within the highlands and to urban destinations elsewhere.

The New Guinea coastal region comprises distinct pockets of modern economic activity (it contains three of the country’s larger towns) surrounded by extensive areas of subsistence and semi-subsistence agriculture. Coastal areas and provinces to the east provide more wage earning opportunities than inland areas and the Sepik provinces to the west. Migration has been mainly to the port towns of Lae and Madang, the mining towns of Wau and Bulolo and to plantations in the islands region. Migration to plantations was most evident from the Sepiks. The islands region was the earliest area contacted by Europeans. Christian missionaries, traders, “blackbirders,” land- and labour-hungry plantation owners, German, Australian and Japanese administrators, and Chinese settlers have all left their mark. Today, plantations have been overshadowed by a palm oil resettlement scheme (West New Britain) and copper mining (North Solomons) as a source of employment. The islands region has higher levels of schooling (especially for girls) and wage employment than other regions, and all but small, isolated Manus were provinces of net migration gain.

The 1980 and earlier censuses

Given the physical and human complexity of Papua New Guinea, the overall low level of literacy and the shortage of suitable manpower, it should be no surprise to learn that the 1980 census was the first to attempt a total

coverage of population. Earlier censuses (1966, 1971) were based on a complete coverage of the population in the urban and rural non-village sectors and a 10 per cent sample of the population in the rural village sector. In 1980, two types of census schedules were used: in the rural villages, a short form asking basic questions, and in urban areas and rural non-villages, a long form asking expanded questions on fertility, employment and migration.

The census showed a citizen population of 2,978,057, which indicated an annual intercensal growth rate of 2.2 per cent (1971-1980). Provincial increases ranged from 0.7 to 4.2 per cent, mainly as a result of differing migration rates. The National Capital District's annual intercensal growth rate was 7.8 per cent. Assuming a continuation of these growth rates, the population of Papua New Guinea will double within 30 years; the population of the National Capital District, within nine years; and all provinces, within 100 years. Given the youthfulness of the population (43 per cent aged under 15 years; less than 4 per cent aged 60 years or more), continuing improvements in health, particularly that of women and children, and the general absence of family planning practices, future growth rates could far exceed those indicated.

Barely 35 per cent of the economically active population (aged 10 years and over, excluding students, houseworkers and those too old or too young to work or the handicapped) earned money, and only 10 per cent earned money from wage or salaried employment. Women comprised about 13 per cent of wage and salaried workers. Other money-earning came from "business" (an assortment of mainly small-scale activities) (3 per cent) and "farming and fishing for food and money" (23 per cent). If these largely "informal" money-making activities are added to "subsistence" (27 per cent) and "other" (mainly villagers at home or on visits to towns) (11 per cent), the formal sector is seen to involve directly a very small proportion of the population.

Formal sector employment is limited in extent and in complexity. Its location is also at variance with the distribution of population. Rural villages, which comprised 82 per cent of the population, accounted for only 23 per cent of wage jobs. Rural non-villages, with only 6 per cent of the population, accounted for 28 per cent of the wage jobs, and urban areas, with 12 per cent of the population, accounted for 49 per cent of the wage jobs. Considerable variation in access to wage employment has also been shown to exist between regions (**table 1**). It is obvious, therefore, that the foregoing demographic and economic factors greatly influence the level and type of migration and urbanization which is occurring in Papua New Guinea.

Comparisons with earlier censuses for the purpose of migration and urban analysis are difficult for a number of reasons. Firstly, earlier censuses,

as noted, were largely based on sample surveys which asked a very limited number of questions. Secondly, in the 1971 census, urban populations were adjusted upwards (by unrecorded and unknown mathematical factors) because the enumerated populations were considered to be significantly undercounted. This assumption is now considered most unlikely. Thirdly, a classificatory change occurred with independence: "indigenous" and "non-indigenous" became "citizen" and "non-citizen". The two sets of terms are not quite synonymous. Fourthly, several provincial boundaries were changed and two new administrative areas, Enga province and National Capital District, were carved out of Western Highlands and Central provinces, respectively. With migrants defined for most census purposes as persons not resident in their province of birth, intercensal comparisons are hazardous when they are concerned with specific inter-provincial migration streams or the total volume of "lifetime" migration^{3/}

Fifthly, the urban boundaries used in 1980 were often different from those used in 1971. This led to the inclusion, in some cases, of peri-urban, mainly squatter, settlements and to their exclusion in other cases. Furthermore, the boundaries used in 1980 were not always consistent with regard to this type of settlement. As a consequence, it is most difficult to make firm statements about urban size, urban growth rates or to compare the socio-economic characteristics of individual towns.

Many of these problems, of course, occur in varying degrees in the more developed countries but they are particularly serious in countries such as Papua New Guinea which lack long histories of census taking and where information on births, deaths and other vital statistics is incomplete. Unreliable temporal perspectives and statements on past trends must increase the probability of error in a variety of exercises undertaken in the course of development planning, most especially at subnational levels of analysis.

Inter-provincial migration

The most readily available and reliable census information on migration at the provincial level concerns inter-provincial lifetime migrants. This limited definition of 'migrant' means that two important types of migration in Papua New Guinea, short-term and short distance migration, are considerably understated in most census analyses.

Nearly one in ten (9.1 per cent) of the citizen population were inter-provincial lifetime migrants in 1980. Precise comparison with earlier censuses is not possible for the aforementioned reasons, but it is evident that the number of migrants and the importance of both in- and out-migration streams has increased. During the period from 1966 when the indigenous-citizen popu-

lation increased by 39 per cent, migrants increased by 116 per cent, even when the provinces which had experienced boundary changes are excluded from the calculation. One of the excluded “provinces” is National Capital District, which accounted for nearly one quarter of all in-migrants in 1980. Its exclusion clearly results in a considerable understatement of the increase in migration.

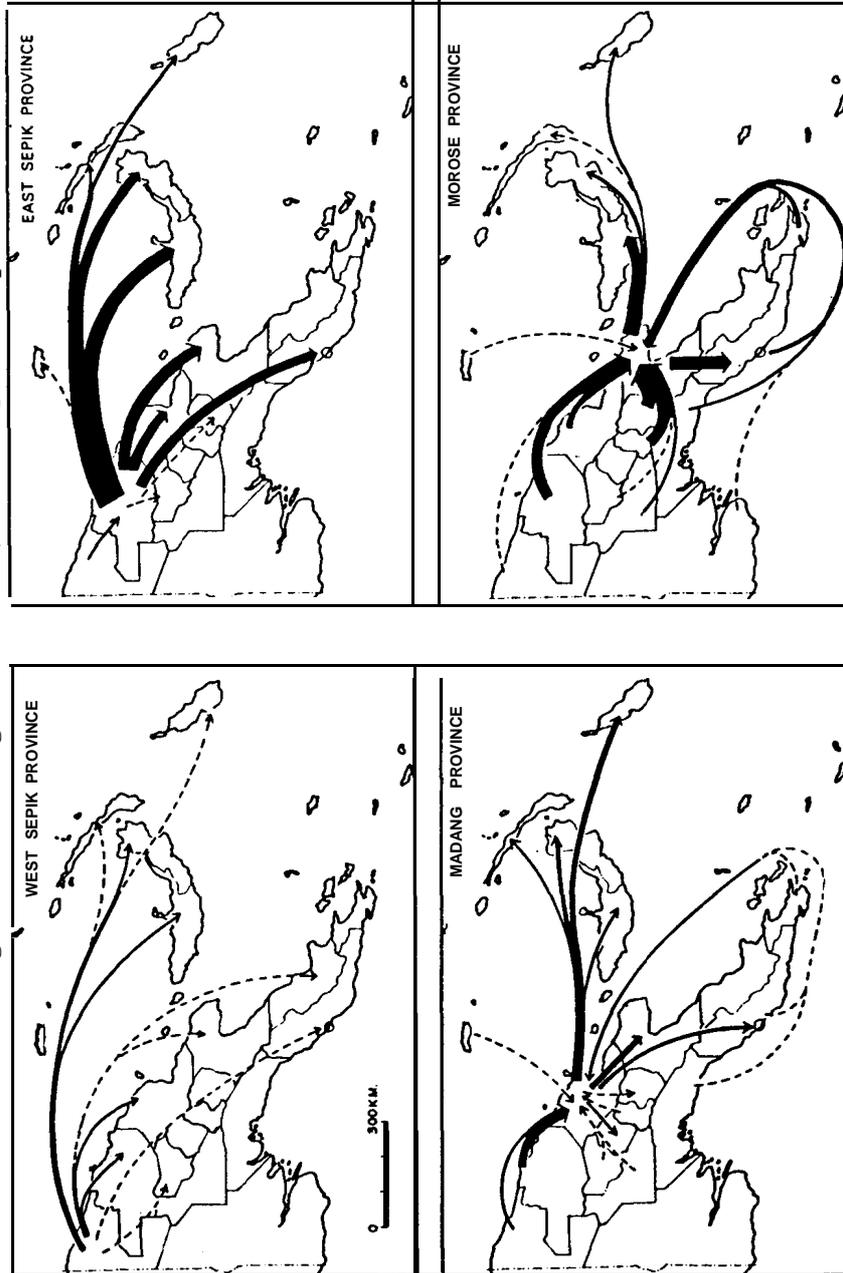
Differences in the net migration streams of the four New Guinea coastal provinces provide a vivid, visual example of the types of influences affecting migration patterns. The construction of a development continuum (comprising such indices as education, health, communications, urbanization and wage employment) would show the four provinces to be ranked from low to high in a west-to-east direction, with West Sepik and East Sepik at very low levels and Madang and Morobe at generally higher levels of development (**table 2**). The net migration continuum, if it can be called that, shows a similar gradient (**figure 2**, **table 2**). The Sepik provinces were clearly provinces of net migration loss. In-migration rates were low; they suffered losses to all other provinces with which they had significant migration linkages, and islands’ plantations (rural non-villages) were a particularly important destination, The stronger linkages of and losses by East Sepik compared with less developed West Sepik appears to lend some weight to notions of underdevelopment.^{4/} By contrast, more developed Madang and Morobe showed both gains and

**Table 2: A development-migration continuum:
New Guinea coastal provinces**

| | West Sepik | East Sepik | Madang | Morobe |
|--|------------|------------|--------|--------|
| Secondary education (%) ^{a/} | 1 | 1 | 2 | 3 |
| % Urban population | 5 | 10 | 10 | 22 |
| Largest town (1000) | 3 | 20 | 21 | 62 |
| Wages/econ. active (%) ^{b/} | 4 | 5 | 8 | 12 |
| Assumed development rank | 4 | 3 | 2 | 1 |
| Out-migration rate ^{c/} | 64 | 105 | 14 | 82 |
| In-migration rate ^{d/} | 26 | 36 | 64 | 105 |
| In-migrants/all migrants ^{e/} | 28 | 24 | 46 | 51 |
| Migrant destinations: | | | | |
| Rural non-village (%) | 41 | 34 | 34 | 31 |
| Urban (%) | 47 | 56 | 53 | 59 |

Notes: **a/** Senior school grades 10-12 for “not at school” population.
b/ See note e, table 1.
c/ Out migrants/born in province x 1,000.
d/ In-migrants/resident population in province x 1,000.
e/ In-migrants/in-migrants + out-migrants x 100; a score of less than 50 indicates net migration loss.

Figure 2: Net migration streams, New Guinea coastal provinces



losses from several provinces; their in-migration rates were much higher than that of the Sepiks. In-migrants almost equalled out-migrants in Madang; Morobe showed a net migration gain. For Morobe, at least the urban area was a more important migrant destination than the rural non-village. The contrast was, of course, greatest at the extremes of the continuum, and the overlap between East Sepik and Madang on some indices produced more of a stepped than a lineal continuum.

Viewed from another perspective, higher than average out-migration occurred from overpopulated Chimbu and long-contacted and resource-deficient Gulf, East Sepik and Manus provinces, from East New Britain to the neighbouring, newly developing West New Britain, and from rural Central to nearby urban National Capital District. High in-migration rates were associated with the more urbanized provinces (National Capital District and Morobe), provinces experiencing rapid development in recent years (Western Highlands, West New Britain and North Solomons), and the copra economy provinces of East New Britain and New Ireland.

With regard to changes in levels of migration, out-migration rates increased progressively (1966, 1971 to 1980) from all provinces except West Sepik. The increases were most noticeable from the more remote highland provinces. In-migration rates also increased in most provinces, most especially in Western Highlands, National Capital District, Morobe, West New Britain and North Solomons. Provinces to experience declines in their in-migration rates were the remoter highland provinces, isolated Manus, and the formerly important copra producing provinces of New Ireland and East New Britain. Over time, potential migrants have become aware of more attractive alternatives to plantation employment. The remote and little developed Sepik provinces showed no increase in their in-migration rates. This situation could change, however, if international border problems intensify.

Census questions on the duration of residence and previous residence were asked only in urban areas, rural non-villages and in a 10 per cent sample of rural villages. The question on previous residence asked where respondents were on Independence Day (16 September 1975). Of migrants aged five years and older, 37 per cent had moved before independence, 12 per cent had returned to their province of birth, 11 per cent had moved before and after independence, and 40 per cent had moved since independence. The groups were labelled, respectively, "past", "returned", "restless" and "recent" migrants. Although the high proportion of recent migrants lends some support to the view that migration levels continued to increase, it should be noted that many of these migrants were likely to have been short-term visitors and circular migrants who have since joined the ranks of the returned migrants.

The importance of such mobility becomes evident when urban migration is considered. Most restless migrants were almost certainly modern sector migrants, wage workers and their dependants moving between non-village destinations. All migration categories were male dominated with sex ratios (15-44 years) ranging from 192 for past migrants and 195 for restless migrants to 200 for recent migrants and 243 for restless migrants compared with 97 for the non-migrant population. Although the composition of migrant streams had become more balanced in terms of age and sex, over time, significantly improved balances seem unlikely until migration itself becomes more permanent. This will require major changes in the nature of employment, housing and social welfare in the towns.

It is evident that the people of Papua New Guinea are becoming more mobile, even in remote areas of the country, and that migration destinations are those most strongly associated with wage employment. The correlation between male wage jobs in rural non-villages and urban areas and male migration in 1980 was an incredible 0.976. The town and mine site, which are adopted symbols of an independent Papua New Guinea, have replaced the largely negative symbols of colonialism and the plantation as major sources of wage employment. In 1971, rural non-villages (which include plantations) were the destination for 42 per cent of the migrants while urban areas (which include the North Solomons mining towns) were the destination for 46 per cent of the migrants. By 1980, the figure for rural non-village migration had dropped to 28 per cent and that for the urban area had increased to 59 per cent. The rural non-village, however, continued to be an important destination for migrants from the remoter highland provinces (it accounted for 65 per cent of Southern Highland destinations) and the rural village was an important destination for National Capital District out-migrants, many of whom were probably the town-born children of rural-urban and return migrants. There was some indication of urban-urban lifetime migration, most especially between Goroka, Lae and Port Moresby, but this is unlikely to become obvious in census records until higher numbers of people are town-born. Inter-urban mobility by formal sector employees is, of course, most significant, but as most of these people were rural-born, they were shown (misleadingly) as rural-urban migrants. All sector migration streams were male dominated in 1980 (sex ratios: rural village, 108; rural non-village, 251; and urban, 170) but urban migration in particular was less male dominated than at earlier censuses.

Notwithstanding the comments above which show the overall volume and direction of migration to be shaped by major national and regional imbalances, it is evident that if all things were equal many migrants would opt for short distance migration. This is shown in the high level of intra-provincial (district) migration, in the strength of stream and counter-stream between

adjacent provinces, and in the strength of “relative salient” streams,^{5/} which show highlands, islands and Papua coastal migration networks, in particular, to display marked degrees of independence from national influences. It should encourage the Government, embarked as it is on an active policy of decentralization, to be aware that not all migrants want to be where they are currently located.

The towns

Most towns were established during colonial times and their location and size, by and large, were reflections of how well they served colonial interests. Their distribution (**table 1**), form and functions bore little relationship to indigenous spatial patterns, lifestyles, needs or interests. The indigenous population was largely irrelevant to the urbanization process, and it was illegal until the early 1960s for indigenes to reside in some towns without employment or a special permit. Much of this colonial heritage is still evident today.

The definition of “urban” in Papua New Guinea, as in most Pacific islands, is a non-rural settlement of at least 500 people. Given this definition, some 60 places, accommodating 12 per cent of the population, were deemed urban in 1980. Most towns were very small. Only 21 had populations over 3,000, and only eight had populations over 10,000. The National Capital District was by far the largest with a population of 124,000. In the remaining hierarchy, only Lae, the second largest town (population 62,000), came close to where one would have “expected” it to be in terms of the rank-size rule.^{6/} Towns with populations over 10,000 were the regional centres. They departed least from their expected size, although the smallest was only 69 per cent of expected. The smaller provincial and district centre towns (populations over 3,000) were about one half their expected size, and the very small, district centres (populations under 3,000) were between 44 and 25 per cent of their expected size. In 1966, urban primacy was a salient feature of urbanization in Papua New Guinea. In 1980, primacy (or perhaps duopoly, given the importance of Lae) was, if anything, even more pronounced.

Primacy, of course, was not limited to population size. The urban population as a whole (for towns with populations over 3,000) was only 62 per cent of its expected size. Manufacturing was 73 per cent of expected size; however, wage work, 53 per cent; private work, 55 per cent; government work, 41 per cent; and services, 43 per cent were all much lower.^{7/} It is interesting to note, given the Government’s strong emphasis on decentralization, that private sector employment was somewhat more equitably distributed than government employment, according to this index, at both regional and national levels.

The recency of citizen urbanization and small urban populations means that migration plays a major role in shaping the demographic characteristics of towns. In the 21 major towns,^{8/} only 28 per cent of the population was town-born (most of them were children of migrants) and the proportion of the town-born population ranged widely from a low of 15 per cent in the new resource towns of West New Britain and North Solomons to a high of 46 per cent in remote Manus. Town populations, then, generally had proportionately fewer children, proportionately more late teenagers and working-age adults, fewer old people and far fewer adult women, especially in the more migration-prone 15-44-year-old age group, than the country as a whole (**table 3**). However, there was considerable variation between towns. Towns where migrants had been resident for a longer period of time and where district migrants were relatively more important than short-term migrants and inter-provincial migrants tended to have more balanced populations.

Table 3: Some urban and national demographic characteristics

| | Percentage aged: | | | Child-woman ratios ^{a/} | Dependency ratios ^{b/} | | Sex ratios ^{c/} 15-44 years |
|---------|------------------|-------------|---------------|----------------------------------|---------------------------------|-----|---|
| | 0-14 years | 15-44 years | Over 44 years | | Youth | Age | |
| Towns | 41 | 54 | 5 | 791 | 711 | 18 | 154 |
| Country | 43 | 43 | 14 | 772 | 810 | 69 | 110 |

Notes: **a/** Children 0-4 years/women 15-59 years x 1,000.
b/ Youth, 0-14 years/15-59 years x 1,000; Age, 60 years and over/15-59 years x 1,000.
c/ Males/Females 15-44 years x 100.

Source: Walsh (1985).

Urban growth rates are difficult to establish owing mainly to boundary changes and the upward "adjustment" of urban populations following the 1971 census. One effect of overstating the 1971 urban population was to overstate intercensal growth from 1966 and understate subsequent growth. Urban growth rates were, therefore, assumed to have declined in recent years.

A reconsideration of census figures, based on comparable urban boundaries, enumerated (and not adjusted) populations, which distinguishes between citizen (indigenous) and non-citizen (non-indigenous) populations shows a very large drop in the non-citizen population after 1971 and a considerable increase (and only a fractionally lower growth rate) in the citizen population. Between 1971 and 1980, the enumerated urban citizen population increased at an annual rate of 7.2 per cent (national growth rate = 2.2 per cent), and their

urban population increased by 91 per cent. During this same period, the non-citizen urban population fell by 39 per cent. In 1971, one urban resident in five was non-indigenous; in 1980, non-citizens comprised a scant 7 per cent of town populations.^{9/} Intercensal annual urban citizen growth rates varied from 19 per cent to minus 2.6 per cent in Aitape, the only town to experience a population loss.

Generally, the larger towns as well as the new administrative and the “special situation” towns^{10/} had above average growth, while the smaller, older administrative towns and those which had lost their former special situation as well as towns with much informal housing had below average growth. The recency of towns in Papua New Guinea, their colonial heritage, their fast changing demographic structures and the marked differences in their rates of growth suggest that current patterns are by no means permanent.

In many ways, the most important census economic variable is the “type of employer” because it indicates likely levels and types of work available, the extent to which employment relies on local or national resources, and the extent to which employment is likely to be sustainable and capable of growth.

The Government was the major employer in most towns and an important employer in all of them. Predictably, service activities were the major urban industry. In many of the larger towns, however, especially those in which manufacturing and mining were important activities, private sector employment was more important. In almost all towns, most people lived in housing provided by the government or private business. Almost all other citizens lived in informal housing because few have the income to purchase their own homes. The typical urban situation (and the considerable range between towns) with regard to employers, major industry and housing variables is shown in **table 4**.

With most formal sector business activity being foreign-owned and the informal sector being relatively undeveloped, wage and salaried employment is an especially important source of income for urban dwellers. The level of urban wage employment, however, was relatively low (under two thirds of the economically active) and the range between towns was again considerable (**table 4**). The unemployed (much understated in census results), people deriving their only income from the small-scale and irregular sale of food and fish, people with no declared income and a miscellaneous group of “others” typically accounted for 40 per cent of the urban economically active population. Towns “over-represented” in wage employment were the country’s two largest towns and recently established towns associated with local resource exploitation. Informal activities, unemployment and “others” were relatively more important in towns of low growth. They were invariably towns

Table 4: Some urban economic characteristic^{a/}

| | Percentage range | | Average ^{b/} |
|--------------------------------------|------------------|------|-----------------------|
| | Low | High | |
| Employer: Self | 1 | 19 | 6 |
| Government | 19 | 75 | 50 |
| Private business | 19 | 80 | 37 |
| Industry: Manufacturing | 1 | 49 | 6 |
| Mining & quarrying | 0 | 33 | 2 |
| Service | 22 | 64 | 36 |
| Housing: Informal ^{c/} | 10 | 66 | 32 |
| Government | 18 | 65 | 37 |
| Private business | 1 | 66 | 15 |
| Economically active: | | | |
| Wage and salaried workers | 43 | 87 | 61 |
| Growing food for sale ^{d/} | 1 | 10 | 3 |
| Food for subsistence only | 1 | 15 | 5 |
| Unemployed | 4 | 20 | 6 |
| Other ^{e/} | 8 | 35 | 20 |
| Households with some informal income | 12 | 58 | 30 |

Notes: **a/** For towns with a population of over 3,000.
b/ The average of each town's percentage.
c/ Traditional villages in the urban area and squatter settlements.
d/ For "economically active", see note e, table 1. Fishing or cultivating food for sale and subsistence; no formal sector income.
e/ "Other activities and not looking for work". This probably included rural visitors and concealed unemployment.

Source: Walsh (1985).

where local, district migration was relatively more important than inter-provincial migration. It is evident that many people in urban and rural Papua New Guinea have yet to benefit from the country's relatively recent independence.

The very marked differences between towns and the apparent relationship between several of the demographic and economic variables under discussion suggested that it could be useful to determine the relationships more precisely. Some 38 census variables were finally selected from over 60 variables because of the strength and number of significant correlations with other variables.

Particularly strong correlations were shown to exist between three sets of employment-related variables: (a) households with no wage incomes, those growing food for sale and those growing food for subsistence only; (b) private sector employment, those in wage employment, and manufacturing and mining; and (c) government employment, those in services and professional/technical occupations. In turn, these sets of variables were seen to be strongly related to a number of other economic, social, general demographic and migration variables.

This led to the notion of three basic types of towns: informal towns associated with the first set of variables above; private sector towns associated with the second set; and government towns associated with the third set. It was evident that certain types of towns were associated with certain types of migration.

Urban migration

Urban migration has been shown to be particularly important in Papua New Guinea: as a destination for most migrants, as the source of most urban populations and as the major component in urban growth. Most such migration originates in rural areas.

Intra-provincial or district migrants accounted for about one third of the town populations and one quarter of all urban migrants. They were especially important in towns with relatively stagnant economies (for example, towns in Daru and Sepik provinces) and for those with more dynamic economies (for example, towns in Morobe and North Solomon provinces). It seems likely that migration to the former towns would include many short-term rural visitors while migration to the latter towns was probably more job-related. In most provinces, the district with the highest migration rate was either the district in which the town was located or one adjacent to it. Distance, access and density of rural population appeared to play the major roles in determining the level of district migration.

As might be expected, the majority of inter-provincial migrants moved to the largest towns, nearly one half (44 per cent) to National Capital District. The exceptionally strong correlation between male urban inter-provincial migration and wage employment (0.976) has already been noted. So too has the propensity for people to migrate, if all things are equal, to places in their own province or region. For example, National Capital District was an especially important urban destination for migrants from the Papua coastal region and relatively close Morobe and Eastern Highlands. Distance decay was also a noticeable feature of migration from New Guinea coastal provinces to Lae.

Factors most influencing urban inter-provincial migration flows, then,

were town size, wage employment and distance or ease of access. Historical links between regions were also important. Labour migration between New Guinea coastal and islands regions and the long association of Gulf people with the National Capital District are outstanding examples. As previously stated, there was also a suggestion of direct urban-urban migration between the more and longer urbanized provinces.

Short-term, circular migration has long been recognized as an important part of Melanesian migration.^{11/} In the past, it was more commonly associated with contract work in plantations and mines; currently, it is also an important component of urban migration and contributes largely to the high proportion of urban residents who are recent arrivals. Most migrants had been residents in the town for under five years; about one urban migrant in four had been a resident for under one year. For inter-provincial migrants, proportions ranged from 15 per cent in the National Capital District to a massive 40 per cent in the small highland town of Kainantu and, for district migrants, from 14 per cent in North Solomon mining towns to 35 per cent in recently formed, fast-growing Kimbe in West New Britain. There was a tendency for towns with high proportions of district migration also to have high proportions of recent arrivals. All highland towns had high proportions of recent arrivals. The densely populated hinterlands of highland towns and the ease of movement between highland provinces probably resulted in a high level of short-term visiting and tentative job search for district and inter-provincial migrants.

Factors producing differences between towns in the duration of residence concern their relationship to their own hinterlands (population density, availability of rural wage work, level of rural incomes), attributes of the towns themselves (size, amount and type of work), ease of access and the extent of previous migration links. Rural visitors, tentative job seekers and intending migrants rely heavily on kinsfolk already resident in the towns for a variety of services.^{12/} What is not clear is the relative importance of these factors and how they are influenced by changes in the national economy.

Most small towns in Papua New Guinea comprise two distinct elements: the "station" and the "corner". The station is the modern formal sector (government, missionary and private business offices and residences); the corner comprises informal, self-help housing at the periphery. The station is part of the national system of formal employment and job transfer; it mainly attracts inter-provincial migrants. The corner is part of a local system where mainly district migrants comprise visitors and those staying with relations in the hope of gaining employment in the station. These two elements – the station and the corner, the formal and the informal sector – are often less obvious in the large towns but they are there nonetheless. Many people in

Papua New Guinea towns are non-permanent residents. The high proportion of unskilled jobs tending towards employment instability, access to formal housing linked to employment, and the absence of social welfare provisions for the unemployed, the sick and the elderly all contribute towards non-permanence. So long as the sharp contrast exists between station and corner, between those with some and those with little to no access to the benefits of the modern economy, the number of short-term migrants is likely to remain high, although the proportion may drop as more citizens become at least relatively more permanent urban residents.

Urbanization and urban migration

The strength and interdependence between groups of variables representing demographic, economic and social aspects of urbanization led to the proposition that there are three basic types of towns in Papua New Guinea. Similarly, two types of migration were identified. One type, i.e. born in district (residence under one year; migrants aged 0-14 years), was called "conservative migration". The other type, i.e. born in other province (residence for 10 or more years; migrants aged 15 years and over), was called "innovative migration".

If, as has been implicitly assumed, urbanization and migration are part of the same process, one would expect to see a close relationship between urbanization and migration variables and between types of towns and types of migration.

Relationships between variables associated with informal activities, private business and government employment can be separately arranged around three central, strongly correlated variables: (a) households with no wage incomes, growing food for sale, growing food for subsistence only, which are typical of informal activities; (b) private employment, wage employment, manufacturing and mining, which are typical of private sector activities; and (c) government employment, service, professional/technical occupations, which are typical of government activities. The correlations between urban and migration types were as below:

| Urbanization | Migration | |
|---------------------|---------------------|-------------------|
| | Conservative | Innovative |
| Informal | 0.364 | -0.399 |
| Private sector | -0.657 | 0.703 |
| Government | 0.654 | -0.686 |

Table 5: An urbanization-migration typology

| | 1. Informal – Conservative | 2. Formal-government – Conservative | 3. Formal-private – Innovative |
|---------------------|--|---|--|
| General demographic | Youth and age dependency | Youth and age dependency | Population size High annual growth Adult masculinity Non-citizen population High child-woman ratio |
| Economic | Households with no wage incomes Food for sale and subsistence Unemployed and "other" activities Female wage workers | Government employment Service Professional technical Female wage workers | Private business employment Households with no informal income Wage employment Manufacturing Provincial migrants, high percentage of wage work |
| Social | Informal settlement Female household heads Many adults, no schooling | Government housing | Private business housing More adults with higher schooling |
| Migration | Born in district Short duration of residence Children among migrants | | Born in other province Longer duration of residence Adult and older migrants |

Clearly, there were no “pure” situations. All towns possessed some elements of all urbanization and migration types. Within the typology proposed (table 5) however, 12 towns fitted neatly into only one urbanization-migration category, four towns were both informal and government-conservative towns, three of the remaining towns combined other urbanization types and “informal” Goroka and “government” Popondetta were innovative rather than conservative towns.^{13/}

All typologies have limitations. In this case, the extent to which some census variables are indicative of current as distinct from past trends is not always clear. The construction of migration streams from net “lifetime” migration is a case in point.

The extent to which census boundaries arbitrarily affect the socio-economic characteristics of towns is also not always clear. The inclusion or exclusion of a peripheral settlement here or there could lead to a reclassification of individual towns. Perhaps there are no town “types” but only underlying social and economic constructs.

Whatever its limitations, the typology does serve to highlight likely inequalities of opportunity in the urban system of Papua New Guinea by identifying groups of variables related to human deprivation and by demonstrating their association with certain urban and migration features.

It also demonstrates most clearly that migration and urbanization are both part of the same process of “development” and change. In Papua New Guinea, this process has yet to reduce many of the social and spatial inequalities created by colonialism without creating new ones in their place.

References/footnotes

1. Kiki, Albert Maori (1968). “Ten Thousand Years in a Lifetime” (Melbourne, Canberra).
2. New Guinea was under German administration from 1884 to 1914; it was a League of Nations mandate and, later, a United Nations trust territory under Australian control until independence in 1975. Papua was under Australian administration from 1904. The northern islands and the northern coast were under Japanese control during the Second World War.
3. A “lifetime” migrant is a person not resident in his province of birth at the time of the census. Unless otherwise stated, all discussion concerns the citizen population only.
4. For example, Frank, A.G. (1966). “The Development of Underdevelopment” *Monthly Review* (New York) pp. 17-31 and Forbes, D.K. (1984). *The Geography of Underdevelopment* (London, Croom Helm), especially Chapter 7, “Migration, Circulation and Urbanisation in Indonesia”.

5. Relative salience shows the extent to which the volume of individual migration streams to a destination exceed the "expected" volume, as determined from overall migration levels to that destination. See "Migration and Development in Southeast Asia: A Demographic Perspective", Pryor, R.J. (ed.) (O.U.P., Kuala Lumpur, 1979).
6. According to rank-size rule, the second ranked town can be "expected" to have one half of the population of the largest town, the third ranked town one third of the population, and so on.
7. Walsh, A.C. (1983). "Up and Down the PNG Urban Hierarchy" *Yugl-Ambu*, vol. 10, No. 3, pp. 47-58 and (1984) "Much Ado about Nothing: Urbanization, Predictions and Censuses in Papua New Guinea" *Singapore Journal of Tropical Geography*, vol. 5, No. 1, pp. 73-87 elaborate on these various hierarchical structures.
8. The 21 "major" towns included all regional, provincial and district towns except Wabag, the new administrative centre of Enga province, the population of which was less than 3,000. All subsequent discussion concerns these towns.
9. The non-indigenous urban population was 23,000 in 1966 and 41,000 in 1971. The non-citizen urban population in 1980 was 26,000. Many non-indigenes in the New Guinea towns were Chinese who opted for Australian citizenship and emigration prior to independence. Rabaul lost 56 per cent of its non-indigenous (non-citizen) population between 1971 and 1980.
10. For example, the North Solomon mining town of Kimbe, which was associated with an oil palm resettlement scheme, and Rabaul, a commercial centre for the formerly important copra industry.
11. See, for example, Chapman, M. and Prothero, R.M. (1985). *Circulation in Population Movement: Substance and Concepts from the Melanesian Case* (London, Routledge and Kegan Paul).
12. Walsh, A.C. (1986). "Where Times Flies: Urban Temporality in Papua New Guinea" Proceedings of the 14th New Zealand Geography Conference and 56th ANZAAS Congress [Geography] (New Zealand Geography Society, Palmerston North) discusses source and destination factors affecting short-term urban mobility.
13. Private-Innovative: National Capital District, Lae, North Solomon mining towns, Rabaul, Mt. Hagen, Bulolo and Kimbe;
 Informal-Conservative: Wewak;
 Informal-Innovative: Goroka;
 Government-Innovative: Popondetta;
 Government-Conservative: Lorengau, Alotau, Kundiawa and Mendi;
 Informal-Government-Conservative: Aitape, Kainantu, Daru, and Kerema;
 Government-Private-Conservative: Vanimo;
 Informal-Government-Innovative: Kavieng; and
 Informal-Private-Innovative: Madang.

Age at Marriage in India

*The projected shortage of females of marriageable age
may help to enhance the status of women
in India by the early decades of
the next century*

By A.S. Kadi*

Demographers and other social scientists from less developed countries have shown interest recently in the study of the age at marriage, especially of women, as a prime determinant of fertility in countries where contraception is not widely practised. The age at marriage is also considered one of the best indicators for studying the status of women in developing countries (Vagliani, 1980).

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Several studies have shown that an increase in the age at marriage, or a decline in the percentage of ever-married women in certain age groups, is an important factor in the decline of fertility in developing countries (Caldwell, (1963; *et al.*, 1982); Tien, 1968; Immerwahr, 1971; Smith, 1980; and McCarthy, 1982).

Several studies in the Indian context have shown changes in the age at marriage (Kapadia, 1966; Goyal, 1975; Agarwala, 1977; Caldwell *et al.*, 1982; Fakhru'l Islam, 1984; and Hatti and Ohlsson, 1984). The latter studies were based on censuses and sample survey data. However, the sample survey data provided coverage of limited areas and offered less utility and scope than census data.

The studies based on the data of earlier censuses showed an increasing trend in the age at marriage in India since 1891, when child marriages were common. Although Goyal in 1985 conducted a limited analysis of the 1981 census data on age at marriage, a detailed analysis of those data especially the data on ever-married women by age, residence and educational levels etc., seems not yet to have been undertaken. Hence, this article on age at marriage in the Indian context uses 1981 census data in an attempt to highlight the trend, pattern and differentials in age at marriage by rural-urban residence, State, religion and educational levels while attempting to hypothesize theories concerning those trends etc.

Data

The data used in this article are drawn mainly from the 1981 census report (Padmanabha, 1983) based on a 5 per cent subsample of a 20 per cent sample. That report gives information on age at marriage, age at the time of the sample, religious affiliation and educational attainment.

The limitations of the census data on age at marriage are well known in the literature. Among them are a few common errors such as coverage error, failure to record age and misreporting of age (Shryock and Siegal, 1976). The extent of bias in the 1981 census is not known; however, any that does exist has been reduced to some extent by consolidating the data into five-year age groups. The non-availability of uniform data on ever-married women is another constraint; in such cases only, data on currently married women are used.

Trends in age at marriage

From the beginning of this century, social reformers and government agencies in India have taken several measures for raising the age at marriage.

Table 1: Proportion of females ever married, by age group, mean age at marriage (MAM) and rural and urban residence; 1961, 1971 and 1981

| Age group | Rural | | | | Urban | | | | | | |
|-----------|----------|--------|--------|---------|----------|---------|---------|---------|--------|---------|---------|
| | Decrease | | | | Decrease | | | | | | |
| | 1961 | 1971 | 1981 | 1971-81 | 1961-71 | 1971-81 | 1961-71 | 1971-81 | | | |
| All ages | 0.5850 | 0.5519 | 0.5517 | -0.0331 | -0.0870 | -0.0579 | 0.5358 | 0.5098 | 0.5124 | -0.0260 | +0.0026 |
| 10-14 | 0.2237 | 0.1367 | 0.0790 | -0.0870 | -0.1301 | -0.0449 | 0.0699 | 0.0405 | 0.0219 | -0.0294 | -0.0186 |
| 15-19 | 0.7500 | 0.6199 | 0.5755 | -0.1301 | -0.0238 | -0.0310 | 0.5239 | 0.3660 | 0.2821 | -0.1579 | -0.0839 |
| 20-24 | 0.9554 | 0.9316 | 0.9006 | -0.0238 | -0.0029 | -0.0032 | 0.8728 | 0.8096 | 0.7448 | -0.0632 | -0.0648 |
| 25-29 | 0.9853 | 0.9824 | 0.9792 | -0.0029 | -0.0001 | 0.0004 | 0.9615 | 0.9561 | 0.9325 | -0.0054 | -0.0236 |
| 30-34 | 0.9917 | 0.9918 | 0.9922 | -0.0001 | -0.0039 | 0.0025 | 0.9797 | 0.9816 | 0.9749 | 0.0019 | -0.0067 |
| 35-39 | 0.9970 | 0.9913 | 0.9956 | -0.0039 | -0.0002 | 0.0012 | 0.9857 | 0.9886 | 0.9869 | 0.0029 | 0.0017 |
| 40-44 | 0.9948 | 0.9950 | 0.9962 | -0.0002 | 0.0002 | 0.0012 | 0.9885 | 0.9901 | 0.9885 | 0.0016 | 0.0016 |
| 45-49 | 0.9957 | 0.9955 | 0.9955 | 0.0002 | 0.0002 | 0.0000 | 0.9907 | 0.9913 | 0.9909 | 0.0006 | 0.0004 |
| MAM | 15.38 | 16.62 | 16.78 | - | - | - | 17.84 | 19.11 | 20.12 | - | - |

| Age group | Rural-urban difference | |
|-----------|------------------------|--------|
| | 1971 | 1981 |
| All ages | 0.0492 | 0.0393 |
| 10-14 | 0.1538 | 0.0571 |
| 15-19 | 0.2261 | 0.2934 |
| 20-24 | 0.0826 | 0.1558 |
| 25-29 | 0.0238 | 0.0467 |
| 30-34 | 0.0120 | 0.0173 |
| 35-39 | 0.0130 | 0.0087 |
| 40-44 | -0.0037 | 0.0077 |
| 45-49 | 0.0050 | 0.0046 |
| MAM | -2.46 | -3.34 |

Sources: Registrar General and Ex-officio Census Commissioner for India (1964): Census of India, 1961, Vol. 1, India, Part-II-C (i), Social and Cultural Tables.

Registrar General and Census Commissioner of India (1976): Census of India, 1971, Series 1, Part II-C (i), Social and Cultural Tables.

Statement 7. Percentage of married, widowed, divorced or separated population in each age group by sex (1981) p. 33. Census of India.

In 1929, the Government of India passed the Child Marriage Restraint Act. In 1949, the minimum age at marriage was raised to 15 years for females. The 1976 Marriage Act raised the minimum age to 21 years for males and 18 years for females. Yet, in spite of the passage of all this legislation, in the 1981 census count about 16 million females in the age group 10-19 years were found to be "ever married". A recent study (Fakhrul Islam, 1984) reported on the unlawful practice of early child marriage among low caste communities in rural areas of the State of Uttar Pradesh. However, even in rural India, the concepts of childhood, dependency and immaturity have currently gained great importance. Parents and family members are apprehensive about their sons marrying girls who have not attained menarche, or those who have done so only recently, on the grounds that they are too immature to play the role of wife, mother and daughter-in-law (see Caldwell *et al.*, 1982).

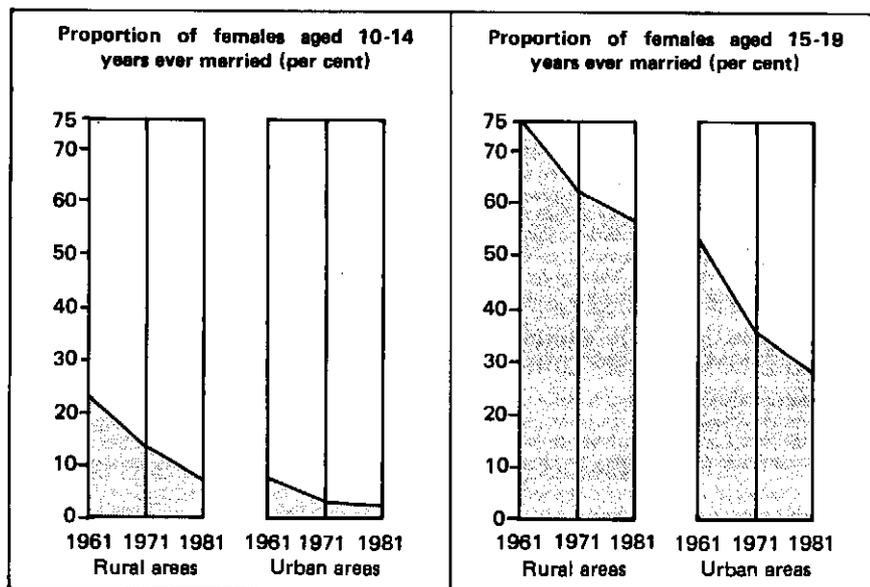
An examination of the proportion of young females ever married indicates that a major change in social attitudes has occurred in India over the past two decades. In rural areas, the proportion of females aged 10-14 ever married has fallen from 22.4 per cent in 1961, to 13.7 per cent in 1971 and 7.9 per cent in 1981, a total decline of nearly two thirds (table 1). The proportional decline in urban areas was even greater, from 7.0 per cent in 1961, to 4.0 per cent in 1971 and 2.9 per cent in 1981 (see figure on next page).

While the proportional declines in percentage of females aged 15-19 ever married were less, the decreases in percentage points were greater, thus a larger absolute number of females was affected. The proportion of rural females 15-19 ever married dropped from 75.0 per cent in 1961, to 62.0 per cent in 1971 and 57.6 per cent in 1981. In urban areas, the proportion decreased by a greater amount, from 52.4 per cent in 1961, to 36.6 per cent in 1971 and 28.2 per cent in 1981 (see figure on next page).

Significant decreases in the proportion ever married also occurred for females aged 20-24. In rural areas the proportion declined from 95.5 per cent in 1961 to 90.1 per cent in 1981. In urban areas the proportion decreased steadily from 87.3 to 74.5 per cent during the same period.

These declines were due mainly to the changes that have occurred in socio-economic, cultural and behavioural attitudes rather than because of the Government's legislative efforts.

In the 1981 census, about 45 per cent of the male and 54 per cent of the female population were found to be ever married. The proportions for rural areas were 45.3 and 55.2 per cent, respectively; those proportions were slightly higher than for urban areas which were 43.8 per cent for males and 51.2 per cent for females. In the Indian context, the proportion of the ever-married female population is large compared with that of males. The main



reason is the difference in couples' age at marriage and also the smaller size of the female population compared with the size of the male population. However, during the last two decades there has been a higher decline in the proportion of ever-married females compared with males, i.e. 3.36 percentage points for females and 2.36 for males.

For the period 1891-1901, the mean age at marriage (MAM) was estimated to be 21.0 years for males and 12.8 years for females (Agarwala, 1977). There was an uncertain trend during the period 1891-1931, followed by a slow increase from 20.4 to 22.4 years for males, and 14.4 to 18.0 years for females from the period 1931-1941 to 1971-1981. The increase in MAM for both sexes was accompanied by a decline in the difference in couples' age at marriage. The observed decline in the difference was about 3.8 years over the period of a century. Davis (1955) has rightly pointed out that, "once a particular pattern of age difference between spouses becomes well established, it cannot be rapidly altered, because of the strains that this would place on the marriage market". While this factor may be an obstacle to change, it does not explain the level of the age at marriage.

During the period from 1891-1901 to 1971-1981, the expectation of life at birth increased from 24.11 to 49.50 years for males, and from 24.75 to 48.75 years for females (Government of India, 1981, p. 27). Both MAM

and the expectation of life at birth show a similar increasing trend during the period 1891-1981. The Pearsonian correlation coefficient "r" between these two variables is 0.7517 for males and 0.9697 for females, thus confirming a high degree of association. This association seems to be universal, observed especially in developing countries. For such countries, the computed value of "r" between MAM (Smith, 1980, p. 3) and the expectation of life at birth (United Nations, 1982, p. 302) is 0.7335 for males and 0.8202 for females. Thus, an increase in MAM is highly associated with an increase in the expectation of life at birth.

When the chance of long survival is low in a society, it is quite natural for people to be highly motivated towards early marriage in order to reproduce as early as possible, so that the replacement of the generation may be better assured.

Differentials in the age at marriage

According to McDonald (1981), "Marriage customs, including norms about age at marriage, develop in each culture in relation to the functions that it fulfils in the society." The specific functions of a marriage are economic, social and personal, but they vary with respect to the place of residence (rural or urban), educational level, religious affiliation, as well as regional (State), and socio-economic and cultural differentials, which all affect the age at marriage.

Rural-urban differentials

Table 1 gives the proportion of ever-married females for each five-year age group and the mean age at marriage separately for rural and urban areas. The results show that the proportion ever married among the rural female population became relatively stable in 1981 after it declined 3.31 percentage points, i.e. dropping from 58.5 to 55.2 per cent, during the period 1961-1971. In urban areas, there was a very slight increase, i.e. less than 1 percentage point, observed in 1981 after it had declined 2.60 percentage points during the period 1961-1971.

In examining the proportion of ever-married females by each five-year age group during the period 1961-1981, a gradual decline is revealed in the proportions in the age groups from 10-14 years to 25-29 years; in the remaining age groups, increases occurred in at least one of two decennial periods. This process occurs somewhat faster in urban areas compared with rural areas. Hence, while there is a shift in the age at marriage in the Indian context, no change is observed in the almost universal practice of female marriage. Furthermore, it has been observed that the difference between the rural and urban

Table 2: Selected socio-economic and demographic indicators in India, by State

| State | Singulate mean age at marriage | | | | Female literacy rate ^{a/} | TFR ^{b/} | PUP ^{c/} | PNDP ^{d/} |
|-----------------|--------------------------------|-------|--------|-------|------------------------------------|-------------------|-------------------|--------------------|
| | Male | | Female | | | | | |
| | 1971 | 1981 | 1971 | 1981 | | | | |
| Andhra Pradesh | 22.71 | 23.02 | 16.22 | 17.25 | 16.16 | 4.6 | 23.33 | 1 018 |
| Bihar | 19.84 | 21.47 | 15.27 | 16.63 | 8.85 | — | 12.50 | 735 |
| Gujarath | 22.21 | 23.09 | 18.43 | 19.51 | 26.75 | 5.1 | 31.10 | 1 452 |
| Haryana | 20.52 | 21.67 | 16.64 | 17.87 | 14.61 | 5.9 | 22.00 | 1 600 |
| Karnataka | 25.03 | 25.86 | 17.80 | 19.20 | 21.11 | 3.7 | 28.90 | 1 129 |
| Kerala | 26.74 | 27.19 | 21.01 | 21.85 | 59.35 | 3.4 | 18.80 | 987 |
| Madhya Pradesh | 19.72 | 20.57 | 14.99 | 16.52 | 11.23 | 6.0 | 20.30 | 905 |
| Maharashtra | 23.57 | 24.28 | 17.54 | 18.76 | 26.85 | 3.5 | 35.00 | 1 637 |
| Orissa | 22.57 | 24.17 | 17.29 | 19.04 | 13.88 | 4.6 | 11.80 | 797 |
| Punjab | 23.32 | 24.47 | 20.18 | 21.04 | 24.19 | 4.7 | 27.70 | 1 962 |
| Rajasthan | 19.52 | 20.35 | 20.18 | 21.04 | 8.73 | 5.4 | 20.90 | 964 |
| Tamil Nadu | 25.92 | 25.97 | 19.58 | 20.22 | 25.63 | 3.8 | 33.00 | 1 051 |
| Uttar Pradesh | 19.30 | 20.86 | 15.45 | 17.77 | 10.43 | 6.6 | 18.00 | 949 |
| West Bengal | 24.28 | 25.66 | 19.92 | 19.26 | 24.82 | — | 26.50 | 1 263 |
| India (country) | 22.36 | 23.27 | 17.16 | 18.32 | 19.32 | — | 23.70 | — |

* Correlations : $r_1 = 0.8245$; $r_2 = -0.6691$; $r_3 = 0.3730$; $r_4 = 0.4159$

Note: a/ The female literacy rate for those in the age group 15 and above

b/ Total fertility rate

c/ Percentage of urban population

d/ Per capita net domestic product

* r_i = Correlation coefficient between female mean age at marriage with "ith" factor (i = 1,2,3,4,).

Source: Statement 11. Singulate mean age at marriage, by sex : India and States, p. 37. Census of India 1981, Series 1, Part II, Special report and tables based on 5 per cent sample data. Registrar General and Census Commissioner for India, New Delhi.

proportion of those ever married in each five-year age group (except 10-14, 35-39 and 45-49 years of age) increased consistently during the period 1961-1981. It seems that the shift in the age at marriage from earlier to older ages and the increasing difference in the rural-urban proportion of those ever married are additional features of a population in the mid-transition period during which fertility starts to decline following a rapid decline in mortality as observed in the case of India.

Differentials by State

In addition to economic differentials, each State in India is characterized by socio-cultural, linguistic and religious differences. These affect the norms and traditions of marriage and, consequently, the age at marriage. Table 2 gives singulate MAM (Hanjal, 1953) for currently married males and females during the 1971 and 1982 censuses along with some socio-economic indices for each State under study during the period 1971-1981. In the 1981 census, MAM for the State of Rajasthan was found to be very low (16.09 years for females and 20.35 years for males); for the State of Kerala, very high (i.e. 21.85 years for females and 26.96 years for males). The States of Rajasthan, Madhya Pradesh, Uttar Pradesh, Bihar and Haryana had an early age at marriage for both sexes. Kerala, Tamil Nadu, West Bengal, Karnataka and Orissa had a later age at marriage for both sexes. For those States with a high MAM, the proportion of currently married females in the age group 10-14 years was found to be very small (the proportion varies between 0.0030 in Kerala and 0.0380 in Karnataka) compared with other States in which MAM is low, and the proportion married increases to 0.1314 in Madhya Pradesh. The same pattern is also observed in other age groups. The States with a higher MAM for males have a high MAM for females, thus showing a high association between the two. The computed correlation coefficients for the 1971 and 1981 censuses are 0.8659 and 0.8657, respectively, i.e. they are stable and highly significant at the 1 per cent level.

In every State, grooms are older than brides, with the average age gap between them ranging from 3.09 years in Uttar Pradesh to 6.60 years in West Bengal. The States where MAM is comparatively higher than in other States have shown a larger gap, except in the States of Punjab and Gujarat where a smaller age gap is associated with higher MAM. For the 1971 and 1981 censuses the computed correlation coefficients between the age gap of couples and male MAM were 0.6299 and 0.6480, respectively, which is highly significant at the 1 per cent level. The coefficients for female MAM are 0.1558 and 0.1821, which show a very poor relationship. In general, the age gap between couples is very much related to the grooms' age, but not with that of brides.

The socio-economic and demographic indicators by State, namely, literacy

rate, per capita net domestic product, percentage of urban population and total fertility rate, show higher association with MAM (table 2). The computed correlation coefficient values between female MAM and each of these indices are found to be highly significant with expected signs (table 2). Hence, higher level socio-economic conditions, along with the attainment of a higher level of education, influence women to marry at later ages, consequently reducing the level of fertility.

Differentials by religion

Many religious groups are represented in India. Some of the religions are indigenous; others have been introduced. Among the more prominent indigenous religions are Hinduism, Jainism, Buddhism and Sikhism. Islam and Christianity are among those introduced from outside India (Mandelbaum, 1970). According to the 1981 census, Hindus, Muslims, Christians, Sikhs, Buddhists and Jains formed 82, 11, 2.4, 1.19, 0.71 and 0.48 per cent, respectively, of the total population. Other religions such as Judaism and Zoroastrianism, which form an insignificant proportion of the total population, are classified as "others".

In India, all social relations are inevitably suffused with religious concepts and practices. Because individuals take their particular religion as a pervasive force in their lives, marriage norms, customs and traditions vary widely according to religious group.

Table 3 gives the mean age at marriage for the different religious groups studied. In the 1981 census, among currently married women in urban areas, MAM was low for Muslims, i.e. 17.37 years, and high for Christians, i.e. 19.88 years. Christians marry a little later than Sikhs, who marry a little later than Jains, while Buddhists marry a little earlier than Muslims and Hindus. During the period 1971-1981, MAM increased in all religious groups. Among Hindus, Muslims, Buddhists and Jains, female marriage is virtually universal; traditionally, it is arranged by parents while children are still in their early years. However, among Christians, marriages are of a more Westernized or European pattern, generally characterized by late marriage; moreover, a higher proportion of Christian women never marry (Dixon, 1971). An analysis, by religion, of those ever married in rural areas shows that about 52 per cent of Hindus, 51 per cent of Buddhists, 50 per cent of Muslims, 45 per cent of Jains, 30 per cent of "others", 20 per cent of Sikhs and 17 per cent of Christians were married while in the 10-15-year age group. A more or less similar pattern and trend, with lower prevalence of early marriages, is seen among urban religious groups. However, during the last three decades, the proportion of early marriages has declined very rapidly in Hindu, Muslim and Buddhist communities, where such marriages once were more commonly practised.

Table 3: Mean age at marriage of currently married women in India, by religion

| Religion | Rural | | Urban | |
|---------------|-------|-------|-------|-------|
| | 1971 | 1981 | 1971 | 1981 |
| Hindu | 15.24 | 16.38 | 16.67 | 17.56 |
| Muslim | 15.51 | 16.48 | 16.76 | 17.37 |
| Christian | 18.48 | 19.17 | 19.39 | 19.88 |
| Sikh | 17.83 | 18.94 | 18.02 | 19.05 |
| Buddhist | 15.28 | 16.56 | 15.96 | 16.72 |
| Jain | 15.90 | 16.92 | 17.51 | 18.62 |
| All religions | 15.39 | 16.51 | 16.80 | 17.63 |

Note: Some of the results in this table differ from those of table 1, because the results of table 1 are computed from the data on ever-married females.

Source: Census of India 1981, Series-1 India, Part-II special, Report and tables based on 5 per cent sample data. Registrar General and Census Commissioner for India.

Educational differentials

Several studies have shown that women's education is one of the prime determinants of age at marriage in many developing countries including India (Vagliani, 1980; McCarthy, 1982; Kanitkar and Sinha, 1985; and Bhargava and Saxena, 1985).

In this article, an attempt is made, using census data, to examine the extent of variation in the age at marriage for each level of education at the national level. A person not able to read and write in any language was considered "illiterate"; a person able to read and write any language, "literate". The latter educational level was further subclassified as follows: "literate but below middle" (primary or lower secondary education), "middle but below matriculation" (higher secondary), "matriculated but not graduated" (higher education), and "graduation and above" (post-graduate).

From table 4, it may be observed that at the time of the 1981 census, MAM ranged from 16.32 to 21.50 years for rural women and from 16.75 to 21.85 years for urban women as the level of education increased from the "literate but below middle" level to "the graduation and above" level, with a minimum increase of one year in MAM for each level of education. During the period 1971-1981, it was observed that the proportion of young women

Table 4: Mean age at marriage of currently married females in India, by educational level

| Educational level | Rural | | Urban | |
|--|-------|-------|-------|-------|
| | 1971 | 1981 | 1971 | 1981 |
| Illiterate | 15.23 | 16.32 | 16.24 | 16.75 |
| Literate but below middle (primary or lower secondary education) | 16.53 | 17.11 | 17.22 | 17.44 |
| Middle but below matriculation * | — | 17.76 | — | 18.12 |
| Matriculated but not graduated | 19.30 | 19.33 | 19.97 | 19.82 |
| Graduation and above | 21.16 | 21.50 | 21.90 | 21.86 |
| All educational levels | 15.39 | 16.51 | 16.80 | 17.63 |

* *Note:* Not available for 1971 census.

Source: Census of India 1981, Series-1 India, Part-II-special, Report and tables based on 5 per cent sample data. Registrar General and Census Commissioner for India.

currently under age 20 who had married during the ages of 10 and 15 years declined from 59 to 50 per cent in rural areas and from 47 to 15 per cent in urban areas as the level of education increased from the primary level to the “graduation and above” level. A similar trend was observed among women



Women's education is one of the prime determinants of age at marriage in India; it is also one of the factors which is expected to result in a better quality of life for Indian women in the future. (United Nations photograph by J.P. Lafonte)

in other current age groups. Furthermore, MAM for rural illiterate women was 16.51 years, whereas for urban woman, it was 17.63 years; similar rural-urban differentials were observed for other educational categories. This shows the influence of urban culture alone on the age at marriage.

A generation or two ago, brides were in short supply; however, there have been changes in marriage patterns described as a "marriage squeeze" in which there is a surplus supply of potential brides, changes in the dowry system, and a decrease in the number of marriages between relatives, which has resulted in a greater choice in the selection of brides (Caldwell *et al.* 1982, 1983). This phenomenon is due mainly to the decline in mortality at a time when the birth rate was relatively high, which has resulted in a broadening of the base of the age pyramid, with a sex ratio favourable to males. In such a situation, the considerable age gap between spouses operates against the sex ratio and produces a surplus of potential brides. In comparing all females over 10 years of age with all males over 15 years of age, it may be observed that the surplus of females increased from 12 million to 20 million during the period 1931-1971 (Caldwell *et al.*, 1982).

The main concern in this regard is to know how long this "marriage squeeze" will continue in India. Caldwell and others (1983) have expressed the hope that it may be eased by the end of the century following the rapid

Table 5: Number of potential brides available for every 100 males of different age groups during the period 1950 to 2000.

| Age group (males) | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
|-------------------|------|------|------|------|------|------|
| 5-9 | 116 | 123 | 111 | 99 | 98 | 96 |
| 10-14 | 108 | 109 | 111 | 101 | 98.5 | 99 |
| 15-19 | 108 | 106 | 122 | 105 | 95 | 95 |
| 20-24 | 104 | 108 | 109 | 111 | 101 | 99 |
| 25-29 | 102 | 109 | 107 | 116 | 105 | 96 |
| 30-34 | 102 | 104 | 107 | 110 | 111 | 101 |
| 35-39 | 101 | 103 | 109 | 108 | 116 | 105 |
| 40-44 | 103 | 122 | 105 | 109 | 110 | 111 |

Note: Potential brides = $\frac{\text{No. of females of age (x-5 to x-1)}}{\text{No. of males of age (x to x+4)}} \times 100$

Source: United Nations (1982), Demographic indicators of countries: Estimates and projections as assessed in 1980, India, p. 303.



A shortage of brides in the future is expected to have far-reaching beneficial effects on the status of women in India. (UNICEF photograph by J. Ling)

fall in fertility and the narrowing of the age gap between spouses. The decline of fertility in India began after a rapid fall in mortality. It may decline at an even faster rate by the end of the next decade, resulting in changes in the age and sex structure of the population. Also, as previously noted, the age at marriage for both sexes shows an increasing trend with a concomitant decline in the age gap between spouses. In such a situation, the narrowing age gap acts as an opposing force on the current "marriage squeeze"; it results in a shortage of potential brides in the so-called marriage market, that can be shown using population figures for India projected by age and sex.

It should be mentioned that, although there are inconsistencies in the population projections given by different agencies, they do not vary much in aggregate; however, they do differ considerably with regard to age distribution because of different assumptions about the fertility level (Natarajan, 1982). United Nations (1982) population projections and assumptions on population components seem to be more appropriate to the Indian situation and more closely aligned with Indian population policy as well, i.e. reaching the target of a net reproduction rate of unity by the end of the century. Thus, the total fertility rate and the net reproduction rate change, respectively, from 6.37 to 2.05 and from 1.77 to 0.93 for the period 1950-2025. The total population of India in 1950 was 368 million, consisting of 193 million males and 175 million females. By the year 2025, the population is expected to be 1.233 billion, consisting of 634 million males and 599 million females. During the

period 1950-2025, the sex ratio will have remained favourable to males, but with a slight decrease.

Utilizing these projected figures and assuming a one-to-one male-female stable marriage union, and maintaining an average age gap of five years between spouses, a comparison of all females over 10 years of age with all males over 15 years of age reveals an increase in the surplus of females from four to ten for every 100 males during the period 1950 to 1980. The surplus will decline significantly during the period 2000-2025, resulting in a shortage of females which increases from one to four in number later in that period. Under similar assumptions, comparisons made for different combinations of age groups, i.e. females in the age group 10-24 years with males in the age group 15-29 years and females in the age group 25-49 years with males in the age group 30-54 years, show a greater shortage of marriageable females before the end of the century. Furthermore, analysis by five-year age group only (table 5) shows a shortage of females in the year 2000 for males aged 15-29 years, and a continuing shortage of females after the turn of the century.

Future implications

In advanced industrial societies, some important socio-economic and demographic changes, such as an increase in longevity, aging of the population, sex differences with regard to mortality, low fertility and increased participation of women in economic activities, are currently causing several developments that are forcing an alteration in sex roles (Davis *et al.*, 1982, 1984). Women in developed societies have more freedom owing to their economic independence. The increase in longevity and decline in fertility together have

Table 6: Demographic indicators – India

| Indicators | 1950 | 2025 |
|--------------------------|------|------|
| TFR ^{a/} | 6.37 | 2.05 |
| NRR ^{b/} | 1.77 | 0.93 |
| C/W ^{c/} | 727 | 309 |
| Life expectancy (Female) | 38.0 | 69.1 |
| PUP ^{d/} | 17.3 | 53.5 |

Notes: a/ TFR = Total fertility rate
 b/ NRR = Net reproduction rate
 c/ C/W = Child-women ratio
 d/ PUP = Percentage of urban population.

Source: United Nations (1982), Demographic indicators of countries. Estimates and projections as assessed in 1980, India, p. 302.

enabled women to devote more time to activities other than child-bearing and child-rearing. In the Indian context, some changes will occur in various socio-economic and demographic factors along with a decline in fertility and changes in the so-called marriage market during the early decades of the next century. Some of the estimated indicators in table 6 show the changes that are possible in India's future socio-economic and demographic profile (United Nations, 1982).

It may be expected that the projected shortage of females of marriageable age will enhance the status of females in India in the early part of the next century. The increased demand for brides should induce parents to delay the marriage of their daughters while continuing to "invest" in their future prospects through providing a greater amount of education. The combination of increased education, later marriage and the projected changes in fertility and mortality are likely to lead to significant changes in the status of women in India.

In view of all these factors, India's current women's movement, which is pressing for abolition of the dowry system, more suitable jobs and better educational facilities, may lead, at least by the early decades of the next century, to the formation of a feminist movement along the lines of those in developed societies which advocate the complete abolition of traditional sex roles.

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Population Policy

Between 1965 and 1970, the annual population growth rate for the Asian and Pacific region was 2.5 per cent; by the mid-1980s the growth rate had been reduced to 1.7 per cent per year.

This remarkable decline was greatly influenced by the adoption of national population policies, most notably family planning programmes, by most of the developing countries in the region. However, even though the experience of ESCAP countries in reducing the regional population growth rate has been the most successful of all the population programmes established globally, there have been wide variations in performance of the specific subregions and individual countries. For example, the South Asian subregion has been the least successful in achieving fertility reduction while the East Asian subregion has been the most successful.

While China, in particular, has contributed much to this decline, large pockets of high fertility (a total fertility rate in the range of 5 to 7) exist in most South Asian countries, despite the investment of substantial amounts of resources in their family planning programmes.

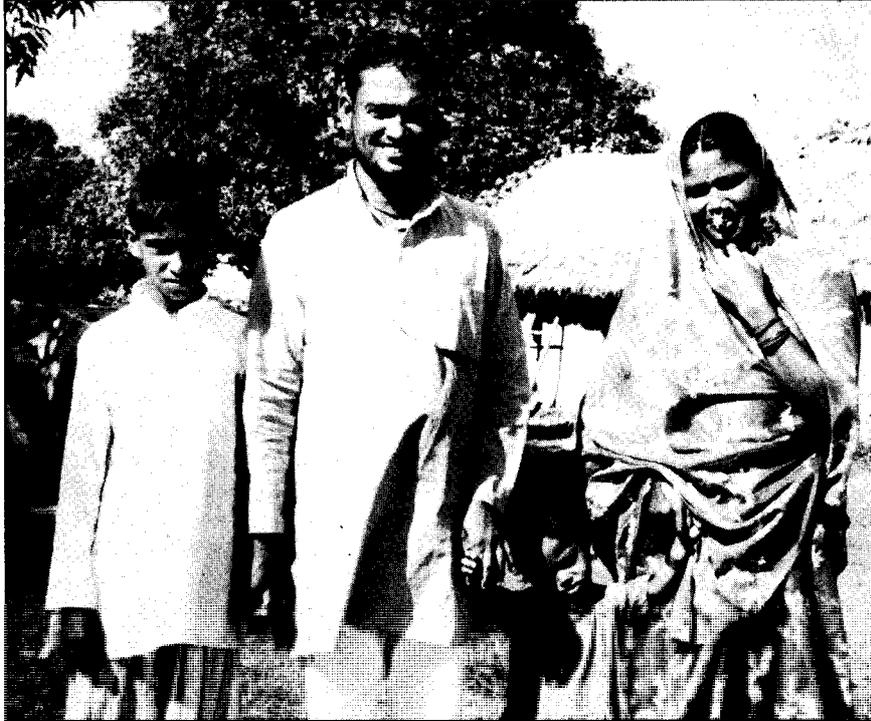
In view of such variations, ESCAP, with financial assistance from the United Nations Fund for Population Activities, organized the Seminar on Population Policies for Top-level Policy Makers and Programme Managers, held at Phuket, Thailand, from 14 to 19 January 1987. The Seminar examined the challenges that are currently being faced and are likely to be faced in the future by policy makers and programme managers regarding the implementation of fertility regulation programmes in their respective countries.

The Seminar was organized to coincide with the completion of an ESCAP study on the impact and efficiency of family planning programmes in the region. That study was designed to sort out the relative contribution of socio-economic development and family planning programme efforts, i.e. to find out how the programmes have performed in attaining a decline in fertility after isolating the contribution of other socioeconomic changes.

The study was based on the conceptual framework of input-output analysis wherein the input-output ratios may serve to generate comparative norms which will affect programme design and strategies. Another use of the input-output relationship is in making evaluative judgements concerning the performance of individual subunits in a programme by assessing how well resources are used for the accomplishment of the programme objectives. Such judgements could provide the basis for decisions concerning the allocation of resources to different subunits and organizational structuring, and the distribution of rewards to the personnel responsible for a particular level of performance. Country studies carried out in Bangladesh, Indonesia, Malaysia, Republic of Korea and Thailand were reviewed at the Seminar. An overview of the family planning policies and programmes of Bangladesh, China, India, Indonesia, Malaysia, Nepal, Pakistan, Philippines, Republic of Korea and Thailand was presented. The Seminar also considered policy issues regarding the status of women, incentive and disincentive systems and socio-economic factors affecting fertility, among other topics.

Bangladesh

The Government of Bangladesh recognizes population growth as the number one problem related to the socioeconomic development of the country. With the recent launching of an elaborate multisectoral population control programme, which involves eight ministries, the Government is attempting to promote a reorientation of strategy from the previous clinic-oriented, isolated "birth control" programme to an all-out multidimensional "family welfare" programme. Emphasis is currently on domiciliary delivery of integrated maternal/child health and family planning services involving community participation not only for the sake of health and welfare of the people but also for improving the chance of child survival in order to make the concept of the small family norm more widely acceptable. The Government projects that there will be a population of 115 million people by the year 2000 and 175 million by the middle of the twenty-first century. The third five-year plan (1985-1990) has set targets for sterilization of at least 3.4 million people and an increase of couples practising family planning from 4.5 million in 1984 to 10.5 million by the year 1990 in order to achieve replacement level fertility before the end of the century.



Bangladesh is promoting small families in the hope of achieving replacement level fertility before the end of this century. New emphasis is being placed on family health and welfare in order to increase the chances of child survival.

China

The Government of China considers curbing population growth to be a matter of top priority. Rapid population increase is perceived as a hindrance both to improvements in living standards and the achievement of modernization in four sectors, i.e. agriculture, defense, industry, and science and technology, in which development efforts have been concentrated. The objectives of China's family planning programme are the postponement of marriage, the spacing of births of children between three and five years, and especially the promotion of the one-child family.

The goal to be achieved is a reduction in the rate of natural increase from 12 per thousand in 1978 to 5 per thousand by 1985 and 0 by the year 2000, with the total population not to exceed 1.2 billion by the end of this century. In 1980, the national minimum age for marriage was increased two

years for both sexes and is currently 22 years of age for men and 20 for women, although in some areas such as Beijing the minimum age for marriage has been set at 28 years for men and 25 for women. To encourage families to have one child only, several social and economic measures have been adopted both at the national and the provincial levels which include the awarding of income bonuses, health care subsidies, higher pensions and priority in the allocation of city housing and private vegetable gardens in the countryside to couples having no more than one child.

India

Among its various provisions, India's Seventh Five-Year Plan (1986-1990) aims at establishing a two-child family norm and replacement level fertility by the year 2000. It envisages a goal of 31 million sterilizations, 21.3 million IUD insertions and the acceptance of conventional contraceptives by 62.5 million users by 1990. Furthermore, it calls for more financial incentives for acceptors and a reinvigoration of the family planning programme. The integration of family planning with maternal and child health services continues to play an important role in the national programme. In revising its strategy for family welfare, the Government hopes to (a) raise the mean age at marriage for women to over 20 years, (b) raise the status of women, (c) increase the literacy rate, (d) provide for old age security, (e) enhance child survival and development, (f) ensure community participation through population committees at the block level, (g) involve voluntary organizations on a large scale, (h) motivate the co-operative sector in working for family welfare, (i) instruct public sector enterprises to undertake family welfare programmes, (j) involve professional organizations in family welfare programmes, (k) motivate and involve political leaders in propagating family welfare messages and (l) improve programme management. In this context, a large-scale programme to upgrade skills has been launched with the aim of training 3,200 physicians in various family planning methods by the end of the seventh plan period.

Indonesia

The primary objectives of the Government of Indonesia's population policy are to reduce the rate of population growth, achieve a redistribution of the population, adjust economic factors and create prosperous families. Since 1978, priority has been given to family planning for curbing fertility, with emphasis on community participation and the integration of health and nutrition education into the family planning programme in order to establish a "small, healthy and happy family" norm. Tax disincentives, income-generating activities for acceptors, a minimum marriage-age law and efforts to im-

prove the status of women are other measures that are being implemented in order to reduce the annual population growth rate to 1.5 per cent by 1990. To achieve more equitable distribution of the population and to control rural-to-urban migration, it is expected that 2.5 million people from the islands of Java and Bali will have been settled on other islands by the end of 1987.

Malaysia

The Malaysian Government considers population policy to be essential for achieving development objectives, particularly for improving socio-economic conditions. By providing full employment and integrating ethnic groups, population policy can raise standards of living and ensure the country's future prosperity. In 1984 the Government reversed its policy to reduce the population growth rate and announced its intention of achieving a population of 70 million by the year 2100. In its view such a population size is necessary in order to support mass consumption industries. The strategy is to decelerate the rate of decline in the growth of population, so that replacement level fertility is achieved by the year 2070, by encouraging earlier age at marriage and child-bearing. Incentives include an income-tax deduction system favouring large families and maternity benefits for women who have up to five children.

The provision of a broad network of family planning programmes and measures to improve maternal and child health care, nutrition, education, housing and sanitation will continue to upgrade family welfare.

Family planning services will be provided as part of the family health programme to enable couples to exercise their right to decide on the number and timing of births, and to protect their health and well-being. The programme will continue to subsidize the cost of contraception for the needy who cannot afford to pay. Private practitioners have been hired on a part-time basis to increase the availability of such services. However, the distribution of contraceptives through commercial outlets or social marketing remains limited to condoms. Although voluntary sterilization is not actively promoted, mainly on religious grounds, it is offered as a family planning method only to those who meet the minimum criteria based on parity, age and duration of marriage.

Nepal

The Government of Nepal has adopted a population control programme as an integral part of its development strategies. The official policy is to decrease fertility, control international migration and modify the spatial distribution of the population, with the greatest emphasis being placed on socio-

economic restructuring. Since 1983, the Government has adopted a number of measures, including enhanced family planning services, the integration of population components into socio-economic development programmes and the improvement of the status of women, with the goal of reaching "replacement level fertility" by the year 2000.

Pakistan

A reduction in the population growth rate was one of the objectives of the Government of Pakistan's Sixth Five-Year Plan (1985-1988) because it will serve the twin objectives of increasing the country's capacity to save and invest while improving the per capita availability of goods and social services.

A multi-sectoral, multi-dimensional approach to family planning has been adopted which implies (a) replacement of the traditional narrow concept of family planning by a comprehensive programme dealing with family health (especially that of children and mothers), responsible parenthood, individual well-being and family planning, (b) community involvement including that of non-governmental organizations and (c) involvement of government line departments, especially those having health outlets for providing family planning services. The present family welfare programme has been split up into about 30 projects, such as the Family Welfare Centre Project, the Reproductive Health Project (for contraceptive surgery) and the Communication Project.

Although mass media such as the radio, newspapers and cinema are being used to popularize the use of contraceptives, some religious leaders are opposed to family planning and the advertisement of contraceptives. Nonetheless, constant efforts are being made to enroll the support of community leaders and others in the social marketing of contraceptives on a commission basis.

While there is no incentive system in Pakistan's family planning programme, a small amount of money is given to couples undergoing sterilization as compensation for the work-time lost in the process of sterilization.

Philippines

The rate of population growth in the Philippines is regarded as unsatisfactory because it is too high. The Government's policy is to bring the population growth rate into line with the availability of natural resources and employment opportunities. The population programme policies and strategies in the Philippines are guided by four basic principles: non-coercion, integration, multi-agency participation and partnership of public and private sectors. Non-coercion recognizes and safeguards the right of each couple to determine its



The Philippines' so-called "cafeteria approach" to family planning makes available a wide range of contraceptives to acceptors.

own family size and choose voluntarily the methods for contraception. This policy accounts for the programme's "cafeteria approach". Integration infers that family planning is integrated into existing programmes in health, education, social welfare, community development and other development programmes. Multi-agency participation means that the programme is implemented, not by one agency exclusively, but by a host of public and private agencies.

Under the development plan for the period 1987-1992, the programme will continue to promote family planning in order to reach the target of a net reproduction rate of 1 by the year 2010 and as a means to promote family well-being. It will be considered a part of the country's health and nutrition programme, with family planning activities being regarded as part of the primary health care approach.

Republic of Korea

The Republic of Korea's Fifth Five-Year Plan (1982-1986) placed greater emphasis on social development than previous plans which were concerned primarily with economic development. It attempted to more fully integrate population and development policies and programmes within relevant sectors.

The Government's family planning programme continues to provide various incentives and legal and institutional systems that will establish a small family norm. The new demographic targets during the Sixth Five-Year Economic and Social Development Plan (1987-1991) call for a reduction of the population growth rate to 1.0 per cent by 1993. The achievement of this target, however, is not an easy task mainly owing to anticipated socio-demographic

factors such as a strong preference for sons and an increase in the number of women reaching reproductive age.

Thailand

Thailand's population policy recognizes that one of its most significant resources is human resources which play a pivotal role in economic and social development. However, because the current rapid rise in population is not in proportion with existing economic resource endowments and employment opportunities, the Government is expanding the reach of its family planning programme. It has begun to incorporate aspects of it into school curriculums and adult literacy programmes, and the minimum legal age for marriage was raised from 15 to 17 years.

To reduce the population growth rate to 1.3 per cent by 1992 will require the recruitment of approximately 6.6 million new acceptors over the period of the Sixth Five-Year Plan (1987-1991) and the retention of approximately 5.7 million continuing acceptors by the end of 1992. The following measures have been suggested for achieving that goal:

- Expansion of the family planning services to all areas of the country, particularly to the northwestern and southern regions because of their lower contraceptive prevalence rate and higher fertility;
- Improvement of the capability and responsibility of paramedical personnel at each level;
- Increase the dissemination of information and family planning IEC (information, education and communication) efforts to promote the two-child family norm and family planning for attaining a better quality of life;
- Promotion of research and evaluation for more effective formulation of policy, planning, implementation and management;
- Encouragement of community involvement in the initiation and development of the family planning programme; and
- Creation of mechanisms for maintaining close co-ordination, co-operation and transfer of work between public and private agencies.

Report

The report of the Seminar will be issued as one of the Asian Population Studies Series. It will contain, in addition to a summary of the country papers, chapters covering other items that were on the agenda including a review of the current fertility situation and future prospects in the region, and an examination of the socio-economic factors affecting fertility.

Population and Development

Efforts to integrate population and development planning are based on the recognition that population and development are interrelated: population variables influence development variables and are influenced by them.

Although this has been a topic of concern to countries in the ESCAP region for more than a decade, the extent to which population factors are integrated into development planning has been limited. Nonetheless, because the matter is of major importance to the developing countries of the Asian and Pacific region, ESCAP recently organized a workshop to develop an analytical framework for population and development research and planning. Held at Bangkok from 16 to 20 February 1987, the workshop was funded by the United Nations Fund for Population Activities.

The aim of the workshop was to enable study directors to review and discuss the research methodology and guidelines for a series of country studies to be undertaken as part of a larger project on integrating population and development.

The aim of the overall project is to provide individual national entities with up-to-date and scientifically sound descriptions, analyses and interpretations of significant population and development trends and their inter-relationships, as well as assessments of the implications of such trends and relationships for the formulation and improvement of public policy.

A major reason for slow progress in integration is the lack of useful and ready-to-use scientific information for responsible planners and the lack of



Some of the participants in the recent ESCAP workshop on developing an analytical framework for population and development research and planning.

analytical frameworks for researchers and responsible planners which would enable them to identify the crucial information.

In many countries of the Asian and Pacific region, the availability and quality of demographic data have significantly improved in the recent past.

The results of studies on the determinants and consequences of demographic trends have been published in various technical journals and monographs, as well as in unpublished reports which are often not readily useful to policy makers and planners in their current form. For example, the highly technical style of most research reports may render them unreadable to the average policy maker or planner. There are other factors which may limit their usefulness, such as quality variations and the level of confidence attached to the findings. Furthermore, policy makers and planners may not always be in a position to judge the quality of the research based on scientific standards, or to assess conflicting research results unless these are placed in the context of the larger pool of knowledge on the subject.

Thus, "processing" of information is also required if the results of research are to be made readily useful for decision-making. If the decisions to be made involve only fine-tuning of specific policies and programmes, the usual scheme for research dissemination might be adequate to enable the findings of the relevant research to be brought to bear on the problem. However, when the policy decisions to be made are broader in scope, as in cases involving long-term perspective planning, there is a need to process information on a correspondingly broader scale to serve policy makers and planners. More concretely, there is a need for up-to-date critical analysis and synthesis of available information at the country level on significant population and develop-

ment trends and their interrelationships, and an assessment of their implications for the formulation and improvement of public policy and programmes.

With regard to the development of an analytical framework, considerable work has already been done in the areas of population-development interrelationships and their modelling, i.e. specifically in the preparation of an analytical chart, or computerized "mapping", as a systems approach to identifying the main population-development interrelations.

For the ESCAP project on population and development, Bangladesh, Nepal, the Philippines and Thailand have been selected for investigation, primarily on the ground that they are at different stages of integrating population and development activities and research. The comparative analysis that is to be carried out as part of the project will provide a better understanding of the current population-development research activities and the future needs of these countries, and help in developing appropriate analytical frameworks for undertaking research activities in the future. In addition, the country reports to be prepared may also serve the following purposes:

- Enhancing social consciousness of existing population and development trends and their implications;
- Providing relevant background facts and analytical findings for the general public, and otherwise inform public debate about population policy;
- Identifying key gaps in knowledge, and hence helping to establish priorities in research and data-gathering efforts;
- Facilitating international exchange and comparison of findings on population and development relationships; and
- Contributing to the development of improved theoretical and analytical tools for investigation of population and development relationships and consequent policy choices.

The participants in the Workshop were prospective study directors from Bangladesh, Nepal, the Philippines and Thailand, representatives from population planning agencies from those countries, and selected experts in population-development integration from Australia, Malaysia and the Philippines. Representatives from the United Nations Population Division (New York), International Labour Organisation, Asian Development Bank and the Population Council also participated as resource persons.

The report of the workshop will be published as one of the numbers in the Asian Population Studies Series. It will include a review of the situation with regard to population and development research and planning in the four participating countries and selected background papers presented at the Workshop.