

Levels and trends of fertility throughout the world, 1950-1970



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Levels and trends of fertility throughout the world, 1950-1970



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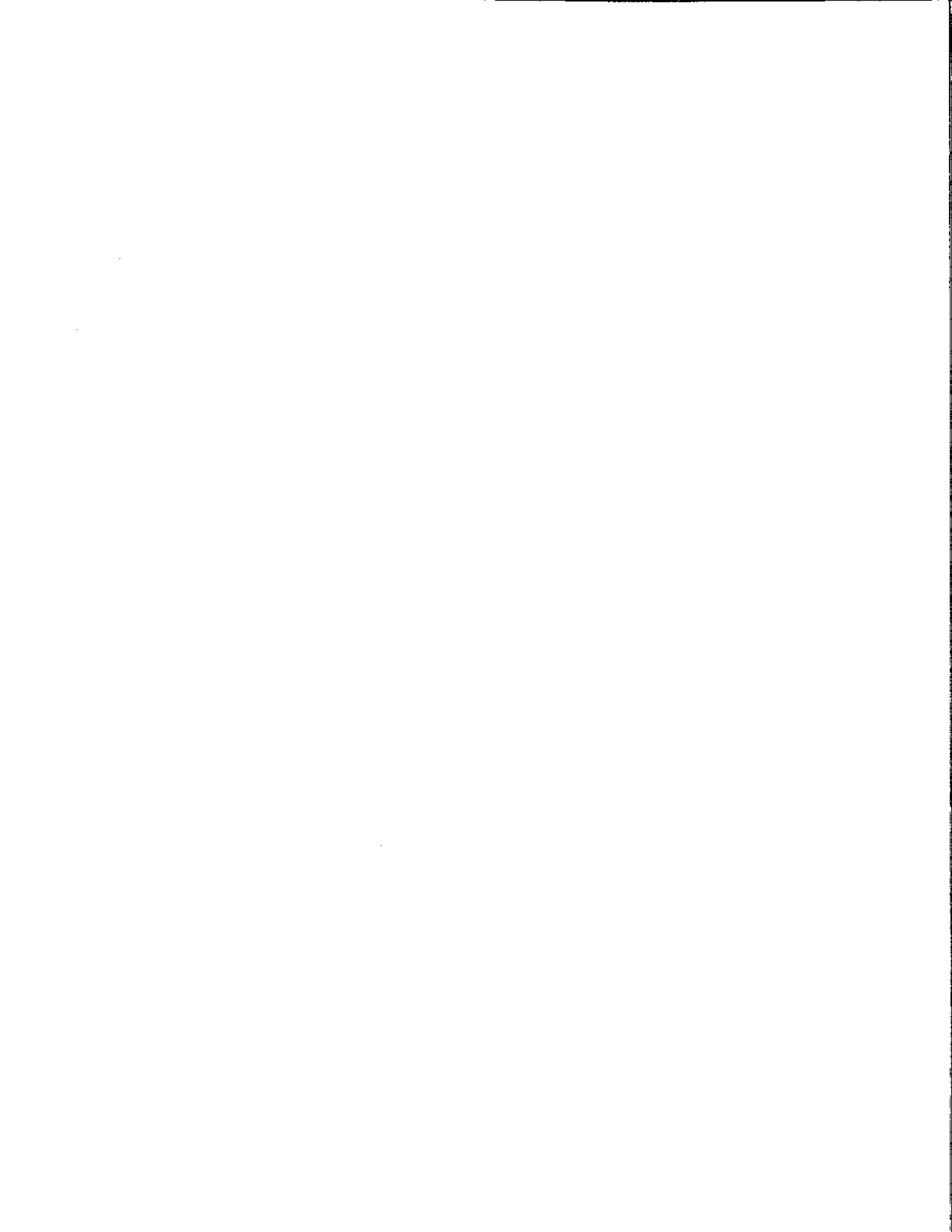
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Explanatory notes

The following symbols have been used in the tables throughout the report:

Three dots (...) indicate that data are not available or are not separately reported.

A dash (-) indicates that the amount is nil or negligible.

A blank in a table indicates that the item is not applicable.

A minus sign (-) indicates a deficit or decrease, except as indicated.

A full stop (.) is used to indicate decimals.

A slash (/) indicates a crop year or financial year, e.g., 1970/71.

Use of a hyphen (-) between dates representing years, e.g., 1971-1973, signifies the full period involved, including the beginning and end years.

Details and percentages in tables do not necessarily add to totals, because of rounding.



I. SUMMARY OF PRINCIPAL FINDINGS

A. Levels of fertility

Scope of data

This report deals with the levels of fertility in the more developed and the less developed countries of the world from around 1950 to about 1973, and particularly concerns the trends that occurred during the decade of the 1960s. Events during the period from 1960 to about 1973 are emphasized because the results of in-depth analyses of the level and course of fertility in earlier years appear in previous United Nations studies. 1/ Data and analyses relevant to the 1950s are included in the present report mainly to add perspective to the subsequent course of fertility. Even with this background, it was not always possible to interpret trends satisfactorily, as there were important fluctuations during the 1950s in many countries in both the more developed and the less developed regions.

The present study is based on crude birth rates and gross reproduction rates (GRR) for countries with an estimated population of 250,000 or more in 1970. Among the 149 countries of the world having a population of this size, there are only four for which no essential data were available (see tables 1 and 2). Therefore, some measure capable of indicating at least the approximate level of fertility at some time in the relatively recent past is available for 145 countries, which in 1970 contained nearly the whole of the world population. For the assessment of conditions and trends of fertility throughout the world around 1960, it was possible to estimate the crude birth rate or the gross reproduction rate of 123 countries containing about 70 per cent of the world population. 2/ Thus, there has been an increase both in the number of countries 3/ and in the proportion of the world population for which at least the order of magnitude or fertility can be determined. But, more significantly, the estimates for many countries for which vital statistics registration is incomplete have been based on better quality data and/or greatly improved methodology. Consequently, the estimated crude birth rates and gross reproduction rates provided in this report command, on the whole, somewhat greater

1/ Recent Trends in Fertility in Industrialized Countries (United Nations publication, Sales No. 57.XIII.2); Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XIII.2) (hereinafter referred to as Population Bulletin, No. 7); Interim Report on Conditions and Trends of Fertility in the World, 1960-1965 (United Nations publication, Sales No. E.72.XIII.3).

2/ See Population Bulletin, No. 7, p.1.

3/ The increase in the number of countries for which data are currently available can be attributed in part to an increase in the number of existing countries, but mostly to a rise in the number of less developed countries that had taken a relatively recent complete population census or a demographic or fertility sample survey which produced results of reasonably reliable quality.

confidence than did the estimated measures presented in the first study of trends throughout the world. 4/

Variations in fertility among the more developed and the less developed regions

The crude birth rates and gross reproduction rates for the major areas of the world are given in table 1. These rates are averages for the period 1970-1975, based on estimated and recorded data and on projections of births and estimated mid-year populations for individual countries, weighted appropriately.

According to the best current estimates, there occur each year about 31.5 live births for every 1,000 of the world population, and a moderate level of world fertility is confirmed by the average gross reproduction rate of about 2.1. But these moderate averages mask wide differences in levels between the more developed and the less developed regions, and they do not show the variations among countries within these regions. Crude birth rates and gross reproduction rates are, on average, over twice as high in the less developed regions as in the more developed regions. In the former regions, the annual average is about 37.5 live births per 1,000 population, associated with a gross reproduction rate of about 2.6, while the economically more advanced regions have an average crude birth rate of 17.2 and a gross reproduction rate of only 1.13.

International comparisons of crude birth rates may lead to faulty conclusions, as the measures are influenced by the sex and age structure of the population, and there are important differences among countries with respect to this structure. As the gross reproduction rate is not susceptible to this short-coming, it is a more satisfactory measure of fertility. However, crude birth rates are generally more widely available than are other indicators of fertility and, therefore, must frequently be utilized for comparison purposes. Both the crude birth rates and the gross reproduction rates given in this report have a special quality of incomparability, because they are based on data from different types of sources, of varying degrees of reliability and for different dates. These measures are defined in chapter II.

Distribution of countries by level of fertility

Table 2 shows the distribution of 149 countries among the major areas by the estimated level of the crude birth rate. It was possible also to estimate the gross reproduction rates for 128 countries, and the distribution of those countries according to that measure is given in table 3.

There are currently a number of less developed countries in which fertility is below the level that around 1960 distinguished the more developed from the less developed countries. At that time, all of the economically more developed countries had a crude birth rate under 30 per 1,000 and a gross reproduction rate under 2.0; none of the less developed countries had such low measures. 5/ According to the

4/ Population Bulletin No. 7, chap. II.

5/ Ibid., p. 2.

Table 1. Estimated crude birth rates and gross reproduction rates, by major area and region, around 1970-1975

Major area and region	Crude birth rate (per 1,000 population)	Gross reproduction rate
World total <u>a/</u>	31.5	2.13
Less developed regions <u>a/</u>	37.5	2.57
Africa	46.3	3.10
Eastern Africa	48.1	3.18
Middle Africa	44.4	2.86
Northern Africa	43.3	3.05
Southern Africa	43.0	2.76
Western Africa	48.7	3.24
Latin America	36.9	2.57
Caribbean	32.8	2.27
Middle America	42.2	3.11
Temperate South America	23.3	1.54
Tropical South America	38.3	2.64
Asia <u>a/</u>	34.8	2.37
East Asia <u>a/</u>	26.2	1.75
South Asia <u>a/</u>	41.9	2.92
Eastern South Asia	42.4	2.85
Middle South Asia	41.7	2.94
Western South Asia	42.8	3.08
More developed regions	17.2	1.13
Northern America	16.5	1.08
Europe	16.1	1.12
Eastern Europe	16.6	1.07
Northern Europe	15.8	1.14
Southern Europe	17.7	1.22
Western Europe	14.6	1.04
Oceania	24.8	1.66
USSR	17.8	1.18

a/ Including an estimated crude birth rate of 26.9 per 1,000 and a gross reproduction rate of 1.84 for China, derived from an analysis of official vital registration statistics for periods during the 1950s, results of the 1953 census, an official estimate of total population for around 1964; and a projection of the births per annum and the mid-year population, estimated on those bases, to 1970-1975. The rates for China were developed in order to permit projections of world and regional population up to 2000. For additional information, see "Selected world demographic indicators by countries, 1950-2000" (ESA/P/WP.55), p. 99. The crude birth rate of 26.9 given here is significantly lower than that given in table 21, which was prepared early in the course of the study. Owing to the complete absence of official statistics on the population of China and its growth parameters, it was considered that no basis existed for discarding the figure used in table 21. For a discussion of various estimates of the crude birth rate of China, see L. A. Orleans, "China's population figures: can the contradictions be resolved", Studies in Family Planning, vol. 7, No. 2 (February 1976), pp. 54-55.

Table 2. Distribution of countries among major areas by level of crude birth rate

Crude birth rate (per 1,000 population)	World total	Less developed regions	More developed regions	Africa	Asia ^{a/}	Europe	Latin America	Northern America	Oceania	USSR
Total	149 ^{b/}	115 ^{b/}	34	50 ^{c/}	38 ^{c/}	28	27	2	3	1
Under 15	9	...	9	...	...	9	...	...	...	...
15.0 - 19.9	21	1	20	...	1	16	...	2	1	1
20.0 - 24.9	11	8	3	1	3	2	4	...	1	...
25.0 - 29.9	9	8	1	1	3	...	4	...	1	...
30.0 - 34.9	8	7	1	2	2	1	3	...	...	...
35.0 - 39.9	9	9	...	3	1	...	5	...	...	...
40.0 - 44.9	23	23	...	5	11	...	7	...	...	...
45.0 - 49.9	38	38	...	25	9	...	4	...	...	...
50.0 - 54.9	17	17	...	11	6	...	...	...	...	...
55.0 - 59.9	...	...	...	...	...	...	...	...	...	...
60.0 and over	...	...	...	...	...	...	...	...	...	...

Note: Countries are classified according to levels of crude birth rates in 1970 or at most recent dates for which data were available.

a/ Comprising the major areas of East Asia and South Asia.

b/ Including four countries for which data were not available.

c/ Including two countries for which data were not available.

most recent available data, and excluding the more developed countries within the less developed regions, there are nine less developed countries in which the gross reproduction rate is below 2.0 and 13 in which the number of live births per annum is under 30 per 1,000 population. ^{6/} A finding of equal interest is that fertility in a number of the less developed countries is below that of Ireland, the more developed country of highest fertility. (This comparison excludes Albania, which had a crude birth rate of 33.3 in 1971 and a gross reproduction rate of 2.4 in 1970, and which generally lacks the characteristics of the more developed countries.) Four countries - Cyprus, Martinique, Hong Kong and Singapore - recorded crude birth rates below 22.7 per 1,000, the level of Ireland; and in nine countries the gross reproduction rates are not as high as the level of 1.9 found for Ireland.

Differences in fertility levels among the less developed countries of Africa, Asia, Latin America and Oceania

Estimates of crude birth rates and gross reproduction rates for around 1970 or the most recent date for which a measure could be calculated are provided in tables 7, 21 and 30 in chapters III, V and VI, respectively, and in annexed table 64. Fertility is high in Africa: in Eastern and Western Africa where the crude birth rates are estimated to be over 48 per 1,000 and the gross reproduction rates average about 3.2, it equals or exceeds that found anywhere else in the world. Among the countries of Africa, the range in crude birth rates is very wide, from 24.8 per 1,000 in Mauritius (1972) to an estimated 52 in Ethiopia (1970); the gross reproduction rates vary from 1.6 to 3.6 in the same two countries.

It had previously been thought that among the peoples of Africa, fertility was probably highest in the western region south of the Sahara Desert. But a first estimate for Ethiopia and new, or improved measures for other countries of Eastern Africa confirm that fertility in that region may be as high as that anywhere in the world. Weighted averages of crude birth rates were 48.7 for Western Africa and 48.1 for Eastern Africa, with the respective gross reproduction rates being 3.2 and 3.2. In 12 of 15 Eastern African countries, birth rates exceeded 45 per 1,000 and gross reproduction rates varied from 3.0 to 3.6.

Other belts of high fertility are found in Middle and Western South Asia, where crude birth rates of 47 per 1,000 and higher are common; and where, according to the best available estimates, one finds an annual average of approximately 42 live births per 1,000 population and an average gross reproduction rate of about 3.0. Fertility is also high in parts of Latin America, particularly in the Dominican Republic, Ecuador, Honduras, Mexico and Nicaragua, for which the crude birth rates are 45 and over per 1,000 and the gross reproduction rate ranges from 3.4 to 3.6.

^{6/} See tables 1 and 2. According to the most recent available data (even where those data relate to a period prior to 1960), there are 13 countries in the less developed regions in which the gross reproduction rate is below 2.0. However, only nine of the countries are considered less developed; four countries are classified as more developed. In 17 countries of the less developed regions, the number of live births per annum is under 30 per 1,000; of those countries, only 13 are classified as less developed; four are in the more developed category.

Table 3. Distribution of countries among major areas by level of gross reproduction rate

Gross reproduction rate	World total	Less developed regions	More developed regions	Africa	Asia ^{a/}	Europe	Latin America	Northern America	Oceania	USSR
Total	149 ^{b/}	115 ^{b/}	34 ^{c/}	50 ^{d/}	38 ^{e/}	28 ^{c/}	27 ^{e/f/}	2	3	1
Under 1.0	11	...	11	...	...	10	...	1	...	...
1.0 - 1.2	17	1	16	...	1	13	...	1	1	1
1.3 - 1.5	8	5	3	...	2	2	3	...	1	...
1.6 - 1.9	9	7	2	1	3	1	3	...	1	...
2.0 - 2.3	7	6	1	2	1	1	3	...	...	...
2.4 - 2.6	13	13	...	8	2	...	3	...	...	...
2.7 - 2.9	15	15	...	6	3	...	6	...	...	...
3.0 - 3.2	21	21	...	16	2	...	3	...	...	...
3.3 - 3.5	24	24	...	14	6	...	4	...	...	...
3.6 and over	3	3	...	1	1	...	1	...	...	...

Note: Countries are classified according to levels of gross reproduction rates in 1970 or at the most recent dates for which data were available.

a/ Comprising the major areas of East Asia and South Asia.

b/ Including 21 countries for which data were not available.

c/ Including Northern Ireland, for which a measure could not be calculated.

d/ Including South Africa, for which no measures are presented owing to lack of reliable information on the majority population; and including Cape Verde, for which no measure was available.

e/ Including 17 countries for which no measure was available.

f/ Including Guyana, for which no measure was available.

Moderate fertility levels characterize the populations of East Asia (excluding Japan), sections of Tropical South America and some countries of Middle America, Réunion and parts of the Caribbean region. Among them, crude birth rates range from 30 to 40 per 1,000, and gross reproduction rates vary from 2.0 to 2.9.

There are pockets of low fertility in each of the less developed regions. Fertility has been decreasing in a few of these countries for a number of years; but in some cases, the levels of fertility that are significantly below the regional average are the result of declines that began or were accelerated during the 1960s. In others, the marked lower levels of crude birth rates and gross reproduction rates may be owing in part to fecundity impairments. It is to this factor that some scholars have attributed the zone of comparatively lower fertility in several countries of Western and Middle Africa, for which crude birth rates of 40 and under have been estimated and gross reproduction rates vary from 2.0 to 2.6. Measures of this order are lower than would be expected of populations that do not practise contraception on a wide scale and that place a high value on large families.

Fertility is comparatively low also in the small countries of East Asia where the populations are largely of Chinese culture. Among those countries, crude birth rates vary from 20 to 29 per 1,000 population and the range of gross reproduction rates is from 1.7 to 1.9, the result of fertility declines arising from the deliberate regulation of births. In Western South Asia, a crude birth rate of 21.3 and a gross reproduction rate of 1.3 indicates low fertility in Cyprus.

Countries with low fertility indicators are also found in the Caribbean region. Around 1970-1973, the recorded birth rates for Cuba, Guadeloupe, Martinique, Puerto Rico, and Trinidad and Tobago were well below 30 per 1,000, varying from 28.0 in Guadeloupe to 22.4 in Martinique. Excluding Guadeloupe, for which the most recent figure relates to 1967, the comparable gross reproduction rates ranged from 1.5 to 2.3, respectively, in Puerto Rico and Martinique.

Differences in fertility levels among the more developed countries of Europe, Northern America and Oceania, and the Union of Soviet Socialist Republics

The countries of Europe, Northern America and Oceania, and the Union of Soviet Socialist Republics and Japan represent, with a few exceptions, the world's regions of low fertility. The outstanding exceptions are Albania which, with a crude birth rate of 33.3 in 1971 and a gross reproduction rate of 2.4 in 1970, is the only European country for which fertility can be regarded as high; and Fiji in Oceania. Neither of these countries has, by comparison with others in these regions, the characteristics of an economically more developed country. Conversely, the levels of gross reproduction rates and crude birth rates indicate low fertility in a number of more developed countries that are located in the less developed regions. In addition to Japan, for which the crude birth rate and gross reproduction rate are 18.8 and 1.0, respectively, these countries include Argentina, Chile, Uruguay and Israel. Among these four countries, the crude birth rate ranges from 21.9 to 27.4 per 1,000 and the gross reproduction rate varies from 1.42 to 1.8.

Within Europe, excluding Albania, fertility is uniformly low, though the range in levels of the crude birth rate is notably wide, from 22.7 in Ireland (1971) to

10.8 in Luxembourg (1973). The gross reproduction rates vary to a somewhat greater extent, from 0.9 in the German Democratic Republic (1972) to 1.9 in Ireland.

Low fertility also characterizes the populations of Canada and the United States of America, in Northern America, of Australia and New Zealand in Oceania, and of the Soviet Union. The range in crude birth rates among these countries is comparatively narrow, from 15.6 in the United States to 21.8 in New Zealand, and the respective gross reproduction rates vary from 1.00 to 1.5.

B. Trends of fertility

Scope of data

Statistical evidence of the course of fertility during the period 1950-1970 is available for all of the more developed countries, but such data may be observed for only 5 countries of Africa (Algeria, Egypt, Mauritius, Réunion and Tunisia); 7 countries of Asia (Hong Kong, Israel, Japan, Singapore, Sri Lanka, West Malaysia and Cyprus); and 17 countries of Latin America. A short series of crude birth rates for the Republic of Korea, covering the years (1958-1966, 1968 and 1970) made it possible, in a limited sense, to appraise the trends in that country. Changes over time in the quality of vital statistics registration obfuscate knowledge of the true course of fertility in a number of less developed countries, so that even after an in-depth analysis, it is hardly possible to state with certainty whether observed changes in levels of crude birth rates and gross reproduction rates reflect the deteriorated or enhanced quality of the statistics or an actual increase or decrease in fertility.

Although the data were sufficient to observe fertility trends in some countries of each region, an overwhelming short-coming was that lack of reliable statistics made it impossible to study trends in any but some very small less developed countries of East and South Asia, which contain only a small fraction of the total population of those major areas; or to trace fertility change in any country on the African mainland south of the Sahara Desert.

Tables 7 and 21, in chapters III and V, respectively, and annexed table 64 include the crude birth rates and gross reproduction rates taken from a variety of sources and based on several different methods of estimation, for 1970 or the most recent available date and for the period around 1960. The statistics for the period around 1960 were either taken from the first report, published in Population Bulletin, No. 7, or were based on census or survey data utilized in that report to calculate the measures. In the latter case, either the Brass method or the stable population method was applied to the old data to produce a new, more reliable measure. Thus, the sets of data presented in the tables mentioned above are not necessarily comparable and may not therefore reflect trends.

Fertility trends in the more developed and the less developed regions

The difference in fertility levels between the more developed and the less developed regions has widened since 1950. Average crude birth rates have declined by about 24 per cent in the more developed regions, compared with roughly only 13 per cent in the less developed regions. The decrease was most marked in

Northern America and the USSR, and least pronounced in Africa and South Asia (table 4). However, post-1960 declines in the number of live births occurring annually per 1,000 population in a number of less developed countries have been such that the more developed and less developed countries are no longer distributed bimodally in respect of level of the crude birth rate, as was the case around 1960. Indeed, the crude birth rates are lower in several less developed countries than in one or two of the economically more advanced countries; and, according to the most recent available data, nine less developed countries recorded gross reproduction rates below the highest value found for a more developed country. As stated above, a crude birth rate of 30 per 1,000 and a gross reproduction rate of 2.0 no longer distinguish the more developed and the less developed countries.

In both the more developed and the less developed countries in which important fertility declines were recorded, changes occurred in the relative frequency with which women bear children at specific ages. The alterations in age patterns were very diverse, however, and among these countries, no systematic changes were found in the age group in which fertility is at a maximum. Among many of the less developed countries that experienced fertility declines, rising age at marriage and declining widowhood, among other factors, apparently accounted for a rise in the relative contribution of older women to gross total fertility, while that of very young women tended to decrease. In many more developed countries, on the other hand, the fertility of women under 20 years of age increased in relation to that of older groups, among whom fertility generally declined.

Trends in the less developed countries

The range in estimated levels of fertility among the less developed countries is broader now than around 1960, owing to relative stability in some countries and important declines in certain others.

Among the countries for which data suited for examination of trends over the period 1950-1970 were available, the picture has been very diverse. In those cases where change was estimated to have occurred, neither the direction of the trend nor its pace appears to have been uniform. Moreover, some countries experienced both upward and downward swings, and there were variations in the timing of the onset of specific change.

Complex patterns of change have characterized fertility in the countries of Latin America, including the Caribbean region. Fertility declined in most countries of this major area, but the timing and declivity of that movement varied markedly among them. It should be noted, as a background to changes during the period 1950-1970, that many of the 17 countries with reliable data for studying trends had experienced earlier declines in fertility which were terminated just prior to the Second World War, and those increases were subsequently recorded.

In one group, the declines began in the late 1950s and during the succeeding decade, drops in the gross reproduction rate of from 6 to 39 per cent were recorded. The smaller reductions occurred in Argentina, Guadeloupe, Mexico and Panama; and the most impressive were in Chile, Costa Rica, Puerto Rico, and Trinidad and Tobago, where declines in the gross reproduction rate amounted to from 29 to 39 per cent. In still another group, Cuba, Martinique and Surinam, fertility did not begin to fall until the mid-1960s; but during the latter half of the decade, decreases in the gross reproduction rate amounted to from 13 to 20 per cent. A decline was not evident in Jamaica until the late 1960s.

Table 4. Estimated crude birth rates by major area and region, 1950-1975

(Live births per 1,000 population)

Major area and region	Crude birth rate				
	1950-1955	1955-1960	1960-1965	1965-1970	1970-1975
World total ^{a/}	35.6	34.6	33.7	32.1	31.5
Less developed regions ^{a/}	42.1	40.9	39.9	38.4	37.5
Africa	48.1	48.0	47.7	47.2	46.3
Eastern Africa	49.3	49.0	48.7	48.5	48.1
Middle Africa	46.7	46.5	45.9	45.6	44.4
Northern Africa	48.0	47.8	46.9	45.3	43.3
Southern Africa	41.7	42.0	43.0	43.1	43.0
Western Africa	49.0	49.0	49.3	49.0	48.7
Latin America	41.0	40.5	39.5	38.1	36.9
Caribbean	36.9	36.9	37.5	34.9	32.8
Central America (mainland)	47.3	46.6	45.3	43.3	42.2
Temperate South America	27.5	27.3	26.1	24.0	23.3
Tropical South America	43.1	42.2	40.9	39.8	38.3
East Asia ^{a/}	35.6	30.9	28.5	27.0	26.2
South Asia	44.0	45.1	44.8	42.9	41.9
Eastern South Asia	44.7	45.6	44.9	43.4	42.4
Middle South Asia	43.9	45.1	44.9	42.7	41.7
Western South Asia	46.2	45.9	44.1	43.5	42.8
More developed regions	22.9	21.9	20.5	18.1	17.2
Northern America	25.1	25.1	22.8	18.3	16.5
Europe	19.8	19.2	18.7	17.7	16.1
Eastern Europe	23.7	21.4	17.5	16.8	16.6
Northern Europe	16.7	16.7	17.9	17.3	15.8
Southern Europe	21.2	20.8	20.7	19.6	17.7
Western Europe	17.6	17.6	18.2	17.0	14.6
Oceania	27.6	27.4	26.7	24.4	24.8
Australia and New Zealand	23.5	23.3	22.6	20.3	21.2
USSR	26.3	25.3	22.3	17.6	17.8

a/ See foot-note a/ to table 1.

Trends of fertility are less well documented for the remaining countries of Latin America, owing to the lack of adequate statistics. There was a generally downward, if slow, movement in Tropical South America, though Colombia, at least, appears to have experienced rising fertility during some years. In both Honduras and Nicaragua -- the Middle American countries in which, along with the Dominican Republic, fertility in this region is estimated to be highest -- the indications are that fertility rose during the period 1950-1970.

The rises in gross reproduction rates that occurred in many countries of Latin America during that period were rooted in a variety of circumstances; and because the scope of this report does not include an analysis of the economic and social variables associated with fertility change over those years, it is not possible to explain satisfactorily the factors responsible for this trend. However, there appears to be adequate evidence to support a conclusion that older women contributed to the increase. The decline of mortality among adult males and the corresponding extension of life expectancy at age 25, so that important proportions of males who reached age 25 completed their fifty-fifth birthday, brought about a reduction of widowhood. This factor was responsible for some of the fertility increase among women aged 30-35 years and older.

Another factor was the important advances made in the control of fecundity-impairing conditions. In parts of the Caribbean region, in particular, the result of increased fecundity was higher fertility in existing unions; and this factor, along with declining widowhood, meant that a larger proportion of more fertile unions remained intact for a longer period. In addition, improved economic conditions in some countries led to a decline in the age at marriage and larger proportions marrying; the effect of those changes is questionable, however, in view of the wide prevalence of consensual unions and the contention regarding differences in fertility level by type of union.

Impressive advances in education among both sexes and the diffusion of modern contraceptive methods, in many countries through national family planning programmes, are among the factors associated with the fertility declines. And the worsening of economic conditions which characterized a number of countries beginning in the late 1960s tended to have a depressing effect upon fertility, among other things, by inducing increases in the age of marriage and decreases in the incidence of marriage and the formation of other sexual unions. The age pattern of fertility also changed in that, in many countries, childbearing tended to occur later and to be concentrated in a relatively shorter segment of the reproductive span.

Crude birth rates and gross reproduction rates declined notably and uniformly in the seven small countries of Asia for which data on fertility trends are available, and that movement was also the result of a variety of changes within those societies. Among those countries, also, the timing varied somewhat; in some of them, declines were notable during the late 1950s; but in others, for example, Hong Kong and Sri Lanka, diminishing fertility was not evident until the early 1960s.

Decreases in the proportion of women of reproductive age accounted, at least in part, for the lower birth rates recorded in some of these countries; in others, advancement in the age of women at marriage was partially responsible; and in some of them, influences favourable to a rise in birth rates occurred along with restraining factors. But, in some of the countries, a decline in marital fertility

underlay the diminution of the crude birth rate and was partially responsible for it. Among all of the countries for which marked decreases were recorded, changes occurred in the economy and in the social conditions that are supportive of lower fertility. These countries have had considerable investments in family planning programmes, and the economic and social advancements are no doubt at least partially responsible for the success achieved in some of them. Significantly, childbearing has been increasingly concentrated in a shorter portion of the reproductive years, and maximum fertility currently occurs comparatively late, when the woman is 25-29 years of age.

For the countries containing the vast majority of the population of Asia, the available data were not of sufficient reliability to permit an assessment of trends. Lack of any reliable information for China greatly impairs the knowledge of fertility levels and trends in Asia. However, the current levels of crude birth rates and gross reproduction rates estimated in several sources indicate considerable decreases in that country. Furthermore, the reported success of the national family planning programme, the rise in education over the past two decades and other positive changes in the conditions of life among the people support an assumption that fertility is declining in China.

The moderate level of the estimated crude birth rates and gross reproduction rates for India and several countries of Eastern South Asia suggests that, if any confidence can be placed in their quality, fertility in those countries is or has been declining. But the comparatively high level of the measures estimated for most countries of Western South Asia points to stable or even rising fertility owing to improvements in levels of living.

Africa remains the major area about which there is least knowledge of fertility trends. Crude birth rates dropped substantially in Egypt, Mauritius, Réunion and Tunisia, the four countries of Africa for which data were available to assess trends. In Mauritius and Tunisia, where the declining gross reproduction rates confirm a downward trend in the 1960s, the measures were influenced largely by decreases in fertility among younger women, possibly as a result of a later age at marriage; but in Réunion, women under 30 years of age accounted for only 37 per cent of the fertility decline. For Algeria, no trend was discernible from the sparse series of crude birth rates, but a rise in fertility evidently occurred during the later part of the 1960s as evidenced by the upward swing of the gross reproduction rate. That increase was due largely to a rise in birth rates for women aged 25-39 years.

For the remaining countries of Africa, no satisfactory evidence was available upon which to assess the course of fertility. The lower fertility of many countries in Middle Africa and of some in Western Africa may reflect actual declines, as some scholars maintain; or impaired health, as is commonly held. In general, however, what can be said of fertility trends in Africa remains a matter of conjecture. When levels of living have risen appreciably, a number of countries of Africa are likely to experience higher fertility prior to the onset of a pronounced decline. Better nutrition and improved conditions of health, including reduction of the prevalence of venereal disease, may raise fecundity levels and contribute to higher fertility in the short run. In addition, improvements in the life expectancy of males may affect a decline in widowhood and subsequent rises in fertility among older women. Other changes, such as urbanization and employment of women outside family economic activities, appear already to have begun an erosion

of customs that have served in the past to moderate levels of fertility. Thus, in the interim prior to adoption of more modern methods of fertility regulation, a rise in fertility is indicated. But the potential for such rises will very probably be mitigated by advances in education and a diffusion of modern contraceptives. The latter development can be expected to occur increasingly, as the mortality of children declines and more and more countries adopt family planning programmes. These programmes, along with improvements in the condition of women and other social and economic advances, are likely, as in Egypt, Mauritius and Tunisia, eventually to pave the way to lower fertility.

Trends in the more developed countries

The course of fertility in the more developed countries of Europe, Northern America and Oceania, and in Japan and the USSR during 1950-1970, the period under review, assumed diverse forms. Nearly all of these countries experienced a post-war rise in fertility. But it was short-lived in Eastern Europe and the USSR; and in the Southern European countries, it was for the most part milder and occurred somewhat later. In Japan, fertility had already been high at the end of the Second World War, and it dropped sharply during the 1950s. In the remaining more developed countries, the post-war rise in fertility was more pronounced and persisted over a longer time.

As a result of these varied movements, there is currently greater uniformity of levels of the crude birth rate and gross reproduction rate. This convergence of fertility levels further reflects the accelerated declines in some countries, mainly after 1960; the relative stability or more moderately paced decreases in others, and even very slight increases in several. Eleven of the more developed countries currently have a gross reproduction rate under 1.0; around 1960, none were in this category.

Among the outstanding changes, particularly since around 1960, has been the decrease of crude birth rates and gross reproduction rates in Canada, the United States of America and the Union of Soviet Socialist Republics, from levels that were among the highest recorded for more developed countries to measures of intermediate value. In some Eastern European countries, the crude birth rates reached their post-war nadir during 1965-1967 and subsequently tended first to rise and then to fluctuate; but in all the countries but Romania, the gross reproduction rates declined. The value of the gross reproduction rate increased in Greece, Ireland, Romania and Spain; remained relatively stable in Italy and declined in the remaining countries.

An important characteristic of the fertility trends during those years was the diversity of the changes in age patterns marked by a decline of fertility among older women and the increased concentration of fertility among younger women, i.e., those under 30 years of age. One aspect of this phenomenon was the change in fertility levels among women aged 15-19 years. During the 1950s, when relatively few women married early, the fertility of this group accounted for only a small proportion of gross total fertility. But in the succeeding decade, its contribution to aggregate fertility increased in the majority of developed countries, Ireland and Spain being the most notable exceptions, owing mainly to declining age at marriage; in very recent years, young women in several countries of Northern Europe and perhaps elsewhere have increasingly formed consensual marriages at early ages. In most developed countries, therefore, from two thirds to three quarters

of childbearing now takes place among women under 30, generally between the ages of 20 and 29 years.

In spite of the close association between trends in marriage patterns and fertility in the past, information concerning the former factor appears to be losing some of its predictive utility. During the 1960s, fertility in many countries continued to fall although age at marriage was also declining and the proportions married increased. Furthermore, the increased ability of parents to adapt quickly to changing economic, social and political conditions means that fertility will be increasingly sensitive to temporary, and hard to predict, developments.

A number of developments appear to have been responsible for the changes in reproductive behaviour that have been manifest since the Second World War. The persons coming of marriageable age during these years were members of the relatively small and well-educated birth cohorts of the 1920s and 1930s. Owing to their small size and relatively high educational levels, the economic boom associated with post-war recovery made their employment position particularly favourable. In addition, government programmes of support for the costs of having and rearing children, as well as improvements in contraceptive technology, meant that earlier marriage did not necessarily imply a large and economically burdensome family. Under these conditions, earlier and more marriages were contracted and couples began having children. But they bore these children earlier than they otherwise might have, and their reproductive behaviour therefore "overlapped" with that of older cohorts that were still having children. Earlier marriage and childbearing represented a change in timing rather than a lengthening of the reproductive period, as became evident when these women reached their late twenties and early thirties, for during the 1960s, they began to terminate childbearing and their fertility rates declined sharply. This "final phase" of the shift of fertility to earlier ages exercised a negative effect upon annual birth rates. On the other hand, those who reached marriageable and reproductive age in the 1960s did so in economic and demographic circumstances that were different from the conditions experienced by their immediate predecessors. Economic conditions had worsened and competition for reduced employment opportunities had increased among the relatively large birth cohorts then coming of age. Trends in age at marriage and proportions marrying were reversed, and the fertility of young women declined. This factor, combined with declining fertility among older women, led to sharp downturns in annual fertility rates after the mid-1960s.

The pattern just described was most characteristic of Northern and Western Europe, though it is generally applicable elsewhere. In Northern America, the fertility boom was more pronounced and involved a slight increase in average family size. In the countries of Eastern Europe, and in the Soviet Union and Yugoslavia, changes in nuptiality were either more modest or did not have the same effect, for factors generating lower fertility tended to offset or mitigate the positive influence of increasing the proportions married. Furthermore, the nature of the rapid economic and social change in socialist countries differed markedly from that occurring elsewhere. During the post-war period, these countries underwent a transformation from rural agricultural to urban industrial societies, and the proportion of better-educated married women employed in non-traditional activities rose rapidly. These conditions constituted strong forces making for significant and continued fertility reductions.

II. MEASUREMENT OF FERTILITY AND SOURCES OF DATA

The first analytical assessment of levels, trends and conditions of fertility throughout the world to be undertaken by the United Nations 1/ covered, for the countries having requisite data of sufficiently reliable quality for a study of trends, the years around 1960 and extended to various periods in the past. Account was taken also of the conditions affecting the levels and trends of fertility in those countries. The statistics for a large number of the less developed countries, particularly those in Africa and Asia, were such that an assessment of trends was not feasible and it was possible only to deal with levels of fertility around 1960 and the conditions that influenced them.

The intention was to undertake decennially an assessment of levels, trends and conditions of fertility throughout the world, with the first year of each decade as the focal point and reference date. It was not foreseen, however, that the decade of the 1960s would witness important declines of fertility in some countries in which the level had previously been comparatively high. Nor was it envisaged that the emphasis placed upon family planning programmes as means of reducing fertility and the relatively large number of countries adopting such programmes would give rise to a demand for up-to-date information on world fertility trends at more frequent intervals than 10 years.

To meet the demand for current information on trends of world fertility, the United Nations published an interim report, 2/ which covered the period 1960-1965. For that report, no effort was made systematically to determine and analyse socio-economic, cultural and related factors and conditions influencing the fertility levels and trends. Rather, the work was confined to the compilation, evaluation and analysis of the fertility measures, with only the most superficial attempts to explain conditions responsible for the levels and trends that the measures represented.

Because the two publications mentioned above are periodic reports of the continuous monitoring of fertility conditions and trends throughout the world by the United Nations, they are useful companions to the present report which, wherever possible, avoids duplicating the information published in them.

A. Scope and emphasis of the present report

This report on conditions and trends of fertility in the world focuses on changes that occurred during the decade of the 1960s. But as every effort was made

1/ This study was published in Population Bulletin of the United Nations, No. 7-1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XIII.2) (hereinafter referred to as Population Bulletin No. 7).

2/ Interim Report on Conditions and Trends of Fertility in the World, 1960-1965 (United Nations publication, Sales No. E.72.XIII.3).

to provide the most recent data available as of November 1974, the statistics for analysis of trends extend to various years in the early 1970s. In order to add perspective to findings on trends during the period 1960-1970, where possible, data are given also for the period 1950-1960. Even against this background, it was not always possible to interpret with assurance the apparent trends in 1960-1970 because in some countries, particularly among those in Latin America, during the 1950s the rates had fluctuated considerably or posed other problems for trend determination.

Neither the supply nor the quality of the fertility measures for a majority of the less developed countries was adequate for the study of trends; for most of them, therefore, the discussions deal with the level of fertility at the most recent date for which acceptable measures were available, in most cases around 1970. Reference is frequently made to the "most recent estimates", but this phrase should not be interpreted as relating in effect to 1970 or to an adjacent year, as for a number of these countries the most recent data available were for years somewhat earlier than 1970. For the chapters concerned with the less developed regions, tables are provided (for chaps. III and V, tables 7 and 21; and for chap. IV, annexed table 64) which show the crude birth-rates and the gross reproduction rates that were presented in Population Bulletin, No. 7, and those calculated in the course of the present study. The latter figures are referred to as the "most recent estimate". For the first study, measures for a number of countries were based on the "reverse-survival" technique and, for a variety of other reasons, were of dubious and generally unsatisfactory quality. This condition still applies to the crude birth rates and gross reproduction rates developed for many of the countries as a part of the present study. However, there are a number of countries for which there were no improved statistics of fertility and no population census or survey data more recent than those used to estimate fertility for the study carried out around 1960. Therefore, for these countries, either the Brass technique or the stable population method, both comparatively recent developments, was applied to the census or survey data used in the 1960 study, with the result that more dependable estimates were derived for some countries from the old data on children ever born and children born during a one-year retrospective period by age of mother and on the age structure of the population. Therefore, the tables mentioned above may contain two different crude birth rates or gross reproduction rates based on a single source of census or survey statistics.

Thus, for the foregoing reasons and those specified below in section B, it should be clear that the purpose of the tables giving the crude birth-rates and gross reproduction rates in Africa, Asia and Latin America is primarily to show the order of magnitude, availability and quality of data around 1960 and around 1970 and not to indicate trends.

For a variety of reasons, but owing mainly to lack of data, the chapter on fertility differentials has been confined to two variables - education and rural-urban residence. The material represents a summary statement based on a survey of the literature and is presented in lieu of a systematic analysis of differential fertility throughout the world, an undertaking rendered unfeasible by lack of resources and requisite data. Although the theory that information about the differentials is useful in making forecasts of fertility change for the population as a whole has been challenged, ^{3/} such material is certainly important for an understanding of the determinants of observed measures of aggregate fertility.

^{3/} See, for example, G. Carlsson, "The decline of fertility: innovation or adjustment process", Population Studies, vol. XX, No. 2 (November 1966), pp. 149-174.

A major distinction between the first report in this series and the current assessment of levels and trends of fertility throughout the world is that, owing to problems of time and resources, the present report does not offer a systematic analysis of economic and social factors affecting levels of fertility. Similarly, in view of the current world-wide emphasis on development as the prime factor in fertility decline, it would have been advantageous to have available in this report results of an analytical examination of relationships between fertility and various development indicators as confirmation of or challenge to the validity of this theory. Thus, for the less developed countries in particular, the omission of these lines of analyses limits the usefulness of the present report.

Because analyses of relationships between measures of fertility and indicators of economic and social development for years "around 1970" have not been undertaken, no new line of demarcation has been established on distributions of population by levels of fertility and of development indicators. Consequently, it is not possible to verify empirically the border line in fertility levels between the more developed and the less developed countries "around 1970"; or even to determine whether, in view of the recent declines of fertility in some less developed countries, such a mark can still be said to exist. The first analysis showed that a gross reproduction rate of 2.0 distinguished the more developed from the less developed countries and was a more systematic indicator than any of a variety of development parameters. ^{4/}

It is proposed to broaden the scope of the next report on the assessment of levels and trends in fertility throughout the world to comprehend the lines of analysis omitted in the current text, including the possible demarcation in fertility levels between the more developed and the less developed countries. The updating and broadening of knowledge relating to this indicator are important for the understanding of fertility and its change, and particularly for estimates and projections of fertility levels and change in countries lacking the population and vital statistics and other data needed to calculate fertility measures for relatively frequent intervals.

B. Methodological aspects

Definitions and significance of measures of fertility

As in the two previous reports, this study of levels and trends of fertility throughout the world is based on the crude birth rate and the gross reproduction rate, and the countries included are those in which the population in 1970 was estimated to be 250,000 or more.

The crude birth rate is the total number of live births occurring during one calendar year per 1,000 of the average number of inhabitants living in the area during the same year, usually taken as the population at mid-year. The simplest and most widely used indicator of fertility, its main advantage over other, more refined measures is that the data required for its computation are generally more readily available for a larger number of countries. However, it has several disadvantages since, owing mainly to differences in population structure, it does

^{4/} Population Bulletin, No. 7, chap. IX.

not afford international comparability. For the same reason, the crude birth rate is not ideally suited for assessing differences in fertility over time or between geographical areas within a country; its use may conceal or even magnify the effects of differences in the proportion of women in the reproductive ages and their distribution by age within this broad category, as well as the effect of variations in the ratio of males to females of reproductive age.

The gross reproduction rate is the average number of daughters that would be born per woman in a group of women if all women survived to the end of their reproductive years and bore daughters at each age in accordance with the age-specific fertility schedule for women of various ages in a specified area and period. Calculation of the gross reproduction rate requires statistics on the number of births during the year tabulated by age of mother and on the total female population at mid-year of the same year, in single years of age or by five-year age groups. The measure is derived by adding the age-specific birth rates for a given year or period and either multiplying the sum by the recorded proportion of female births among all births or, as has been done here, by applying a standard sex ratio of 105 male per 100 female births in cases where statistics on the sex ratio at birth are lacking.

The gross reproduction rate is generally more satisfactory for analysing fertility differences among countries, as well as time trends within a country, than is the crude birth rate, as the gross reproduction rate is largely independent of the effect of the sex and age composition of the population, which varies among countries and over time in any given country. Thus, changes in these elements, which influence the birth-rate, have no bearing on the value of the gross reproduction rate.

Sources of data and bases of estimation

Changes since the assessment of levels and trends of fertility around 1960.

For this report, the countries of the world have been classified into eight major areas, subdivided into 24 regions. ^{5/} The division was made in order to obtain regions with similar demographic characteristics and quality of demographic data. The broadest classification of countries is the dichotomy of the less

^{5/} For further information, see World Population Prospects as Assessed in 1968 (United Nations publication, Sales No. E.72.XIII.4), table A.6.1, pp. 114-120. However, since that publication was issued, some changes have been made in the names of regions and in the order of their arrangement and that of the countries within each region: (a) all major areas, regions and countries are listed alphabetically; (b) in Latin America, the Temperate South America region now consists only of Argentina, Chile, Uruguay and the Falkland Islands (Malvinas); Paraguay is included in the Tropical South America region; (c) East Asia now comprises the following three regions: China; Japan (including the Ryukyu Islands, which are now called Okinawa-ken and represent one of the 47 prefectures (ken) of Japan); and Other East Asia (Democratic People's Republic of Korea, Hong Kong, Macau, Mongolia and Republic of Korea); (d) in South Asia, the three regions are now called Eastern South Asia, Middle South Asia and Western South Asia; the coverage of countries is unchanged; (e) in Oceania, the former Polynesia and Micronesia region is now called the Micronesia and Polynesia region.

developed and the more developed regions. This classification was based on the fertility levels of these regions in the early 1960s as measured by the gross reproduction rate. As mentioned above, an intensive analysis of gross reproduction rates and various development indicators revealed that a country might be considered more developed when its gross reproduction rate was under 2.0, and less developed when the rate equalled or exceeded that value.

The crude birth-rates and the gross reproduction rates that are based on "complete" vital statistics registration data represent material available to the Statistical Office of the United Nations as of November 1974, supplemented in some cases by more up-to-date information obtained from official national publications. Some of these rates, especially those for more recent years, i.e., from 1971 to 1973, were subsequently revised by correcting the total number of births or by adjusting the population base, for example, to accord with the results of the 1970 round of censuses.

The first report in this series was a pioneering study undertaken at a time when useful fertility statistics for the less developed countries were less readily attainable and when the methodology for deriving approximate values was relatively less sophisticated. Thus, every effort was made to establish estimates of fertility levels and trends for as many countries as possible, frequently by reverse-surviving appropriate age groups of the population or the entire population reported in censuses or sample surveys. Since that study was undertaken, the methodology of fertility estimates has been greatly improved and considerable work has been done in that sphere. Consequently, for the present study, interest was not focused on developing original estimates of fertility levels for countries with deficient registration data, but was centred on the compilation, evaluation and analysis of estimates obtained from a wide variety of sources. These sources include the regional commissions of the United Nations; and the Cairo Demographic Centre and the Latin American Demographic Centre (CELADE), both sponsored by the United Nations, as well as published scholarly reports.

Following established policy ^{6/} the measures used in this study to describe fertility levels in each country have been classified according to the sources of data and the method of estimation, and have been grouped into four major categories:

Category A: "complete" birth registration statistics;

Category B: birth data from sample survey;

Category C: other estimates, including estimates whose basis cannot be clearly determined from available information:

- (1) "reverse-survival" method;
- (2) on the number of children reported as having been born to each woman during her lifetime;
- (3) on reported births occurring during the 12 months prior to a survey or census and the number of children ever born, both by age of mother;
- (4) on the analysis of the age composition of the population, supplemented by indications of the rate of natural increase or of an approximate level of mortality;

^{6/} Population Bulletin, No. 7.

- (5) on the number of reported births by age of mother in the year preceding the census, adjusted by graphic techniques;
- (6) basis either unknown or cannot be clearly determined from available information;

Category D: either no data available or statistics so deficient as to be useless for describing order of magnitude.

As used above, the letters A-D are not completely comparable with those applied in the previous reports. ^{7/} Some modifications have been introduced to indicate the basis upon which the rates were estimated without signifying their order of reliability. Thus, category C is used to designate estimates obtained by various methods and from different sources. For example, it includes fertility estimates derived by the "reverse-survival" method and by analysis of the age composition of population, supplemented with information on the rate of population growth or an indication of the approximate level of mortality; and estimates developed from census or survey data on reported births and the number of children ever born by age of woman, as in the case of some African countries, ^{8/} or on the number of children reported as having been born to each woman during her lifetime in other countries of Africa. ^{9/} Estimates obtained from the regional commissions and by the Cairo Demographic Centre and CELADP have also been placed in category C, as have all estimates of a provisional nature and those for which the method of derivation could not be fully ascertained.

Changes in the supply and type of fertility measures

It is useful to ascertain improvements in the supply and quality of basic fertility measures since the first report in this series was issued. Generally speaking, the information required to assess levels of fertility was available for a slightly greater number of countries around 1970 than around 1960. Table 5 suggests that, in this connexion, Africa and Asia underwent changes of comparable magnitude but, in fact, far greater progress was made in Asia. Although two of the four countries with a population of 250,000 or more for which nothing is known of the order of magnitude of crude birth rates or gross reproduction rates are in Asia, the progress in data development over the past decade has been rather considerable: an additional 10 countries of Asia currently have data for some reasonable measure of fertility.

^{7/} Ibid., and Interim Report on Conditions and Trends of Fertility in the World, 1960-1965.

^{8/} William Brass and A. J. Coale, "Methods of analysis and estimation"; and William Brass, "Note on Brass method of fertility estimation", both in William Brass and others, The Demography of Tropical Africa (Princeton, New Jersey, Princeton University Press, 1968), pp. 88-139 and 140-142, respectively. See also Manual IV, Methods of Estimating Basic Demographic Measures from Incomplete Data (United Nations publication, Sales No. 67.XIII.2), pp. 32 and 73-74.

^{9/} Population Bulletin, No. 7, p. 18.

Table 5. Number of countries with a population of 250,000 or more having at least one fertility indicator, around 1960 and around 1970 ^{a/}

Major area	Most recent date around 1960	Most recent date around 1970
	<u>Number of countries with data</u>	
World	128	149
Less developed regions	90	115
Africa	36	50 ^{b/}
Asia (including Japan)	28 ^{c/}	38 ^{d/}
Latin America	26	27
More developed regions	35	34
Europe	29	28
Northern America	2	2
Oceania	3	3
USSR	1	1
	<u>Number of countries without data</u>	
World	25	4
Less developed regions	25	4
Africa	12	2
Asia	12 ^{c/}	2
Latin America	1	0
More developed regions	0	0

Note: Asia comprises the two major areas of East Asia and South Asia.

a/ Around 1960 and around 1970 refer to availability of data as of the cut-off date for collection and development of data for the first and present reports on conditions and trends of fertility throughout the world.

b/ For 14 countries, the most recent estimate is for the same date (and represents the same measure, possibly revised) around 1960 as is given in Population Bulletin of the United Nations, No. 7 - 1963 (United Nations publication, Sales No. 64.(XIII).2). There are only 20 countries for which separate data are available for both periods, and only 14 for which the second estimate relates to a date around 1970, i.e., 1965 or later.

c/ Including East Malaysia and West Malaysia separately; Bangladesh and Pakistan counted as one country.

d/ Excluding Iran and Yemen, for which an estimated crude birth rate is given in table 21, but for which the year to which the measure relates is unknown. Including Bangladesh and Pakistan separately; including West Malaysia and excluding East Malaysia.

On the other hand, for 14 of the 50 countries of Africa, the most recent fertility measures relate to dates "around 1964" or earlier; and for 14 countries, the figures shown as the most recent estimate "around 1970" apply to the same date and are, in fact, based on the same basic data as the figure presented for 'around 1960', the difference being use of another method of deriving the estimate. However, data for a year around 1970 are currently available for an additional 12 countries for which neither a crude birth-rate nor a gross reproduction rate of reasonable quality could be estimated for "around 1960".

In the world as a whole, useful information exists on at least the order of magnitude of fertility at some time over the past one and a half or two decades in 149 of the countries with populations of 250,000 or more, with 115 of these being less developed countries. Data of reliable quality are available at recent dates for all the more developed countries, as are statistics of fertility trends. It was possible to assess trends for all or a part of the post-1950 period for each of the more developed countries, for 17 of the countries of Latin America, for 5 countries of Africa and for 7 countries of Asia.

In spite of the progress since around 1960 in the development of statistics suited for deriving fertility measures, there remain a number of countries for which no useful estimates of fertility can be derived. These countries contain approximately one quarter of the world's population. It is noteworthy that among the countries of Asia, the bases for reliable fertility estimates are still lacking for 42 per cent of the population of the area, excluding that portion of the USSR which is in Asia (the entire USSR is now considered to be a separate major area).

A summary of the types of available information on the level of the crude birth-rate in recent years for countries of each major area of the world is presented in table 6, expressed in terms of the number of countries for which this study provides fertility statistics or estimates of each type and their share of population in the world and in the major areas in 1970. The most striking fact about this table is the expected disclosure that virtually the entire population of the more developed regions of the world is covered by "complete" birth registration statistics, whereas such data are available only for countries containing about 12 per cent of the estimated population in the less developed regions as a whole. By major area, the comparable figures are 44 per cent in Latin America, 15 per cent in Africa and only 6 per cent in Asia (comprising East and South Asia). In the less developed regions, the gaps in fertility measures caused by lack of adequate vital registration statistics have been largely filled by development of useful estimates through application of the Brass method and stable population analysis to data obtained in population censuses and surveys.

Comparison of the information in table 6 with a similar tabulation of types of information available for estimating fertility around 1960 ^{10/} shows relatively little progress during the 1960s in so far as "complete" registration statistics are concerned. Gains have been noted for one country of Oceania, two countries of Africa and two of Latin America, with a loss in one country of Asia. The number of countries having neither useful measures nor bases for calculating them declined from 30 to 8, with the progress having been made mainly in Africa and Asia.

^{10/} Population Bulletin, No. 7, p. 13.

Table 6. Number of countries and percentage of total population according to basis for estimating crude birth rates, by major area, most recent available date

Type of data or estimates	World total	Less	More	Africa	Asia ^{a/}	Europe	Latin America	Northern America	Oceania	USSR
		developed regions	developed regions							
	<u>Number of countries^{b/}</u>									
Total	<u>149</u>	<u>115</u>	<u>34</u>	<u>50</u>	<u>38</u>	<u>28</u>	<u>27</u>	<u>2</u>	<u>3</u>	<u>1</u>
"Complete" birth registration statistics (A)	64	30	34	5	8	28	17	2	3	1
Birth data from sample survey (B)	7	7			5		2			
Other estimates, including estimates whose basis cannot be clearly determined from available information (C)	70	70		43	19		8			
C(1)	(4)	(4)	(...)	(...)	(...)	(...)	(4)	(...)	(...)	(...)
C(2)	(1)	(1)	(...)	(...)	(1)	(...)	(...)	(...)	(...)	(...)
C(3)	(16)	(16)	(...)	(15)	(...)	(...)	(1)	(...)	(...)	(...)
C(4)	(34)	(34)	(...)	(28)	(4)	(...)	(2)	(...)	(...)	(...)
C(5)	(2)	(2)	(...)	(...)	(1)	(...)	(1)	(...)	(...)	(...)
C(6)	(13)	(13)	(...)	(...)	(13)	(...)	(...)	(...)	(...)	(...)
Either no data available or so deficient as to be useless for describing order of magnitude (D)	8	8		2	6					
	<u>Percentage of population as of 1970</u>									
Total	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
"Complete" birth registration statistics (A)	35	12	100	15	6	100	44	100	87	100
Birth data from sample survey (B)	18	24			31		9			
Other estimates, including estimates whose basis cannot be clearly determined from available information (C)	23	31		78	21		47		13	
C(1)	(1)	(1)	(...)	(...)	(...)	(...)	(6)	(...)	(...)	(...)
C(2)	(3)	(4)	(...)	(...)	(6)	(...)	(...)	(...)	(...)	(...)
C(3)	(2)	(3)	(...)	(18)	(...)	(...)	(5)	(...)	(...)	(...)
C(4)	(7)	(10)	(...)	(60)	(2)	(...)	(2)	(...)	(...)	(...)
C(5)	(3)	(4)	(...)	(...)	(0)	(...)	(34)	(...)	(...)	(...)
C(6)	(7)	(9)	(...)	(...)	(12)	(...)	(...)	(...)	(13)	(...)
Either no data available or statistics so deficient as to be useless for describing order of magnitude (D)	24	33		6	42					

Note: The bases of estimation in category C are: (1) reverse-survival method; (2) on the number of children reported as having been born to each woman during her lifetime; (3) on reported births occurring during the 12 months prior to a survey or census and the number of children ever born, both by age of mother; (4) on the analysis of the age composition of the population, supplemented by indications of the rate of natural increase or of an approximate level of mortality; (5) on the number of reported births by age of mother in the year preceding the census, adjusted by graphic technique; (6) basis either unknown or cannot be clearly determined from available information.

a/ Comprising the major areas of East Asia and South Asia.

b/ Excluding countries with population under 250,000 in 1970.

Among the more noteworthy changes is the fact that it is no longer necessary to rely on birth-rates calculated by reverse-surviving the age structure of the population, a method that depends upon quality in the data on age structure and requires assumptions about mortality, both of which are of dubious quality for most less developed countries. There has been a measure of the gain in this respect: for the study undertaken around 1960, the only available fertility measures for 36 less developed countries were derived by the "reverse-survival" method; but for the present study it was necessary to apply this method for only four countries. It should be noted, however, that the present study does contain weak estimates that have been derived by other techniques.

The principal factors responsible for improvements in the quality, as well as the supply of fertility data, have been the increases in the number of population censuses and of demographic and fertility surveys and the improvements in their quality, the development of the Brass method of calculating fertility rates from census and survey data; and the development of the stable population method of analysis, which also utilizes age data from censuses and surveys.

Brass method

The Brass method of estimating fertility rates relies chiefly on two sets of data: (a) births reported as occurring during the 12-month period preceding a survey or census; and (b) the number of children ever born to each woman, both tabulated by age of the woman. Since these questions on births have been included in a number of demographic surveys in Africa, the Brass technique has been developed and designed for use primarily for African countries, especially for those in Tropical Africa. However, more recently, such questions have been included in the censuses or surveys in some countries of Asia and Latin America, and the Brass technique has been applied to data from these inquiries.

The Brass method accepts as correct the age pattern of fertility rates obtained from the reported births, though the level of fertility is estimated from the mean number of children ever born reported by young women. The application of the procedure and the various ways of adjusting and/or correcting the errors in the reference period, as well as omissions of children ever born by older women, are described in great detail in the studies of both Brass ^{11/} and the United Nations. ^{12/} Measures derived by this method are influenced by the validity of the mortality assumptions and by the quality of the age data. The method does not accommodate unsystematic errors in age reporting; and where data are influenced by such inaccuracies, the quality of the derived measures is affected accordingly. For purposes of this report, the computational procedure is briefly described below:

(a) Age-specific fertility rates are estimated by relating the reported number of births to mothers during the 12 months preceding a survey or census to the corresponding female population for each age group. The resulting estimates are referred to as "current" age-specific fertility rates;

(b) The mean number of children ever born reported by women for each age group is determined and referred to as "retrospective" rates;

^{11/} W. Brass, loc. cit., pp. 140-142.

^{12/} Manual IV. Methods of Estimating Basic Demographic Measures from Incomplete Data, pp. 73-75.

(c) "Current" age-specific fertility rates are converted into mean number of children ever born or average cumulative fertility by age, by application of multiplication factors derived by interpolating the values given in annexed table IV.1 or IV.2 of Manual IV. 13/ The resulting mean number of children ever born is then compared at each age with the observed "retrospective" rates;

(d) Lastly, the ratios of the "retrospective" rates to the "current" estimated mean number of children ever born are calculated for all age groups of women. On the assumption of a more accurate reporting of children ever born by younger women, the ratio calculated for women in the age group 20-24 is selected as a correction factor, which is then used to "correct" the reported "current" age-specific rates for all age groups, in order to adjust these rates to consistency with the mean number of children ever born reported by women in each age group and to correct the fertility rates for a possible error in the reference period;

(e) The adjusted estimate of total fertility is taken as five times the sum of the "corrected" age-specific fertility rates.

Stable population analysis technique

Estimation of the crude birth rate by means of the stable population analysis technique for countries with age distributions from a single or two or more censuses or surveys utilizes the cumulative proportion of the population up to age $C(X)$ and an observed rate of population increase between the censuses or surveys. The observed cumulative proportions of the population up to age $C(X)$ are compared with the corresponding proportions up to age $C(X)$ given in the regional model stable population 14/ at various levels of mortality, with the same rate of increase as observed between the censuses or surveys. This comparison determines by interpolation the exact level of mortality, and the birth-rate corresponding to the same mortality level in the stable populations is selected.

In order to facilitate accuracy, it has been recommended that the level of female birth rate be estimated first, using the cumulated proportions of the female population up to age 35 and the observed rate of growth for the female population. The birth-rate for the entire population, as well as for the male population, can then be obtained by multiplying the male ratio at births and the sex ratio of the total population as enumerated by the census or survey. The resulting estimated birth rate can then be adjusted, if necessary, for changing mortality.

13/ Ibid., p. 124.

14/ Ansley J. Coale and Paul Demeny, Regional Model Life Tables and Stable Populations (Princeton, New Jersey, Princeton University Press, 1966).

III. AFRICA

A. General data problems

Some measure of fertility is currently available for 48 of the 50 countries of Africa having a population of 250,000 or over. Data are lacking for Cape Verde and for the majority population of South Africa. In spite of the improvements in data supply since around 1960, when it was not possible to develop useful fertility estimates by any known method for 12 of the 48 countries, the regions of Africa remain sorely lacking in satisfactory statistics for determining fertility levels and trends. Indeed, the data available permit almost no knowledge of long or short-term trends, nor is it possible to deduce from them the changes that may have occurred since 1960. A summary statement of available fertility estimates for the most recent dates for countries of Africa is given in table 7.

Generally speaking, the most recent fertility measures, while still of poor and uneven quality, are on a somewhat firmer basis than the estimates developed for the first study of this series, 1/ which, for all but three countries, were derived either by "reverse-surviving" the age structure for a single census, calculated from unadjusted sample survey data or by less suitable methods. For the estimates presented in this chapter, the Brass method of analysis 2/ and the stable population method - not yet developed when the earlier study was carried out - have been utilized to derive measures of fertility from the old census and sample survey data, as well as results of more recent and, in some cases, more reliable population censuses and surveys. However, the data are still far from satisfactory, and improvement of basic data sources with which to measure demographic parameters remains a priority for the whole of Africa.

In the current assessment of fertility levels, there are only five countries - Algeria, Egypt, Mauritius, Réunion and Tunisia - for which the relevant measures can be derived from complete birth registration statistics. As these countries are by no means representative of the major area, knowledge of fertility conditions in Africa depends upon the quality of demographic sample surveys and population censuses, the adequacy of the methodology for analysing and manipulating the results of those inquiries and the skill with which the methodology is applied. The limitations of the methods of deriving fertility measures from censuses and surveys are discussed above in chapter II.

The most recent fertility estimates for 15 of the 48 countries were developed

1/ Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XIII.2) (hereinafter referred to as Population Bulletin, No. 7), chap. III.

2/ William Brass and Ansley J. Coale, "Methods of analysis and estimation", in William Brass and others, The Demography of Tropical Africa (Princeton, New Jersey, Princeton University Press, 1968), pp. 88-104; Manual IV. Methods of Basic Demographic Measures from Incomplete Data (United Nations publication, Sales No. 67.XIII.2).

by the Brass method from survey data on reported births during a given reference period by age of mother and on the number of children ever born to women in the reproductive ages (method C (3)). ^{3/} For the remaining 28 countries lacking adequate data sources for the estimation of basic fertility measures, the measures were derived by an analysis of age structure, as reported in population censuses and surveys, in conjunction with information on the rate of natural increase or an assumption about mortality and application of stable or quasi-stable population methods (method C (4)).

The first method does not overcome certain deficiencies that frequently characterize African survey and census data. With respect to surveys, this lack applies mainly to retrospective reporting of births during the specified period prior to the inquiry, as inhabitants outside the more modern, urban centres are generally unable to perceive the time intervals employed by surveys with any precision and, to a greater extent than their urban counterparts, may give a misleading report of births occurring during the reference period.

Further, among certain ethnic groups found in sub-Saharan Africa, cultural traditions forbid references to dead children; and women of all ages may systematically omit them in reporting children ever born. Even where such cultural prohibitions do not exist, the children who died shortly after birth may be systematically excluded from live births and therefore not reported; and this source of under-reporting is very probably not age-related. Because the method of estimation does not correct for systematic under-reporting, the derived measures would underestimate fertility. There are, of course, other causes of under-reporting both in respect of births occurring within a given reference period and of children ever born. ^{4/} All are applicable to data obtained in African surveys.

Another problem that may also render less valid the estimates developed by method C (3) and that may, in addition, impair measures derived by method C (4) relates to age reporting and the fact that in vast regions of the continent, particularly the less urbanized areas, results of surveys and censuses contain gross age irregularities. These irregularities result not only from mis-statements but, to a very important extent, from ignorance of calendar-year methods of reckoning age and from the methods used by interviewers to guess or estimate it. ^{5/}

A common occurrence in African demographic inquiries is exaggeration of ages of females at either end of the reproductive cycle and particularly at the earlier ages, so that there is understatement of girls aged 10-14 years and an over-count of those in the childbearing ages. Method C (3) would probably not be sensitive to this type of error, because the misreporting affects only one or two age groups. In such cases, the effect would be to depress the gross reproduction rate.

Both surveys and censuses taken in Africa appear to yield a deficit of young adult males, who are said to emigrate or to migrate seasonally in order to secure employment. Such undercounts would exaggerate the crude birth rate, particularly

^{3/} For explanation of methods of estimation, see chap. II, sect. B.

^{4/} For a detailed discussion, see Manual IV. Methods of Estimating Basic Demographic Measures from Incomplete Data, pp. 31-34.

^{5/} This fact has been reported by many scholars. See, for example, G. T. Acsádi, A. A. Igun and G. Z. Johnson, Surveys of Fertility, Family Planning in Nigeria (Ile-ife, Nigeria, University of Ife, 1972), p. 68.

where the seasonal migrations coincided with the period of pregnancy and delivery, so that the absence of males had little effect upon exposure of women to risks of pregnancy. 6/ Examples of the extent of the undercounting are provided by the data used to estimate fertility for 19 countries of Western Africa. Among 12 of them, the number of males per 100 females at the time of the census or survey ranged from 90 to 98; and in seven countries, fewer than 95 males per 100 females were enumerated. 7/

Although the methods of estimating the fertility measures are sufficient to accommodate certain biases, it is probable that gross age inaccuracies do affect the derived estimates. Not only are there the problems of differences among the countries with respect to the quality of reporting in the sample surveys and censuses, but additional factors affecting comparability may be introduced by the different methods used to derive the fertility measures for the various countries. For example, owing to misreporting with respect to age and children born, acknowledged earlier as a consistent source of error in African demographic inquiries, analysis of sample survey data by the Brass method tends to yield lower estimates than are obtained by methods of stable population analysis, 8/ the two methods used to derive the more recent estimates given in table 7. The exceptions that have been observed relate to data that were apparently less distorted by misreporting, in which cases the two methods when applied to the same data gave very similar results.

In many of the countries, there is no doubt a tradition of accounting age among the urban upper classes and among some ethnic groups to a greater extent than others. In such cases, a further bias would be introduced if the samples failed to obtain equitable ethnic, rural-urban or other relevant representation. It is unfortunate that many of the demographic and KAP (knowledge-attitude-practice) surveys, upon which estimates of African fertility depend, have not been subjected to stringent tests for sampling errors. 9/

The quality of the estimates for these countries may therefore be regarded as adequate only to suggest possible order of magnitude; in no cases, except the countries mentioned above and possibly Kenya and Zaire with reservation, may they be taken to represent the level of fertility. Clearly, it is only in respect of the

6/ In some cultures, the seasonal migrations, where they occur in large volume, apparently coincide with pregnancy and delivery, so that the men are absent from home when conception is either not possible or culturally proscribed and return when those conditions no longer prevail.

7/ "Levels and trends of fertility in the countries of Africa" (E/CN.14/POP/75), paper submitted to the Working Group on Fertility Levels and Differentials, and the Prospects for the Future, Addis Ababa, Ethiopia, 18-22 December 1972, p. 17.

8/ Ansley J. Coale and Etienne van de Walle, "Notes on areas for which estimates were made but not subject to a detailed study", in W. Brass and others, *op. cit.*, pp. 164-167.

9/ "Report on the Technical Meeting on Methods of Analysing Fertility Data for Developing Countries", Budapest, 14-25 June 1971 (E/CN.9/241).

five countries mentioned earlier as having relatively complete vital registration that any confidence can be placed in current knowledge of the level of African fertility. 10/

There are few phenomena in the world today about which there is greater interest and speculation than the course of fertility in Africa. Yet, little is known about the levels and patterns of fertility in this major area now or in the past. 11/

Reasonably reliable data on recent trends are available for Algeria, Mauritius, Réunion, Tunisia and possibly Egypt; but these countries contain only a small proportion of the population of Africa and none is representative of the vast regions south of the Sahara. None the less, for the reasons discussed in chapter II, except for these five countries, the differences between the values for the period around 1960 and the most recent estimates, i.e., approximately around 1970 (table 7) cannot, as a rule, be interpreted as being necessarily indicative of a trend. Application of a different method of estimation was in some cases the sole reason for a change in the value of the fertility measures. For example, the estimates for Mali (1960-1961) using the methods applied in the first study of this series, i.e., retrospective reports of births by age of mother in the year preceding the survey, yielded a crude birth-rate of 56 per 1,000 and a gross reproduction rate of 3.4. But when the Brass method was applied to the same data, the corresponding results were 50 per 1,000 and 3.3. Similarly, the "reverse-survival" of sample survey data on age structure upon which the earlier estimates for several countries were based yields somewhat lower measures than are obtained from retrospective reporting in a sample survey of children ever born in a specified 12-month period, so that comparisons cannot be made between these types of estimates.

Looking at the data in table 7, it would be erroneous, therefore, to conclude that the changes are real. The tools for deriving indirect measures of fertility are sharper now than in the recent past when the first study was issued, and their application may have the same effect on the measurement of trends over the past decade as technicians have become accustomed to expect where there is improvement or relaxation in the quality of vital statistics registration.

B. Levels of fertility

Africa is a continent of great geographical, ecological, cultural and ethnic heterogeneity. The countries vary markedly in area and population size, and in both crude and effective density. There are differences among them, too, in respect of experience with foreign political domination, stability of government, and level and means of economic development. In this diverse setting, if one excludes Mauritius and Réunion, which are atypical countries of Africa, the estimated levels of fertility are found to be uniformly high, perhaps higher, on

10/ This point is made forcibly in W. Brass and others, op. cit., after a more exhaustive analysis of data available for examining fertility in Africa than is attempted here. Scarcely any more reliable materials currently exist than were available to them in the mid-1960s.

11/ Population Bulletin, No. 7, pp. 25-26.

Table 7. Estimated levels of fertility in countries of Africa by region

Region and country	Most recent estimates				Estimates given in Population Bulletin, No. 7			
	Year or period	Method of estimation	Crude birth-rate (births per 1 000 population)	Gross reproduction rate	Year or period	Method of estimation	Crude birth-rate (births per 1 000 population)	Gross reproduction rate
Western Africa								
Benin	1961	C(3)	50	3.3	1961	B	54	3.3
Cambia	1963	C(4)	40	2.6	...	...	...	...
Ghana	1960	C(4)	50	3.3	1950-1955	C(1)	51	3.0
Guinea	1954-1955	C(3)	48	3.0	1954-1955	B	62	3.4
Guinea-Bissau	1965	C(4)	40	2.6	1940-1945	C(1)	47	2.4
Ivory Coast	1957-1958	C(3)	52	3.0	1957-1958	B	55	3.0
Liberia	1969-1970	C(3)	49	3.2	...	...	...	...
Mali	1960-1961	C(3)	50	3.3	1960-1961	B	56	3.4
Mauritania	1964-1965	C(4)	45	2.9	...	...	...	...
Niger	1959-1960	C(3)	53	3.5	1959-1960	B	61	3.5
Nigeria	1963	C(4)	50	3.3	1952-1953	C(1)	53-57	3.6-3.8
Senegal	1960-1961	C(4)	49	3.1	1960-1961	B	(40)	...
Sierra Leone	1963	C(4)	45	2.9	...	...	...	...
Togo	1961	C(3)	50	3.1	1961	B	55	3.3
Upper Volta	1960-1961	C(3)	49	3.2	1960-1961	B	49	2.9
Eastern Africa								
Burundi	1965	C(4)	46	3.0	1957	B	47	2.6
Comoros	1966	C(4)	47	3.0	...	...	...	...
Ethiopia	1970	C(4)	52	3.6	...	...	...	...
Kenya	1969	C(4)	49	3.3	1948 ^{a/}	C(2)	50	2.9-3.4
Madagascar	1966	C(3)	49	3.3	1950-1955	C(1)	45	2.4
Malawi	1966	C(4)	48	3.0	...	...	...	...
Mauritius	1970	A	26.8	1.86	1960 ^{b/}	A	39.3	2.87
	1972	A	24.8	1.60				
Mozambique	1960	C(4)	43	2.7	1945-1950	C(1)	47	2.6
Réunion	1970 ^{c/}	A	30.0	2.26	1960 ^{d/}	A	44.0	3.1
	1973	A	28.1	...				
Rwanda	1957	C(4)	50	3.5	1957	B	52	3.3
Somalia	1965	C(4)	47	3.2	...	...	...	...
Southern Rhodesia	1969	C(4)	48	3.3	1953-1955 ^{a/}	B	45	3.1
Uganda	1969	C(4)	46	3.0	1959	C(2)	42	2.6
United Republic of Tanzania	1967	C(4)	48	3.2	1957 ^{e/}	C(2)	46	2.7
Zambia	1969	C(4)	50	3.3	1950 ^{a/}	B	57	3.5
Middle Africa								
Angola	1960	C(4)	49	3.2	1940-1945	C(1)	49	2.7
Central African Republic	1959-1960 ^{f/}	C(3)	45	2.5	1958-1959 ^{g/}	B	48	2.4
Chad	1963-1964	C(3)	48	2.6	...	...	...	...
Congo	1960-1961	C(3)	44	2.8	1960-1961	B	47	2.8
Equatorial Guinea	1965	C(4)	35	2.4	...	...	...	...
Gabon	1960-1961	C(3)	31	2.0	1960-1961	B	36	2.1
United Republic of Cameroon	1960 ^{h/}	C(3)	40	2.5	1960 ^{i/}	B	42	2.3
Zaire	1955-1957	C(4)	45	2.8	1955-1957	B	43	2.4

Table 7(continued)

Region and country	Most recent estimates			Estimates given in Population Bulletin, No. 7				
	Year or period	Method of estimation	Crude birth-rate (births per 1 000 population)	Gross reproduction rate	Year or period	Method of estimation	Crude birth-rate (births per 1 000 population)	Gross reproduction rate
Northern Africa								
Algeria	1969	A	45.6 ^{d/}	3.45 ^{l/}	1944-1949 ^{k/}	C(1)	45	3.1
Egypt	1971	A	34.8	2.5 ^{l/}	1950-1955	C(1)	45	2.8
Libyan Arab Republic	1964	C(4)	47.0	3.2	1944-1949	C(1)	43	3.0
Morocco	1961-1963	C(3)	45	3.4	1945-1960 ^{m/}	C(1)	47	2.9
Sudan	1955-1956	C(4)	49	3.4	1955-1956	B	52	3.0-3.5
Tunisia	1970 ^{n/} 1972 ^{n/}	A A	38.2 39.2	3.12 ...	1960 ^{o/}	A	45.7	3.3
Southern Africa ^{p/}								
Botswana	1964	C(4)	45	2.9	1936-1941	C(1)	41	2.7
Lesotho	1966	C(4)	38	2.4	1956	B	40	2.4
Namibia	1960	C(4)	45	3.0	...	...	...	...
Swaziland	1966	C(4)	50	3.2	...	...	...	...

Source: Earlier estimates taken from Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XIII.2), except as noted.

Note: The following methods of estimation were used:

A: "complete" birth registration statistics;

B: birth data from sample surveys;

C: other estimates, including estimates whose basis cannot be clearly determined from available information:

(1) "reverse-survival" method;

(2) on the number of children reported as having been born to each woman during her lifetime;

(3) on reported births occurring during the 12 months prior to a survey or census and the number of children ever born, both by age of mother;

(4) on the analysis of the age composition of the population, supplemented by indications of the rate of natural increase or of an approximate level of mortality.

a/ For Africans only.

b/ Most recent revised rates; the crude birth-rate and gross reproduction rate for 1960 published in Population Bulletin, No. 7 are 39.6 and 2.8, respectively.

c/ France, Institut national de la statistique et des études économiques, Annuaire statistique de la Réunion, 1969-1972 (Paris, 1973), pp. 34 and 36, tables 2 and 3.

d/ Most recent revised rates; the crude birth-rate and gross reproduction rate for 1960 published in Population Bulletin, No. 7 are 44.3 and 3.1, respectively.

e/ For Tanganyika only.

f/ Survey data exclude the populations of Bangui and Zone East, and nomad populations (Bororos, Babugas).

g/ For Central and West Ubangi.

h/ For Northern Cameroon.

i/ For five provinces of Northern Cameroon.

j/ Gourari Négadi, "La fécondité en Algérie. Niveaux - tendances - facteurs", doctoral dissertation, Ecole pratique des hautes études, VIème section: Sciences économiques et sociales, Paris, 1975, p. 64, table II-4.

k/ For Moslems.

l/ Calculated on the basis of reported births by age of mother and projected age distribution of female population for 1970.

m/ For Moroccan Moslems.

n/ Official rates corrected for under-registration by 5 per cent.

o/ Estimated rates taken from Alain Marcoux, "La croissance de la population de la Tunisie, passé récent et perspectives", Population (Paris), vol. 26, special number (March 1971), p. 107.

p/ Not including South Africa because no data are available for the major ethnic group.

average, than elsewhere in the world today. The range in the more recent estimates of live births per 1,000 population was from 53 for Niger (1959-1960) to 24.8 for Mauritius (1972). Table 7 also shows a birth rate of 52 per 1,000 in Ethiopia (1970), the first fertility indicator available for that country. The gross reproduction rates also attest to high fertility, the range being from 1.60 for Mauritius (1972) to 3.6 in Ethiopia (1970).

The variations in the estimated crude birth rates and gross reproduction rates are depicted more clearly in maps 1-4 from which it may also be observed that on the African continent, there are belts of high and more moderate levels of fertility. However, as stated earlier, because of the variations in methods of estimation, dates and type and quality of the basic data, comparisons over time or between countries or groups of countries are hazardous at best. Among the most recent estimates, a gross reproduction rate of 2.9 or under was found for 16 countries and a value of 3.3 or over for 14 countries; gross reproduction rates of an intermediate value were found for 18 countries. In so far as the most recent estimates are concerned, the possibility of lower fertility zones is more evident in the gross reproduction rates than in the crude birth rates (see maps 1 and 2). Quantitative information is not available that would permit reasonably satisfactory explanations for the differences and similarities in fertility among the peoples of Africa. Indeed, lack of such data remains, along with the gross inadequacy of fertility and other demographic statistics, an essential impediment to analyses of conditions and change in fertility in Africa. It is useful, nevertheless, to review, to the extent possible, the regional differences and similarities in the estimated fertility measures, as such a review provides at least a modest framework within which to consider the influence of cultural and related phenomena.

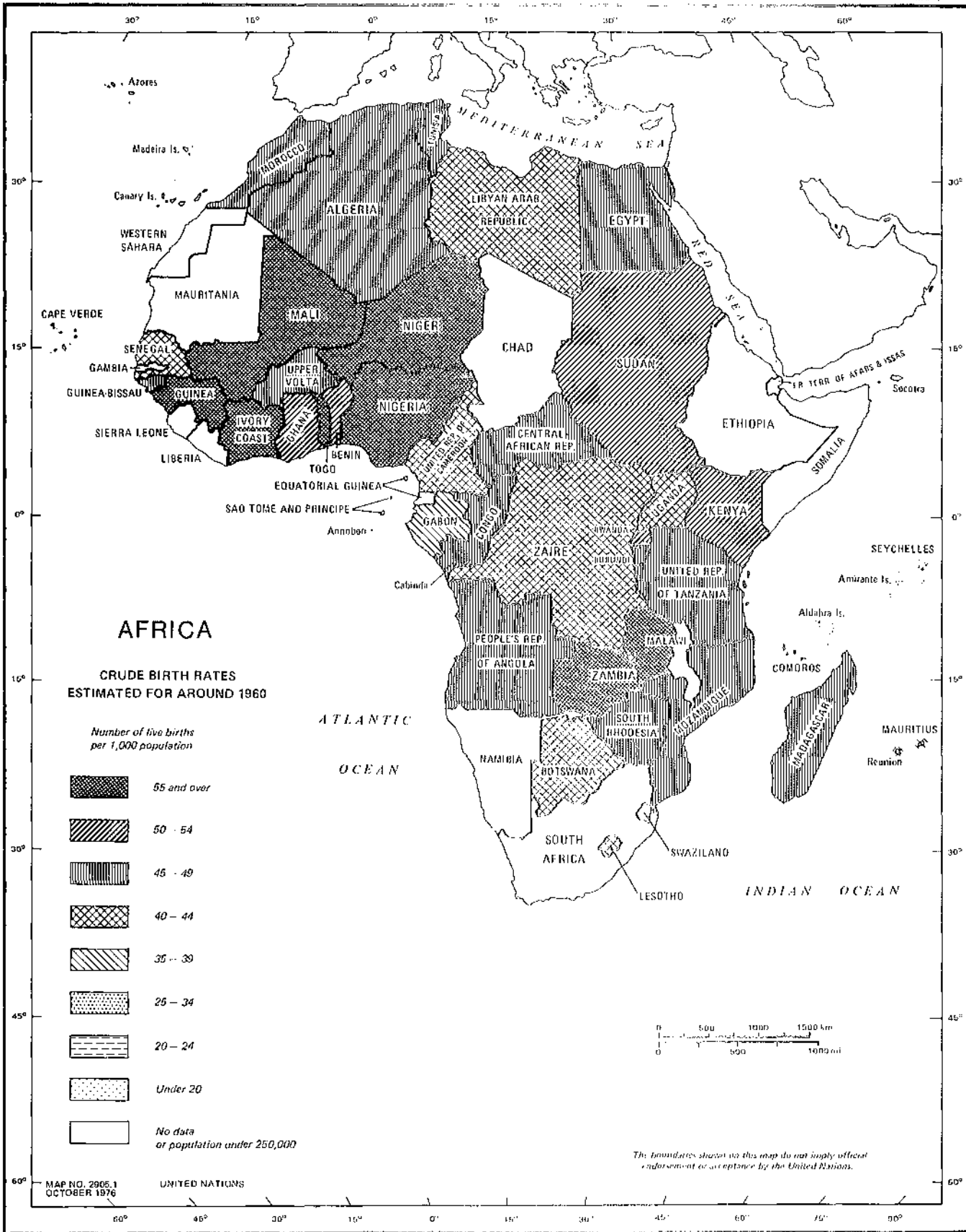
Western Africa

Western Africa includes the countries west of the United Republic of Cameroon and Chad, and south of Algeria and Morocco. It therefore excludes five countries allotted to this region in Population Bulletin No. 7. The countries excluded are the Central African Republic, Chad, the Congo, Gabon and the United Republic of Cameroon. The 15 countries that currently comprise the region of Western Africa include 7 of the 11 within Africa that have crude birth rates estimated at 50 per 1,000 or more. Fertility in this region appears to be about as high, on average, as that anywhere in Africa and perhaps in the world. The estimated crude birth rates range from 40 to 53 per 1,000 live births and the gross reproduction rates from 2.6 to 3.5, with 11 of the 15 countries having measures estimated at 3.0 or over.

In their analysis of African data, Brass and his associates considered the estimates for eight of the countries to be among the least reliable for Africa. Those countries are the Gambia, Ghana, Guinea-Bissau (formerly referred to as Portuguese Guinea), Liberia, Nigeria, Senegal and Togo. ^{12/} Although the exact level suggested by the data in table 7 cannot be accepted with confidence, the statistics do confirm that fertility in Western Africa is uniformly high.

Lack of reasonably reliable fertility measures for Nigeria greatly impairs current knowledge of the demography of what is by far the most populous country of Africa. A number of sample surveys capable of yielding fertility measures have










^{12/} A. J. Coale and E. van de Walle, in W. Brass and others, op. cit., p. 166.

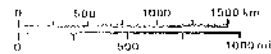


AFRICA

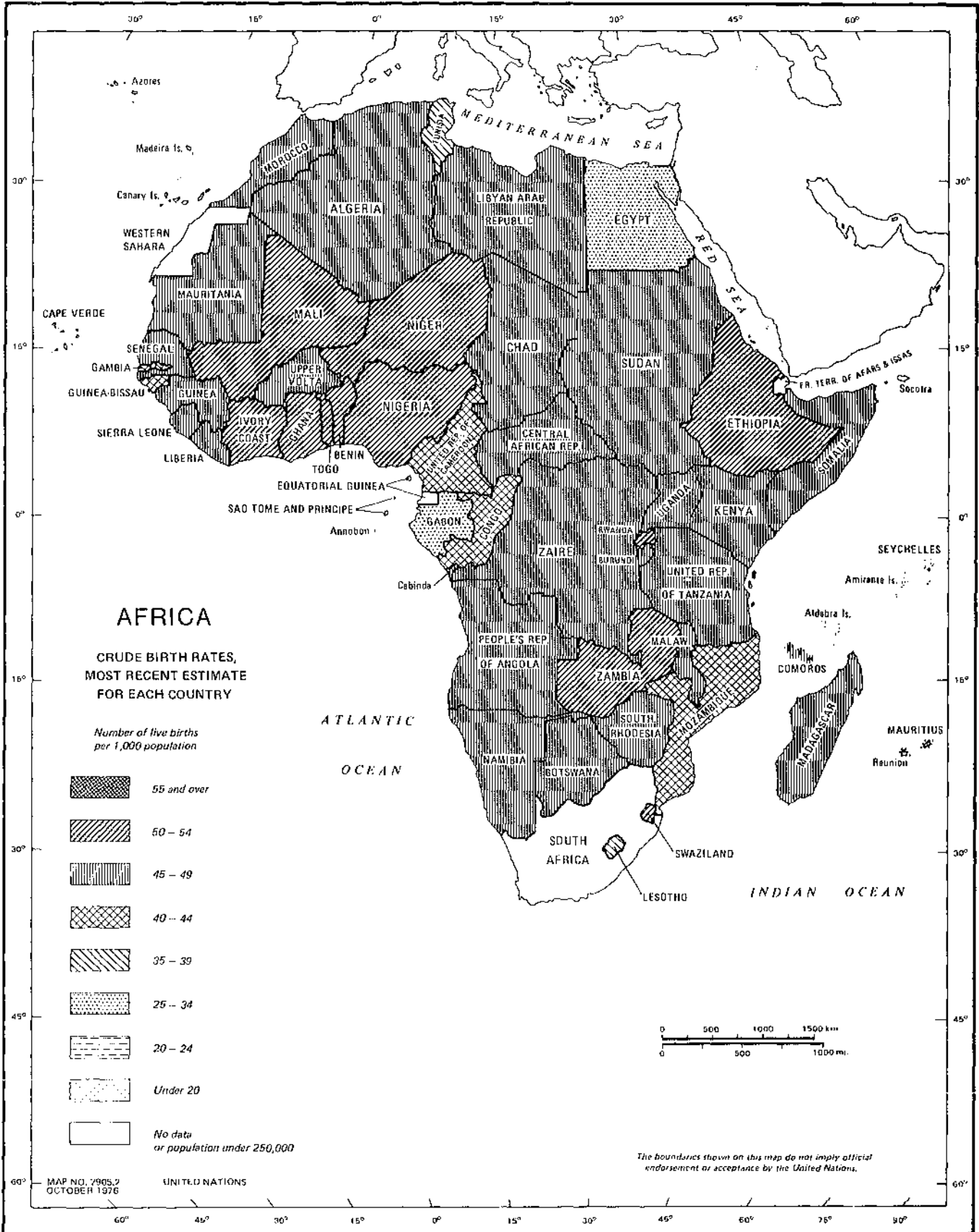
CRUDE BIRTH RATES
ESTIMATED FOR AROUND 1960

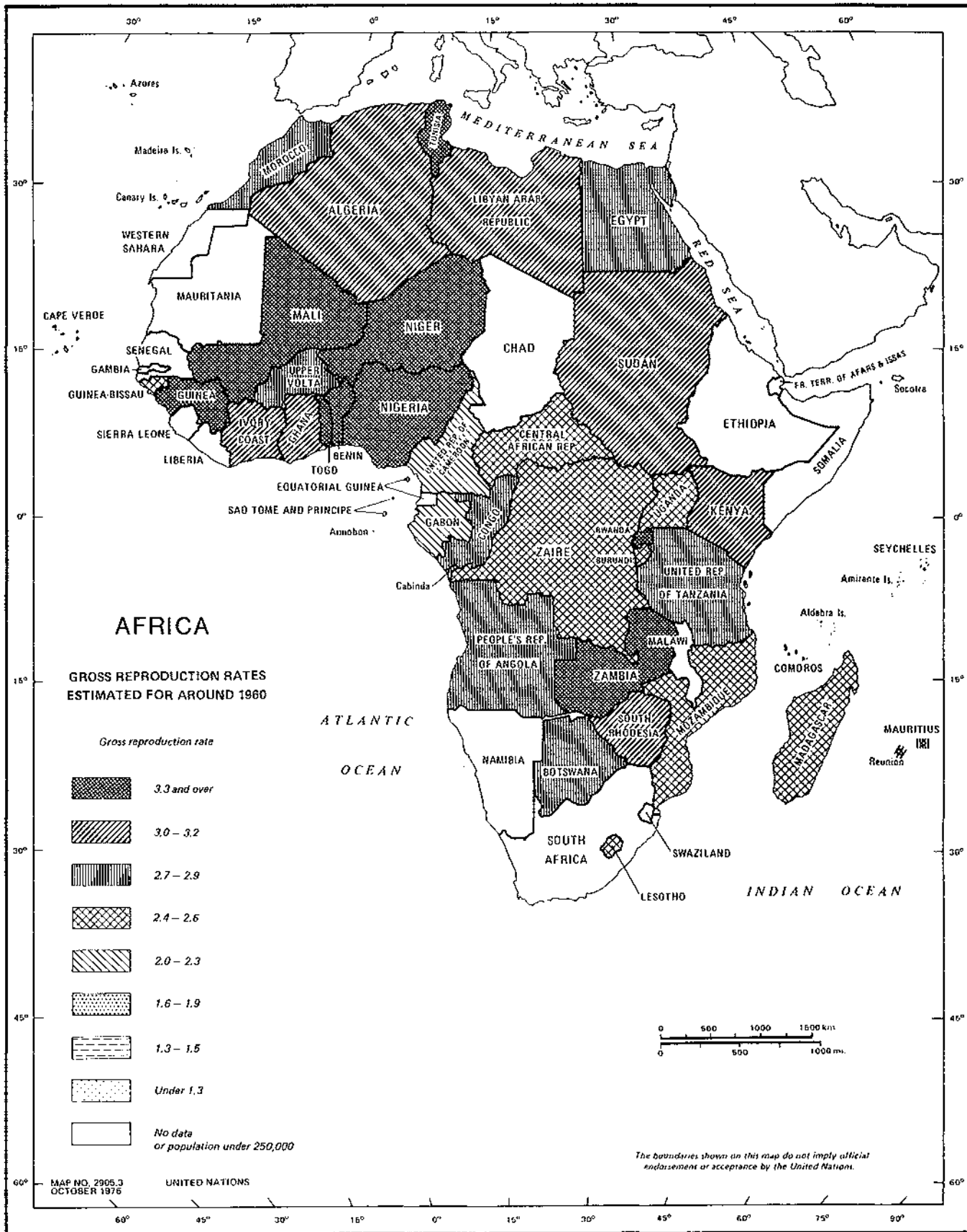
Number of live births
per 1,000 population

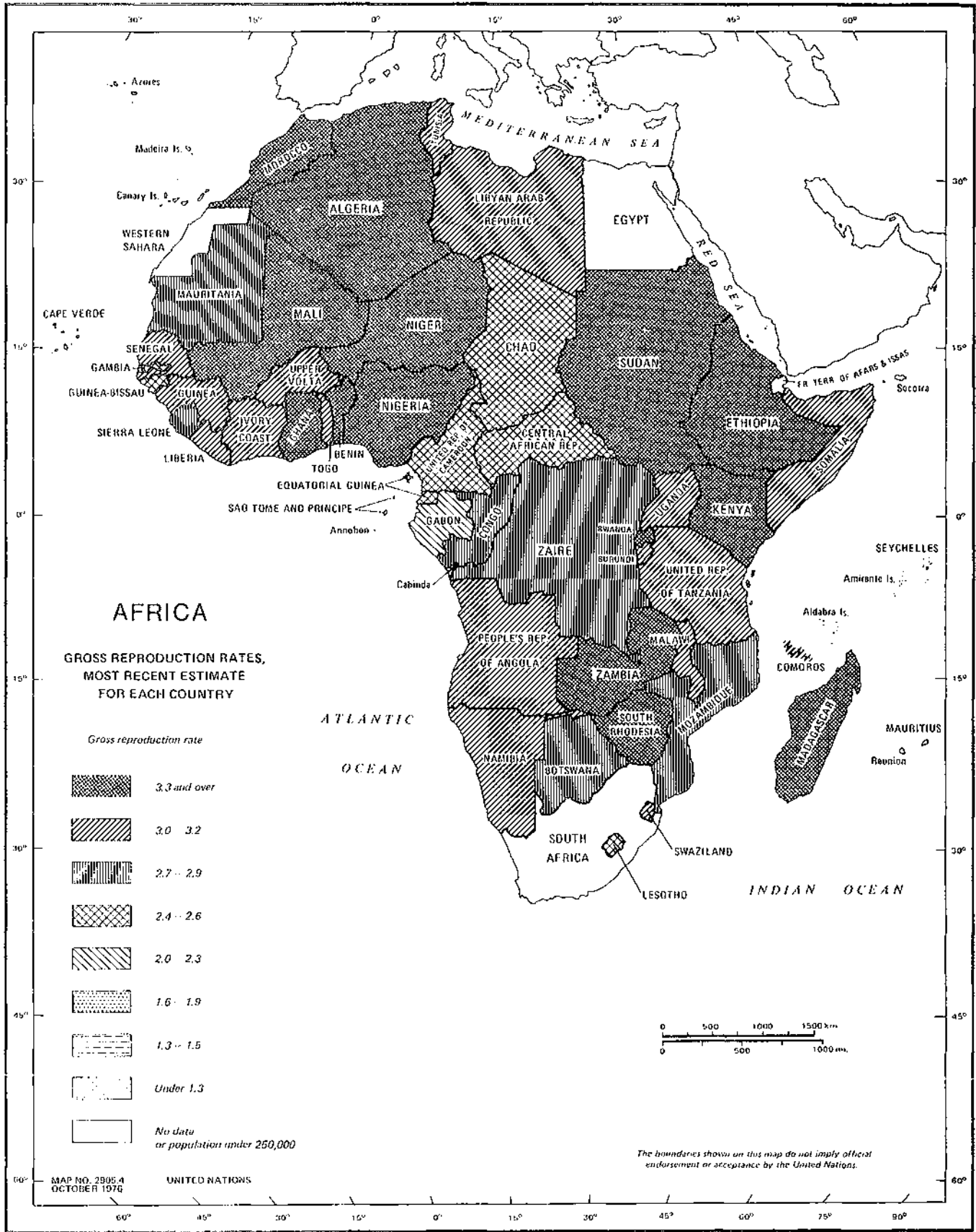
-  55 and over
-  50 - 54
-  45 - 49
-  40 - 44
-  35 - 39
-  25 - 34
-  20 - 24
-  Under 20
-  No data
or population under 250,000



The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.







been conducted in Nigeria, but they were partial inquiries in so far as geographical area is concerned; and the more inclusive of them either proved unreliable at the analysis stage or the results were never completely tabulated and published. 13/ Three efforts have been made to enumerate completely the entire population of Nigeria: in 1952-1953; 1963; and 1973.

Several scholars have pointed to the unsuitability of the Nigerian censuses for deriving fertility or other demographic measures; 14/ and after an extensive analytical effort, van de Walle 15/ concluded that, owing to the poor quality of the returns and the lack of other, supplementary data, the census of 1952-1953 could not be used for that purpose. The 1963 census was widely criticized as having grossly exaggerated the population count in certain regions, and the published data were unsuited for fertility analysis. In any case, the average annual population growth rate in excess of 5 per cent that is implied by comparing it with the previous census is so unbelievable as to call seriously into question the validity of one or both censuses. Details of the 1973 census, which has also given rise to some controversy, have not yet been published. Based on the results of various inquiries, some highly tentative estimates of fertility in Nigeria are available (table 8).

Certain conditions exist in Nigeria that favour high fertility while others tend to depress it, though the factors supporting high fertility appear to have a greater impact. For example, polygamy, which is considered to have, on balance, a depressing effect upon fertility, is far more widely practised in the northern region than elsewhere in the country. This practice is apparently balanced by the northern traditions of early and nearly universal marriage of women, which would tend to raise fertility. According to analyses carried out by Brass and his associates on the basis of the 1952-1953 census, total fertility rates for 12 northern provinces varied from 5.5 to 6.5 children per woman, with a median of 5.9. 16/ But in the western region where polygamy is not culturally entrenched - though "visiting" unions are prevalent and nearly all women marry, but at a later age 17/ - the total fertility measures varied among eight provinces from 5.7 to 9.1 children per woman. 18/ In the seven eastern provinces where living conditions are less favourable, nutrition poorer and mortality thought to be higher than in either the northern or western regions, the estimated total fertility rates exceeded those of the northern region, varying from 5.3 to 7.5. 19/ The median values of the total fertility rates for the northern, eastern and western regions were, respectively, 5.9, 6.7 and 6.9.

13/ G. T. Acsádi, A. A. Igun and G. Z. Johnson, op. cit., chap. 2.

14/ Ibid.

15/ E. van de Walle, "Fertility in Nigeria", in W. Brass and others, op. cit., pp. 515-527.

16/ Ansley J. Coale and Frank Lorimer, "Summary of estimates of fertility and mortality", in W. Brass and others, op. cit., pp. 157-158.

17/ G. T. Acsádi, A. A. Igun and G. Z. Johnson, op. cit., pp. 24-25.

18/ A. J. Coale and F. Lorimer, in W. Brass and others, op. cit., p. 157.

19/ Ibid., p. 158.

Table 8. Comparison of various estimates of fertility in Nigeria

Source of estimates	Year or period	Crude birth rate	Total fertility rate	Gross reproduction rate
(1) United Nations	1952-1953	53-57	...	3.6-3.8
	1963	50	...	3.3
(2) Coale and Page	1952-1953	54	7.0	...
(3) van de Walle	1952-1953	...	...	3.2-3.5
(4) Official estimate	1965-1966	50 <u>a/</u>	...	...
(5) Coale and Lorimer	1952-1953	41-66 <u>b/</u>	5.3-7.7 <u>b/</u>	...

Sources: (1) for 1952-1953, Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XIII.2); for 1963, estimated by the United Nations Secretariat according to estimation method C(4); (2) A. J. Coale and H. J. Page, "Estimates of fertility and child mortality in Africa south of the Sahara", in S. H. Ominde and C. N. Ejiogu, eds., Population Growth and Economic Development in Africa (London, Nairobi and Ibadan, Heinemann Co., 1972), pp. 51-66; (3) E. van de Walle, "Fertility in Nigeria", in William Brass and others, The Demography of Tropical Africa (Princeton, New Jersey, Princeton University Press, 1968), p. 527; (4) files of the Statistical Office of the United Nations and official government sources; (5) Ansley J. Coale and Frank Lorimer, "Summary of estimates of fertility and mortality", in W. Brass and others, op. cit., pp. 157-158.

a/ Based on a rural demographic survey in 1965-1966.

b/ Range in the measures for 27 provinces.

Many cultural factors, including the nearly universal marriage of women, support the hypothesis that fertility is very high. Other factors are the traditionally motivated desire for large numbers of children, disapproval of childlessness, common practice of sororate and levirate, and lack of any stigma upon children born out of wedlock. There are other conditions, however, which tend to limit fertility. In addition to later marriage in the southern provinces and polygamy, mentioned above, fertility is regulated by the relatively high bride prices and other obligations at marriage, which cause postponement of marriage; the custom of long abstinence following delivery, infanticide, abortion, traditional methods of birth control; and long lactation periods, averaging in some regions as much as three years. 20/

Many of the customs and conditions conducive both to higher and to lower fertility in Nigeria are found also in neighbouring countries, particularly Benin and the Niger in the western area, whose populations are ethnically similar to certain Nigerian groups. The estimated crude birth rates for these countries were, respectively, 50 and 53 per 1,000 live births, and the gross reproduction rates were 3.3 and 3.5.

20/ G. T. Acsádi, A. A. Igun and G. Z. Johnson, op. cit., pp. 24-27.

In the gross reproduction rates and crude birth rates that have been developed for other countries of this region, there is also conflicting evidence as to the level of the measures; but, as with Nigeria, all confirm high fertility. For Ghana, the population census of 1960 served as the basis for the most recent estimates of fertility. The United Nations Secretariat estimated a crude birth rate, derived from an analysis of the census age distribution and application of stable population method, of 50 per 1,000 and a gross reproduction rate of 3.3 (table 7). Brass and his associates obtained similar results from the 1960 census: a crude birth rate of 50 per 1,000; and a total fertility rate of 6.5. ^{21/} Other estimates based evidently on the same census place the crude birth rate at from 47-52 ^{22/} to 54. ^{23/}

Bearing in mind the limitations of the data for comparisons among the countries, the strikingly low measures for the Gambia and Guinea-Bissau, crude birth rates of 40 and gross reproduction rates of 2.6, warrant some explanation. Measures for both countries were derived by applying the stable population method in an analysis of the census age structure. Taking into account the necessarily questionable mortality assumptions, the quality of the census age structure and the suitability of stable population models for analysing African data, the estimates can at best be regarded as weak.

The first study, published in Population Bulletin, No. 7, does not contain fertility estimates for the Gambia, Liberia, Mauritania and Sierra Leone; but some measure is currently available for assessing the fertility level of each of the Western African populations. Significantly, the new data confirm that fertility is markedly high throughout Western Africa, except in the Gambia and Guinea-Bissau, where for reasons of health and nutrition, fecundity may be somewhat impaired.

Eastern Africa

The fertility measures derived for the countries of Eastern Africa are also very high, though the range in gross reproduction rates, from 1.8 to 3.6, is greater than that reported for Western Africa. The estimated crude birth rates vary from 24.8 per 1,000 in Mauritius (1972) to 52 for Ethiopia (1970). If one excludes Mauritius, whose gross reproduction rate is around 1.60, and Réunion, which in 1970 had a crude birth rate of 28.1 per 1,000 and a gross reproduction rate of 2.26, the range is much narrower, and the regional lowest crude birth rate and gross reproduction rate become 42 and 2.7, respectively, which are the values estimated for Mozambique. The more recent measures shown in table 7 for several countries, namely, Kenya, Uganda and the United Republic of Tanzania, appear to be compatible with the previous United Nations estimates (given in Population Bulletin, No. 7) and with results obtained by other researchers on the basis of different sets of data, ^{24/} confirming the general levels. But as stated several times previously, the tools for deriving fertility measures indirectly cannot compensate entirely for inaccurate and otherwise inadequate data. Estimates are currently

^{21/} A. J. Coale and F. Lorimer, in W. Brass and others, op. cit., p. 160.

^{22/} Estimates developed by the Economic Commission for Africa.

^{23/} A. J. Coale and H. J. Page, "Estimates of fertility and child mortality in Africa south of the Sahara", in S. H. Ominde and C. N. Ejiogu, eds., Population Growth and Economic Development in Africa (London, Nairobi and Ibadan, Heinemann Co., 1972), pp. 51-66.

^{24/} Cf. A. J. Coale and F. Lorimer, in W. Brass and others, op. cit., pp. 161-166.

available for four Eastern African countries, Comoros, Ethiopia, Malawi and Somalia (table 7), for which data could not be included in the first study. The gross reproduction rate of 3.6 estimated for Ethiopia, the first available, is the highest for any African country. Furthermore, in every case among the Eastern African countries with incomplete statistics, the revised or the more recent estimates are higher than the gross reproduction rates published in Population Bulletin, No. 7. These changes, which are attributable to new data and/or methodology, along with the estimated gross reproduction rates of 3.0 and above for the four countries having data for the first time, raise the question whether the region extending from the southern border of the Red Sea down the East Coast to Mozambique and including the inland countries bordering the coastal States does not constitute a belt of fertility unequalled even in Western Africa, where fertility was previously thought to be the highest within the continent. ^{25/} However, except for Kenya (and for Mauritius and Réunion, which have relatively complete vital registration statistics), the estimates are weak, some more so than others; and they apply to widely varying dates, so that there is danger in making comparisons. But it is probably safe to conclude from the measures available that apart from the small off-shore islands of Mauritius and Réunion, fertility is uniformly high in Eastern Africa, probably as high as anywhere in the world.

Middle and Southern Africa

Middle Africa is a region of diverse historical experiences as well as western contacts and influences. Bordered by the Libyan Arab Republic and the southern part of the Sudan on the north, Nigeria and the Niger on the west, and Zambia and Namibia on the south, it is marked by a considerable degree of geographical, cultural, ethnic and economic heterogeneity. In spite of this feature, it is characterized also by almost uniformly more moderate levels of fertility than have been estimated for Northern, Western or Eastern Africa. The range in estimated crude birth rates is from 49 per 1,000 in Angola to 31 for Gabon, and the gross reproduction rate varies similarly from 3.2 to 2.0.

The comparatively lower level of the fertility estimates for the countries of Middle Africa, excluding Angola, are in sharp contrast to the measures derived for countries in Western and Eastern Africa and indicate a zone of comparatively lower fertility. The range of gross reproduction rates among these countries, from 2.0 to 2.8, would suggest, if based on reliable data, the onset of a transition from high to low fertility through deliberate regulation of family size. But conditions throughout Middle Africa are such as to preclude this transition. Some researchers have attributed the low fertility measures for countries of Middle Africa to sub-fecundity due to malnutrition, ill health of women and venereal diseases. ^{26/} But hard evidence of the prevalence of these conditions throughout the region and of their relation to fertility are poorly documented, and more extensive studies based upon satisfactory statistical data are needed to determine with confidence the reasons for this belt of estimated low fertility.

Only for Angola, for which the most recent estimated gross reproduction rate is 3.2, can the measure be regarded as high by African standards.

^{25/} "Levels, patterns and implications of fertility in Africa" (E/CN.14/POP/73), p. 2.

^{26/} For a fuller discussion, see Population Bulletin, No. 7, p. 23.

The most recent estimate for the Central African Republic, the Congo, Gabon and the United Republic of Cameroon alter slightly the fertility picture presented for Middle Africa in the first study. It is cautioned that this change is not due to a trend, but to application of the newer Brass method to the same data from which the earlier measures had been derived either by "reverse-surviving" the age structure of the population, or by direct calculations of the crude birth rate and the gross reproduction rate from the survey data on births in the previous year and children ever born by age of mother. As a result, crude birth rates for the region are somewhat lower, whereas the gross reproduction rates are, on the whole, higher.

Although the measures, except possibly those for the Congo, 27/ are based on very unreliable statistics, the level of the estimated gross reproduction rates is supported by some studies of the influence of health, nutrition and environmental conditions upon fertility. 28/ Debilitating diseases and the pattern of hard labour among the women also are held by some scholars to have depressed fertility in those countries. 29/

Indeed, certain ethnic groups in the Central African Republic and Zaire are reported to have either ceased to grow or to be declining in numbers. 30/ There is common acceptance by investigators of the problem that the determinants of this phenomenon are complex, involving a web of social, cultural, medical and psychological factors often very hard to disentangle. Among the commonly enumerated variables associated with this low fertility are conjugal mobility, the incidence of polygyny, widespread free sexual unions, the breakdown of traditional values and customs, low agricultural yields and malnutrition, addiction to alcohol, practices of abortion and contraception, ill-health and disease, especially venereal disease. Several scholars who have devoted special attention to the question have arrived at the conclusion that the medical factor of venereal disease is paramount. 31/ In some cases, these diseases had been introduced at the end of the nineteenth century as a result of historical circumstances, including contacts with visiting traders and European colonizers. The dispersion has no doubt been facilitated by some of the other factors mentioned as possible determinants: divorce and conjugal mobility; polygyny; and the general breakdown of traditional values and customs.

27/ A. Romaniuk, "The demography of the Democratic Republic of the Congo", in W. Brass and others, op. cit., pp. 336-337.

28/ Ibid.; and Population Bulletin, No. 7, p. 23.

29/ Population Bulletin, No. 7, p. 23.

30/ C. Blayo and Y. Blayo, "La population de l'Afrique", Population, (Paris), vol. 27, No. 6 (November-December 1972), pp. 1094-1095.

31/ A. Romaniuk, "Infertility in tropical Africa", in J. C. Caldwell and C. Okonjo, eds., The Population of Tropical Africa (London, Longmans; and New York, Columbia University Press, 1968), pp. 214-224; and A. Retel-Laurentin, "A few observations on socio-cultural factors governing infertility in Sub-Saharan Africa", paper prepared for the African Population Conference, Accra, Ghana, 9-18 December 1971.

On the other hand, an analysis of the data on parity and on the proportion childless by age of woman in Northern Cameroon and in the metropolitan area of the Central African Republic, Centre-Ubangui, suggests that in these areas fertility might, in fact, have fallen. 32/ The observation rests upon the evidence that, in spite of the probability that the propensity for women to forget some births increases with their age, the women who had completed their family building reported larger family size than did the women who were in their terminal childbearing years. Further, proportionately fewer of the older women reported themselves as childless.

For present purposes, southern Africa consists only of Botswana, Lesotho, Namibia and Swaziland, and excludes South Africa, which lacks data on the majority population. In this region, the estimated measures of fertility suggest a fairly wide range in levels, with the crude birth rates and gross reproduction rates varying, respectively, from 38 per 1,000 and 2.4 in Lesotho to 50 and 3.2 in Swaziland.

The estimates for these countries were derived from an analysis of the census age structure and an indication as to the rate of natural increase or approximate level of mortality. Thus, the data are weak at best, as even less is known of mortality than of fertility levels, and it cannot be said to what extent the censuses are deserving of reliance. The 1966 census report of Swaziland, for example, provided tabulations only of odd age categories, i.e., 1-6, 7-12 etc. years, necessitating interpolation as a prerequisite of age structure analysis and possibly introducing additional errors. On the other hand, the Lesotho census of 1966 recorded a large deficit of adult males, said to be absentee workers estimated at 12 per cent of the total population. 33/

The estimated low fertility measures for Lesotho might also reflect some of the health and social conditions believed responsible for the sub-fecundity that, as stated above, may affect levels of reproduction in certain countries of Middle Africa. But, as with the Middle African countries, there is little evidence for the southern African countries that would substantiate or refute these hypotheses. In these countries, there is not only a void with respect to statistics for measuring fertility levels and trends but an almost total lack of reliable, scientific information about the factors affecting human reproduction.

Northern Africa

Among the culturally more homogeneous countries of northern Africa, fertility is also relatively high. The more recent estimates, which are for somewhat disparate dates, place the range in live birth rates from 34.8 per 1,000 population

32/ William Brass, "The demography of French-speaking territories covered by special sample inquiries: Upper Volta, Dahomey, Guinea, North Cameroon, and other areas", in W. Brass and others, op. cit., pp. 346-347.

33/ Demographic Yearbook, 1970 (United Nations publication, Sales No. E/F.71.XIII.1), pp. 186 and 401. At the census, there were only 43 males aged 25-39 per 1,000 females aged 20-34, and 46 males per 1,000 females aged 20-34. The apparent effect of migration (and mortality) on the census age structure is seen in the sudden sharp decline by 59 per cent in males aged 20-24, compared with those aged 15-19. The relationship of these male migratory movements to mating and reproduction is not precisely known, as in certain African cultures, such migrations coincide with periods when the woman is held not to be at risk of pregnancy.

for Egypt (1971) to 49 for the Sudan (1955-1956). A somewhat narrower spread in gross reproduction rates (from 3.12 to 3.4) is shown in table 7, but this range excludes Egypt, for which a reasonably accurate measure would probably fall below that level. ^{34/} The data for Algeria, Egypt and Tunisia are considered to be relatively reliable; but the rates for Morocco, the Libyan Arab Republic and the Sudan have been constructed from statistics of very questionable quality.

The information for the Sudan has been calculated by analysis of the age statistics obtained in the census of 1955-1956, an inquiry that yielded significant inconsistencies in the reporting of children ever born and children born during the year preceding the census and which provided no detailed data on age composition of the population. ^{35/} It may be said that the fertility estimates based on this census, the only population inquiry carried out in the Sudan, are inadequate except to suggest very vaguely the order of magnitude. Although the crude birth rate and gross reproduction rate for this country relate to a period approximately two decades ago, it is not considered that social and economic advancements and the mortality decline have been such as to precipitate changes in fertility. In any case, current knowledge of fertility in the Sudan is unsatisfactory and the measures available are unreliable.

The data for the Libyan Arab Republic are also very inadequate, although possibly more reliable than the measures for the Sudan, as they were derived by analysis of the age structure reported from the 1964 population census, the 1954-1964 intercensal rate of population growth and estimates of mortality. However, the 1954 census is held to have undercounted the population and the intercensal growth rate to have therefore been too high, 3.75 per annum for Libyan nationals. ^{36/} The crude birth rate of 47.0 per 1,000 and the gross reproduction rate of 3.2 suggest high fertility, but owing to the inadequacies of fertility rates estimated by these means and the short-comings of the statistical bases for the calculations, little reliance should be placed on them. However, the early and nearly universal marriage of women supports the estimates of high fertility, as does the wide prevalence of traditionalism with respect to the roles and status of women. ^{37/} For example, at the 1964 census, only 9 per cent of women aged 20-24 had never married and 81 per cent of all women of reproductive age, 15-50 years, were or had been married. ^{38/}

^{34/} Total fertility in Egypt derived from analysis of the 1960 census results was estimated to be 6.3, slightly lower than that for Morocco (1962), Algeria (1964-65) and Tunisia (1965 and 1968), for which the figures were, respectively, 6.7, 6.9, 6.7 and 6.6. See J. Vallin, "La conjoncture démographique. Les populations de l'Afrique au nord du Sahara: Maroc, Algérie, Tunisie, Libye, Egypte", Population (Paris), vol. 25, No. 6 (November-December 1970), p. 1230. It should be noted that these measures were based on data from sources of varying quality. The 1960 census of Egypt, for example, is considered to contain important age irregularities that would affect fertility measures derived from it.

^{35/} Population Growth and Manpower in the Sudan (United Nations publication, Sales No. 64.XIII.5), pp. 7-12.

^{36/} S. Zaghoul and others, "Demographic parameters for Libya", in Cairo Demographic Centre, Demographic Measures and Population Growth in Arab Countries, Research Monograph Series, No. 1 (Cairo, 1970), pp. 115-136.

^{37/} See, for example, N. H. Youssef, Women and Work in Developing Societies, Population Monograph Series, No. 15 (Berkeley, California, University of California, 1974), pp. 2-4.

^{38/} J. Vallin, loc. cit., pp. 1212-1234.

The information on Moroccan fertility (1961-1963) commands scarcely, if any, greater confidence. The crude birth rate of 45 per 1,000 and the gross reproduction rate of 3.4 also indicate very high fertility. Supporting these estimates is the fact that 49 per cent of young women aged 15-19 at the 1960 census were reported as married, as were 81 per cent of all women of reproductive age. Apart from the Sudan, for which information is lacking, this appears to be a higher ratio than is apparently found among other countries of Northern Africa, where the percentages married among women aged from 15 to 50 years ranged from 72.7 in Tunisia (1966) to 81.2 in Morocco (1960), supporting the higher crude birth rate and gross reproduction rate estimates for Morocco. More important, perhaps, is that in Morocco, Algeria, Egypt and Tunisia, the relative numbers married among younger women (those aged 15-19) varied downward, respectively, from 49.1 to 19.0 per cent. ^{39/} But the Moroccan demographic statistics are notoriously faulty with respect to age, and in particular, the ages of young married women and mothers. ^{40/} Irregularities of the age data also influence the values of the estimated fertility measures.

As stated above, more is known reliably of fertility levels and conditions in Algeria, Tunisia and, to a lesser extent, Egypt. However, despite the similarities of cultural patterns and values, it is hazardous to infer that levels and trends of fertility in these three countries may hold for the region as a whole; there are differences among them in level of development, in traditionalism and in official policy with respect to fertility regulation.

Algerian birth registration statistics for 1969, adjusted for under-registration, yield a crude birth rate of 45.6 births per 1,000 and a gross reproduction rate of 3.45 (table 7), high values by any criteria. But the 1967 crude birth rate is markedly lower than the 1966 value of 50.5 (table 9), an inexplicable change, inasmuch as the rates have been corrected for under-registration. The nuptiality patterns are as would be expected in a high fertility culture; and, as in the other countries of this region, the marriage of Algerian women is virtually universal and occurs at an early age. At the 1966 census, 44 per cent of the women aged 15-19 were reported to be married, as were about 88 per cent of those aged 25-29 years. ^{41/} Even more noteworthy is the statistic that at the 1966 population census only 11 per cent of the women aged from 20 to 24 years had never married.

Lack of important variations in levels of fertility among residence and socio-economic classes within a country may be a mark of very high or very low aggregate national fertility. If so, the very modest differentials noted by Vallin in his analysis of results of the 1970 fertility survey are further evidence of the high level of Algerian fertility. When age of woman was controlled, differences by education, occupational classes and residence were not marked, and the variations by residence became pronounced only when age at marriage and age of woman were jointly controlled. Such differences as existed point to the widespread illiteracy among women and even the modest level of education among men, along with constraints against the employment of women outside the home, as well as the factors of nuptiality mentioned earlier, as being important among the intricate complex of factors responsible for the high level of Algerian fertility. ^{42/}

^{39/} Ibid., 1227.

^{40/} A. Thavarajah and others, "Some demographic measures for Morocco", in Cairo Demographic Centre, op. cit., pp. 137-168.

^{41/} J. Vallin, loc. cit., p. 1227.

^{42/} J. Vallin, "Influence de divers facteurs économiques et sociaux sur la fécondité de l'Algérie", Population (Paris), vol. 28, No. 4-5 (July-October 1973), pp. 818-842.

Tunisia is a country of more moderate fertility, its crude birth rate and gross reproduction rate in 1970 being 38.2 and 3.12, respectively. Around 1964, the country instituted important measures the purpose of which was to release women from their traditional role and status, but whether the measures had any bearing on the crude birth rate and gross reproduction rate recorded for 1970 is difficult to determine. Tunisian women tend to marry later, and increasingly so, than do those in other northern African countries for which patterns of nuptiality can be examined. According to results of the 1966 census, at ages 15-19 only 19 per cent were married, though this status characterized nearly all, 94 per cent, of those aged 30-34; and 27 per cent of young women 20-24 years of age had never married. In 1966, the average woman married when she was 21 years old, an increase of 1.5 years over a span of one decade. 43/

In 1964, Tunisia began to pursue a policy to reduce fertility. It established a national family planning programme, decreed 17 years to be the minimum age at which women might marry, forbade polygamy and instituted measures to emancipate women. The possible effect of these measures is considered below in the section on fertility trends; but Vallin reports that, except for the family planning programme, the new laws appear to have been established in recognition of already changing institutions.

Fertility may be lower in Egypt than elsewhere in northern Africa. Egypt has had a history of compulsory birth registration dating back to 1912, and the records are currently held to be nearly complete with the under-reporting estimated to be approximately 7 per cent in the early 1960s. 44/ In an intensive study carried out in 1970, this estimate of under-registration was used to adjust birth data for years as recent as 1968. 45/

The estimated crude birth rate for 1971 was 34.8. However, available data did not permit calculation of the gross reproduction rate for a year around that time. The most recent estimate, for around 1950-1955, is a gross reproduction rate of 2.8, derived by reverse-surviving the age structure of the 1960 census. 46/ Even if inflated by 7 per cent, the crude birth rate would remain the lowest for northern African countries.

Certain conditions in Egypt would suggest a moderate level of fertility. In 1960, as many as 23 per cent of women aged 20-24 years had never married, a small proportion by the standards of more developed countries, but substantial in light of

43/ J. Vallin, "Les populations de l'Afrique au nord du Sahara", p. 1228.

44/ See, for example, Population Bulletin, No. 7, p. 28; J. Vallin, "Les populations de l'Afrique au nord du Sahara", pp. 1229-1230; and M. A. El-Badry, "Trends in the components of population growth in the Arab countries of the Middle East: A survey of present information", paper presented to the Conference on Demographic and Economic Trends in the Developing Countries, New York, October 1963, p. 53.

45/ J. Vallin, "Les populations de l'Afrique au nord du Sahara", pp. 1229-1230.

46/ Population Bulletin, No. 7, p. 28.

the far smaller percentages of 8, 9 and 11, respectively, in Morocco (1960), the Libyan Arab Republic (1964) and Algeria (1966). The proportion married among women in the age group 15-19 was 31.3 per cent, compared with nearly 50 per cent in Morocco (1960) and 44 and 19 per cent, respectively, in Algeria (1966) and Tunisia (1966). ^{47/} In addition, it has been estimated that the family planning programme in Egypt, which was established in 1965, provided in 1969 service for approximately 6 per cent of all women within the ages of 15 and 44 years, and that 10 per cent were using contraceptives from the programme and private sources combined. ^{48/} For purposes of comparison, it may be mentioned that, in the same year, the proportions of women of these ages in Morocco, Tunisia and the Republic of Korea who received contraceptives from the family planning programme were estimated to be 0.4, 5.4 and 21 per cent, respectively. ^{49/}

While such information can be a valuable asset to the interpretation and evaluation of the estimated crude birth rates and other fertility measures, they cannot substitute for complete vital registration statistics. The latter remains an item of highest priority if a reliable picture of fertility conditions in Egypt is to be obtained.

C. Trends and patterns of fertility

There are only five countries in Africa - Algeria, Egypt, Mauritius, Réunion and Tunisia - for which statistics are sufficiently reliable for an assessment of trends in gross reproduction rates and crude birth rates; and only four of these (all but Egypt) have data capable of yielding useful information about fertility patterns. Unfortunately, an analysis of these data cannot provide a picture of the course or patterns of fertility in Africa, for the countries do not typify socio-economic, cultural, demographic and other relevant conditions in that major area.

Trends of fertility

The course of fertility in Mauritius and Réunion, two small islands far off the coast of Africa in the Indian Ocean, has been fluctuating downward since the mid-1950s (see Figure I). In Mauritius, which has had reliable birth registration statistics since the turn of this century or earlier, this movement represents but the latest cycle in a highly erratic, long-term downward trend. For the first three decades of the century, the birth rate in Mauritius fluctuated at a level around 36-37 per 1,000. Thereafter, the trend showed a marked similarity to that of many of the more developed countries, as it achieved its nadir, about 30.9, during the 1930-1934 quinquennium and recovered to reach a peak of 50 in 1950, ^{50/} declining from that time and stabilizing at about 38-40 per 1,000 population from 1958 to 1963. After that period, a rapidly accelerating decline of about 38 per cent

^{47/} J. Vallin, "Les populations de l'Afrique au nord du Sahara", p. 1228.

^{48/} Dorothy Nortman, Population and Family Planning Programs: A Factbook, Reports on Population/Family Planning, No. 2 (New York, The Population Council, 1969), p. 48.

^{49/} Ibid., pp. 46-47.

^{50/} For information on trends of fertility in Mauritius prior to 1950, see Population Bulletin, No. 7, p. 37.

Table 9. Trends of crude birth rates in countries of Africa having relatively good statistics, from 1950 to most recent available date

(Births per 1 000 population)

Year	Algeria ^{a/}	Mauritius ^{b/}	Egypt	Egypt ^{c/}	Réunion	Tunisia
1950	45.0	49.7	44.2	...	48.1	...
1951	45.9	47.5	44.6	...	46.6	...
1952	46.9	48.0	45.2	...	51.3	...
1953	46.2	45.7	42.6	...	51.2	...
1954	47.5	40.9	42.6	...	49.6	...
1955	49.9	41.4	40.3	43.8	49.2	...
1956	47.1	43.3	40.7	44.2	47.7	46.4
1957	42.6	42.6	38.0	41.3	46.9	46.5
1958	43.6	40.4	41.1	44.7	44.9	46.3
1959	46.4	38.1	42.8	45.5	44.0	46.2
1960	48.2	39.3	43.0	45.8	44.0	45.7
1961	47.6	39.4	43.9	46.7	43.7	45.4
1962	45.9	38.5	41.3	43.9	44.4	44.3
1963	52.1	40.2	42.8	44.8	44.4	44.3
1964	50.1	38.4	42.1	44.7	43.5	46.0
1965	47.0	35.7	41.5	44.0	42.9	43.1
1966	50.5	35.6	41.0	43.6	41.4	43.2
1967	45.9	30.6	39.2	41.8	38.7	40.9
1968	43.7	31.2	38.1	40.6	37.2	40.2
1969	45.6	27.4	36.8	...	34.8	41.0
1970	45.8	26.8	34.9	...	30.0	38.22
1971	...	25.5	34.8	...	31.8	36.75
1972	...	24.8	...	...	29.7	39.16
1973	...	22.7	...	...	28.1	...

Sources: Algeria; Gourari Négadi, "La fécondité en Algérie, Niveaux - tendances - facteurs", doctoral dissertation, Ecole pratique des hautes études, VIème section: Sciences économiques et sociales, Paris, 1975, p. 41, table II-4; Jean-Noël Biraben, "Essai d'estimation des naissances de la population algérienne depuis 1891", Population (Paris), vol. 24, No. 4 (July-August, 1969), pp. 725 and 727-728;

(Sources and foot-notes continued on following page)

(Sources and foot-notes to table 9) (continued)

Mauritius: crude birth rates for 1950-1962 calculated on basis of officially revised total population estimates and the total number of live births for corresponding years. Crude birth rates for 1963-1972 taken from Mauritius, Ministry of Economic Planning and Development, Central Statistical Office, Bi-annual Digest of Statistics, vol. 8, No. 1 (June 1973) (Rose Hill, 1974), p. 7, table 10;

Egypt: corrected crude birth rates for 1955-1968 (second column) taken from Jacques Vallin, "La conjoncture démographique. II. Les populations de l'Afrique au nord du Sahara: Maroc, Algérie, Tunisie, Libye, Egypte", Population (Paris), vol. 25, No. 6 (November-December 1970), p. 1229;

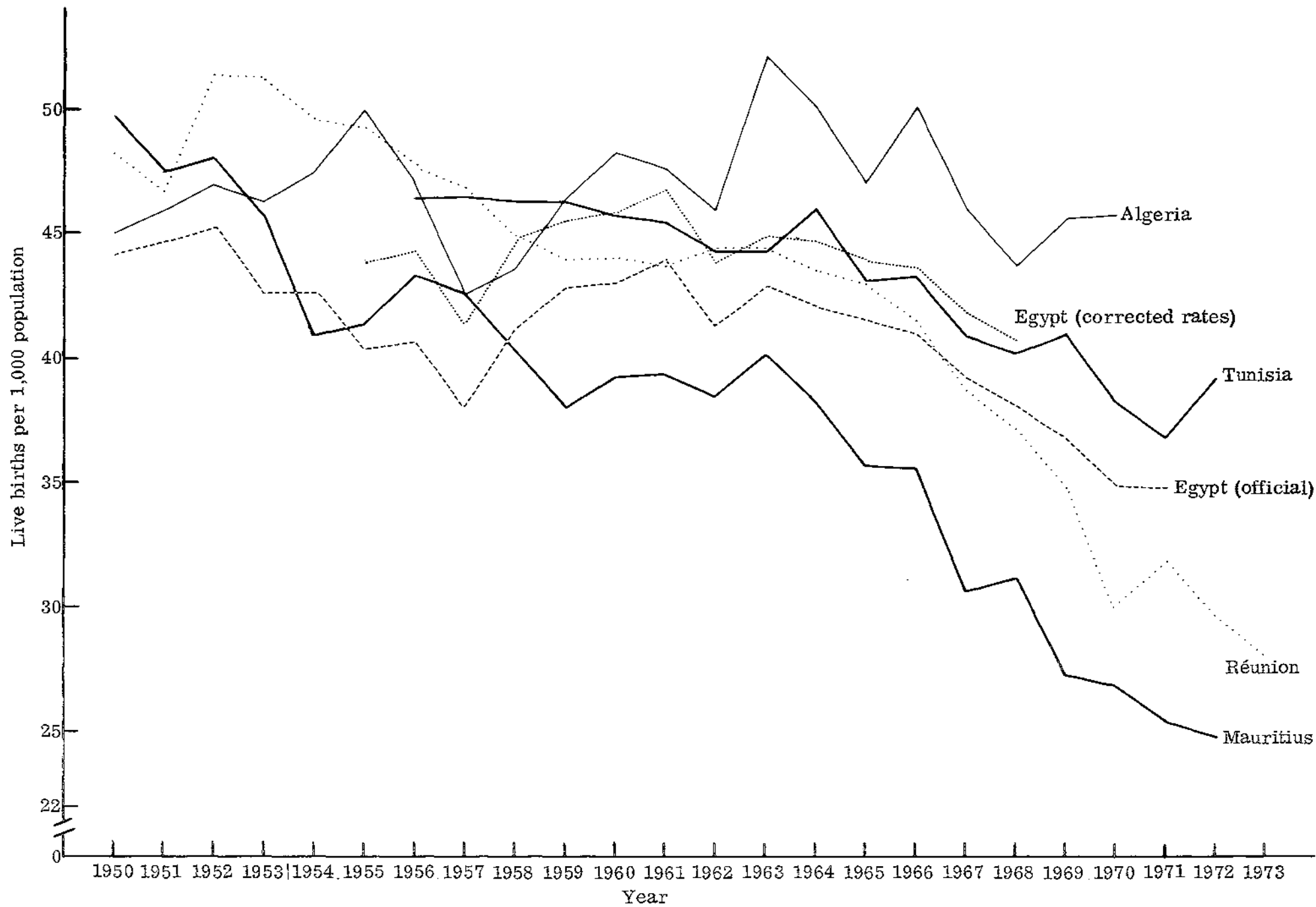
Réunion: crude birth rates for 1950-1970 taken from France, Institut national de la statistique et des études économiques, Annuaire statistique de la Réunion, 1969-1972 (Paris, 1973), p. 34, table 2. Data for 1971-1973 obtained from the Statistical Office of the United Nations;

Tunisia: corrected crude birth rates for 1956-1969 taken from Alain Marcoux, "La croissance de la population de la Tunisie, passé récent et perspectives", Population (Paris), vol. 26, special number (March 1971), p. 197. Rates for 1970-1972 calculated in accordance with Marcoux's population estimates and on his assumption that official birth registration was 95 per cent complete.

a/ Data corrected for under-registration.

b/ Excluding dependencies.

c/ Rates corrected for under-reporting.



occurred, with the crude birth rate achieving an all-time low of 22.7 per 1,000 in 1973 (table 9 and figure I). The gross reproduction rate fluctuated at between 3.0 and 2.7 during the 1950s and at least until 1965, declining to 1.60 in 1972; the steep drop in the gross reproduction rate from 1965 to 1972 represented a decline of 41 per cent. The relative stability, up to about 1965, of the gross reproduction rate, coupled with a declining crude birth rate, indicates that changes in the proportion and/or distribution of women in the reproductive ages generally favoured a lower crude birth rate.

Since relevant birth registration data became available for Réunion around 1946, the course of the crude birth rate in that country has more or less paralleled that described for Mauritius, though at a higher level. The post-1950 trend for Réunion was characterized by three cycles: a generally downward movement from 48.1 to 43.7 live births per 1,000 population over the period 1950-1961, with upward fluctuations around that level for several years; and, lastly, resumption of the downward trend with a level of 28.1 being reached in 1973. During the 1965-1970 quinquennium, the gross reproduction rate decreased from 3.37 to 2.26, a drop of 33 per cent.

The extent to which the continued decline of fertility in Mauritius may reflect positive achievements of the national family planning programme put into effect in 1965 is uncertain. There may also have been a decline in the age of females at marriage; data from the most recent censuses show that the proportion never married at ages 15-24 increased from 41.8 in 1952 to 51.9 at the 1962 census of population. ^{51/} Improvements in certain development indicators may also have played a part. Of the three remaining countries for which reasonably reliable data on trends are available, birth registration is perhaps most complete in Tunisia, ^{52/} though quite recently notable improvements have also taken place in the data for Algeria and Egypt. Even in Tunisia, delays in registration cause irregularities in the series of annual crude rates, so that the trend for that country cannot be evaluated with certainty. Nevertheless, indications point to some decline in the crude birth rates, at least in Egypt and Tunisia.

The registered crude birth rates for Egypt showed no evidence of decline prior to 1960, at which time it is estimated to have been between 43 and 46 per 1,000 population. Since the adoption of an official policy in support of family planning in 1965, the crude birth rate has followed a downward trend, the corrected birth-rates give an estimate of around 41 per 1,000 for the years 1965 and 1966, and the registered crude birth-rate decreased steadily from 39.2 in 1967 to 34.8 in 1971, or by about 11 per cent in four years. On the other hand, the gross reproduction rate, as variously estimated, remained at a rather constant level of about

^{51/} Demographic Yearbook, 1970, pp. 518-519.

^{52/} Birth registration is reported as 95 per cent complete. See Institut national de la statistique, Niveau et tendance de la fécondité en Tunisie, Demographic Series No. 5 (Tunis, 1974) p. 10. See also Alain Marcoux, "La croissance de la population de la Tunisie, Passé récent et perspectives", Population (Paris), vol. 26, special number (March 1971), p. 106.

3.0 until 1966; ^{53/} and according to recent information, was about 2.7 in 1969 and 2.5 in 1970. There are reasons to believe that the pace of fertility decline may intensify if this has not already happened. In comparison with other countries of Africa, and according to a wide variety of pertinent indicators, Egypt is at a relatively advanced level of economic development. Furthermore, in 1960, the most recent date for which statistical information is available, the proportion married among women aged 15-19 was still relatively high, about 31 per cent, and may be expected to decline along with the average age of women at first marriage. The possibility also exists that the national efforts to bring ever-larger numbers of women into the national family planning programme will succeed, with a consequent depressing effect upon fertility.

In Tunisia, as in Egypt, the downward trend in the crude birth rate occurred after 1964, the year in which the official national family planning programme was inaugurated (table 9 and map 3). The crude birth rate had fluctuated at from 4 to 46 per 1,000 throughout the period 1956-1964; but it began a steady decline thereafter, reaching its lowest level of about 38 in 1971, a drop of 20 per cent in seven years. In 1972, Tunisia experienced a temporary surge upwards in the crude birth rate, the measure returning to the pre-1971 level. ^{54/} The gross reproduction rate declined mildly from 3.34 in 1960 to 3.12 in 1970 or by about 7 per cent during the decade. Various scholars ^{55/} have attributed the decrease in fertility in recent years to a number of factors. According to one researcher, ^{56/} for example, the downward movement of Tunisian fertility reflects a real fertility decline due directly or indirectly to the family planning programme and is not attributable to changes in age structure. The comparative behaviour of the crude birth-rates and gross reproduction rates would tend to support this view. But on closer inspection, mainly by application of a decomposition technique described below, it would appear that changes in age structure have, in fact, been the main factor in the fertility decline. Another factor of significance has been the increase in the average age of women at marriage, for example, from 19.5 years in 1956 to 21.0 in 1966, the most recent year for which information is available. It is generally acknowledged that, where contraception is not widely practised, increased age at marriage has a significant influence upon fertility.

^{53/} See Ferial Abd El-Kader Ahmad, "Fertility studies in the Arab Republic of Egypt" (POP/INF/110), country statement prepared for the Economic Commission for Africa, Working Group on Fertility Levels and Differentials in Africa and the Prospects for the Future, Addis Ababa, 18-22 December 1972; V. G. Valaoras, Population Analysis of Egypt, 1935-1970 (With Special Reference to Mortality), Cairo Demographic Centre Occasional Paper, No. 1 (Cairo, 1973); and Institute of Statistical Studies and Research, The Population of Egypt, CICRED Series, 1974 World Population Year (Cairo, 1973).

^{54/} The 1972 crude birth rate has been calculated in accordance with the population estimates given in A. Marcoux, loc. cit., and on his assumption that the official birth registration was 95 per cent complete.

^{55/} A. Marcoux, loc. cit., pp. 105-123; Jacques Vallin, "Limitation des naissances en Tunisie. Efforts et résultats"; and idem, "L'enquête nationale démographique tunisienne", both articles in Population (Paris), vol. 26, special number (March 1971), pp. 181-204 and 205-227.

^{56/} J. Vallin, "Les populations de l'Afrique au nord du Sahara", p. 1231.

Certain measures introduced by the Tunisian Government to elevate the conditions of women may also have played a part and will no doubt be effective in furthering the decline. The abolition of polygamy would have a counter-effect, but its prevalence was not wide; and the influence, if any, of this measure upon fertility is not likely to be important.

According to a recent analysis of data for Algeria, the registration of births in that country may be estimated at between 90 and 96 per cent complete. ^{57/} The average crude birth-rate, as corrected and estimated by Biraben, for the years 1951-1967, ^{58/} and rates estimated more recently by Négadi for the years 1950-1970 ^{59/} were found to range between 43 and 52 per 1,000. On the basis of the registered birth statistics, a gross reproduction rate in the range of from 3.3 to 3.5 was obtained for 1965 and 1969, respectively; and, with the assumption of an under-registration of 10 per cent, a gross reproduction rate of 3.7 was derived for 1964-1965. ^{60/}

Based on an analysis of data from two recent surveys conducted in Algeria, the 1968 socio-demographic survey and the 1970 fertility survey, Vallin ^{61/} considers that Algerian fertility, which has fluctuated erratically between approximately 42 and 52 births per 1,000 during the two decades under consideration, is not likely to decline in the next few years. On the contrary, in his view, changes in certain existing conditions, i.e., improvement in health and/or changes in social customs relevant to marriage and the family, may even lead to an increase in fertility. On the basis of a more recent study of age and generation-specific fertility rates, the conclusion was reached that fertility in Algeria not only is high but has shown an increasing trend for some time in the past, though a maximum had been reached by the late 1960s. ^{62/} Average age at marriage, which appears to be one of the most crucial variables influencing Algerian fertility, ^{63/} declined from 20.1 in 1948 to 19.7 and 18.4, respectively, in 1954 and 1956. ^{64/} Whether this trend has persisted cannot be ascertained owing to lack of data. ^{65/}

^{57/} Jean-Noël Biraben, "Essai d'estimation des naissances de la population algérienne depuis 1891," *Population* (Paris), vol. 24, No. 4 (July-August 1969), pp. 722-725.

^{58/} *Ibid.*, pp. 725-728.

^{59/} Gourari Négadi, "La fécondité en Algérie. Niveaux - tendances - facteurs," doctoral dissertation, Ecole pratique des hautes études, VIème section: Sciences économiques et sociales, Paris, 1973, pp. 126, 156 and 159.

^{60/} Gourari Négadi and Jacques Vallin, "La fécondité des algériennes: niveau et tendances," *Population* (Paris), vol. 29, No. 3 (May-June 1974), p. 493.

^{61/} J. Vallin, "Influence de divers facteurs économiques et sociaux sur la fécondité de l'Algérie," pp. 817-842.

^{62/} G. Négadi and J. Vallin, *loc. cit.*, p. 509.

^{63/} J. Vallin, "Influence de divers facteurs économiques et sociaux sur la fécondité de l'Algérie," pp. 817-841.

^{64/} J. Vallin, "Les populations de l'Afrique au nord du Sahara", p. 1228.

^{65/} G. Négadi and J. Vallin, *loc. cit.*, pp. 500, 501 and 513. See also G. Négadi, *op. cit.*, pp. 126, 156 and 159.

Trends in fertility patterns by age

Due either to the lack of a consistent series of data on births by age of mother or to irregularities in the data on sex-age composition of the population, the age-specific fertility rates and the gross reproduction rates, could be calculated for only four of the five countries of Africa having relatively good statistics - Algeria, Mauritius, Réunion and Tunisia - for selected years between 1960 and 1970 (table 10). In so far as Egypt is concerned, it has been demonstrated ^{66/} that the distorting effect of the irregularities in the data on age characteristics of the population upon the statistics used to determine the pattern of fertility are such as to preclude any meaningful analysis of changes in the pattern of age-specific fertility rates.

The data on percentage of total fertility contributed by women in each five-year age group (table 11 and figure II), reveal a striking similarity among these countries with respect to the age pattern of fertility. Bearing in mind the disparities in dates to which the data relate, it will be seen that the fertility age curve common to Algeria (1965), Mauritius (1960) and Réunion (1970) was the broad-peak type, which denotes the relatively even spread of a comparatively large share of gross total fertility over several age groups.

On the other hand, the late-peak type, indicated by a high degree of concentration of fertility at the peak ages 25-29, characterized the pattern of fertility in Algeria (1969), Mauritius (1970), Réunion (1965) and Tunisia (1960 and 1970). In Mauritius, where the gross reproduction rate declined rapidly to a low level of 1.60 in 1972, a change in age at marriage and in the practice of fertility control within marriage by some segments of the population appear to have been responsible for a change in the fertility age pattern from a broad- to a late-peak type. It may be mentioned that, although the broad-peak type of fertility age curve is found among both low-fertility and high-fertility countries, childbearing among women in low-fertility regions is typically concentrated in a narrower age range, so that, generally speaking, the early-peak type or late-peak type of fertility age curve is more common among the low-fertility countries than among the countries with high fertility. ^{67/} Furthermore, as stated in the first study of this series, analyses of changes over a half century or more in the shape of the fertility age curve for some more developed countries have shown a shift from the broad-peak type to a type that reflects higher concentration of childbearing within a much shorter age span. This change appears also to have characterized the decline in Mauritius, but the alterations in Réunion from a late-peak type to a broad-peak type are not readily explainable. Nor is the change in Algeria from the late-peak to the broad-peak comprehensible in the absence of additional information, except in so far as it may be attributed to a probable fertility increase.

The relative contribution of very young women aged 15-19 to gross total fertility has declined in each of these countries. Diverse patterns of change in the proportion of gross total fertility in women aged 30 years and over have also

^{66/} See Ferial Abd El-Kader Ahmad, *op. cit.*; V. G. Valaoras, *op. cit.*, p. 47, table 17; and Institute of Statistical Studies and Research (Cairo), *op. cit.*

^{67/} For a full explanation, see *Population Bulletin, No. 7*, pp. 106-111.

Table 10. Crude birth rates, gross reproduction rates and age-specific fertility rates in countries of Africa having relatively good statistics, 1960-1970

Country	Year	Crude birth rate	Gross reproduction rate	Gross total fertility	Age-specific fertility rates (births per 1,000 women in each age group)						
					Age group						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Algeria	1965	47.0	3.29	1 349.0	122.0	304.0	311.0	261.0	203.0	123.0	25.0
	1969	45.6	3.45	1 411.3	98.4	283.7	329.3	297.1	234.0	121.0	47.8
Mauritius	1960	39.3	2.87	1 179.4	122.5	297.3	288.4	238.8	171.8	54.2	6.4
	1965	35.7	2.72	1 098.2	85.1	290.0	272.1	231.9	154.0	57.8	7.3
	1970	26.8	1.86	764.6	58.7	191.5	210.1	147.4	113.5	38.0	5.4
Réunion	1965	42.9	3.37	1 346.0	70.0	284.0	334.0	302.0	230.0	110.0	16.0
	1970	30.0	2.26	923.0	60.0	235.0	238.0	185.0	131.0	66.0	8.0
Tunisia	1960	45.7	3.34	1 368.2	70.1	306.2	337.7	299.3	208.7	105.8	40.4
	1965	43.1	3.34	1 368.2	88.4	279.2	333.3	297.3	224.8	104.8	40.4
	1970	38.2	3.12	1 279.4	48.8	276.6	313.9	283.1	215.0	102.3	39.7

Sources: Algeria: Gourari Négadi, "La fécondité en Algérie. Niveaux-tendances - facteurs", doctoral dissertation, Ecole pratique des hautes études, VIème section: Sciences économiques et sociales, Paris, 1975, p. 64, table II-4:

Mauritius: rates obtained from Ministry of Economic Development and Planning, Central Statistical Office;

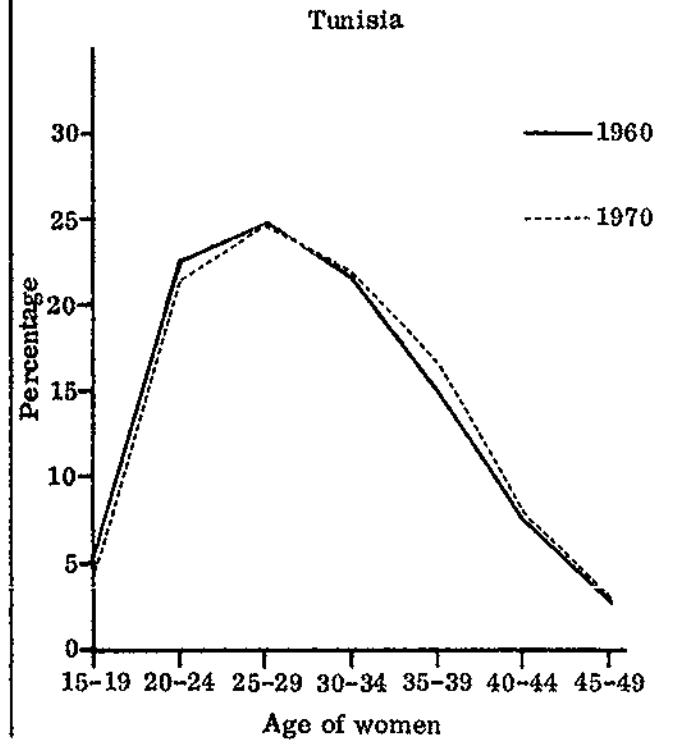
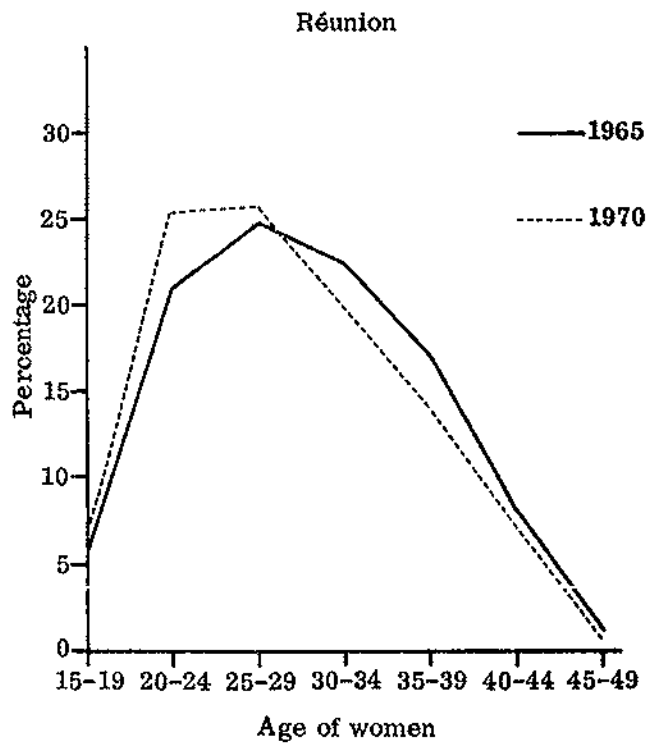
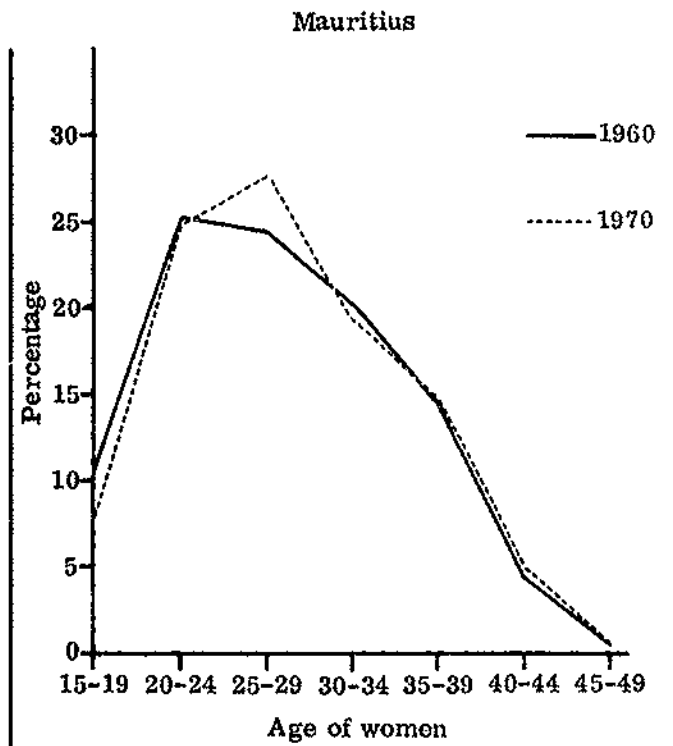
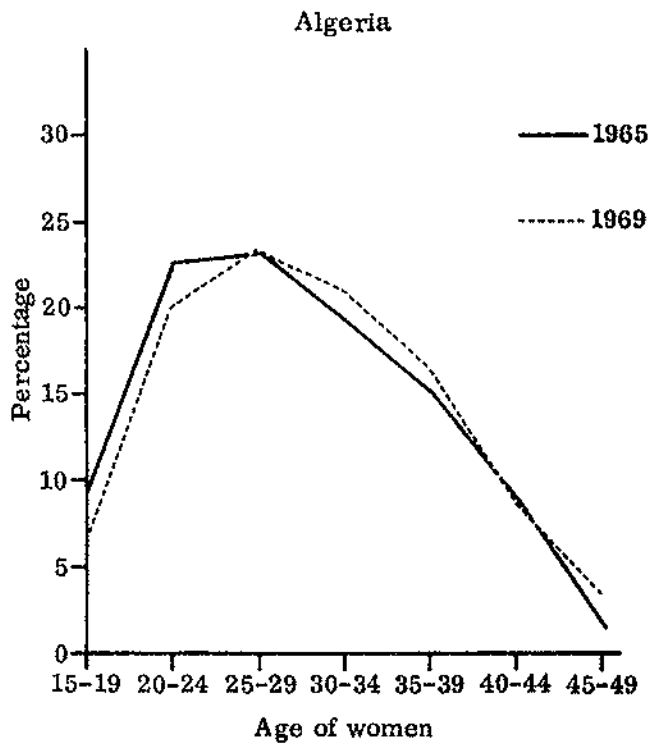
Réunion: France, Institut national de la statistique et des études économiques, Annuaire statistique de la Réunion, 1969-1972 (Paris, 1973), pp. 34 and 36, tables 2 and 3;

Tunisia: rates for 1960 and 1965 taken from Alain Marcoux, "La croissance de la population de la Tunisie, passé récent et perspectives", Population (Paris), vol. 26, special number (March 1971), p. 113, table V. Rates for 1970 calculated in accordance with Marcoux's population estimates and on his assumption that official birth registration was 95 per cent complete.

Table 11. Relative contribution of women in each age group to gross total fertility in countries of Africa having relatively good statistics, 1960-1970
(Percentage)

Country	Year	Total	Age group						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Algeria	1965	100.0	9.0	22.5	23.1	19.4	15.1	9.1	1.8
	1969	100.0	7.0	20.1	23.3	21.0	16.6	8.6	3.4
Mauritius	1960	100.0	10.4	25.2	24.5	20.2	14.6	4.6	0.5
	1965	100.0	7.7	26.4	24.8	21.1	14.0	5.3	0.7
	1970	100.0	7.7	25.0	27.5	19.3	14.8	5.0	0.7
Réunion	1965	100.0	5.2	21.1	24.8	22.4	17.1	8.2	1.2
	1970	100.0	6.5	25.5	25.8	20.0	14.2	7.1	0.9
Tunisia	1960	100.0	5.1	22.4	24.7	21.9	15.2	7.7	3.0
	1965	100.1	6.5	20.4	24.4	21.7	16.4	7.7	3.0
	1970	100.0	3.8	21.6	24.6	22.1	16.8	8.0	3.1

Source: Calculated from data in table 10.



been noted. In two countries, Mauritius and Réunion, the relative fertility of women in the age group 30-34 was declining during the period 1965-1970. Furthermore, in Réunion, where birth-rates have also declined significantly, there has been a sharp drop in the relative contribution of the age group 35-44, and the early-peak type is clearly developing. In both Algeria and Tunisia, a slight increase in the proportion of gross total fertility to women aged 30-34 has been observed. The percentage distribution of gross total fertility among selected age groups in those four countries was as follows:

Age group	Mauritius		Réunion		Tunisia		Algeria	
	1965	1970	1965	1970	1965	1970	1965	1969
30-34	21.1	19.3	22.4	20.0	21.7	22.1	19.4	21.0
35-39	20.0	20.5	26.5	22.2	27.1	27.9	26.0	28.6
35-44	19.3	19.8	25.3	21.3	24.1	24.8	24.2	25.2

Changes have taken place not only in the relative contribution of each age group of women to the aggregate fertility picture but in the level of the age-specific rates themselves. The indications are that there have been consistent declines in the age-specific fertility rates over the entire reproductive period in all but one of the four countries, the exception being Algeria where, during 1965-1969, fertility appears to have declined only among women aged 15-24 years (tables 10 and 12). Changes in the fertility rates for women under 30 years of age accounted for only about 37 per cent of the decline of gross total fertility in Réunion and about 56 per cent in Mauritius.

In Tunisia, however, a much higher contribution to the decline, about 70 per cent, is attributable to the drop in fertility among women below the age of 30 years, with the greater part of this change occurring among the younger females aged 15-19 years. Undoubtedly, a significant factor in the decline of fertility among young women has been an increase in age at marriage. This trend has been documented for Tunisia in the preceding sections, where partial evidence has also been provided for Mauritius. Although the obstacles are numerous, it is clear that there is a need for an intensive analysis of nuptiality and its relation to fertility levels and trends in the less developed countries.

Following application of the decomposition technique described by Cho and Retherford, ^{68/} an analysis was undertaken to show, to the extent possible, the

^{68/} Lee-Jay Cho and Robert D. Retherford, "Comparative analysis of recent fertility trends in East Asia", in International Union for the Scientific Study of Population, International Population Conference, Liège, 1973 (Liège, 1974), vol. 2, pp. 163-181.

Table 12. Percentage change in crude birth rates, gross reproduction rates and age-specific fertility rates in countries of Africa having relatively good statistics, 1960-1970

Country	Period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Algeria	1965-1969	- 3.0	4.6	4.6	-19.3	- 6.7	5.9	13.8	15.3	- 1.6	91.2
Mauritius	1960-1965	- 9.2	- 5.2	- 6.9	-30.5	- 2.5	- 5.7	- 2.9	-10.4	6.6	14.1
	1965-1970	-24.9	-31.6	-30.4	-31.0	-34.0	-22.8	-36.4	-26.3	-34.3	-26.0
	1960-1970	-31.8	-35.2	-35.2	-52.1	-35.6	-27.1	-38.3	-33.9	-29.9	-15.6
Réunion	1965-1970	-30.1	-32.9	-31.4	-14.3	-17.3	-28.7	-38.7	-43.0	-40.0	-50.0
Tunisia	1960-1965	- 5.7	0.0	0.0	26.1	8.8	- 1.3	- 0.7	7.7	- 0.9	0.0
	1965-1970	-11.4	- 6.6	- 6.5	-44.8	- 0.9	- 5.8	- 4.8	- 4.4	- 2.4	- 1.7
	1960-1970	-16.4	- 6.6	- 6.5	-30.4	- 9.7	- 7.0	- 5.4	3.0	- 3.3	- 1.7

effect upon the crude birth rate of changes in age structure, marital status structure and age-specific marital fertility rates in Mauritius, Réunion and Tunisia for selected years between 1960 and 1972. The results are as follows:

Percentage change in the crude birth rate due to change in:	<u>Mauritius</u> 1962-1972	<u>Réunion</u> 1965-1970	<u>Tunisia</u> 1960-1970
Age structure	- 25.9	14.3	52.6
Marital status	53.5	- 2.1	32.5
Marital fertility	72.4	87.8	14.9
Total	100.0	100.0	100.0

Between 1962 and 1972, the crude birth rate in Mauritius declined by 35 per cent, from 38.0 to 24.7 per 1,000 population. According to results of the analyses tabulated above, changes in the proportions married accounted for 54 per cent of the decline in the crude birth rate, and a genuine decline in marital fertility accounted for 72 per cent. But the changes in age structure contributed negatively by about 26 per cent to the decline of the crude birth rate, so that the changes in age structure have been working in the opposite direction, causing an increase in the crude birth rate instead of a decline.

The pattern of fertility changes in Réunion resembles that observed for Mauritius. Between 1965 and 1970, the crude birth rate declined by 30 per cent, from 42.9 to 30.0 per 1,000, with 88 per cent of the drop attributable to a change in marital fertility and 14 per cent to a change in age structure. An increase in the proportion of women married had a small counter-effect, a contribution of 2 per cent to an increase in the crude birth rate.

In Tunisia, the crude birth rate underwent a rather moderate decline of 16 per cent, from 45.7 to 38.2 per 1,000, over the decade 1960-1970; changes in age structure accounted for 53 per cent of the decrease, while 33 per cent was attributable to an alteration of the proportion of women married and only about 15 per cent to changes in marital fertility.

A trend towards marriage at older ages has been one of the contributing factors in fertility decline for both Mauritius and Tunisia. In Mauritius, between 1962 and 1972, the proportion of women married declined by 55 per cent at ages 15-19 and 27 per cent at ages 20-24. The decline was small at ages 25-29 and 30-34, and at older ages there were even small increases. Of course, the latter finding may involve improvements in the mortality conditions of males. In Tunisia, according to the 1954 census, 40 per cent of the women in the age group 15-19 were married; but by 1966, only 19 per cent of the women in this age group were married, a decrease of 21 per cent. In the age group 20-24, the proportion of married women decreased by 6 percentage points. As in Mauritius, from about age 30 and up the trend was reversed, with the proportion of married women at older ages increasing.

Summary

Returns from population censuses and from demographic and fertility surveys constitute the principal sources of new information on fertility levels and trends in Africa, and their use for fertility analyses is possible thanks to the development of the Brass method and the stable population technique. Because of these improvements in data availability, some measure of fertility exists for 48 of the 50 countries of Africa with a population of 250,000 or over in 1970. None the less, the supply and quality of statistics for assessing levels, trends and conditions of fertility in the countries of Africa are grossly inadequate and their improvement remains a matter of high priority for each country of that major area. Birth registration is reasonably complete in only five countries; and because application of the most sophisticated evaluative and analytical technique to data that are frequently of inferior quality and that are intended primarily to serve other means cannot compensate for the adequate registration of births and their tabulation in suitable detail, the birth statistics for all but five of the countries of Africa are useful at best as a vague indication of order of magnitude; they are suited neither for the study of trends nor for purposes of international comparison.

Africa remains an area of high fertility: estimated crude birth rates and gross reproduction rates are perhaps higher there, on average, than anywhere else in the world. Availability of measures for some Eastern African countries for which information had previously been lacking and revised measures for other countries point to it as being possibly the region of Africa where fertility is highest, though imperfections of the data make it difficult to state with any assurance whether the level exceeds that among the people of Western Africa.

In this study, as in the earlier studies published in this series, the estimated fertility for countries of Middle Africa indicate that region as having, by African standards, only moderately high fertility. This situation has been attributed to a variety of factors, including health and cultural conditions, and, in some countries, even possibly to an actual decline of fertility.

The evidence is sparse, but an upward trend in fertility may have been under way in certain countries, for example, Algeria, the Central African Republic and the United Republic of Cameroon; and increases may be expected in others before any long-term decline of fertility gets under way. Such increases may be anticipated owing to a breakdown of traditional factors that once served to regulate fertility, including polygamy and breast-feeding, and to improvements in health and related conditions, all of which may be precipitated or accelerated by urbanization and other aspects of development likely to characterize this continent of new nations over the coming decades.

In the few cases for which relevant information is available, age at marriage is indicated as having a powerful influence upon aggregate fertility. Inasmuch as fertility regulation is still not widely practised in Africa, higher age at marriage as a policy measure would appear to be an important means by which Governments that so desire might reduce national fertility.

In three of the four countries having necessary data, changes in the relative contribution of women in each age group to gross total fertility were of a diverse nature; and, except for Mauritius where the movement is from a broad-peak to a late-peak fertility age curve, the emerging patterns do not necessarily conform with what would be expected in light of fertility trends. On the other hand, there appears in these countries to have begun a shift away from early childbearing. As for the cause of the fertility decline in the three countries having experienced a decrease and having data adequate to show it, a decrease in marital fertility was the essential factor in two countries; in the other, the paramount factor was a change in the age structure of the population. Significantly, in two of them, an important factor in the fertility decline was a trend towards older average age at marriage.

IV. LATIN AMERICA

The major area of Latin America comprises the following regions: Caribbean; Middle America; Temperate South America; and Tropical South America. An estimate of the crude birth rate is available for each country of Latin America for some period around 1970, i.e., 1965 or later; and for all but one of them there is a measure of the gross reproduction rate for a relatively recent year. For each of the 27 countries having a population of 250,000 or over in 1970, the most recent available estimates of the crude birth rate and gross reproduction rate, along with an indication of the basis and method of estimating the figures, are given in table 13. Estimates for these countries for a date around 1960, which were published in the first study of this series, 1/ and revisions of those estimates based on new data or estimating techniques are presented in annexed table 64. The three series are not necessarily comparable and changes in the measures are not indicative of trends.

Birth registration is relatively complete in 17 of the 27 countries of Latin America, which represents an addition of two countries, Cuba 2/ and Uruguay, 3/ to the 15 previously classified as having reliable data. For these 17 countries, the measures provided in this report are based, with some exceptions, 4/ on available, unadjusted official statistics. For seven of the countries with complete statistics, there is a lag of at least three or more years between the date of the most recent available crude birth rate and the year to which the gross reproduction rate relates. (Even data for calculating the crude birth rate frequently become available only after some years have elapsed.) Because of these difficulties, table 13 has been organized differently from the corresponding tables (7 and 21) in the chapters on Africa and Asia. The principle of presenting the most recent crude birth rate and gross reproduction rate for the same year in each country has been discarded in order to avoid showing crude birth rates for some years past as the most recent available when a more up-to-date picture could in fact be provided.

1/ Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility throughout the world (United Nations publication, Sales No. 64.XIII.2) (hereinafter referred to as Population Bulletin, No. 7), pp. 14 and 66.

2/ The quality of birth registration has improved considerably in Cuba, and the Government reports that registration has been virtually complete since the late 1960s.

3/ Although birth registration has been satisfactorily complete for many years in Uruguay, no population census was taken between 1908 and 1963, so that there was no basis for calculating reasonably accurate crude birth rates and age-specific fertility rates.

4/ Estimates consistent with official figures have been utilized for Chile, where detailed information with which to calculate the gross reproduction rates was not available for the entire period under review. In Uruguay, a consistent estimate of this kind could be found only for census year 1963. In Cuba, the official rates for the period 1958-1962 are ex post facto adjusted estimates of probably good, albeit somewhat uncertain, quality (see foot-note b/ of table 14).

Table 13. Estimated levels of fertility in countries of Latin America, most recent available date

Region and country	Method of estimation	Year or period	Crude birth rates (live births per 1,000 population)	Year or period	Gross reproduction rate
Caribbean					
Cuba	A	1973	25.3	1969-1971 ^{a/}	1.88
Dominican Republic	C(1) ^{b/}	1970	46	1970	3.5
Guadeloupe	A	1973	28.0	1967	2.66
Haiti	B, C(4) ^{c/}	1973	36	1973	2.4
Jamaica	A	1973	31.3	1969-1971 ^{d/}	2.71
Martinique	A	1973	22.4	1970	2.28
Puerto Rico	A	1972	24.1	1972	1.49
Trinidad and Tobago	A	1971	25.3	1970	1.68
Middle America					
Costa Rica	A	1972	31.3	1972	2.13
El Salvador	A	1972	40.7	1970	2.94
Guatemala	A	1973	41.6	1970	2.80
Honduras	B ^{e/}	1970-1972	49	1970-1972	3.6
Mexico	A	1972	44.7	1970	3.31
Nicaragua	C(5) ^{f/}	1965-1970 ^{g/}	49	1970 ^{h/}	3.5
Panama	A	1973	33.2	1973	2.19
Temperate South America					
Argentina	A	1968	21.9	1965	1.48
Chile	A	1970	27.4	1970	1.78
Uruguay	A	1971	22.6	1963 ^{i/}	1.42
Tropical South America					
Bolivia	C(5) ^{f/}	1965-1970 ^{g/}	44	1960 ^{j/}	3.0 ^{k/}
Brazil	C(5) ^{f/}	1970 ^{l/}	36	1970 ^{l/}	2.4
Colombia	B ^{m/}	1967-1968	41	1967-1968	2.9
Ecuador	C(5) ^{f/}	1965-1970 ^{g/}	45	1965 ^{n/}	3.3 ^{o/}
Guyana ^{p/}	A	1968	38.2	...	...
Paraguay	C(1)	1965-1970 ^{g/}	44	1960	3.2
Peru	B ^{q/}	1969	43	1969	3.0
Surinam	A	1970	36.5	1970	2.69
Venezuela	A	1971	38.3	1971	2.61

(Source and foot-notes on following page)

(Source and foot-notes to table 13)

Source: Unless otherwise noted, rates have been compiled from data available from the Statistical Office of the United Nations or from official records of the country concerned.

Note: Methods of estimation:

- A: "complete" birth registration statistics;
- B: birth data from sample survey;
- C: other estimates, including estimates whose basis cannot be clearly determined from available information;
- (1) "reverse-survival" method;
 - (2) on the number of children reported as having been born to each woman during her lifetime;
 - (3) on the reported births occurring during the 12 months prior to a survey or census and the number of children ever born, both by age of mother;
 - (4) on the analysis of the age composition of the population, supplemented by indications of the rate of natural increase or of an approximate level of mortality;
 - (5) on the number of reported births by age of mother in the year preceding the census, adjusted by graphic techniques.

a/ Estimated by averaging the 1968 distribution of live births reported by age of mother to the average number of births reported for 1969-1971.

b/ Agustín García L., República Dominicana: Estudio de la evolución demográfica en el período 1950-1970 y proyecciones de la población total, período 1970-2000, CELADE Series A, No. 19 (San José, Costa Rica, 1974), pp. 85 and 88.

c/ Estimated by the United Nations Secretariat.

d/ World Bank and International Development Association, Current Economic Position and Prospects, Report No. 257a-JM (Washington, D.C., 1974), vol. II, annex I, "Population, labour force and employment in Jamaica", p. 3.

e/ Antonio Ortega, "Estimaciones demográficas en países con estadísticas incompletas. La Encuesta Demográfica Nacional de Honduras (EDENH)", Notas de Población (Centro Latinoamericano de Demografía), Año 1, vol. 2 (August 1973), pp. 37-43. Gross reproduction rate calculated from data on age-specific fertility using official data on ratio of male to female births.

f/ Provisional projections by the United Nations Latin American Demographic Centre (CELADE), using 1950 as the base year, and taking into account all available information that would reflect possible changes in fertility.

g/ Boletín Demográfico (Centro Latinoamericano de Demografía), vol. VII, No. 13 (January 1974), table 3.

h/ Data provided by United Nations Latin American Demographic Centre.

i/ Agustín García L., Uruguay: Proyección de la población por sexo y grupos de edades, 1963-2003, CELADE Series A, No. 101 (Santiago, Chile, 1970), p. 12.

(Foot-notes to table 13) (continued)

j/ Jorge Somoza, cited in Guillermo A. Macció, Ajuste e interpolación de tasas de fecundidad por edad (Aplicación a los países de América Latina), CELADE SUBSEDE Series AS, No. 7 (San José, Costa Rica, 1969), p. 2. Gross reproduction rate calculated from data on age-specific fertility assuming a sex ratio of 105.

k/ Method of estimation C(6).

l/ Richard Irwin and Evelyn Spielman, "Estimativas y projeções preliminares das taxas de fecundidade: Brasil, 1970 a 2000", Revista Brasileira de Estatística, vol. 34, No. 134 (April/June 1973), pp. 253 and 261. Gross reproduction rate calculated from data on age-specific fertility assuming a sex ratio of 105.

m/ Henry G. Elkins, "Cambio de fecundidad", in Rodolfo Heredia B. and Elena Prada S., eds., La Fecundidad en Colombia. Encuesta nacional de fecundidad (Bogotá, Asociación Colombiana de Facultades de Medicina, 1973), pp. 31 and 34. Gross reproduction rate calculated from data on age-specific fertility assuming a sex ratio of 105.

n/ Pedro M. Merlo, Ecuador: Evaluación y ajuste de los censos de población de 1950 y 1962 y proyecciones de la población total del año 1960 al año 2000, CELADE Series C, No. 113 (Santiago, Chile, 1969), p. 23. Gross reproduction rate based on registration statistics regarded as "complete" as of 1965. Method of estimation A was used. Crude birth rate calculated from data given on total births and estimated population.

o/ Method of estimation A. Corresponding crude birth rate is 44.8.

p/ Excluding Amerindian population.

q/ Centro de Estudios de Población y Desarrollo, cited in Arthur M. Conning, "Latin American fertility trends and influencing factors", CELADE report S.91/12, Santiago, Chile, 1972.

There are 10 countries in Latin America that meet the minimum population size requirement for inclusion in this report, but that do not have adequate information concerning fertility. 5/ Estimates for those countries, taken from studies utilizing a variety of data sources and bases, are given in table 18.

A. Levels and trends of fertility in countries having relatively complete statistics

Countries of the Caribbean region, and Guyana and Surinam in Tropical South America

The countries in this group that have adequate statistics include three English-speaking countries - Guyana, Jamaica, and Trinidad and Tobago; one Dutch-speaking - Surinam; two French-speaking - Guadeloupe and Martinique (both overseas departments of France); and two Spanish-speaking - Cuba and Puerto Rico).

Among the Caribbean countries, the level of fertility ranges from low to moderately high. Around 1970-1973, crude birth rates varied from 22.4 per 1,000 in Martinique to 36 in Haiti, and gross reproduction rates ranged in level from 1.49 in Puerto Rico to 3.5 in the Dominican Republic. Moderate levels of fertility were indicated for the two countries in Tropical South America, Guyana (1968) and Surinam, the crude birth rates being, respectively, 38.2 and 36.5 per 1,000 population. No measure of the gross reproduction rate is available for Guyana, but a 1970 figure for Surinam places the level in that country at 2.69.

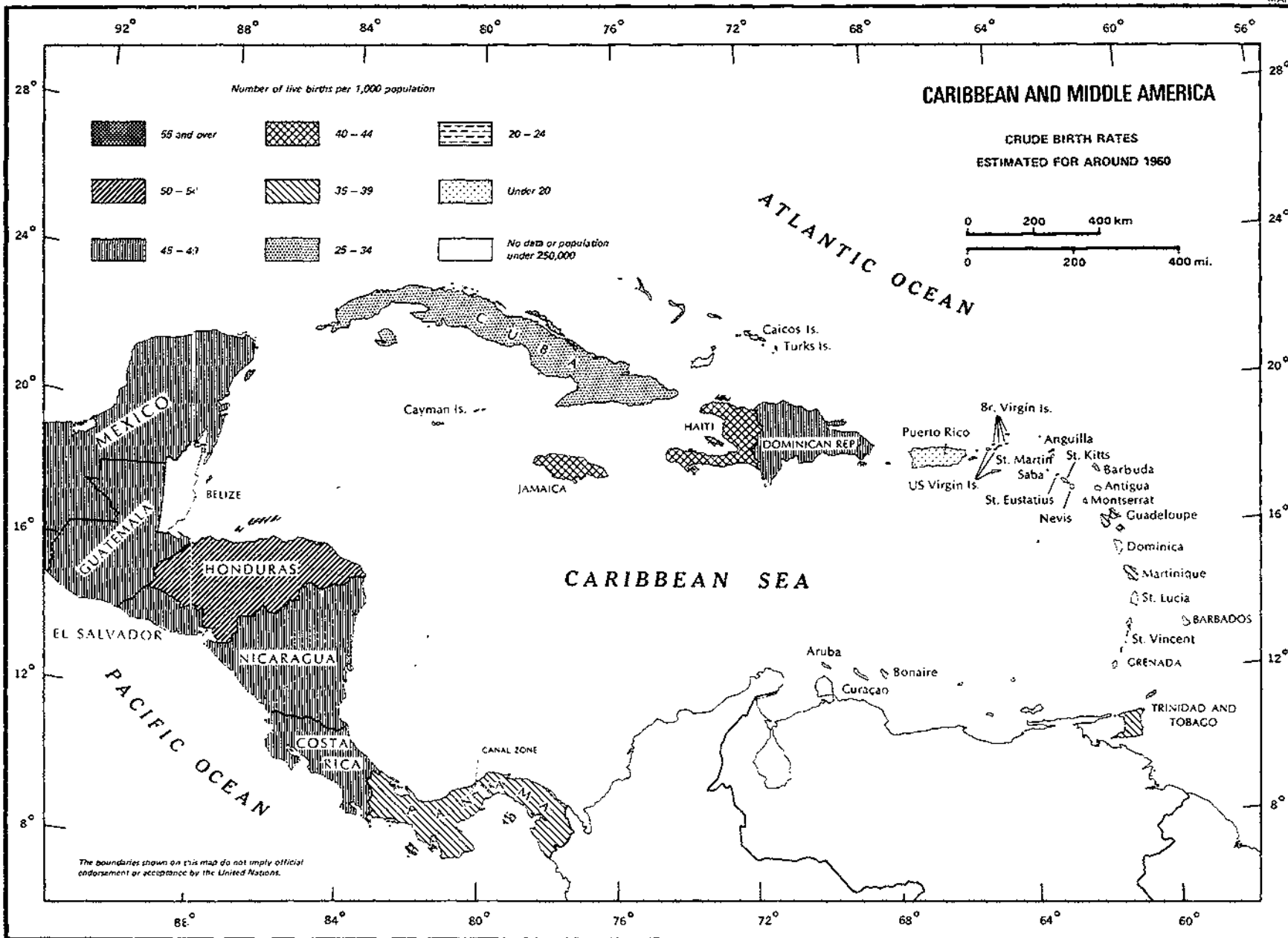
Trends prior to the 1960s

Previous United Nations estimates for Guyana, Jamaica, and Trinidad and Tobago showed that fertility rose in all three countries during the early decades of the century. Crude birth rates of about 30 or slightly over were achieved during 1919-1923 in Guyana, somewhat later (1929-1933) in Trinidad and Tobago, and immediately following the Second World War in Jamaica. 6/ Instead of continuing to decline, fertility turned sharply upwards in each case, cresting in Trinidad and Tobago around 1955, when its crude birth rate stood at about 42 per 1,000 and its gross reproduction rate was 2.82. In Jamaica, the crude birth rate reached 42 in 1960, after an upward swing that began prior to 1950, but its gross reproduction rate continued to rise until around 1964, when it reached 2.85. The crude birth rate in Guyana reached 44.3 in 1952 and remained relatively constant until 1959, whereas its gross reproduction rate continued to rise between 1950 and 1957, when it reached 3.1. However, age-specific fertility rates are not available for Guyana after 1957, 7/ so that it cannot be determined when the gross reproduction rate reached its peak.

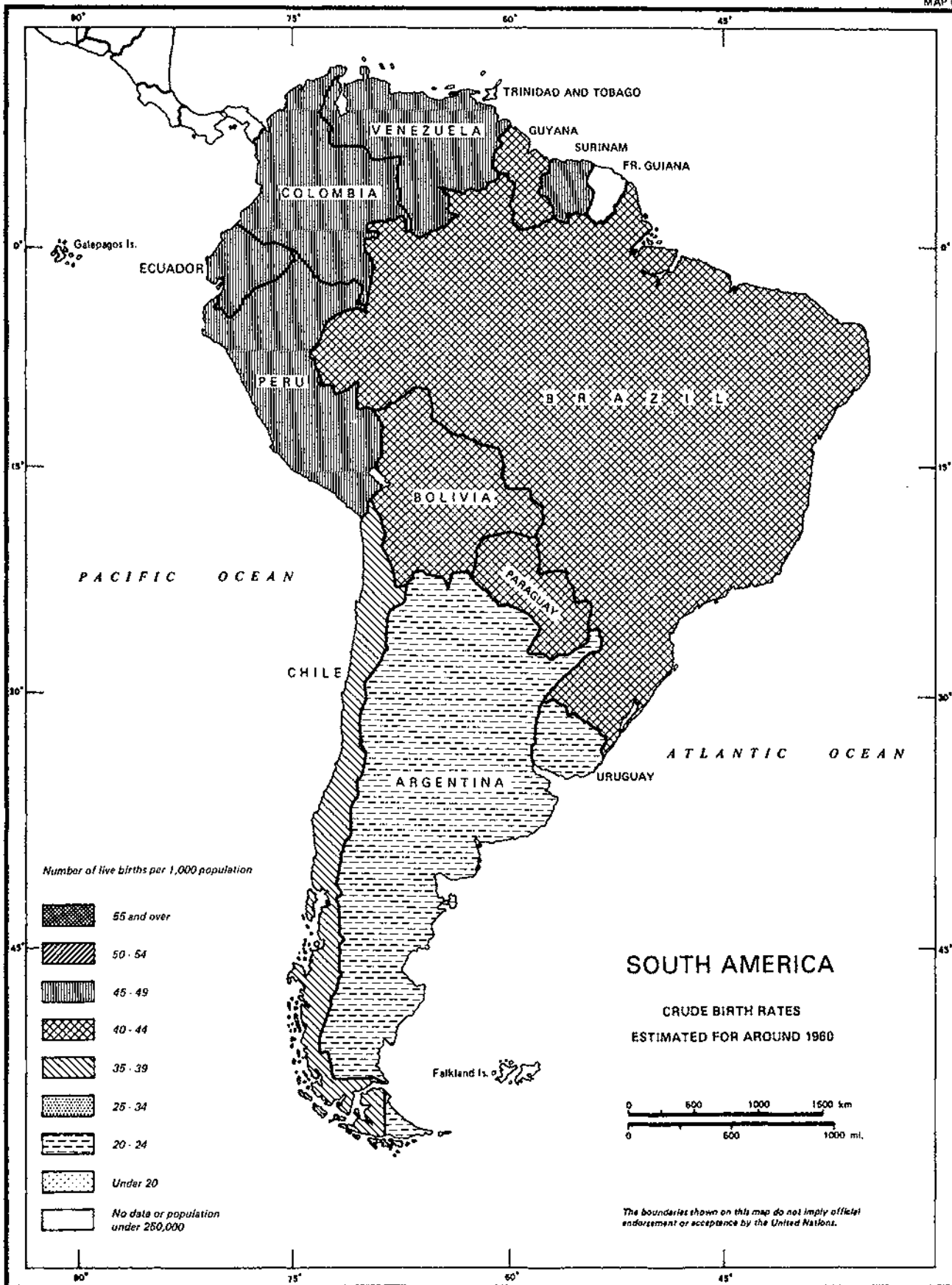
5/ It is important to note the approximate representativeness of the large and small population countries according to completeness of birth registration. Of the eight largest countries, whose estimated 1970 populations range in size from almost 9 million in Cuba to about 95 million in Brazil, three (Brazil, Colombia and Peru) do not have complete birth registration.

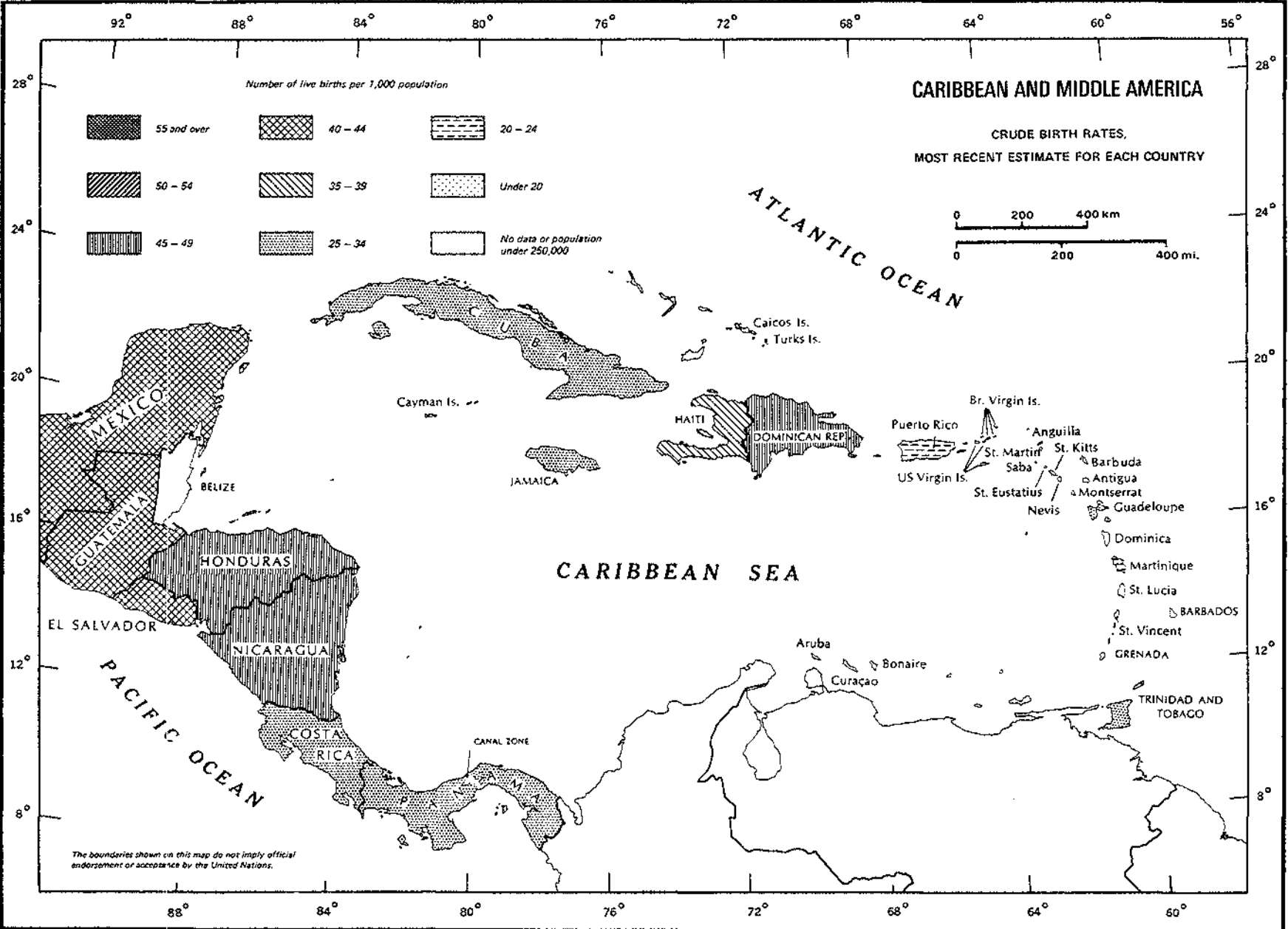
6/ Population Bulletin, No. 7, pp. 75-76.

7/ The figure of 3.0 presented in tables 16 and 64 is taken from Population Bulletin, No. 7 (p. 86) and was computed by assuming that the pattern of births by age of mother in 1960 was the same as that existing before 1957.

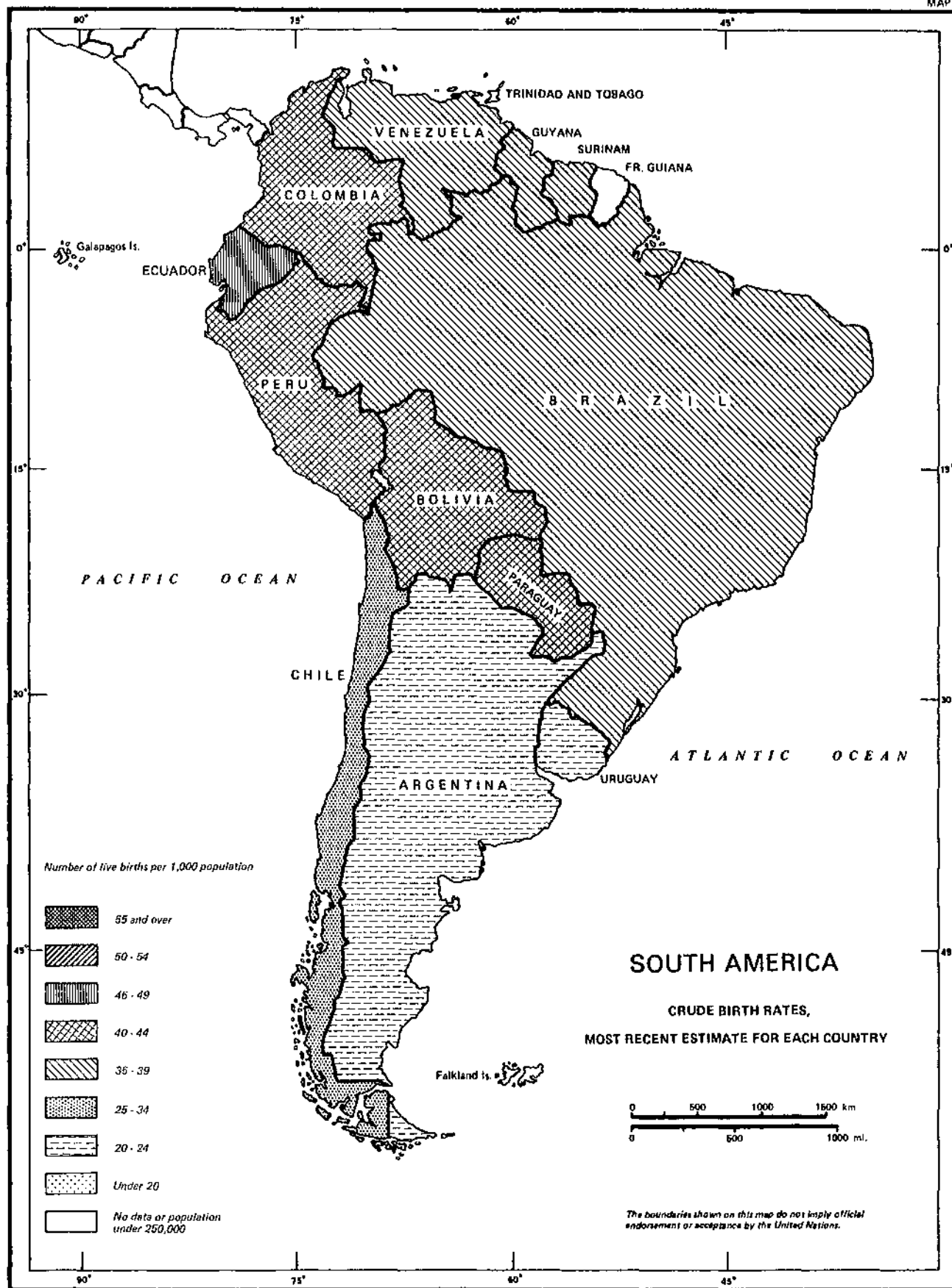


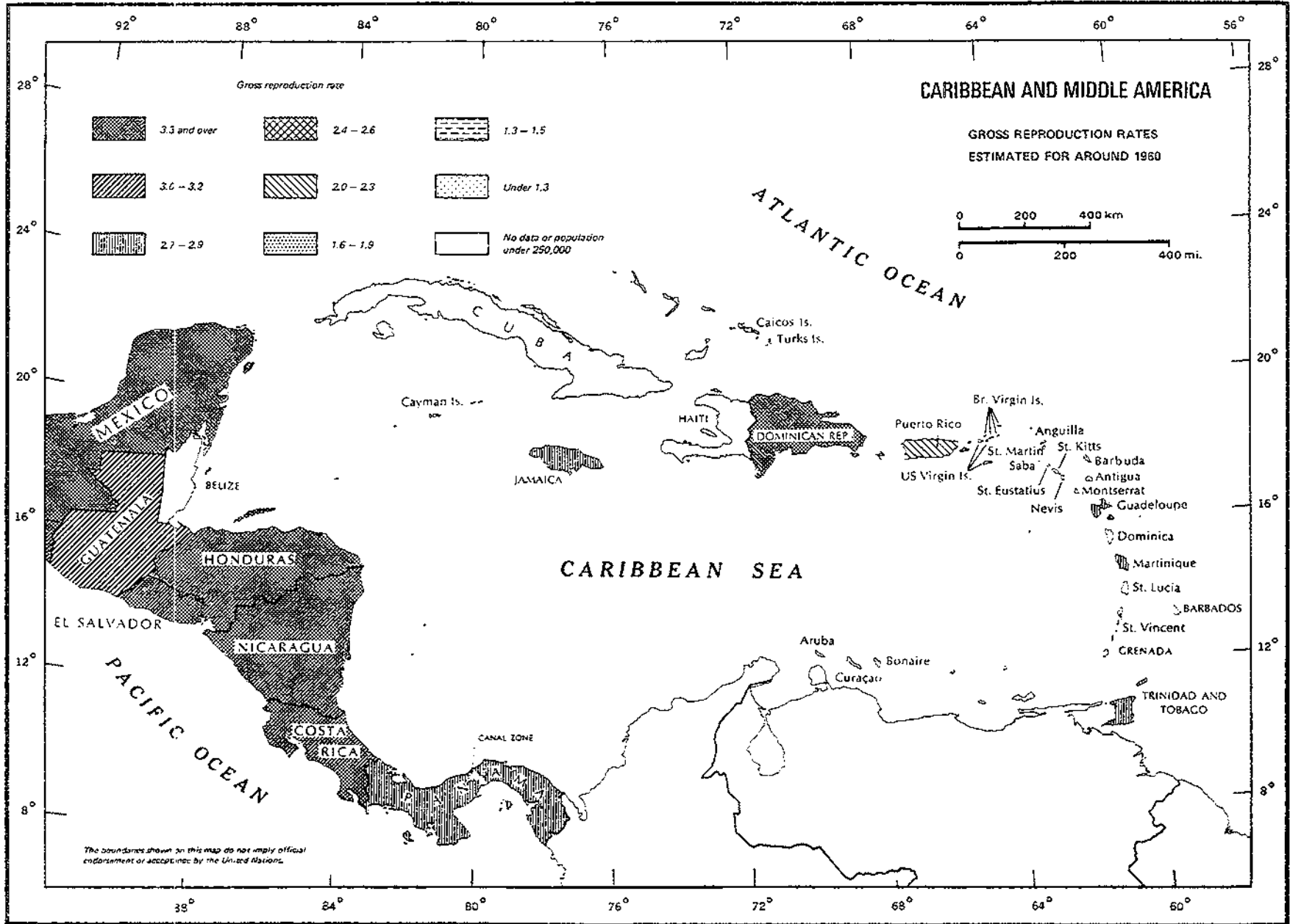
The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.



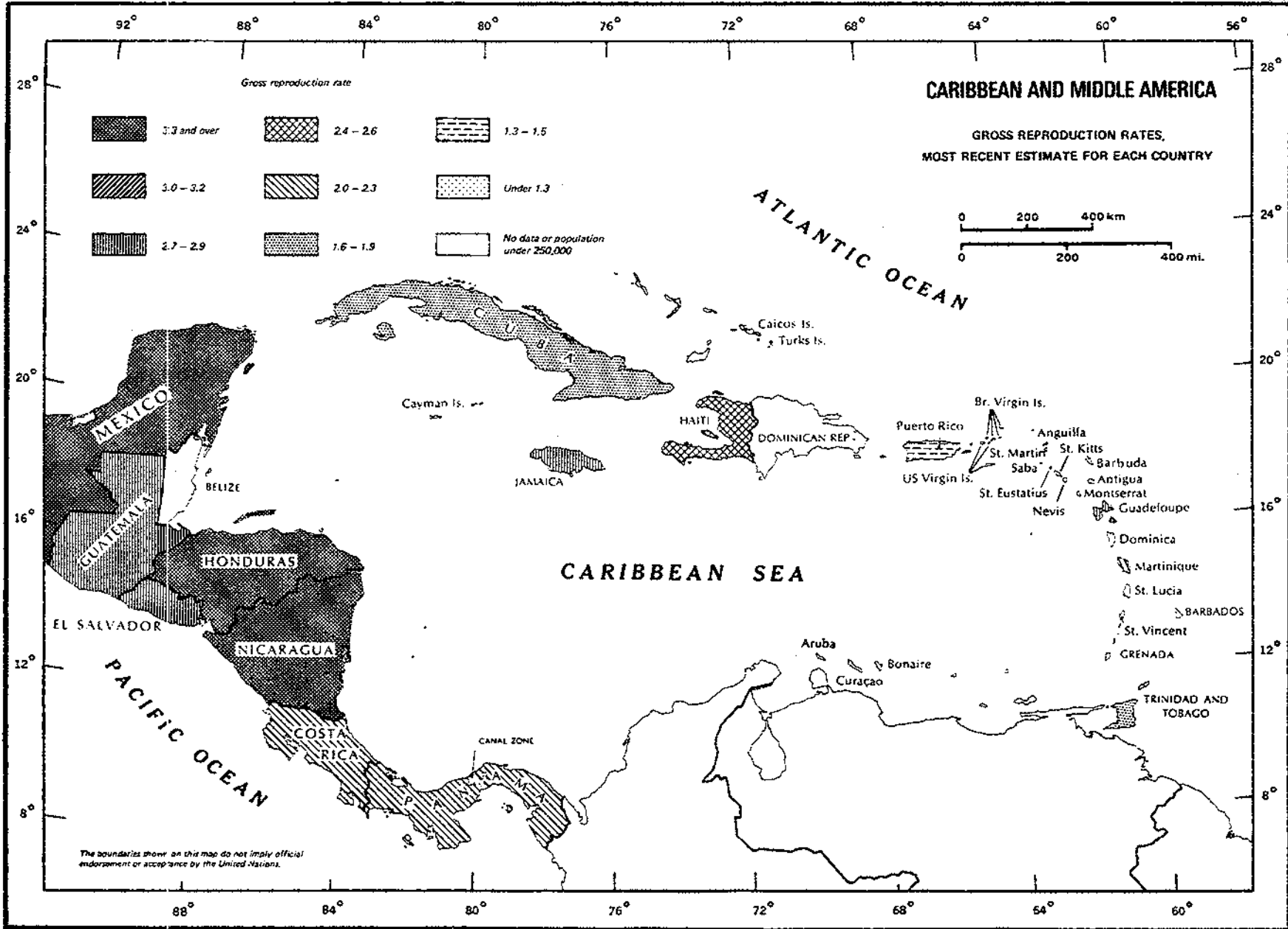


The boundaries shown on this map do not imply official endorsement or acceptance by the United Nations.











Because much of the rise in both crude and gross reproduction rates in the Caribbean countries took place before 1950, the data presented in this report do not fully document these trends. Comparison of the highest values shown in tables 14 and 16 with those reported for earlier years in Population Bulletin, No. 7 indicate increases in gross reproduction rates of about 75 per cent in Guyana and in Trinidad and Tobago during the periods from 1909-1913 to 1960 and from 1929-1933 to 1955, respectively. ^{8/} In Jamaica, the gross reproduction rate rose by about 60 per cent between 1941-1944 and 1964. Percentage increases in the crude birth rate during the same periods were about 22 and 37 per cent in Jamaica and Trinidad and Tobago, respectively, and about 35 per cent in Guyana.

Between 1950 and 1964, the crude birth rate of Jamaica, which had begun to increase just prior to 1950, rose by about 18.7 per cent, and its gross reproduction rate increased by around 49 per cent (see annexed table 65). In Trinidad and Tobago, the long-term increase was drawing to a close during the early 1950s and there were increases of only 11.7 per cent in the crude birth rate and of 21.7 per cent in the gross reproduction rate - changes that are, none the less, impressive. In Guyana, there was an increase of about 15 per cent between the 1950 gross reproduction rate and that estimated for 1960. Furthermore, the crude birth rate in Guyana rose by about 10 per cent between 1950 and 1952 and remained stable at between 42 and 44 per 1,000 until the early 1960s (table 14).

The notable differences between the magnitude of the rise as measured by the gross reproduction rate and that indicated by the crude birth rate reflect the fact that these countries have long been exporters of people rather than areas of immigration. This is particularly true of Jamaica and of Trinidad and Tobago, where emigration was such as to reduce the ratio of women aged 15-49 to the total population. The effect upon fertility is illustrated in table 15, which demonstrates that changes in age composition in these countries, as well as in others in the Caribbean region, have generally exercised a significant and negative influence upon changes in the crude birth rate.

^{8/} Although the statistics upon which these and following comparisons are made are considered to be relatively good, there were undoubtedly improvements in data over these rather long spans of time. This should be kept in mind both in this context and with respect to the discussion of factors contributing to fertility changes.

Table 14. Trends of crude birth rates in countries of Latin America having relatively good statistics, 1950-1973
(Number of live births per 1,000 population)

Caribbean

Year	Cuba ^{a/,b/}	Guadeloupe ^{c/}	Jamaica ^{a/,d/}	Martinique ^{c/}	Puerto Rico	Trinidad and Tobago
1950	29.6	37.3	33.1	38.0	38.5	37.5 ^{a/}
1951	25.3	39.3	34.0	38.7	37.6	36.7 ^{a/}
1952	25.0	39.0	33.6	37.9	36.0	34.6 ^{a/}
1953	...	39.1	34.4	40.2	35.1	37.7
1954	...	39.0	35.3	40.0	35.2	41.9
1955	...	40.1	36.2	39.8	35.2	41.9
1956	...	39.5	37.2	40.5	34.8	37.0
1957	29.3	36.7	37.9	39.9	33.7	37.7
1958	27.3	37.6	39.0	38.4	33.1	37.6
1959	28.2	36.6	40.0	38.2	32.3	37.4
1960	30.0	38.1	42.0	38.3	32.2	39.5
1961	31.5	35.7	40.5	37.6	31.5	37.9
1962	33.3	37.7	39.1	37.1	31.3	37.9
1963	35.0	36.1	39.0	35.6	31.1	35.6
1964	36.3	33.9	39.3	34.4	30.6	34.7
1965	35.4	35.3	39.4	35.0	30.8	32.8
1966	33.6	35.5	39.8	32.1	29.0	30.2
1967	31.7	32.4	37.1	30.8	26.9	28.2
1968	30.1	32.9	35.6	30.2	25.5	27.5
1969	28.6	30.1	34.9	26.8	25.0	24.5
1970	28.6	28.8	34.4	27.5	24.8	24.5
1971	29.8	30.3	34.9	27.1	25.6	25.4
1972	28.3	29.4	34.3	25.1	24.1	25.1 ^{e/}
1973	25.3	28.0	31.3	22.4	...	...

Table 14 (continued)

Middle America					
Year	Costa Rica <u>f/</u> , <u>g/</u>	El Salvador	Guatemala: <u>f/</u>	Mexico <u>g/</u>	Panama: <u>h/</u>
1950	42.9	48.7	47.2	44.7	31.3
1951	43.9	49.0	50.2	43.8	30.5
1952	44.6	49.3	49.2	42.9	34.4
1953	46.2	48.8	49.0	44.0	36.2
1954	47.4	49.1	49.1	45.3	37.3
1955	46.8	49.2	46.2	45.1	37.7
1956	46.4	48.5	45.9	45.2	37.6
1957	47.8	50.9	46.4	45.5	38.8
1958	47.1	49.6	45.7	43.0	37.7
1959	48.2	48.5	46.8	45.6	39.1
1960	47.0	49.5	46.7	46.0	39.1
1961	47.5	49.4	47.3	45.6	39.5
1962	46.5	48.4	45.4	45.6	40.0
1963	45.7	49.0	45.6	45.5	39.5
1964	42.7	47.1	44.1	46.3	38.9
1965	42.1	46.9	43.9	45.7	38.4
1966	40.8	45.4	44.1	45.8	38.8
1967	38.9	44.4	42.5	44.9	38.8
1968	36.1	43.2	42.4	45.0	38.9
1969	34.3	42.1	41.9	44.2	37.9
1970	33.3	40.0	40.0	43.6	37.1
1971	31.5	42.3	42.1	44.1	37.2
1972	31.3	40.7	42.4 ^{e/}	44.7	36.0
1973	...	...	41.6	...	33.2

Table 14 (continued)

Year	Temperate South America			Tropical South America		
	Argentina ^{i/}	Chile ^{i/}	Uruguay ^{s/}	Guyana ^{a/,k/}	Surinam ^{l/}	Venezuela ^{a/}
1950	25.7	35.2	18.6	40.4	39.0 ^{c/}	42.6
1951	25.4	...	18.5	42.5	42.2 ^{c/}	43.4
1952	25.0	33.9	18.8	44.3	44.7 ^{c/}	42.5
1953	25.2	...	18.8	44.1	45.4 ^{c/}	44.3
1954	24.6	35.1	19.4	42.9	45.8	44.8
1955	24.4	...	21.4	43.2	45.9	44.3
1956	24.6	36.8	23.5	43.2	46.8	43.5
1957	24.3	...	23.2	43.8	46.3	42.8
1958	23.5	37.3	23.2	43.8	48.0	42.4
1959	23.3	...	22.6	43.7	49.0	45.6
1960	23.7	38.3	23.9	42.2	46.1	46.0
1961	23.5	37.7	25.0	42.8	48.3	45.3
1962	23.9	37.6	25.3	42.7	48.7	43.4
1963	23.6	37.1	23.8	42.1	46.5	43.4
1964	23.4	35.8	23.4	40.9	45.9	43.4
1965	22.4	35.0	22.2	39.9	42.3	43.5
1966	22.0	34.3	21.4	40.0	41.3	41.7
1967	21.7	31.8	21.7	36.9	39.1	43.6
1968	21.9	31.0	21.7	38.2	37.1	39.7
1969	...	28.8	21.3	33.2 ^{e/}	38.4	39.6
1970	...	27.4	22.4	34.3 ^{e/}	36.5	38.1
1971	...	...	22.6	...	...	38.3
1972	...	...	...	...	...	36.8 ^{e/}
1973	...	...	...	...	...	...

(Foot-notes to table 14 on following page)

(Foot-notes to table 14)

Source: Unless otherwise indicated, rates were computed from registered births and official population estimates.

a/ Births tabulated by year of registration rather than occurrence.

b/ Data for 1958-1973 taken from Cuba, Ministerio de Salud Pública, Cuba: Organización de los servicios y nivel de salud (La Habana, 1974).

c/ Excluding live-born infants dying before registration of birth.

d/ Births for 1965-1972 excluding re-registrations and late registrations.

e/ Provisional.

f/ Mid-year population is a provisional estimate prepared by the United Nations Latin American Demographic Centre (CELADE).

g/ Births are official estimates by year of occurrence.

h/ Excluding Canal Zone. Prior to 1952, excluding tribal Indian population numbering 48,654 in 1950 and 62,187 in 1960. Beginning in 1952, including tribal Indian population in provinces of Bocas del Toro and Darién. Beginning in 1966, including tribal Indian population.

i/ Births in province of Córdoba (1965-1967) and in Santiago del Estero (1965) by year of registration rather than occurrence. Beginning in 1968, births are by year of registration rather than occurrence, except in the Provinces of Catamarca and Entre Rios, where births are those which occurred during the year.

j/ Data taken from S. Zubicueta, "IV Censo de población de 1970. Evaluación y ajuste y proyecciones de población 1970-2000, en base a la muestra de adelanto de cifras", Santiago, Centro Latino Americano de Demografía, n. d. (unpublished).

k/ Excluding Amerindian population.

l/ Data taken from H.F. Lamur, The Demographic Evolution of Surinam, 1920-1970, trans. by Dirk H. van der Elst (The Hague, Martinus Nijhoff, 1973).

Table 15. Index of the effect of changes in age composition upon the crude birth rate, selected countries of Latin America having relatively good statistics, 1950-1970

	1950-1955	1955-1960	1960-1965	1965-1970
Caribbean				
Guadeloupe	92.6	97.0	95.6	94.5
Jamaica	92.6	95.9	91.4	90.3
Martinique	90.9	96.5	92.9	94.6
Puerto Rico	95.9	95.6	107.3	102.9
Trinidad and Tobago	...	99.0	102.3	98.8
Middle America				
Costa Rica	...	...	99.1	105.1
El Salvador	98.2	97.1	96.8	99.1
Guatemala	99.4	96.5	99.5	100.0
Mexico	...	98.5	97.3	100.2
Panama	97.7	97.6	99.2	101.6
Temperate South America				
Argentina	...	94.0 ^{a/}	96.0	...
Chile	100.3 ^{b/}	98.7 ^{c/}	98.4	102.5
Tropical South America				
Venezuela	...	88.5 ^{d/}	...	106.7 ^{e/}

Source: Calculated from method described in Jerzy Barent, "Causes of fertility decline in Eastern Europe and the Soviet Union Part I. The influence of demographic factors", Population Studies, vol. XXIV, No. 1 (March 1970), p. 42.

Note: The figures represent the ratio, expressed in percentage, of the proportions of the crude birth-rate in each period to the corresponding proportions of the standardized crude birth-rate. An index above 100 indicates a positive effect and an index below 100 a negative effect of changes in age composition upon the crude birth-rate. For Chile, the relative change in the crude birth-rates is compared with that in the gross reproduction rate.

a/ For 1950-1960.

b/ For 1952-1956.

c/ For 1956-1960.

d/ For 1950-1961.

e/ For 1961-1971.

The lack of age-specific fertility rates for earlier years for Trinidad and Tobago makes it difficult to analyse and interpret changes in the age pattern of fertility. These data are altogether lacking for Guyana. For Jamaica and for Trinidad and Tobago, however, comparisons have been made on the basis of census data on children ever born between 1943-1946 and 1960, ^{9/} which show that increases in fertility tended to be heavily concentrated among younger Jamaican women, i.e., those aged 15-29 years, although older women also experienced significant changes. Comparison of these findings with the figures in annexed table 66 suggest a change in the relationship between age and the extent of fertility increase during the 1950s, for in the earlier years of that decade, there was a slight tendency for the fertility of younger women to rise more than that of older women; whereas during the late 1950s, that situation was largely reversed. Indeed, there were continued fertility increases among women over 25 until about 1964. In Trinidad and Tobago, on the other hand, comparison of the census results does not show the same heavy concentration of increases among younger women. Instead, among East Indians in the population, women aged 25-44 registered significant increases; and among non-Indians, the fertility of those aged 25-39 showed the sharpest changes. The data in table 66, covering only the years after 1955, provide some support for the conclusions based on census data. During 1955-1960, there was either stability or a small rise in fertility among women 20-39 years of age, while the fertility of both older and younger women was beginning to show significant reductions. Of interest in this connexion is the additional finding from a comparison of the 1943-1946 and 1960 censuses that reductions in childlessness played a major role in fertility changes, particularly in Jamaica (although increases in average number of children ever born were also important). ^{10/}

The trends in the crude birth rate prior to the 1960s in Surinam appear to have paralleled those in neighbouring Guyana, but at a slightly higher level. Between 1950 and 1962, the crude birth rate rose by about 25 per cent, from 39.0 to 48.7. Births classified by age of mother are not available for those years; but the increase of 25 per cent in the general fertility rate, the number of live births per 1,000 women aged 15-44 years, with no appreciable change in the proportion of women at the most fertile ages (20-29), indicates that changes in age composition probably had little to do with the rise in either the general fertility rate or the crude birth rate. On the other hand, improvements in the quality of vital registration may have contributed to this change.

Guadeloupe and Martinique may have experienced a rise in fertility similar to that which occurred in the English-speaking countries of the Caribbean region. However, the extent and timing of changes prior to the 1950s cannot be determined due to the absence of reliable and detailed data. In both Guadeloupe and Martinique, fertility apparently rose somewhat during 1950-1955; crude birth rate increased from 37-38 to about 40 per 1,000. Gross reproduction rates also increased by similar amounts in the two countries, rising by 16-17 per cent, from approximately 2.5 to about 2.8. However, the extent to which these changes represent improvements in vital registration or a genuine increase in fertility cannot be determined with certainty.

^{9/} George W. Roberts, "Fertility in some Caribbean countries", in International Union for the Scientific Study of Population, International Population Conference, London, 1969 (Liège, 1971), vol. I, p. 706.

^{10/} Ibid., pp. 699-700.

Table 16. Crude birth rates, gross reproduction rates and age-specific fertility rates, selected countries of Latin America having relatively good statistics, 1950-1970

Region and country	Year or period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific rates (Live births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Caribbean											
Cuba	1953 ^{a/}	...	2.06	845.0	104.0	166.0	160.0	141.0	117.0	95.0	62.0
	1965	34.6	2.22	908.6	146.1	264.9	212.1	147.7	99.1	31.5	7.2
	1969-1971	28.6	1.88	769.0	108.0	215.0	187.0	128.0	85.0	38.0	8.0
Guadeloupe	1950	37.3	2.47	973.8	83.2	219.7	261.9	196.9	143.8	60.4	8.0
	1955	40.1	2.86	1 148.6	78.9	232.8	288.9	257.0	188.4	91.9	10.8
	1960	38.1	2.79	1 136.7	66.1	217.2	274.4	263.5	205.1	99.5	10.8
	1965	35.3	2.72	1 097.9	63.3	215.9	286.0	246.6	181.8	89.8	14.5
	1967	32.4	2.66	1 059.2	57.3	219.6	286.3	236.8	163.8	85.8	9.5
Jamaica	1950	33.1	1.92	785.7	102.4	221.3	189.0	137.1	96.5	33.1	6.3
	1955	36.2	2.27	924.4	122.4	259.5	237.4	158.7	104.0	36.6	5.9
	1960	42.0	2.78	1 122.4	154.4	299.7	264.2	213.6	132.5	49.7	8.2
	1964	39.3	2.85	1 158.4	147.4	294.2	271.0	226.1	158.9	52.4	8.4
	1970	34.4	2.71 ^{b/}	1 115.0	151.0	294.0	265.0	215.0	134.0	48.0	8.0
Martinique	1950	38.0	2.44	988.4	66.6	213.6	249.3	202.1	167.9	78.4	10.6
	1955	39.8	2.86	1 147.8	68.3	226.3	293.1	271.5	184.5	93.6	10.6
	1960	38.3	2.83	1 157.0	52.4	224.6	278.7	278.8	207.9	101.6	13.0
	1965	35.0	2.85	1 139.4	49.4	217.1	289.1	265.9	202.5	102.7	12.7
	1970	27.5	2.28	921.0	51.0	215.0	264.0	189.0	132.0	62.0	8.0

Table 16 (continued)

Region and country	Year or period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific rates (Live births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Caribbean (continued)											
Puerto Rico	1950	38.5	2.55	1 036.6	98.7	276.7	257.6	197.9	141.6	52.6	11.5
	1955	35.2	2.42	984.6	99.8	273.7	235.0	175.9	130.2	59.0	11.2
	1960	32.2	2.27	925.4	95.9	277.5	233.0	153.7	106.6	49.8	8.9
	1965	30.8	1.95	801.4	109.7	259.5	195.0	115.2	83.1	32.5	6.5
	1970	24.8	1.54	630.9	72.9	193.5	181.5	103.0	56.1	20.8	3.2
Trinidad and Tobago	1950	37.5	2.3 ^{c/}	...	...	...	...	...	...	...	...
	1955	41.9	2.82	1 156.8	180.8	321.4	276.8	201.2	129.6	40.5	6.5
	1960	39.5	2.72	1 109.2	132.6	312.0	282.7	211.4	127.5	37.2	5.7
	1965	32.8	2.21	902.9	106.7	246.3	234.1	164.3	114.2	32.6	4.8
	1970	24.5	1.68	681.6	83.2	204.8	167.7	115.9	78.4	27.6	4.0
Middle America											
Costa Rica ^{d/}	1950	...	3.16	1 293.8	101.0	306.9	331.6	254.8	201.5	82.9	15.1
	1955	46.8	...	...	...	...	...	...	...	...	...
	1960	47.0	3.48	1 428.6	115.3	349.6	355.7	287.1	217.0	88.6	15.3
	1965	42.1	3.16	1 303.3	108.1	294.8	319.1	263.5	213.5	88.0	16.4
	1970	33.3	2.36	967.2	101.3	231.0	221.1	186.4	147.4	67.7	12.3

Table 16 (continued)

Region and country	Year or period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific rates (live births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Middle America (continued)											
El Salvador ^{e/}	1950	48.7	3.19	1 313.4	135.7	349.5	333.6	242.7	170.5	61.8	19.6
	1955	49.2	3.31	1 351.8	147.0	348.4	351.4	234.2	187.9	64.6	18.3
	1960	49.5	3.46	1 413.0	148.5	344.8	350.2	273.2	204.4	70.5	21.4
	1965	46.9	3.43	1 388.9	150.2	341.5	320.7	255.7	223.2	74.1	23.5
	1970	40.0	2.94	1 197.7	134.3	290.3	274.7	213.6	190.3	73.5	21.0
Guatemala ^{e/}	1950	47.2	3.20	1 304.3	164.3	290.7	290.5	228.0	212.0	86.1	32.7
	1955	46.2	3.09	1 270.0	165.3	296.5	287.3	222.9	185.1	85.6	27.3
	1960	46.7	3.23	1 329.2	161.0	322.2	300.4	241.9	195.8	82.6	25.3
	1965	43.9	3.07	1 263.9	145.7	297.7	296.1	231.8	193.2	77.4	22.1
	1970	40.0	2.80	1 147.1	136.7	275.2	258.7	215.4	171.0	69.8	20.3
Mexico ^{e/}	1950	44.7	...	...	...	...	...	...	...	...	...
	1955	45.1	3.15	1 292.2 ^{f/}	121.3	320.7	333.5	232.3	203.8	...	40.3 ^{g/}
	1960	46.0	3.31	1 356.4 ^{f/}	111.9	322.1	336.7	271.7	216.6	...	48.7 ^{g/}
	1965	45.7	3.45	1 413.5 ^{f/}	108.4	316.2	342.3	265.9	228.7	...	76.0 ^{g/}
	1970	43.6	3.31	1 355.2 ^{f/}	93.1	300.9	327.2	257.4	219.4	...	78.6 ^{g/}
Panama ^{f/}	1950	31.3	2.03	839.0	119.4	250.0	217.3	135.7	84.7	23.5	8.4
	1955	37.7	2.54	1 036.7	148.5	290.4	277.1	170.1	111.9	32.8	5.9
	1960	39.2	2.75	1 110.6	149.8	314.5	275.8	194.4	128.0	39.7	8.4
	1965	38.4	2.70	1 100.7	146.4	307.1	280.9	188.5	130.0	40.3	7.5
	1970	37.1	2.59	1 054.1	139.0	291.9	256.4	187.7	126.0	44.3	8.8

Table 16 (continued)

Region and country	Year or period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific rates (Live births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Temperate South America											
Argentina	1950	25.7	1.55	634.2	55.9	149.1	178.1	130.0	79.3	31.4	10.4
	1955	24.4	...	...	...	...	...	...	...	...	...
	1960	23.7	1.51	616.1	58.3	165.3	169.0	118.8	69.6	28.8	6.3
	1965	22.4	1.48	606.4	58.9	159.7	169.0	118.9	70.1	24.5	5.4
	1968	21.9	...	...	...	...	...	...	...	...	...
Chile ^{h/}	1952	33.9	2.20	902.9	73.4	213.2	218.2	179.3	135.0	65.9	17.8
	1956	36.8	2.38	976.8	78.2	215.4	260.2	195.2	137.8	72.4	17.7
	1960	38.3	2.51	1 029.1	84.4	229.5	261.9	227.4	145.8	64.7	15.4
	1965	35.0	2.33	956.4	84.9	228.6	231.9	191.3	148.8	60.0	10.9
	1970	27.4	1.78	730.6	77.5	191.5	187.6	131.2	89.2	45.7	7.9
Uruguay ^{i/}	1963	22.1	1.42	582.3	60.4	167.0	161.6	104.9	58.5	26.0	3.9
Tropical South America											
Guyana	1950	...	2.6 ^{j/}	...	...	...	...	...	...	...	...
	1960	...	3.0 ^{j/}	...	...	...	...	...	...	...	...
Surinam	1965	42.3	3.10 ^{k/}	1 269.6 ^{k/}	153.6	346.4	319.2	237.0	145.8	67.6	...
	1970	36.5	2.6 ^{k/}	1 101.3 ^{k/}	111.0	303.5	285.8	202.9	134.2	63.9	...

Table 16 (continued)

Region and country	Year or period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific rates (Live births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Tropical South America (continued)											
Venezuela	1950-1951	43.3	2.75	1 116.7	116.2	282.9	283.1	218.0	144.2	52.0	20.3
	1961	45.3	3.25	1 333.4	138.0	336.7	342.7	247.6	188.0	64.2	16.2
	1971	38.3	2.61	1 071.6	102.4	257.5	266.9	216.0	153.8	62.8	12.2

(Foot-notes on following page)

(Foot-notes to table 16)

Note: Crude birth rates derived from the same data for births used to calculate the corresponding gross reproduction rate. When total births or mid-year population estimates were not available, no crude birth rate was given.

a/ Data of Rodolfo Mezquita, cited in M. H. Henriques, "Niveles de la fecundidad en América Latina", CELADE report S.444/38, prepared for SEMEV Seminar, 1970; Santiago, Chile, 1969.

b/ For 1969-1971, World Bank and International Development Association, Current Economic Position and Prospects, Report No. 257a-JM (Washington, D.C., 1974), vol. II, annex I, "Population, Labor force and employment in Jamaica", p. 3.

c/ Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XIII.2), p. 75.

d/ Data for 1950 taken from Miguel Gómez Barrantes, República de Costa Rica: Evaluación de las estadísticas de nacimientos y de las cifras censales por medio de las estadísticas de asistencia escolar y de defunciones, CELADE Series C, No. 29 (Santiago, Chile, 1964); estimates of the female population aged 15-49 for 1960, 1965 and 1970 taken from Boletín Demográfico (CELADE), vol. VII, No. 13 (January 1974), table 2.

e/ Estimates of female population aged 15-49 years based on age-sex distributions given in Boletín Demográfico, vol. VII, No. 13 (January 1974), prorated to agree with official mid-year population. Gross reproduction rates calculated assuming a sex ratio of 105.

f/ Adjusted to take into account reporting of births for ages 40-49.

g/ For ages 40-49.

h/ S. Zubicueta, "Chile: IV Censo de población en 1970. Evaluación y ajuste y proyecciones de población 1970-2000, en base a la muestra de adelanto de cifras", Santiago, Chile, Centro Latinoamericano Demografía, 1972 (unpublished).

i/ Agustín García L., Uruguay: Proyección de la población por sexo y grupos de edades, 1963-2003, CELADE Series A, No. 101 (Santiago, Chile, 1970).

j/ Population Bulletin, No. 7, p. 76.

k/ Taken from H. E. Lamur, The Demographic Evolution of Surinam, trans. by Dirk H. van der Elst (The Hague, Martinus Nijhoff, 1973), p. 56. Gross reproduction rate and gross total fertility rate based on births to mothers aged 15-44.

l/ Universidad del Zulia, Facultad de Ciencias Económicas y Sociales, Centro de Investigaciones Económicas; and Comité Internacional de Coordinación de la Investigación Nacional in Demografía (CICRED), Venezuela: Aspectos demográficos de la población, Año Mundial de la Población (Maracaibo, 1974). To facilitate comparison with the gross reproduction rate, the crude birth rate for 1950-1951 is presented instead of the slightly different rate for 1950 given in table 14.

During the period 1950-1955, there were similar patterns of relative change by age in both Guadeloupe and Martinique (table 66). Increases occurred in nearly all age groups, but it was among the older women (particularly in Guadeloupe) that fertility rose by the greatest percentage. During the latter 1950s, the rates of women over 30 years of age continued to rise in both countries.

Puerto Rico differs from most other countries of the Caribbean region in that it experienced only a very small and temporary rise in the crude birth rate immediately following the Second World War. This measure rose by about 9 per cent, from 38.7 in 1943 to 42.2 in 1947, before continuing its long-term decline. Between 1938-1942 and 1943-1947, the gross reproduction rate increased by a similar percentage before subsequently reflecting the same downward trend. ^{11/} Part of that rise may reflect improvement in the quality of vital registration, but it is equally likely that Puerto Rico was experiencing the same "baby boom" that was occurring in the United States of America. From 1950 to 1960, the crude birth rate fell by 16 per cent to about 32 per 1,000. The gross reproduction rate, however, decreased by less (11 per cent) due largely to out-migration of women in the reproductive ages (see tables 15 and 17). During the early 1950s, the decline was concentrated among women aged 25-39; but during 1955-1960, there was an important shift and significant percentage declines occurred among women aged 30-49 years (table 66).

Post-war trends in Cuba are difficult to document, inasmuch as adequate statistics are available only for recent years. It is known, however, that the crude birth rate declined substantially, from roughly 50 per 1,000 in the early decades of this century to about 34 during the mid-1940s. ^{12/} The gross reproduction rate was estimated to have been about 2.1 in 1953, and official figures for 1965 indicate a level of 2.22, representing an increase of approximately 9 per cent. In addition, there was a sharp increment of nearly 33 per cent (from 27.3 to 36.3) in crude birth rates between 1958 and 1964.

The rise in fertility was accentuated among younger women, particularly those under age 25 (tables 16 and 66). In view of the declining rates among women over 35 years of age, it is fairly clear that younger women accounted for virtually the entire increase in the crude birth rate.

In view of the heterogeneity of the social, cultural, economic and political conditions prevailing among the countries of the Caribbean region, and in the absence of the requisite information, it is hardly possible to know what factors or set of conditions contributed most heavily in all cases to the behaviour underlying these changes in crude birth rates and gross reproduction rates. In some instances, the post-war rise represented an interruption of long-established declines associated with progress in economic and social development.

^{11/} Population Bulletin, No. 7, p. 75.

^{12/} Ibid., p. 76.

Table 17. Women in each childbearing age as percentage of all women aged 15-49 and women aged 15-49 as a percentage of total population, countries of Latin America, selected years, 1950-1970

Region and country	Year	Women in each childbearing age as percentage of all women aged 15-49 years							15-49	Women aged 15-49 as percentage of total population
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Caribbean										
Guadeloupe	1950	19.2	17.3	15.4	13.5	13.5	11.5	9.6	100.0	25.2
	1955	19.7	17.3	15.6	14.3	11.7	11.9	9.5	100.0	23.4
	1960	20.1	17.7	15.4	13.7	12.6	10.4	10.2	100.0	22.8
	1965	22.9	17.1	14.3	12.9	12.9	11.4	8.6	100.0	22.2
	1967	25.7	16.5	12.9	12.6	11.6	11.1	9.6	100.0	22.0
Jamaica	1950	19.6	17.7	15.5	14.4	12.8	10.9	9.0	100.0	26.5
	1955	19.5	17.6	15.1	14.1	12.7	11.4	9.7	100.0	24.8
	1960	19.8	17.5	16.0	13.1	12.6	10.8	10.1	100.0	23.8
	1964	22.2	18.3	14.8	12.8	11.3	10.8	9.7	100.0	21.8
	1970	23.1	18.2	14.4	11.6	11.8	11.1	9.7	100.0	20.2
Martinique	1950	19.6	17.9	16.1	14.3	12.5	10.7	8.9	100.0	25.2
	1955	19.0	17.2	15.5	13.8	12.1	12.1	10.3	100.0	23.5
	1960	20.0	16.9	15.4	13.8	12.3	10.8	10.8	100.0	22.8
	1965	22.5	15.7	14.5	13.2	12.9	11.7	9.5	100.0	21.6
	1967	25.2	15.6	12.7	13.1	12.1	11.3	10.0	100.0	21.9
Puerto Rico	1950	22.0	20.2	16.2	12.9	13.1	8.6	7.1	100.0	22.9
	1955	22.7	18.6	15.0	12.8	13.0	9.4	8.5	100.0	22.8
	1960	23.3	17.2	13.9	12.7	12.9	10.2	9.7	100.0	22.7
	1965	20.3	17.3	15.3	14.0	12.3	11.3	9.6	100.0	24.2
	1970	22.3	19.0	14.8	12.6	11.6	10.2	9.5	100.0	24.4
Trinidad and Tobago	1950	...	...	...	...	...	...	...	...	...
	1955	18.5	16.3	15.8	14.5	13.3	11.7	10.0	100.0	23.1
	1960	21.9	17.5	14.5	13.2	12.5	10.7	9.6	100.0	22.8
	1965	22.7	18.8	14.9	12.9	10.9	10.9	8.9	100.0	22.9
	1970	23.9	18.0	15.2	12.7	11.0	9.6	9.6	100.0	22.6

Table 17 (continued)

Region and country	Year	Women in each childbearing age as percentage of all women aged 15-49 years							15-49	Women aged 15-49 as percentage of total population
		15-19	20-24	25-29	30-34	35-39	40-44	45-49		
Middle America										
Costa Rica	1950	...	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...	...
	1960	22.5	18.3	15.8	14.0	11.6	9.4	8.4	100.0	21.3
	1965	23.8	18.8	15.3	13.1	11.6	9.6	7.8	100.0	21.1
	1970	24.8	19.5	15.4	12.5	10.7	9.4	7.7	100.0	22.1
El Salvador	1950	21.7	18.6	16.6	13.8	11.6	10.0	7.6	100.0	23.1
	1955	22.1	18.6	15.8	14.1	11.6	9.6	8.2	100.0	22.8
	1960	21.5	19.2	16.1	13.6	12.0	9.8	7.9	100.0	22.0
	1965	22.8	18.2	16.2	13.5	11.4	9.9	8.0	100.0	21.6
	1970	23.7	19.1	15.2	13.6	11.2	9.3	8.0	100.0	21.3
Guatemala	1950	22.8	20.3	16.4	12.9	10.5	8.9	8.2	100.0	22.9
	1955	21.6	19.7	17.4	14.0	11.0	8.9	7.5	100.0	22.5
	1960	21.7	18.5	16.7	14.7	11.8	9.2	7.4	100.0	22.0
	1965	22.8	18.3	15.5	14.0	12.2	9.7	7.6	100.0	22.1
	1970	23.1	19.1	15.3	12.9	11.6	10.1	8.0	100.0	22.3
Mexico	1950	...	...	...	...	...	...	...	...	...
	1955	22.1	18.9	16.1	13.8	10.3	10.3	8.6	100.0	22.4
	1960	22.2	18.9	16.1	13.7	11.7	8.7	8.6	100.0	21.8
	1965	22.7	18.9	16.0	13.7	11.5	9.8	7.3	100.0	21.3
	1970	24.2	18.7	15.5	13.1	11.1	9.4	7.9	100.0	21.6
Panama	1950	21.7	18.4	16.3	14.2	12.3	9.7	7.4	100.0	22.4
	1955	21.0	18.6	15.7	13.9	12.1	10.4	8.2	100.0	22.2
	1960	21.9	18.0	15.9	13.4	11.8	10.3	8.8	100.0	21.9
	1965	22.6	18.6	15.3	13.5	11.3	10.0	8.6	100.0	21.5
	1970	22.9	19.1	15.8	12.9	11.4	9.5	8.3	100.0	21.6

Table 17 (continued)

Region and country	Year	Women in each childbearing age as percentage of all women aged 15-49 years								Women aged 15-49 as percentage of total population
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	15-49	
Temperate South America										
Argentina	1950	17.2	17.3	16.0	14.4	13.4	11.9	10.0	100.0	26.2
	1955	...	...	...	...	...	...	...	...	...
	1960	16.8	15.2	15.1	15.4	14.1	11.9	11.5	100.0	25.6
	1965	17.4	15.6	14.3	14.2	14.1	13.2	11.2	100.0	24.9
	1970	...	...	...	...	...	...	...	...	...
Chile	1950	20.0	17.9	16.3	14.3	12.2	10.4	8.9	100.0	24.5
	1955	19.7	17.7	15.9	14.4	12.5	10.7	9.0	100.0	24.2
	1960	20.0	17.5	15.7	14.0	12.6	10.9	9.3	100.0	23.8
	1965	20.8	17.6	15.3	13.7	12.2	10.9	9.4	100.0	23.7
	1970	21.1	18.3	15.4	13.4	11.9	10.5	9.4	100.0	24.1
Tropical South America										
Venezuela	1950	21.2	19.9	16.6	13.2	12.2	9.6	7.3	100.0	23.7
	1961	20.7	18.7	16.4	14.5	11.9	9.6	8.2	100.0	21.8
	1971	25.7	20.1	14.6	12.0	11.0	9.2	7.4	100.0	22.8

Sources: Percentages based on official estimates, except as follows:

El Salvador, Guatemala, Mexico, Panama: calculated from Boletín Demográfico (Centro Latinoamericano de Demografía), vol. VII, No. 13 (January 1974);

Chile: "América Latina: índice de crecimiento de la población en el período 1950-2000 por países", Boletín Demográfico, vol. VII, No. 13 (January 1974), table 2;

Venezuela: Universidad del Zulia, Facultad de Ciencias Económicas y Sociales, Centro de Investigaciones Económicas; and Comité Internacional de Coordinación de la Investigación Nacional en Demografía (CICRED), Venezuela: Aspectos demográficos de la población, Año Mundial de la Población (Maracaibo, 1974), table 1.

Cuba, Jamaica, and Trinidad and Tobago had attained relatively low levels of fertility during the 1930s and 1940s as they experienced, to varying degrees, changes in general levels of living. Cuba is generally cited (along with Argentina and Uruguay) as one of a very few cases of a Latin American country that had undergone a transition from relatively high to relatively moderate fertility long before (or in the absence of) such changes in other countries of the area. The population of Cuba began to urbanize more rapidly during that time; and, as in Argentina and Uruguay, there were concomitant advances in industrialization and progress in education. Moreover, the population contained relatively large proportions of Europeans, whose relatively low fertility contributed to the fall in aggregate Cuban fertility. Similar changes are reported to be associated with fertility reductions in Jamaica and in Trinidad and Tobago, 13/ although these countries do not have large minorities of European origin. It should be kept in mind, however, that Jamaica, and Trinidad and Tobago, as well as most of the remaining countries of the Caribbean region, have long been affected by very imbalanced sex ratios from the early to middle adult ages. Further deficits of males in the ages 20-55 resulting from emigration would very likely have an additionally negative effect upon aggregate fertility levels. 14/

In addition to long-run economic changes, it is likely that "short-run" economic adversities had as one effect the decrease of fertility to a level that might not otherwise have been achieved. This is said to have been the case in Jamaica during the Second World War. 15/ Thus, an important question is whether the post-war rise was merely a recovery to previous levels as social and economic conditions improved, or whether it reflected a fundamental change in patterns of childbearing. The latter possibility appears not to have been the case, however, as the timing of marriage and childbearing did not shift perceptibly to younger women, so that childbearing among them did not coincide with the continuation of childbearing among older women to produce exceptionally high annual fertility rates, as occurred during the "baby boom" in the more developed countries.

Except in Cuba and Jamaica, increments in fertility were most notable among older women; and in Jamaica, although increases were at first most important among younger women (under 30 years of age), the impetus of the rise subsequently shifted to older women. On the other hand, the changes in Cuba after 1958 do bear a similarity to the post-war trends in the more developed countries, owing, among other things, 16/ to an increase in the marriage rate and a decline in age at marriage leading to a rise in fertility primarily among young couples. In addition, the selective character of the heavy emigration during the early 1960s removed from the general population large proportions of the low-fertility sectors and had a positive effect upon the crude birth rate.

13/ George W. Roberts, The Population of Jamaica (Cambridge, Cambridge University Press, 1957), pp. 312-314.

14/ See, for example, A. Marino, "Family, fertility and sex ratios in the British Caribbean", Population Studies, vol. XXIV, No. 2 (July 1970), pp. 159-172.

15/ G. W. Roberts, "Fertility in some Caribbean countries".

16/ Juan Pérez de la Riva, "La Population de Cuba et ses problèmes", Population (Paris), vol. 22, No. 1 (January-February 1967), p. 102.

At least two additional factors have been mentioned as playing a significant role in the fertility increases recorded in some countries of the Caribbean region. As far back as the late 1920s ^{17/} and especially during the 1940s, advances in public health led to declines in mortality, as well as to the amelioration of fecundity impairments due to venereal diseases and malaria. ^{18/} In addition to strengthening the capacity of women in these countries to have children, those improvements resulted in very significant gains in life expectancy. Thus, in Jamaica, for example, life expectancy at birth for both sexes increased from 37.1 years in 1920-1922 to 57.3 years in 1950-1952, a gain of about 20 years; and in Trinidad and Tobago, about 23 years were added between 1920-1922 and 1954-1956, as life expectancy for both sexes increased from 38.9 to 61.5 years. ^{19/} What is significant about these improvements, in addition to their extent and the rapidity with which they occurred, is the particular span of years in relation to the family life cycle involved, for the gains were not only in years lived but in reproductive years lived. During 1920-1922, people in Jamaica and in Trinidad and Tobago could, on average, expect at birth to live through only a portion of their reproductive years. By the 1950s, the average person expected to live throughout the reproductive period. Thus, massive gains took place in the proportion of women (and couples) living through the reproductive years and under conditions of improved capacity to conceive and bear children. The fact that these gains benefited all women, but primarily those in the later reproductive years, is consistent with the information presented above, which indicated declines in childlessness and attributed most of the fertility increases to women over 30 years of age.

It has been widely suggested that a shift towards a more stable form of marital union, as well as earlier entrance into such unions, exerted a positive effect upon fertility. Much attention has been devoted to fertility differentials among the three prevailing forms of marital union in the Caribbean: (a) married, in which the partners are legally married; (b) common-law, referring to unions of which the couple shares a common household but is not legally married; and (c) visiting, referring to unions in which the woman has borne one or more children for a partner with whom she does not share a common household. ^{20/} In terms of "stability", i.e., exposure to the possibility of childbearing, legally

^{17/} Jay R. Mandle, "Guyana: pro-natalist policies", in Aaron Lee Segal, ed., Population Policies in the Caribbean (Lexington, Massachusetts, Lexington Books, 1974), p. 90.

^{18/} Population Bulletin, No. 7, p. 79. See also George J. Stolnitz, "Recent mortality trends in Latin America, Asia and Africa", Population Studies, vol. XIX, No. 2 (November 1965), pp. 117-138.

^{19/} Population Bulletin of the United Nations, No. 6, with special reference to the situation and recent trends of mortality in the world (United Nations publication, Sales No. 62.XIII.2), p. 35.

^{20/} For a review of studies conducted in the British Caribbean between 1951 and 1961, see Benjamin Schlesinger, "Family patterns in the English-speaking Caribbean", Journal of Marriage and the Family, vol. 30 (February 1968), pp. 149-154.

married women are considered to be in the most stable unions and to have the highest average fertility, while those in visiting unions have the least stable marital relations and are characterized by markedly lower fertility than those living in either married or common-law unions. This generalization is highly subject to qualification, however, for average age at entry into such unions varies. More importantly, they are not mutually exclusive, for it has been observed that many persons begin their reproductive careers in visiting or common-law unions, but eventually formalize their relationship by entering into legal marriage with the same or another partner.

The first study of this series 21/ contains data for Guyana, Jamaica, and Trinidad and Tobago on the increases in the percentage of legally married women at certain ages during the years in which fertility increased.

Whereas declining widowhood may have been an important contributing factor to the fertility rise in Guyana prior to the 1960s, it is unlikely that improvements in the mortality of males could have had a similar effect upon the fertility trends in Jamaica and in Trinidad and Tobago. In those countries, earlier entrance of women into stable unions, as in a shift from visiting or common-law relationships while still under 40 years of age, appears to have played a more important role. Further evidence of a change in the distribution of marital unions by type lies in the sharp changes in the ratio of legitimate to illegitimate births. In Trinidad and Tobago, there were 626 legitimate births per 1,000 illegitimate births in 1921-1925; by 1941-1945, this figure was 1,020. 22/ In Guyana, this ratio increased from 1,778 in 1954 to 2,891 in 1964. In Jamaica, where illegitimacy is much higher, there was a decline in the proportion of all births that were illegitimate until about 1950, 23/ but since then it appears to have risen again. In 1948, the ratio of legitimate to illegitimate births was 469 per 1,000; but by 1964, the most recent year for which data are available, this ratio was only 349. In view of the fact that the decline during these years coincides with the period of rising fertility, and assuming that it reflects accurately a move to non-legal unions, it would appear to indicate that the increase in Jamaican fertility cannot be explained by a rising proportion of married women, for such did not occur.

The possibility exists that the relationship between fertility levels and stability of union has been undergoing a change since the period covered by the research conducted prior to 1955, upon which bases the theory of a positive relationship between family size and stability of union was developed. Other researchers 24/ also have reached this conclusion; and they further state that the

21/ Population Bulletin, No. 7, p. 78.

22/ Ibid., p. 79.

23/ G. W. Roberts, The Population of Jamaica, p. 288.

24/ G. Edward Ebanks, P. M. George and Charles F. Nobbe, "Fertility and number of partnerships in Barbados", Population Studies, vol. 28, No. 2 (November 1974), pp. 449-461. The authors caution that the role of control of venereal diseases should not be over-emphasized because they do not consider it a factor in differential fertility by type of union and because no data are available with which to provide a definitive answer.

control of venereal disease may have influenced this change, but this is held to be only a scant possibility. Analysis of a sample of the first 25,000 women admitted into the Jamaican National Family Planning Programme, in 1968-1969 showed that upon controlling for variations in age of women, common-law unions were the most fertile, followed by marriages and visiting unions, in that order. 25/ Although this sample was not representative of all Jamaican women, the findings were supported in conclusions reached on the basis of analysis of a representative sample of all women of lower socio-economic status in Barbados taken in 1971, and similar findings have been reported for Trinidad and Tobago. 26/

It might logically have been expected that the response to family planning programmes would be more favourable among couples who were legally married than among those in consensual and "visiting" unions, but in the Barbados study, it was found that "... contraceptive use by itself, or in combination with variables that effect exposure to pregnancy, does not wipe out ..." 27/ the findings of higher fertility among consensual than legal unions. It is not known, however, whether this situation applies also to Jamaica and to Trinidad and Tobago.

Trends during the 1960s

Fertility fell during the 1960s throughout the Caribbean region and in Guyana and Surinam. There was considerable variation, however, in the timing, degree and pattern of these declines. The decline in Puerto Rican fertility began as early as the 1940s and continued throughout the 1950s and 1960s. In Guadeloupe, Guyana, Martinique, and Trinidad and Tobago, crude birth rates crested in the early 1950s at from 40 to 44 per 1,000 population. In none of these cases, however, was there an immediate onset of continuous and significant decline in this measure (table 14 and figure III). In Guyana, the crude birth rate stabilized at 42-43 per 1,000 until 1964; but in Guadeloupe, Martinique, and Trinidad and Tobago, the measure fell quickly from 40-42 to 37-38 and remained at that level until about 1963. In Surinam and Jamaica, on the other hand, the crude birth rate did not reach its peak until the early 1960s; but whereas in Surinam a significant decline began immediately thereafter, in Jamaica the crude birth rate levelled off at about 39-40 until 1966. In Cuba, the crude birth rate began an immediate decline after having risen to about 36 per 1,000 in 1964.

25/ G. Edward Ebanks, "Fertility, union status and partners", International Journal of Sociology of the Family, vol. 3, No. 1 (1973), pp. 48-60.

26/ G. E. Ebanks, P. M. George and C. E. Nobbe, loc. cit., p. 461.

27/ Ibid., p. 460.

Figure III. Live births per 1,000 population in countries of Latin America having relatively good statistics, 1950-1973

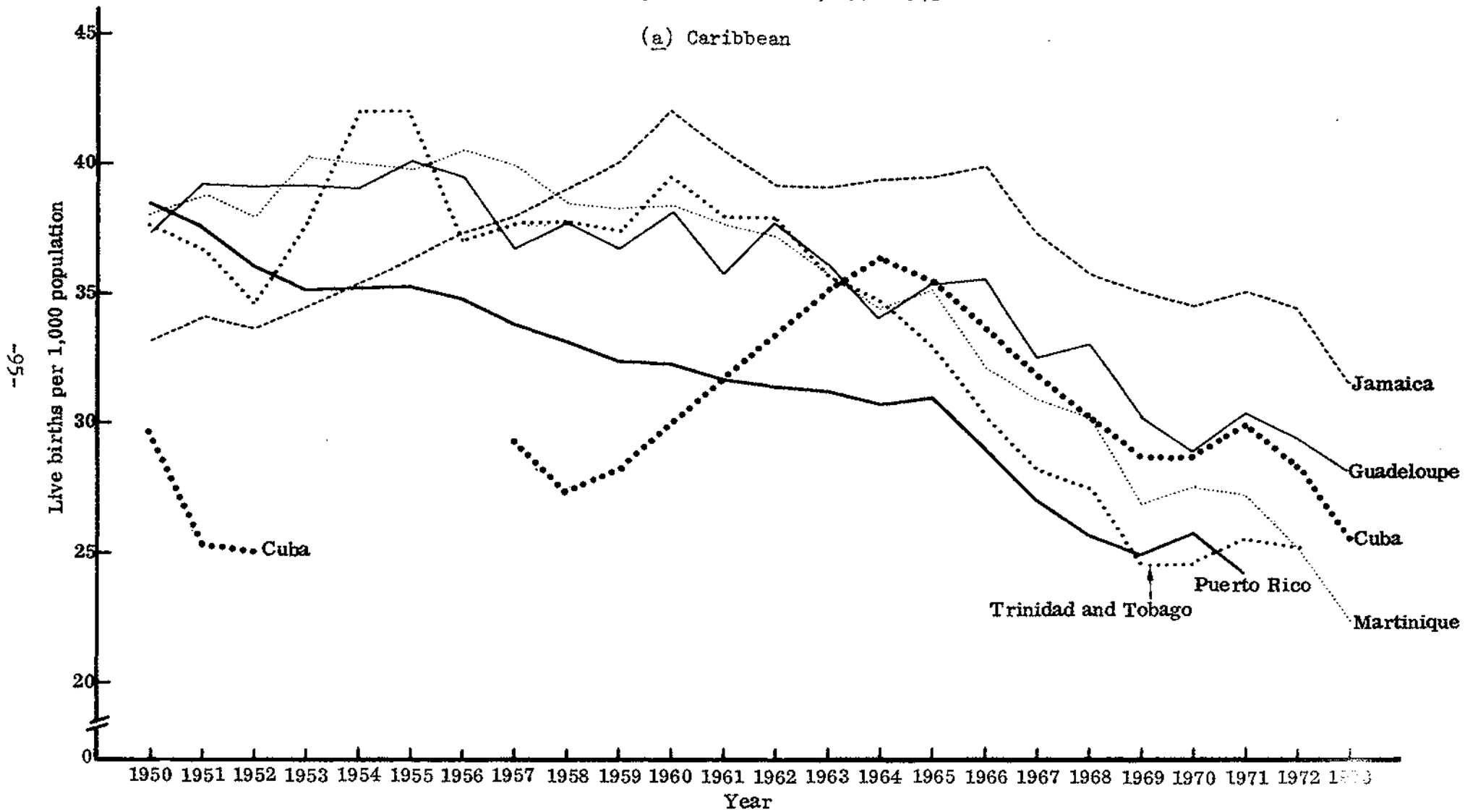


Figure III (continued)

(b) Middle America

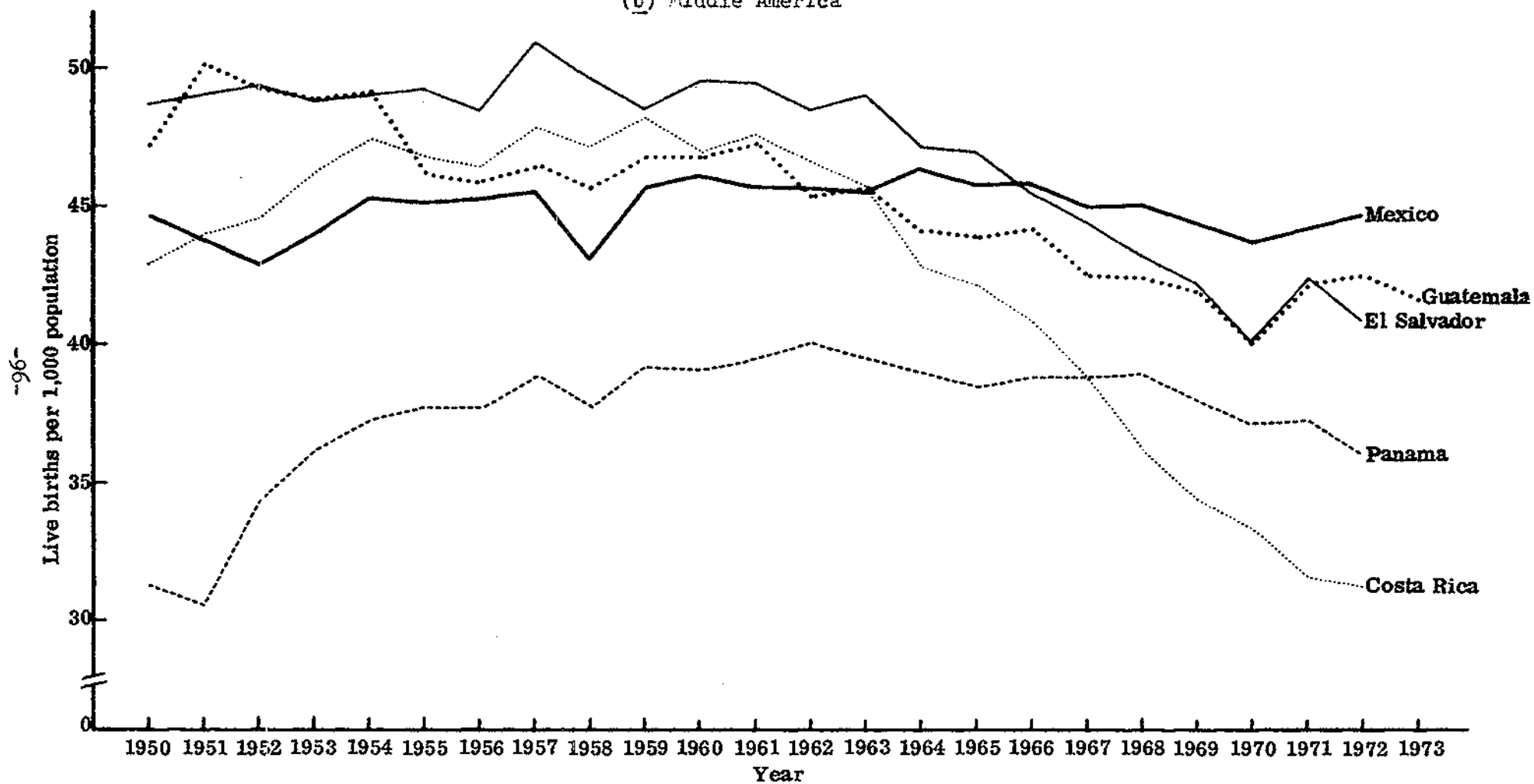


Figure III (continued)

(c) Temperate South America

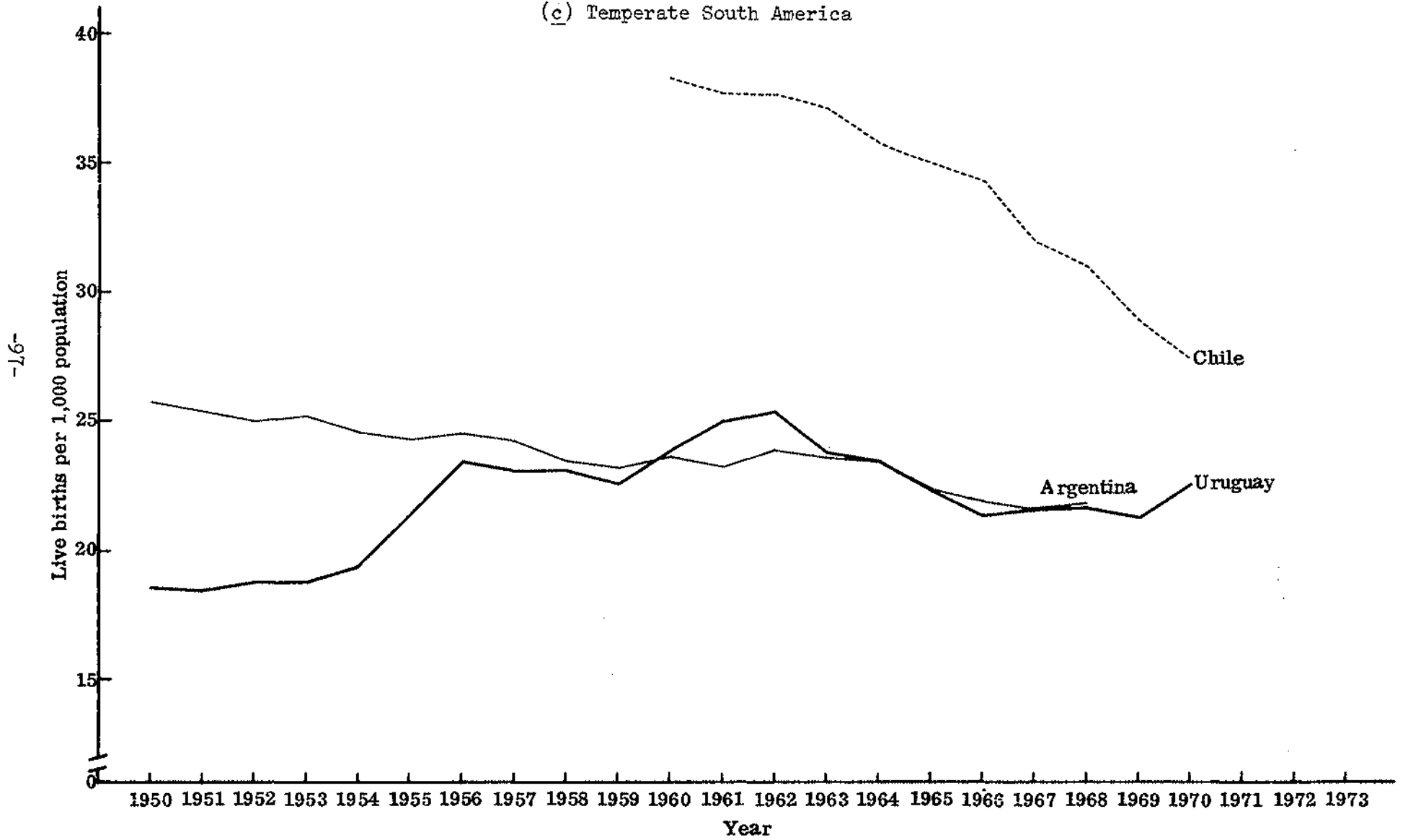
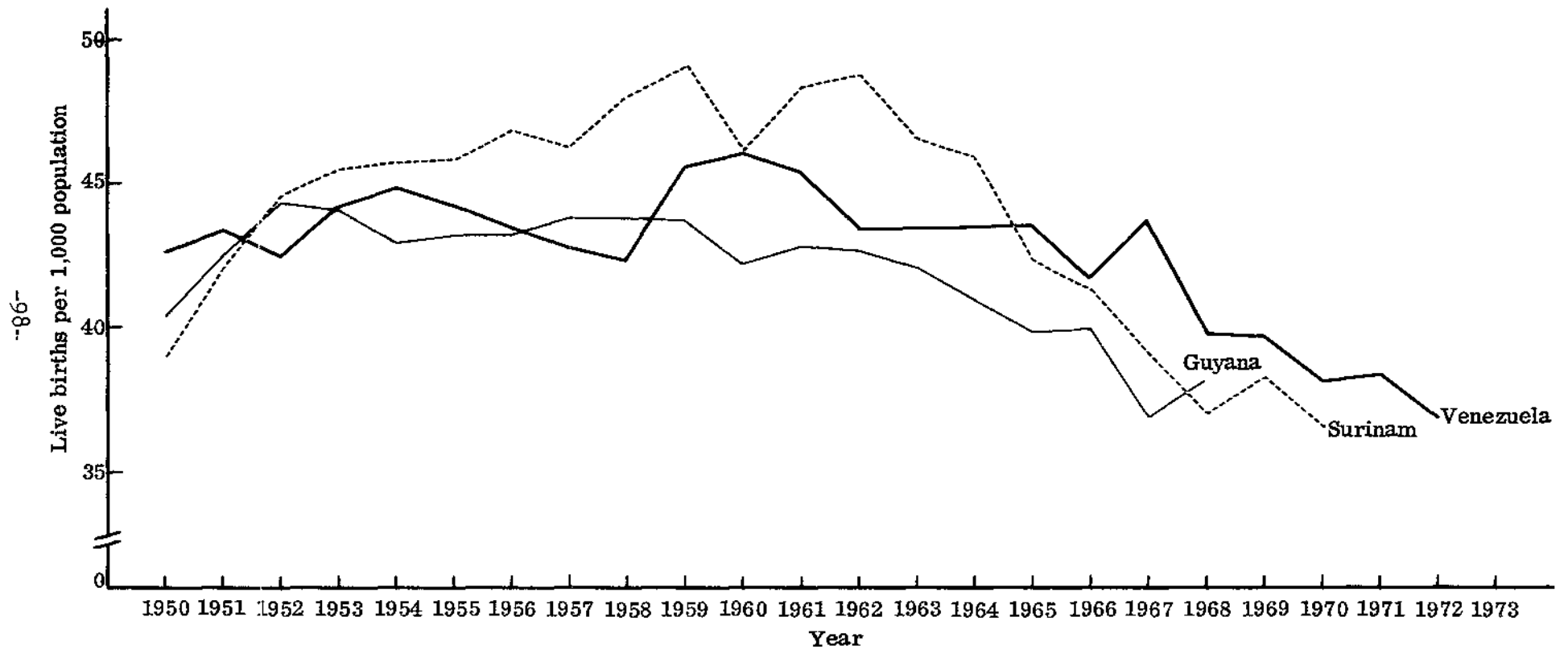


Figure III (continued)

(d) Tropical South America



In the English-speaking countries of the Caribbean region, the fertility declines have differed substantially in extent. The drop in the crude birth rate of Trinidad and Tobago has been very marked. Between 1960 and 1972, this measure fell from 39.5 to 25.1, a reduction of about 36 per cent. As indicated by the data in table 15 and by comparison with changes in the gross reproduction rate (table 16 and annexed table 66), this decline in the crude birth rate did not arise from changes in age composition of the population. The percentage reductions between 1960 and 1970 in the crude birth rate and the gross reproduction rate are very nearly identical.

The declines got under way much later in Guyana and Jamaica, and smaller reductions were recorded. The Jamaican crude birth rate dropped by 18 per cent between 1960 and 1970, when it reached a level of 34.4 per 1,000 population. By 1973, the rate had fallen to about 31 per 1,000. For Guyana, the percentage decrease in the crude birth rate during the period 1960-1970 is provisionally estimated as being about the same as that in Jamaica during that time, and the crude birth rate of 34.3 in 1970 was about identical to the Jamaican rate. Also as in Jamaica, about two thirds or more of the decline in the birth rate in Guyana occurred after 1965. Age-specific fertility rates are not available for Guyana during the 1960s, and it is therefore not possible to determine how much of the decline in the crude birth rate resulted from changes in age composition. In Jamaica, however, changes in age composition exerted an important, negative effect upon the crude birth rate, as the number of women in the reproductive age declined, mainly through emigration, in relation to the total population. Whereas the crude birth rate decreased by 12.7 per cent during 1965-1970, the gross reproduction rate fell by only 4.9 per cent.

Both in Jamaica and in Trinidad and Tobago, fertility declines were under way among young women before crude birth rates began to fall. In Jamaica, modest declines are observed among women aged 15-19 during 1960-1964, although during 1964-1970, the decreases had shifted to women over 30 years of age. Because age-specific rates are not available for Trinidad and Tobago for 1950, it is not possible to specify the age group among which the decline began. Significant decreases in fertility between 1955 and 1960 are evident among women over 40 years of age, as well as among those under 20, but those declines were most marked in the latter group. Furthermore, this age group has continued to experience sharp reductions in fertility. Between 1955 and 1970, while the gross reproduction rate fell by 40.5 per cent, fertility among women 15-19 years of age declined by 54 per cent. Because of the high incidence of non-legal unions, official statistics of age at marriage are not a reliable indicator of changes in age at first union. However, the trends in age-specific fertility, particularly in Trinidad and Tobago, appear to indicate an increase in the age at which sexual relations are initiated. Certainly, it is more likely that the declines in fertility among women aged 15-19 years reflect an advancement of the age at entrance into mating unions rather than any widespread adoption of fertility regulation methods on their part.

The crude birth rate for Surinam fell from a high of 48.7 in 1962 to 36.5 in 1970, a decline of 25 per cent. Very little of this change appears to have come about as a result of changes in age composition. During 1965-1970, both the crude birth rate and the gross reproduction rate declined by 13-14 per cent (see table 66). The limited information available on age-specific fertility indicates a very close and inverse association between percentage declines and age. However, all women under the age of 35, and particularly those under age 20, experienced significant declines between 1965 and 1970.

Until 1970, crude birth rates in Guadeloupe and Martinique followed very similar trends. Their rates fell from 37-38 per 1,000 in the early 1960s to about 28-29 in 1970. The percentage reduction between 1960 and 1970 was 24.4 in Guadeloupe and 28.2 in Martinique. About 70 per cent of these declines took place between 1965 and 1970. After 1970, the crude birth rate continued to fall in Martinique, reaching the relatively low level of 22.4 per 1,000. In Guadeloupe, however, the measure has undergone little recent change. It is evident from the available information (tables 15 and 66) that changes in age composition of the population played a role in the extent of the declines. In Guadeloupe, although the crude birth rate decreased by 15.0 per cent between 1960 and 1967, the gross reproduction rate fell by less than 5 per cent, indicating that women of reproductive age had increased in relation to the total population or that those in the most fertile ages were then a significantly greater proportion of the total aged 15-49 years. Although modifications of the age structure of women in Martinique apparently depressed the crude birth rate, a significant reduction occurred in the gross reproduction rate, which fell by 19.4 per cent, while the crude birth rate was reduced by 28.2 per cent. The age pattern of these changes indicates that, as in Jamaica and Surinam, declines began among young women during the 1950s, but it is especially the case in Guadeloupe and Martinique that the fertility of women aged 20-29 did not undergo appreciable changes. Instead, the distinctive feature of the changes during the 1960s was a shift of fertility declines to older age groups, while reductions continued among the youngest women. This is most noticeable in Martinique, where during 1965-1970, reductions of 1.0 and 8.7 per cent, respectively, occurred among women aged 20-24 and 25-29 years, compared with declines of 29-40 per cent among women over 30 years of age.

During the 1960s, and particularly after 1965, the long-term downward shift in Puerto Rican fertility accelerated sharply. Between 1960 and 1970, the crude birth rate fell by 23 per cent, but the change during the late 1960s was far greater than that during the earlier half of the decade. Furthermore, there are indications that the changes in age composition had much to do with the fact that the crude birth rate, being positively affected by return migration, does not reflect the rapidity of the fall in Puerto Rican fertility, particularly during 1960-1965 (see tables 15 and 66). In those years, the decrease in the gross reproduction rate amounted to nearly 14 per cent, but the crude birth rate declined by only 4.3 per cent. Over the subsequent five years, there was a further 21.1 per cent decline in the gross reproduction rate, making for a total percentage decline during 1960-1970 of nearly one third. In the 1950s, the predominant characteristic of the decline in Puerto Rican fertility was the heavy contribution of older women. But during the 1960s, although the fertility of older women continued to fall, significant reductions also were registered among younger women.

Fertility also declined sharply in Cuba: between 1964 and 1973, a reduction of 30 per cent was registered in the crude birth rate. That changes in age composition only slightly depressed the crude birth rate during 1965-1970 is evidenced by the relative changes in the latter and in the gross reproduction rate, which declined by 15.3 and 17.3 per cent, respectively. The age pattern of the decline represented nearly a complete reversal of that which prevailed during the preceding increase: those age groups whose fertility had previously risen registered significant reductions, which were particularly noticeable among women under 25 years of age.

Factors contributing to trends during the 1960s

Conditions of social and economic development are never stable, and such progress as was made in raising levels of living undoubtedly influenced fertility. In some of the countries reviewed here, the massive emigration that began in the 1950s in response to ever-growing pressure on the limited employment opportunities had a depressing effect upon the birth rate, owing to the imbalanced sex ratios and distortions of age structure that were a consequence. There were improvements in education, increasing urbanization of the population and other changes favourable to a decline in fertility. But the specific effect of these factors upon fertility are not easily documented; and, at any rate, it is difficult to specify their role in each country. The recent establishment of national family planning programmes in some countries may have influenced fertility trends, but their precise impact is difficult to assess and is beyond the scope of this report. It is very difficult to disentangle the effect of these programmes from long-term socio-economic improvements or from the short-term effects of the recent worsening of economic conditions that have led to or been associated with high rates of underemployment and unemployment as, for example, in Guyana and Jamaica. 28/

Puerto Rico had experienced considerable progress in social and economic development before the Second World War and those trends are known to have continued. The Puerto Rican fertility decline began under such conditions; and only later, primarily during the 1960s, were the family planning programmes a factor, along with such other changes as increased urbanization, greater participation of women in the labour force and reduction of the proportion of the labour force engaged in agriculture. 29/

Cuban fertility during the 1960s is said to have been influenced by improvements in education; and the growing incorporation of women into the labour force also has been mentioned, along with such considerations as the worsening economic conditions and increasing housing shortages. 30/

Judging from the pattern of reductions by age, it is very likely that, where fertility has declined sharply, as in Trinidad and Tobago and in Puerto Rico, control of reproduction within marriage has played a major role in the change, for most of the reduction is observed to have occurred among women over 30 years of age. On the other hand, increasing age at first union also appears to have been important, for declines have been especially sharp among women aged 15-19 years.

Owing to the lack of sufficient information, it is unclear what effect, if any, changes in the proportions of legal marriages among the three types of unions might have had upon fertility in the countries where multiple types of unions are common. As mentioned above, it may not be safe to assume that a shift towards or away from legal unions necessarily implies changes in aggregate fertility levels.

28/ See G. Edward Ebanks, Lenworth M. Jacobs and Sylvia Goldman, Jamaica, Country Profiles (New York, The Population Council, 1971); and J. R. Mandle, loc. cit., p. 98.

29/ Population Bulletin, No. 7, pp. 77-78. See also José L. Vázquez, "Fertility decline in Puerto Rico: extent and causes", Demography, vol. 5, No. 2 (1968), pp. 855-865.

30/ Juan Pérez de la Riva, loc. cit., p. 102; and Barent Landstreet, "Cuba", in Aaron Lee Segal, op. cit., p. 143.

Countries of Middle America and Venezuela in Tropical South America

For five Middle American countries and for Venezuela, ^{31/} birth registration statistics are considered adequate for the period 1960-1970, but in three of those countries (Costa Rica, Panama and Venezuela), this relative completeness of registration was achieved only a few years prior to 1960. For two others, Guatemala and Mexico, the interpretation of trends prior to 1950 requires some caution, owing to the quality of the data. Only for El Salvador are fertility statistics of reliable quality available for years prior to 1950.

This region is somewhat less heterogeneous than the Caribbean region, in the sense that all of the countries were at one time part of the Spanish empire. None the less, important differences are found among them. As concerns population size, the population of Mexico is well in excess of 50 million, and is thus nearly 10 times that of Guatemala, the next largest country in Middle America, and five times that of Venezuela. Just as there are significant differences in population size, there exist also important distinctions in levels of social and economic development and in political history. Moreover, there are marked variations in degrees and patterns of urbanization, in levels of average life expectancy, and in the presence and proportion of indigenous and mestizo populations, both between these countries and among the regions within them.

Trends prior to the 1960s

Birth registration in El Salvador may have been relatively complete as early as the 1920s. ^{32/} There was a slow rise of about 17 per cent in the crude birth rate between 1935-1939 and 1955-1959 which could not safely be attributed to improvements in birth registration. The crude birth rate in 1950 was about 49 per 1,000 and it varied between 49 and 51 until 1964, when it began a slow decline (table 14). Changes in age composition exercised only a slight negative effect upon trends in the crude birth rate (table 15), but the effect was sufficient to obscure the slight rise during 1950 and 1960 as shown by the gross reproduction rate (tables 16 and 66). This measure stood at 3.19 in 1950 and rose to 3.46 in 1960 (an increase of about 9 per cent). The increase was primarily attributable to women over 30 years of age, although there was also a slight rise in the fertility of women aged 15-19 years. Furthermore, rising fertility continued among women over age 35 in the period 1960-1965. During those 15 years, rates among those aged 35-39 and 40-44 years increased by 31 and 20 per cent, respectively. However, during 1950-1960, the fertility of women aged 20-29 was relatively stable.

^{31/} Guyana and Surinam, the two other countries of Tropical South America having relatively complete statistics were discussed above with the Caribbean countries. Venezuela is included here because of the similarity of its demographic history to that of Middle America.

^{32/} Population Bulletin No. 7, p. 81.

The inadequacy of the data for years prior to 1950 precludes a useful assessment of trends during those years in crude birth rates and gross reproduction rates for Guatemala and Mexico. It is believed that crude birth rates of around 50 in Guatemala and about 45 in Mexico characterized much of the period just prior to that time, although the Mexican birth rate was undoubtedly affected by the highly unsettled conditions during and following the revolution of 1910-1919. These same levels are observed to have characterized the entire period 1950-1960 in Mexico and to have prevailed in Guatemala during the early 1950s (see table 14 and figure III). In the latter country, the crude birth rate fell to 46-47 per 1,000 population and remained at that level until about 1964.

Changes in age composition affected the crude birth rate negatively in Guatemala during 1955-1960 and in Mexico during 1955-1965. After having declined slightly between 1950 and 1955, the gross reproduction rate rose in Guatemala to its former level of about 3.2; and in Mexico, it underwent a more substantial rise of 9.5 per cent between 1955 and 1965. In Guatemala, declines occurred among older women during the early 1950s and there were modest increases among women 20-39 years of age during 1955-1960. In Mexico, on the other hand, a clear pattern of changes in age-specific fertility emerged: during 1955-1960, the fertility of women aged 15-19 was declining; that of women in the 20-29 age group was stable; and the incidence of births to older women was increasing. During 1960-1965, there were modest declines or relative stability among women aged 15-34, but the fertility of older women continued to rise.

Improvements in the quality of birth registration during the 1950s in Costa Rica, Panama and Venezuela give rise to difficulties in determining whether a genuine rise in fertility was under way in those countries. In Costa Rica, the registered crude birth rate rose from 42.9 to 48.2 between 1950 and 1959, an increase of about 12 per cent. It has been estimated, however, that taking under-registration into account, a figure of about 45 per 1,000 is probably closer to the actual crude birth rate around 1950 (see section D). Comparing this rate with that for 1959 indicates an increase of only about 7 per cent. The gross reproduction rate was estimated to have been about 3.16 in 1950, and official figures place it at about 3.48 in 1960, a difference of 10.1 per cent. In Panama, there was a much larger increase in official rates. From 31.3 in 1950, the crude birth rate rose by 28 per cent to 40.0 in 1962. Gross reproduction rates based on official birth statistics increased from 2.03 to 2.75 between 1950 and 1960, a change of about 35 per cent. As is pointed out below in section D, under-registration of births was probably well in excess of 10 per cent during the early 1950s. On the other hand, even had perfection been achieved by 1960, it does not appear likely that this fact alone could account for the size of these increases. A similar situation obtained in Venezuela: the crude birth rate increased from 42.6 in 1950 to 46.0 in 1960, a rise of about 8 per cent. Official figures show the gross reproduction rate to have risen by 18.2 per cent or from 2.75 to 3.25 between 1950-1951 and 1961. The data given in table 15 suggest that the crude birth rate would have risen considerably more (at least between 1955 and 1960) had it not been for changes in age composition. Estimates of the extent of birth omissions indicate that, during the decade 1940-1950, the deficit was between 10 and 15 per cent, but that by 1960 it amounted to only about 4 per cent. As in the case of Panama, although this change undoubtedly contributed to the rise in official rates, it does not appear likely that it accounts completely for the increases. Furthermore, Venezuelan census data on the number of children ever born also suggest a rise in fertility, for between 1951 and 1961, there was a modest increase of 6.3 per cent in the number of children born to all mothers (see section D).

There were variations among these three countries in trends of fertility age patterns during the 1950s. In Costa Rica, for example, it was the younger women whose fertility underwent the most pronounced upward changes; but in Panama, although substantial increases occurred among all except the very oldest women, the most significant increments are observed to have occurred among those 30-39 years of age. A similar, though less marked pattern is evident for Venezuela, where the largest increases took place among women 35-44 years of age.

Factors contributing to trends prior to the 1960s

Post-war trends in fertility in Latin America are complex and not easily understood. Compared with less developed regions in other areas, rates of urbanization were high, illiteracy was declining, and in some countries, particularly Mexico, considerable efforts had been made since the 1940s to modernize the social structure. Yet, fertility not only remained relatively high during the post-war period but increased. Until fairly recently, it has been customary to reject increases in crude birth rates and gross reproduction rates as reflecting genuine changes in fertility, and to assume that the great stress during the post-war period on improving vital registration systems and in carrying out more adequate and regular censuses was responsible for those changes. It is certain that those efforts resulted in varying degrees of success in improving the quality of the fertility measures. But there has accumulated considerable evidence that, in some of the countries, other factors may have been influential in bringing about a genuine increase in fertility and that improvements in data collection procedures explain somewhat less of the rise in measures of fertility than had previously been thought. Furthermore, to the extent that genuine increases did occur, it is essential to consider whether and to what degree they were merely a return to a previously high level or were a response to changed social and economic and demographic conditions.

According to a United Nations report, ^{33/} the post-war period in Latin America, as in the more developed countries, was one of economic recovery and expansion, particularly in Mexico and Venezuela. It is likely that this development encouraged a degree of optimism among those initiating childbearing during those years. However, in Middle America (but not in Venezuela), economic expansion did not persist throughout the 1950s, but tended to diminish towards the end of the decade. Because this factor did not operate continuously, therefore, it can explain only part of the post-war trends.

Although economic recovery brought about or accelerated a shift of the population from the country to the city (especially to the major cities), urbanization did not exercise a brake upon fertility. Indeed, in Mexico, it was found that during 1950-1960, growth among large cities was positively rather than negatively related to fertility. ^{34/} Further investigation has shown that in

^{33/} The Economic Development of Latin America in the Post-war Period (United Nations publication, Sales No. 64.II.G.6), pp. 107-109 and 119.

^{34/} Alvan O. Zárate, "Fertility in urban areas of Mexico: implications for the theory of the demographic transition", Demography, vol. 4, No. 1 (1967), pp. 363-373.

Mexico, as well as in other countries of Latin America, the physical presence of large numbers of rural migrants in cities has not necessarily implied a reduction in their fertility, for they have not been easily absorbed into the urban milieu. ^{35/} These investigations documented the following views expressed in the early 1960s:

"The failure of birth rates to fall in countries with high rates of urbanization and economic development indicates that we have in Latin America a situation differing in some important respects from areas that industrialized or modernized earlier. Perhaps the indicators of development - percentage of the population living in cities, percentage of the labour force in agriculture - are deceptive in Latin America. What the statistics show as urbanization may be only the congregation of a surplus rural population at the outskirts of the cities. These migrants may be literally camping at the city's edge without really entering it or taking on the culture of the city." ^{36/}

Perhaps a far more important consideration is the factor already mentioned as contributing to increasing fertility in the Caribbean region, i.e., improvements in health and gains in average life expectancy. In Middle America, increases in expectation of life at birth were truly impressive. It has been estimated that, during the period 1921-1930, life expectancies at birth varied from about 26 years in Guatemala to about 39 years in Costa Rica. By 1961-1964, this measure ranged from about 49 to 62 in the same countries. ^{37/} Changes in life expectancy at birth, however, are heavily influenced by improvements in infant mortality and do not necessarily reflect improvements at older ages. What is important is the trend in the relative number of males and females who, having reached marriageable or reproductive age, survive throughout the reproductive period. ^{38/} For instance, among Guatemalan males who in 1921 had survived to age 25, only 42 per cent could expect to live to age 55. The situation in El Salvador in 1930 was only slightly better. About 47 per cent of those who had attained age 25 would live to their

^{35/} See, for example, Enrique M. Brito V., "La Fecundidad según status soci-económico: Análisis comparativo de las ciudades de México y Buenos Aires", Demografía y Economía III (1969), pp. 156-185; and John J. Macisco, Robert H. Weller and Leon F. Bouvier, "Some general considerations on migration, urbanization, and fertility in Latin America", in Arthur A. Campbell and others, eds., The Family in Transition, John E. Fogarty International Center Proceedings No. 3, National Institutes of Health (Washington, D.C., Government Printing Office, 1971), pp. 285-297.

^{36/} O. Andrew Collver, Birth Rates in Latin America, New Estimates of Historical Trends and Fluctuations, Institute of International Studies Research Series, No. 7 (Berkeley, California, University of California, 1965), p. 56.

^{37/} Eduardo E. Arriaga, New Life Tables for Latin American Populations in the Nineteenth and Twentieth Centuries, Institute of International Studies Population Monograph Series, No. 3 (Berkeley, California, University of California, 1968).

^{38/} Arriaga presents abridged life tables that include the proportion of the original life-table cohort that survive to the beginning of each five-year period (1). The proportions surviving throughout the reproductive period (defined here for illustrative purposes as 25-55 for males) were obtained by dividing the value of l_{55} by the value of l_{25} .

fifty-fifth birthday. In Mexico (1930) and Venezuela (1936), this figure is slightly more than half (53 per cent and 54 per cent, respectively); and in Panama, it was about 58 per cent. In 1927, less than two thirds (about 63 per cent) of Costa Rican males were likely to reach age 55. By the early 1960s, the prospects had changed markedly. In Guatemala and Mexico, about three quarters of the male population having reached age 25 could expect to reach 55 years of age. But in the remaining countries of the region for which data are available, the number of males who, having achieved age 25, could expect to reach 55 years varied from 80 to 87 per cent. Gains among females in these countries were even more impressive, but the essential point is that within one generation, mortality declines had resulted in a change from a situation in which a majority of males often failed to survive to age 55 to one in which the great majority lived throughout the reproductive ages. Obviously, these improvements have significant implications for the quality of married life and the incidence of widowhood. Thus, the total number of years of exposure to childbearing increased enormously in these countries.

Information concerning recent trends in nuptiality supports the supposition that increases in expectation of life at reproductive ages have had an effect upon marital composition. Although in countries of Latin America census information on marital status is quite difficult to interpret, analysis indicates that during the 1950s widowhood declined at all ages in Costa Rica, El Salvador, Panama and Venezuela. ^{39/} Perhaps of equal importance is the fact that the proportions of single persons also decreased, for common-law unions are frequent in these countries, and women generally report themselves as single after the death of their partner. The concentration of reductions in proportions reported as single at ages over 30 years suggests that consensual unions are gaining in durability. In El Salvador and Panama, such unions were not, however, becoming more frequent during the 1950s, for the proportion of women reporting themselves to be living in consensual unions declined at all ages, and particularly among those in the younger ages.

It has been suggested that women may have been entering a more stable form of union (that is, becoming legally married) at an earlier age; the decline in the prevalence of consensual unions was more than compensated for by the increasing proportions of women legally married. In Panama, the increase in the proportions married between 1950 and 1960 varied directly with age, whereas the decrease in consensual unions varied indirectly with age, providing further support for the argument that couples were becoming legally married at an earlier age and surviving in that more stable form of union much longer than had their predecessors. That the increase in the proportions of persons legally married more than compensated for decreases among those consensually united is also true in El Salvador and Venezuela, although increases in the former country were not closely associated with age. Costa Rica presents yet a third pattern, for it experienced little change in the proportions of those consensually married, though there were moderate to substantial declines in the proportions of single persons (especially at ages 25-30) and correspondingly moderate increases in the proportions of those married.

Both the trends in probability of surviving through the reproductive ages and in the proportions married were closely related to changes in age-specific trends in

^{39/} Carmen Arretx, "Nuptiality in Latin America", in International Union for the Scientific Study of Population, International Population Conference, London, 1969 (Liège, 1971), vol. II, pp. 2127-2153; see, in particular, pp. 2147-2151.

all countries for which data are available. In El Salvador and Panama, in particular, it may be noted that increases in fertility occurred precisely at those ages, i.e., 30 and over, most affected by the trends in mortality and marital unions. The same is true of Mexico with respect to mortality changes. In Venezuela, all age groups experienced increases, but sharper increases took place among older women. It is quite probable that in this country, which experienced the most pronounced rate of economic growth in Latin America during the 1950s and where both male and female survivorship through the reproductive ages continued to improve substantially, both factors exerted a pronounced effect upon fertility. One analysis of the 1950 and 1961 Venezuelan census data ^{40/} shows that the proportion of females in unions increased at all ages, most notably the oldest, resulting in an increase in the fertility of all women. However, the fertility of married women appears to have undergone a slight decline, owing possibly to the spread of fertility regulation practices. While decreasing widowhood also appears to have had a positive effect upon fertility in Costa Rica, high proportions marrying at younger ages appear to have exerted a more pronounced influence, for fertility increases were sharpest among women under age 25. In this case and in view of the subsequent sharp decline in Costa Rican fertility among these same women after they reached 30 years of age, it may well be that both declining widowhood and a shift of childbearing to earlier ages were taking place at the same time, with the latter trend being more important. This is not surprising, when it is considered that by 1950, expectation of life at birth in Costa Rica had already reached nearly 55 years and almost 80 per cent of males survived from age 25 to age 55. ^{41/}

Fertility trends in Guatemala show no clear association with any of the factors under consideration. Between 1950 and 1960, fertility appears to have fluctuated and no clear-cut and sustained trend can be observed. With respect to the period prior to 1960, it may be speculated that a rise occurred during the period 1940-1950, when Arriaga reports that life expectancy at birth increased substantially from about 30 to nearly 40 years and the proportion of men at age 25 who survived to age 55 rose from just under 50 to nearly 64 per cent.

Trends during the 1960s

During the interval from 1957 to 1970, the crude birth rate of El Salvador fell by about 21 per cent, from nearly 51 to 40.0 per 1,000, and it has changed little since. Most of the initial decline in the crude birth rate was the result of the negative effect of changes in age structure (see tables 15 and 66). Between 1960 and 1965, the gross reproduction rate changed very little, but there was scarcely any redistribution of the population by age in the late 1960s; and, consequently, both the crude birth rate and the gross reproduction rate fell by equal proportions, i.e., from 14 to 15 per cent. While scattered fertility declines among women in the various age groups were notable during the 1950s, it was not until the early 1960s that significant decreases took place, and these declines were limited to women between the ages of 25 and 34 years. Between 1960 and 1965, the fertility of younger women was essentially stable and that of older women was still rising. But during the latter half of the 1970s, substantial declines occurred in nearly all age groups, with reductions of 14-17 per cent among women aged 20-39 years. Thus, whereas the increases of the 1950s took place primarily among older women, the age pattern of the reversal of fertility trends in the 1960s was more general, with reductions among younger women playing an important part.

^{40/} Eduardo E. Arriaga, "The effect of a decline in mortality on the gross reproduction rate", Milbank Memorial Fund Quarterly, vol. XLV, No. 3 (July 1967) part 1, p. 338.

^{41/} E. Arriaga, New Life Tables for Latin American Populations

During the 1960s, changes in the distribution of population by age in Guatemala were apparently unrelated to the relative trends occurring in that country in the crude birth rate and gross reproduction rate. This is seen in the fact that, over the decade, the crude birth rate fell from about 47 to 40 per 1,000, a decline of about 14 per cent, and that the gross reproduction rate fell by a similar amount, 13.2 per cent. However, crude birth rates for 1971-1973 show a reversal to slightly higher levels. Unfortunately, it is not possible to determine whether this movement represents a genuine rise in fertility or merely a fluctuation, possibly due to changes in age composition of women in the reproductive ages. No clear-cut pattern of change by age is evident (table 66). Declines may be observed as early as 1950-1955 among older women, and these reductions continued throughout 1950-1970. The decreases among women aged 15-19 appear to have begun during the mid-1950s and by 1970 amounted to a reduction of 17 per cent, a change that may indicate rising age at first union. At other ages, however, there appears to be no clear-cut association between age group and degree of fertility reduction.

Fertility appears to have changed very little in Mexico between 1950 and 1970. There were slight declines in the crude birth rate and the gross reproduction rate of 4.7 and 4.1 per cent, respectively, over the latter half of the 1960s. And in 1972, the crude birth rate was slightly below the 20-year high of 46.0 per 1,000 registered in 1960. As far as the aggregate level of fertility is concerned, therefore, the long-awaited reduction has yet to be clearly manifested. Recent indications of deficiencies in Mexican vital registration make speculation especially hazardous, but changes in age-specific fertility indicate that a decline may have begun. The evidence of this reduction, however, is limited to certain ages, and during the 1960s it was counterbalanced by increases among other age groups. In the late 1950s, an 8 per cent decline took place among women aged 15-19 (table 66). Fertility continued to decline among these women such that by 1970, the rate was about 23 per cent below its 1955 level. Declines did not appear among women 20-34 years of age until the 1960s; and even during the latter part of that decade, the decreases cannot be regarded as significant. At any rate, the general pattern, if not the degree, of fertility change by age in Mexico is very similar to that observed in El Salvador.

Until recently, except for the timing of changes, trends in age-specific fertility in Panama have been very similar to those of Mexico, although the declines among very young women have not been so extensive and began somewhat later. On the other hand, the crude birth rate does not appear to have been so high in Panama as in Mexico. Its peak during the period 1950-1970 was 40 per 1,000 in 1962, and by 1970 it had fallen only to 37.2, a decline of about 7 per cent. The gross reproduction rate, which had reached 2.75 in 1960, also underwent a similarly slight decrease and was registered at 2.59 in 1970. Recently, however, official sources report a further, much sharper drop in both the crude birth rate and the gross reproduction rate (table 14). Between 1970 and 1973, the decrease in these measures amounted to 10.5 and 11.0 per cent, respectively. A comparison of age-specific fertility rates for these years shows declines among all age groups, but particularly among women over 30 years of age.

In contrast with the difficulty of interpreting the trends in Guatemala and Mexico, trends in Costa Rica and Venezuela are clear. Since the late 1950s, Costa Rican birth registration has been regarded as complete, and there is no evidence of deterioration in recent years. The effect of changes in age composition had a positive effect upon crude birth rates (table 15). Between 1959 and 1972, there was a reduction of 35 per cent: from the relatively very high level of 48.2 in 1959, this measure declined to 31.3 in 1972. The gross reproduction rate, which is unaffected by changes in age composition, fell by an even larger percentage,

from 3.48 in 1960 to 2.13 in 1972, nearly two fifths or 38.8 per cent (table 16). The decline during 1960-1970 took place among all women, but particularly among those aged 20 and 39 years.

The crude birth rate of Venezuela reached a high of 46.0 per 1,000 in 1960, from which it fell to 38.1 in 1970, a decline of 17 per cent. A comparison of the relative changes in the crude birth rate and the gross reproduction rate shows a somewhat sharper fall during 1961-1971 in the latter measure (19.7 per cent) than in the former (15.5 per cent), indicating that declines in the proportion of women of reproductive age had a negative effect on changes in the crude birth rate (tables 15 and 66). Unfortunately, data on age-specific fertility are available only for 1961 and 1971, so that little can be said concerning developments during the intervening years. A comparison of rates for these two years demonstrated a fairly clear indirect association between age and relative decline in fertility. Women aged 25 and over experienced substantial declines (excluding those aged 40-44), suggesting that there were reductions in marital fertility. However, the more pronounced fall of fertility among women under age 25 indicated that increased age at marriage also played a significant role in the decline of Venezuelan fertility.

Factors contributing to trends during the 1960s

The conflicting trends and the variations in levels discussed above are partial evidence that the conditions affecting fertility in the countries of Middle America were not uniform. Development indicators rose substantially in some countries, while changing only moderately in others.

In Costa Rica, there had been much progress in education, and the country had reached a moderately high level of development in other economic and social fields. Yet fertility was high, but it may not have been either as high or as continuously high as previously thought; and the level of fertility that prevailed around 1960 may have represented increases that occurred, at least in part, as a result of processes of development under way in that country. The same noteworthy improvements in levels of living and in social conditions evidently also contributed to the remarkable decline after 1960 of about 30 per cent in the crude birth rate and 32 per cent in the gross reproduction rate. The factors responsible for this decline are complex. Age at marriage, normally expected to have increased in such cases, declined among both males and females between 1960 and 1969. ^{42/} But there appears to have been a decrease in the proportion of women married, both legally and consensually, during the 1960s, which is estimated to have been responsible for about 25 per cent of the reduction in the crude birth rate. ^{43/} Among the various other factors considered by Gómez and Bermúdez ^{44/} to account for some of the decline in the Costa Rican birth rate during the 1960s are the following:

^{42/} Miguel Gómez B. and Vera V. Bermúdez M., Costa Rica, Country Profiles, (New York, The Population Council, 1974).

^{43/} Miguel Gómez B., "El rápido descenso de la fecundidad en Costa Rica", in Asociación Demográfica Costarricense, Quinto Seminario Nacional de Demografía. Informe (San José, Costa Rica, 1970), p. 300.

^{44/} M. Gómez B. and V. V. Bermúdez M., op. cit., pp. 1, 3 and 5.

(a) The increasing concentration of the population in or near urban areas. Census figures indicate that 33.5 per cent of the population was urban in 1950, 34.5 per cent in 1963, and 42.1 per cent in 1973. Significantly, in 1973 an estimated 55 per cent of the total population resided in the Central Valley, the location of the capital city of San José and the political, social and economic centre of the country;

(b) An increasing proportion of the labour force engaged in non-agricultural activities. Although the Costa Rican economy is still heavily dependent upon agriculture, and the majority of the population continues to live in rural areas, by 1963 nearly 50 per cent of the economically active population was engaged in non-agricultural activities;

(c) The importance of any changes in the economic activity of females is not known, among other things, because data on the economically active female population are notably poor and because in this region, relatively large numbers engage in "services", a type of activity that may not interfere very much with childbearing. At the census of 1973, 20 per cent of the economically active population consisted of women, a relatively high participation rate by standards of Middle America as a whole, though not so in view of world levels;

(d) Impressive advances occurred in education, as indicated by high levels of literacy. Fully 89 per cent of the total population aged 10 years and over were classified as literate at the 1973 census. This figure is said to be nearly 100 per cent in urban areas. An increase was registered in the relative number of people who had completed at least primary education, from 32 per cent in 1963 to 52 per cent in 1973. In addition, as Gómez states elsewhere, ^{45/} the proportion of women aged 20-24 years who had completed at least primary education rose from 21 per cent in 1950 to 42 per cent in 1966 - a change particularly significant in view of the ages at which fertility declined most sharply;

(e) There was a wide diffusion of modern contraceptives, especially in urban areas but also among significant proportions of rural women. The latter group may have been influenced by what some observers ^{46/} have regarded as the rather close relationships between urban and rural groups in Costa Rica;

(f) The operation of both private and public family planning programmes is thought to have had some effect on fertility, but all observers stress that although these efforts may have contributed to recent declines, the fall in fertility was already well under way before the programmes began to function on a significant scale,

^{45/} M. Gómez B., loc. cit., p. 307.

^{46/} See Report on the World Social Situation 1974 (United Nations publication, Sales No. E.75.IV.6) p. 37.

The magnitude and rapidity of the fertility decline in Costa Rica warranted discussion in some detail for several reasons. In many respects, the country is not representative of the countries in Middle America nor, is it similar to Venezuela, mainly owing to its ethnic homogeneity, lack of rigid urban-rural distinctions, relatively high degree of education, and small and rather concentrated population. But the exceptions found in Costa Rica may help to explain, at least in part, the stability or the slow decline of fertility in countries of the region whose characteristics and the changes therein are least similar. According to one summary:

"Although the Costa Rican population is too small to weigh heavily in the regional average, the trend reinforces two important hypotheses relating to demographic development in general: that fertility transitions much more rapid than those of the past are quite possible in other parts of Latin America and the developing world, and that levels and patterns of consumption, education and other facets of modernization are more important pre-conditions for such transitions than urbanization per se, or than public family planning measures, although the latter can no doubt speed up the transition once it is under way." 47/

Apparent sharp declines in El Salvador, Panama and Venezuela are very recent and it is not yet clear what factors may have been most responsible. In each of those countries, there has been continued progress in social development, particularly in the sphere of education: and there have been marked changes in the economy of Venezuela, which has generated improvements in levels of living, that may have affected fertility. According to a United Nations report, 48/ educational levels in Panama do not appear to be far below those of Costa Rica. However, though rapid gains have taken place also in Honduras, barely half of the adult population was literate in 1968. Important though they are known to be, improvements in formal education per se are not, therefore, universally associated with fertility declines, nor is the proportion of the population defined as literate clearly associated with such reductions. The report states that whereas Panama by 1968 had achieved a literacy rate of 78 per cent among the population 15 years of age and over, and fertility fell, Mexico had achieved the same literacy level and there was scarcely any change in the level of its fertility. Figures concerning urbanization present the same paradoxical picture although, as already mentioned, such data, in the absence of information concerning the nature of the urban milieu and the extent to which migrants are assimilated to it, are deficient indicators of urban influence.

An understanding of the changes in countries of Middle America and in Venezuela that may have influenced fertility clearly requires a careful and thoroughly detailed investigation of the factors known to influence fertility and of other related conditions. As explained above in chapter II, such an analysis is beyond the scope of this report. However, the need for it is amplified in the picture presented by Guatemala, for example, whose population consists of two

47/ Ibid.

48/ Economic Survey of Latin America, 1970 (United Nations publication, Sales No. E.72.II.G.1) p. 70.

distinct cultural groups, the Maya Indians and the Ladinos. It is estimated that in 1964, the total population was about evenly divided between them. ^{49/} That no clear picture emerges of the trends in aggregate fertility levels or of changes by age of women very probably reflects the weighted behaviour of the two subcultures. It is most probable that the levels and patterns of fertility of the two groups are quite dissimilar: the Ladinos tend to be overwhelmingly urban in residence and occupations; the Indians are concentrated in rural areas. A similar condition prevails in Mexico, although in this case, regional differences in degree and nature of economic development are as important, if not more so, than ethnic distinctions.

Temperate South America

Four countries in Latin America, with about 16 per cent of the population of the area, have either completed or are in the midst of a transition to relatively low levels of fertility. Conditions in Cuba have already been described. The remaining three - Argentina, Chile and Uruguay - constitute the temperate zone of South America.

Trends prior to the 1960s

The trends of crude birth rates in Argentina ^{50/} and probably in Uruguay ^{51/} until around 1960 had generally paralleled those of other more developed countries from the beginning of the century. That is, the birth rate fell steadily until the 1930s, rose temporarily (but only slightly) in the years following the Second World War and then resumed the long-term decline at a slow pace during the 1950s. The figures presented for Uruguay (table 14) are official rates based on population estimates that are known to be inadequate until the early 1960s. It is probable that the increase in these rates is principally due to improvements in birth registration combined with increasingly underestimated mid-year population estimates. The possibility of a post-war increase in fertility cannot be discarded, however, and in the absence of reliable information, it is generally believed that the trend in Uruguayan fertility during those years was quite similar to that of Argentina. In the early 1960s, both Argentina and Uruguay had relatively low levels of fertility (table 16). In 1960, Argentina had a crude birth rate of 23.7 and a gross reproduction rate of 1.51; and in 1963, when its first complete population census since 1908 was taken, Uruguay recorded a crude birth rate of 22.1 and a gross reproduction rate of 1.42.

Trends in Chile appear to have followed those in Argentina, but at a considerably higher level. For example, in 1930-1934, the Argentine birth rate had reached 26.8, while that of Chile, though declining, was still slightly in

^{49/} John D. Early, "Revision of Ladino and Maya census populations of Guatemala, 1950 and 1964", Demography, vol. 11, No. 1 (February 1974), pp. 105-117.

^{50/} Population Bulletin, No. 7, pp. 73 and 76.

^{51/} Until recently, the lack of adequate population estimates resulted in unreliable crude birth rates, even though birth registration had been considered to be relatively complete for many years.

excess of 40 per 1,000. ^{52/} During the 1950s, however, the fertility of Argentina continued to decline; but Chilean fertility rose and its crude birth rate reached a low of about 34 in the early 1950s, while a gross reproduction rate of 2.2 was calculated for 1952. By 1960, however, the crude birth rate had risen to 38.3, and the gross reproduction rate was 2.5. ^{53/} In relative terms, the crude birth rate rose by 13.0 per cent and the gross reproduction rate increased by 14.1 per cent.

Unfortunately, age-specific fertility rates for Uruguay are available for only 1963. The rates for Argentina and Chile, and the percentage changes in those rates indicate that trends during the 1950s were complex (see tables 16 and 66). In Argentina, although the crude birth rate fell by about 8 per cent between 1950 and 1960, the gross reproduction rate declined by only 2.6 per cent. Changes in age composition obviously, therefore, accounted for a good deal of the decline in the Argentine crude birth rate during those years. None the less, a modest genuine decline did take place, although not among women of all ages. While the fertility of most women over 35 years of age was declining at a moderate rate, that of women under age 25 was rising. In Chile, on the other hand, between 1952 and 1960 increases of considerable proportions were recorded among women aged 25-29 and 30-34 years, amounting to 20 and 27 per cent, respectively. During the late 1950s, a more moderate increase took place among younger women under age 25 and over age 34, while declines occurred among women 40-49.

Factors contributing to trends prior to the 1960s

The long-term decline of fertility in Temperate South America, particularly in Argentina and Uruguay, occurred within the context of considerable industrialization, widespread popular education, increasing urbanization, female employment in non-traditional occupations and other changes associated with modernization. It is noteworthy, however, that the countries of this region, along with Cuba and Venezuela, are distinct from other countries of Latin America because of the large-scale immigration of Europeans who had already adopted or were adopting the small family pattern. This influx was officially promoted and supported, and the considerable degree of upward economic and social mobility, sometimes described as a rapid expansion of the middle class, ^{54/} undoubtedly played an important role in fertility reductions. Compared with other developed countries, however, the post-war rise in Argentinian fertility was brief and relatively slight. This can possibly be attributed to the fact that the post-war

^{52/} Population Bulletin, No. 7, p. 74.

^{53/} These figures differ from those given in Population Bulletin, No. 7, p. 76. This discrepancy is apparently due to the fact that a much lower degree of under-registration of births was previously assumed to be the case. The figures presented in this report assume an "average" of 10 per cent of the under-registration of births for the period 1950-1960.

^{54/} Gino Germani, "Mass immigration and modernization in Argentina", Studies in Comparative International Development, vol. II, No. 11 (1966).

economic expansion and development began to slow down only a few years after the end of the war, whereas in most other developed countries it continued into the 1950s: in Chile, for example, the post-war recovery lasted until the late 1950s. ^{55/} Further, in response to that development in Chile, there was a moderate rise between 1952 and 1960 in the proportions married. ^{56/} The increase was particularly noticeable among women aged 25-35 years, but it was evident also among younger women, which suggests that age at marriage was declining.

Because Chile had achieved a higher level of development, including pronounced mortality declines, during those years, it did not experience such sharp changes in life expectancy as did Costa Rica, Panama and Venezuela, so that a declining incidence of widowhood appears to have played little or no role in the fertility increase. Such major changes in survivorship during the reproductive years had taken place in Chile much earlier. Among Chilean women over 35 years of age, there was either moderate increase or a decline in fertility. The increase occurred primarily among younger women.

Trends during the 1960s

During the decade 1960-1970, fertility continued to decline in both Argentina and Uruguay. After a modest fall from 23.7 in 1960, by 1968, the most recent year for which data are available, the Argentine crude birth rate had reached 21.9. In Uruguay, a level of 21.3 was achieved in 1969 after a drop of about 16 per cent beginning in 1962. This decrease was followed by a slight rise between 1969 and 1971.

The decline in the crude birth rate in Argentina during 1960-1965 was influenced by a decline in the proportion of women in the reproductive ages (table 17), as evidenced by the relative declines of the birth rate and gross reproduction rate, which were 1.6 and 5.6, respectively. The continued fertility decreases in both Argentina and Uruguay were no doubt the principal reasons for the adoption in these countries of policies favouring higher fertility. For example, in order to promote more rapid population growth, Argentina introduced the payment of marriage bonuses and a progressive scale of family allowances. Uruguay undertook a similar policy. ^{57/} In Chile, the crude birth rate peaked at about 38 per 1,000 in 1960 and fell sharply thereafter. This measure declined by 28.5 per cent between 1960 and 1970, when it stood at 27.4, the nadir of the

^{55/} The Economic Development of Latin America in the Post-War Period, pp. 83-91.

^{56/} C. Arretx, loc. cit., p. 2149. Because consensual unions form only a small proportion of all marital unions in Chile, the moderate declines in proportions of women living in such unions cannot account for the rise in proportions legally married.

^{57/} César Peláez and George Martine, "Population trends in the 1960s: some implications for development", Economic Bulletin for Latin America, vol XVIII, Nos. 1/2. (United Nations publication, Sales No. E.73.II.G.3), p. 122.

secular trend; and the gross reproduction rate fell by a similar margin, 29.1 per cent, during the same years.

There was virtual stability in fertility levels among younger Argentine women, while sharp declines occurred among those between 35 and 44 years of age (tables 16 and 66). In Chile, where between 1960 and 1970, fertility fell among all age groups, the same women who contributed most to the increase in 1952-1960 appear to have been largely responsible for the decline in 1960-1970. As will be seen in chapter VI (and as noted with respect to the age pattern of the decline in Cuba), the age-specific changes in Chilean fertility are very similar to those which occurred in Northern and Western Europe and in Northern America, and which signalled a shift in childbearing to younger ages, generally without an increase in completed fertility. Should this prove, on the basis of more detailed research, to have been the case in Chile, it would imply that a decline of family size, as opposed to a mere reduction of period fertility as measured by the gross reproduction rate, may well have been initiated during the 1950s.

Factors contributing to trends during the 1960s

Although economic growth continued in Temperate South America during the 1960s, the rate of economic change in this region was below the average for Latin America and was particularly slow during the latter half of the decade. ^{58/} The deceleration of the average annual growth rate of the gross national product was particularly sharp in Uruguay. However, other advances continued at a somewhat faster pace, especially in Chile where, by 1968, the urban population constituted about 74 per cent of the total population, and the literacy rate among those over the age of 15 was estimated to be 89 per cent. ^{59/}

Information concerning nuptiality trends during the 1960s is not available for Chile or Uruguay, but the sharp decline in fertility among younger Chilean women between 1965 and 1970 would suggest increasing age at marriage, though a spread of fertility regulation could account in part for the decline. In Argentina, census data for 1960 and 1970 show slight increases in the proportion of single women at ages 14-19 and 20-24, from 41.9 to 43.1 per cent and from 19.0 to 21.0 per cent, respectively. ^{60/}

In Argentina and Uruguay, which had reached or very nearly achieved the transition from high to relatively low fertility levels by the beginning of the 1960s, worsening economic conditions that encouraged delayed marriage and deferred childbearing or the regulation of family size, appear to be the chief factors in fertility declines. The situation in Chile is much more complex, however, for

^{58/} Economic Survey of Latin America, 1970, pp. 33-34.

^{59/} Alfredo Goldsmith, Héctor Gutiérrez and Hermán Sanhueza, Chile, Country Profiles (New York, The Population Council, 1970), p. 2.

^{60/} Argentina, Instituto Nacional de Estadística y Censos, La Población de Argentina, compiled by Zulma Recchini de Lattes and Alfredo E. Lattes (Buenos Aires, 1975), p. 202.

although economic conditions were better there (the average annual rate of growth of consumer prices between 1963 and 1974, for example, was the highest in Latin America), 61/ the decline of fertility represented a fundamental change in childbearing practices as well as a reaction to changing economic conditions.

As early as the late 1950s, an increasingly widespread use of birth control, particularly in the form of induced abortions, is reported to have taken place at Santiago. 62/ In fact, the proportion of conceptions ending in induced abortion had reached such high levels by the early 1960s as to be viewed with alarm by the Chilean National Health Service. 63/ In an effort to reduce the incidence of induced abortions, the provision of health and family planning services was broadly improved. But although the National Health Service introduced organized family planning services in a small number of clinics at Santiago as early as 1962, a formal programme was not inaugurated until 1967. 64/ This programme, furthermore, was designed explicitly to combat the pervasiveness of abortion. As a result, it did not, at least during the 1960s, involve mass-media campaigns to educate the public concerning the desirability of contraceptive use, nor were any forms of patient recruitment conducted outside clinics. While it is true that substantial bilateral aid permitted the programme to develop rapidly, it appears that efforts in family planning in general did not reach significant proportions until about 1966-1968, 65/ by which time fertility had already undergone substantial reductions. It is probable, however, that the development of both public and private programmes during the late 1960s, as well as the continuing economic uncertainties, served to accelerate the rate of fertility decline. As stated earlier, fully 75 per cent of the 1960-1970 reduction in the Chilean gross reproduction rate took place between 1965 and 1970.

61/ Report on the World Social Situation, 1974, p. 39.

62/ León Tabah and Raúl Samuel, "Preliminary findings of a survey on fertility and attitudes toward family formation in Santiago, Chile", in Clyde V. Kiser, ed., Research in Family Planning (Princeton, New Jersey, Princeton University Press, 1962), p. 302.

63/ Norman Gall, "Births, abortions and the progress of Chile", Field Staff Reports (American Universities Field Staff), vol. XIX, No. 2 (May 1972), p. 2.

64/ A. Goldsmith, H. Gutiérrez and H. Sanhueza, on. cit., p. 5.

65/ M. Gall, loc. cit., p. 3.

B. Levels and trends of fertility in countries having incomplete statistics

Data sources and methods of estimation

The 10 remaining countries with a population of 250,000 or over in 1970 include two in the Caribbean region (the Dominican Republic and Haiti), two in Middle America (Honduras and Nicaragua) and six in Tropical South America (Bolivia, Brazil, Colombia, Ecuador, Paraguay and Peru). The combined population of these countries constitutes more than 55 per cent of the total population of Latin America. Brazil alone accounts for one third of the total population of the major area.

The quality of birth registration in these countries, as previously mentioned, precludes accurate measurement of the level and trend of fertility on the basis of official statistics. This statement applies particularly to Bolivia, Brazil, Haiti and Paraguay. In a second group of countries, births are under-registered by a minimum of about 15 per cent. This group includes Colombia, the Dominican Republic, Nicaragua and Peru, as well as Ecuador, where the quality of statistics was considered adequate until about 1966, but appears to have subsequently deteriorated. Statistics for Honduras are of borderline quality.

Measures of the crude birth rate and gross reproduction rate presented for these countries consist of estimates based on data from a variety of sources and utilizing different methods of calculation. In recent years, national sample surveys have been conducted in several countries; information from those surveys forms the basis of the most recent estimates for Colombia, Honduras and Peru. Rates were calculated directly from the data collected in Colombia and Honduras; for Peru, use was made of Brass technique to adjust for under-reporting of fertility among older women. In a fourth country, Haiti, information from a national sample survey was utilized along with census statistics to estimate the level of fertility. For other countries and for earlier years, the most common method of estimation was the "reverse-survival" method.

For Brazil, Peru and Paraguay, somewhat different techniques were employed. Estimates of Brazilian fertility for the intercensal periods between 1940 and 1970 were based on comparisons of differences in the number of children born to cohorts of women enumerated in the four censuses taken during those years. The estimate for 1970 utilized information on the number of children reported to have been born in the year prior to the census, and the number of births was adjusted graphically, taking previous estimates into account. The Brass technique was applied to the distribution of women in Peru according to their fertility in the year preceding the 1961 census. For Paraguay, various measures were calculated and rejected before the estimate furnished by Thompson's replacement index was judged to approximate most closely the true level of fertility.

In view of data deficiencies, the necessity to make frequent and often arbitrary adjustments and the undetermined degree of comparability between estimating techniques, it is best to consider the estimates presented for the countries discussed in this section to reflect no more than an "order of magnitude".

This caution applies particularly to fertility rates calculated for specific age groups. Furthermore, though it is probably true that estimates based on survey data are more reliable than those derived from adjusted census and birth statistics,

all surveys are subject to some degree of sampling variability. This factor can be especially important where the sample is very small in relation to the size of the total population, as in Peru. In addition, non-sampling errors frequently exceed those introduced by the sampling procedures.

Caribbean

In the Caribbean region, the estimated crude birth rate of 36 per 1,000 and gross reproduction rate of about 2.4 for Haiti in 1973 (table 18) are particularly noteworthy, in light of the previous impression that the level of fertility in that country is much higher. In the past, the crude birth rate had been estimated to be about 44 and the GRR at about 3.0. ^{66/} Of course, in a country where data collection procedures have long been seriously deficient, any estimate must be regarded with caution. However, a crude birth rate of approximately 35 does appear to be more consistent with what is known concerning Haitian social structure and population. For example, relatively high mortality (the estimated proportion of men surviving from age 25 to age 55 was about 62 per cent in 1950 and has probably not changed very much since that time ^{67/}), substantial out-migration of males, high percentages of women who never marry and who are separated or widowed, late age at marriage and separation of spouses are factors that, in combination, would tend to have a depressing effect upon Haitian fertility.

As should be clear from the foregoing statements, the fact that the level of fertility in Haiti is lower than had been expected is not evidence of a transition to lower fertility through the deliberate regulation of births, but of the combined effect that a variety of circumstances can have. Nutritional levels in Haiti are among the lowest in Latin America, and the proportion of children aged 7-13 who are enrolled in primary schools is the lowest, ^{68/} as is the proportion of the total population living in areas of 20,000 or more inhabitants. ^{69/}

The fertility indicators changed little in the Dominican Republic during the period 1950-1970 (table 18). Both the crude birth rate and the gross reproduction rate, about 46 per 1,000 and 3.5, respectively, in 1970, were among the highest estimated for countries of Latin America. The estimated age-specific rates show no clear pattern by age.

In view of the relative lack of economic progress during the 1960s, it is not surprising that the level of fertility appears to have changed little. The situation in the Dominican Republic is described as follows in a recent report. ^{70/}

^{66/} See, for example, Report on the World Social Situation, 1970 (United Nations publication, Sales No. E.71.IV.13), p. 28.

^{67/} E. E. Arriaga, New Life Tables for Latin American Populations ...

^{68/} Report on the World Social Situation, 1974, pp. 49 and 51. The proportion enrolled in primary school in 1968 was 31. The next highest in Latin America was Colombia, with 63 per cent enrolled at this level.

^{69/} C. Peláez and G. Martine, loc. cit., p. 109.

^{70/} Hernando Pérez Montás, Dominican Republic, Country Profiles (New York, The Population Council, 1973), pp. 1-4.

Table 18. Estimated crude birth rates, gross reproduction rates and age-specific fertility rates, countries of Latin America with incomplete statistics, selected years, 1950-1970

Region and country	Year or period	Crude birth rate ^{a/}	Gross reproduction rate	Gross total fertility rate	Age-specific rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Caribbean											
Dominican Republic ^{b/}	1950	50.2	3.66	1 502.3	132.3	327.8	336.0	307.8	218.7	111.9	67.8
	1960	47.7	3.53	1 448.0	113.3	316.4	370.0	289.9	204.9	147.9	5.6
	1970	46.4	3.46	1 419.9	127.8	305.3	330.9	301.0	227.1	102.2	25.6
Haiti ^{c/}	1973	35.8	2.40	...	...	...	...	...	...	...	...
Middle America											
Honduras	1951 ^{d/}	52.6	3.39	1 390.7	166.2	333.4	335.7	284.0	166.0	82.5	22.9
	1961 ^{d/}	51.0	3.52	1 444.7	167.1	324.5	350.8	279.0	204.7	94.5	24.1
	1970-1972 ^{e/}	49.3	3.64	1 494.9	165.5	315.9	340.7	306.6	221.7	126.8	17.7
Nicaragua	1950 ^{f/}	...	3.02	1 240.0	149.0	304.0	308.0	223.0	169.0	77.0	10.0
	1963 ^{g/}	46.1	3.28	1 344.4	147.8	349.3	356.2	238.1	165.5	75.2	12.3
	1970 ^{h/}	...	3.46	1 420.0	129.0	300.5	335.4	290.0	207.6	118.3	39.2
Tropical South America											
Bolivia ^{i/}	1960	...	2.98	1 223.0	77.0	234.0	276.0	259.0	220.0	117.0	40.0
Brazil	1945 ^{j/}	42.2	2.80	1 153.0	92.0	249.0	278.0	246.0	167.0	92.0	25.0
	1955 ^{j/}	40.6	2.76	1 130.0	90.0	256.0	272.0	245.0	167.0	90.0	12.0
	1965 ^{j/}	38.6	2.61	1 076.0	85.0	264.0	268.0	218.0	150.0	75.0	10.0
	1970 ^{k/}	36.3	2.42	993.0	70.0	223.0	246.0	209.0	153.0	74.0	18.0
Colombia	1951 ^{l/}	...	2.88	1 182.6	102.9	305.4	332.4	212.6	161.4	60.2	7.7
	1965 ^{l/}	...	3.20	1 311.9	97.1	291.3	349.9	257.5	212.4	76.4	27.3
	1967-1968 ^{m/}	41.3	2.94	1 206.0	110.0	270.0	278.0	277.0	176.0	85.0	10.0
Ecuador ^{n/}	1960	...	3.35	1 371.7	106.0	300.0	337.3	279.9	229.8	90.2	28.5
	1965	...	3.26	1 337.8	100.9	307.8	331.2	258.1	225.5	86.8	27.5
Paraguay ^{o/}	1960	43.9	3.20	1 311.8	128.7	279.8	346.6	263.8	161.8	93.5	37.6
Peru	1961 ^{p/}	45.3	3.11	1 276.0	101.0	298.0	314.0	255.0	193.0	87.0	28.0
	1969 ^{q/}	42.6	3.01	1 236.0	87.0	255.0	324.0	273.0	176.0	76.0	45.0

(Foot-notes on following page)

(Foot-notes to table 18)

a/ Derived from the same birth data as that used to calculate the corresponding gross reproduction rates. These crude birth rates do not necessarily correspond to those presented elsewhere due to differences in estimation procedures.

b/ Agustín García L., República Dominicana: Estudio de la evolución demográfica en el período 1950-1970 y proyecciones de la población total, período 1970-2000, CELADE SUBSEDE Series A, No. 19 (San José, Costa Rica, 1974), pp. 85 and 88.

c/ Estimated by the United Nations Secretariat.

d/ Carmen Arretx, "Proyecciones de la población de Honduras, por sexo y grupos de edad, 1961-1981", CELADE Series A, No. 70; Santiago, Chile, 1967 (mimeographed).

e/ Antonio Ortega, "Estimaciones demográficas en países con estadísticas incompletas. La Encuesta Demográfica Nacional de Honduras (EDENH)", Notas de Población (Centro Latinoamericano de Demografía), Año 1, vol. 2 (August 1973), pp. 37-43.

f/ Guillermo A. Macció, Ajuste e interpolación de tasas de fecundidad por edad (Aplicación a los países de América Latina), CELADE SUBSEDE Series AS, No. 7 (San José, Costa Rica, 1969).

g/ Guillermo A. Macció, "Nicaragua: proyecciones de la población por sexo y grupos de edad, 1950-1978", CELADE Series A, No. 71; Santiago, Chile, 1967, p. 17 (mimeographed).

h/ Data of United Nations Latin American Demographic Centre (CELADE).

i/ Data of Jorge Somoza, cited in G. A. Macció, Ajuste e interpolación ..., p. 2.

j/ Carmen Arretx, "Revisión de las estimaciones de la fecundidad de Brasil, a base de los censos de 1940, 1950, 1960 y 1970", CELADE report S. 66/25, Santiago, Chile, 1970 (mimeographed).

k/ Richard Irwin and Evelyn Spielman, "Estimativas y projeções preliminares das taxas de fecundidade: Brasil, 1970 a 2000", Revista Brasileira de Estatística, vol. 34, No. 134 (April/June 1973), pp. 252-270.

l/ Data of J. Arévalo, cited in G. A. Macció, Ajuste e interpolación

m/ Henry G. Elkins, "Cambio de fecundidad", in Rodolfo Heredia B. and Elena Prada S., eds., La Fecundidad en Colombia. Encuesta nacional de fecundidad (Bogotá, Asociación Colombiana de Facultades de Medicina, 1973), pp. 31 and 34.

n/ Pedro M. Merlo, Ecuador: Evaluación y ajuste de los censos de población de 1950 y 1962 y proyecciones de la población total del año 1960 al año 2000, CELADE Series C, No. 113 (Santiago, Chile, 1969).

o/ Jorge Vidal L., Paraguay: Proyección de la población, por sexo y grupos de edades, 1960-2000, CELADE Series A, No. 95 (Santiago, Chile, 1969).

p/ Centro de Estudios de Población y Desarrollo, Informe Demográfico del Perú (Lima, 1972).

q/ Data of Centro de Estudios de Población y Desarrollo, cited in Arthur M. Conning, "Latin American fertility trends and influencing factors", CELADE report S. 91/12, Santiago, Chile, 1972.

The level of literacy is relatively low: only 68 per cent of the population aged 10 years and over were able to read and write at the beginning of the 1960s and this proportion has since increased very little. Age at marriage is only partially relevant, in view of the high incidence of consensual unions, but it appears to be moderately low, the mean for women having been estimated at about 20 years. Although the population is becoming increasingly concentrated in urban areas and the proportion of workers engaged in agricultural occupations fell from 66 per cent in 1960 to 52 in 1970, non-agricultural sectors of the economy have not been able to absorb surplus labour, and underemployment and unemployment are very high, with unemployment estimated at 30 per cent in 1970.

Middle America

The estimated crude birth rate of 49 per 1,000 and the gross reproduction rates of 3.6 and 3.5, respectively, for Honduras and Nicaragua are the highest in Latin America. As in other countries of Middle America, fertility apparently increased during the 1950s; but in these two countries, the increase continued into the 1960s.

Although in view of the data deficiencies, due caution must be exercised in evaluating the possibility of a genuine rise in fertility, such a tendency should not be excluded, as the conditions associated with fertility increases in other countries of Middle America and in Venezuela have also characterized Honduras and Nicaragua. Increases during the 1950s in proportions living in both legal and consensual union have been reported for both countries, 71/ and it was considered likely that this trend continued into the 1960s. In regard to changes in survivorship during the reproductive ages, it is estimated that in 1950, 66 per cent of Nicaraguan men who had reached age 25 survived to attain age 55. By 1961, this figure had risen to 78 per cent. Similarly, in Honduras, the percentages changed from 63 in 1950 to 76 in 1963. 72/

The fertility of younger women has remained relatively stable or even declined somewhat and the indicated fertility increase took place primarily among women over 30 years of age (table 18).

These increases may reflect progress in such strategic spheres of development as health and education. Both countries are among the least developed in Latin America, but with respect to education, at least, considerable advances appear to have been made recently in increasing the enrolments in both primary and secondary levels, particularly in Nicaragua. 73/ In this connexion, it may be

71/ See Carmen Arretx, "Proyecciones de la población de Honduras, por sexo y grupos de edad, 1961-1981", CELADE Series A, No. 70; Santiago, Chile, 1967, pp. 10-12; and Guillermo A. Macció, "Nicaragua: proyecciones de la población por sexo y grupos de edad, 1950-1978", CELADE Series A, No. 71; Santiago, Chile, 1967, pp. 17-19 (both mimeographed).

72/ E. E. Arriaga, New Life Tables for Latin American Populations ...

73/ Report on the World Social Situation, 1974, p. 51. Although only 20 per cent of the population aged 14-19 was enrolled in secondary school in 1970, this proportion represented an increase of 351 per cent since 1960.

noted that the age-specific rates (table 19), though not comparable, show signs of declining fertility among younger women in both Honduras and Nicaragua.

Tropical South America

Levels and trends of fertility

It is hardly feasible to speak of fertility trends in Tropical South America. Trend data are not available for some of the countries; and for others, such evidence as exists shows relative stability in comparison with movements in other regions of Latin America, but mainly in Middle American and Caribbean countries.

In Bolivia and Paraguay, estimates are available for only a single year or period. CELADE has estimated that during 1965-1970 the crude birth rate in both countries was about 44 per 1,000. Other estimates for 1960 place the gross reproduction rates of both countries at or above 3.0. It is not possible, therefore, on the basis of available data to determine whether there was any change in fertility during the 1960s in these countries.

Levels of urbanization continued to be low in both countries and the rate of change in this phenomenon relatively slow. ^{74/} Moreover, low levels of literacy prevail; in Bolivia, for example, it was estimated that around 1968 only 40 per cent of the population aged 14 years and over could read and write. In both countries, the proportion enrolled in primary schools was markedly low, about 16-18 per cent, ^{75/} and the rate of increase in this proportion is well below the regional average. ^{76/}

Somewhat more information is available for Ecuador and Peru, but only for the 1960s. Fertility is indicated as being moderately high in these countries. In Ecuador (1965-1970) and Peru (1969), crude birth rates were 45 and 43 per 1,000 population, respectively; and gross reproduction rates were 3.2 and 3.0 (tables 18 and 64). For neither country do the estimates presented indicate important change. The estimated age-specific rates for Ecuador show modest decreases among all women except those 20-24 years of age; and in Peru, moderate declines appear to have taken place among women under 24 and over 34 years of age, while increases appear to have occurred among others.

The slight declines reflected in the estimated gross reproduction rates may be genuine, although the question arises whether they represent a fluctuation or the beginning of a long-term trend. It may be noted, however, that the level of development in Ecuador and Peru appears to be somewhat higher than that of Paraguay,

^{74/} C. Peláez and G. Martine, loc. cit., p. 109. The proportion of the total Bolivian population living in places with 20,000 or more inhabitants in 1970 is estimated to be about 23 per cent, compared with 22 in 1960. These figures may be compared with 67 for Argentina and 56 for Uruguay in 1970.

^{75/} Arthur M. Conning, "Latin American fertility trends and influencing factors", in International Union for the Scientific Study of Population, International Population Conference, Liège, 1973 (Liège, 1974), p. 139.

^{76/} Report on the World Social Situation, 1974, p. 51.

and distinctly higher than that of Bolivia. About 33 per cent of the total population of both countries is estimated to reside in areas with a population of 20,000 or over; 77/ close to three quarters of the population 14 years of age and over is literate, and both countries have made significant strides in improving educational enrolment. 78/

Estimates of the Colombian birth rate and gross reproduction rate for 1967-1968 indicate levels similar to those in Ecuador and Peru. The measures for Colombia were, respectively, 41.3 per 1,000 and 2.94.

Between 1950 and 1965, there was an increase of about 11 per cent in the gross reproduction rate (table 18). Furthermore, as in Venezuela and in some Middle American countries, the older women appear to have been primarily responsible for the change. It may also be mentioned that the subsequent decline reflected a change in the reproductive behaviour of younger women; age-specific fertility continued to increase among older women. This situation is especially noteworthy in view of the rapidity with which mortality has declined in Colombia and of the concomitant decrease in widowhood. 79/ According to the estimates, between 1965 and 1967-1968, fertility declined by about 8 per cent. An analysis of pregnancy histories collected in the 1967-1968 survey tends to confirm a recent decline, amounting to about 14 per cent between 1960-1964 and 1967-1968, the larger part of which was due to lower fertility among women aged 25-34 years.

The estimates indicate that Brazilian fertility has been falling steadily since the mid-1940s (table 18). The crude birth rate decreased by about 14 per cent during that 25-year period, and the gross reproduction rate declined by about the same amount. Nevertheless, in 1970, these measures remained relatively high at about 36 and 2.4, respectively (see annexed table 64). Analysis of the 1960 and 1970 censuses has shown that the proportion of children aged 0-4 declined in spite of improvements in the census enumeration of infants and young children and of declining infant and child mortality. Women in all age groups appear to have participated in the fertility decline, the reductions being somewhat sharper among women over 30 years of age.

77/ C. Peláez and G. Martine, loc. cit.

78/ Report of the World Social Situation, 1974, p. 51.

79/ Henry G. Elkins, "Cambio de fecundidad", in Rodolfo Heredia B. and Elena Prada S., eds., La Fecundidad en Colombia, Encuesta nacional de fecundidad (Bogotá, Asociación Colombiana de Facultades de Medicina, 1973), p. 29.

C. Age patterns of fertility

The pattern of age-specific fertility shows the frequency of childbearing according to age of the woman, expressed in terms of the number of live births per annum per 1,000 women of a given age group at the midpoint of that year. The summary of these age specific rates gives a measure of gross total fertility; and, by calculating the percentage distribution of the age-specific rates, it is possible to determine the relative contribution made by women in each group to the level and trend of fertility. The age pattern of fertility depends upon a variety of factors, most of which have been discussed in preceding sections of this chapter. Age at marriage is highly significant in most populations that have not resorted to the artificial regulation of births on a broad scale. It is of less import, however, in the many countries of Latin America in which a very significant proportion of mating unions are formed without legal procedure. Other factors that determine the number of women in each of the reproductive age groups that is capable of childbearing include the levels of physiological and secondary sterility; proportion of persons married; incidence of widowhood and, increasingly in the more developed countries, divorce; customs pertaining to lactation and post-partum abstinence; practice of fertility regulation by either modern or traditional methods; and various other forms of cultural behaviour that regulate fertility, whether intentionally or unintentionally. Thus, owing to the wide differences among peoples in the prevalence of these factors and in their relative influence, the proportion of women in each age group that gives birth in a given year varies from one population to the next.

It has been established ^{80/} that the age curve of fertility takes three forms: an early peak, in which the level of fertility is highest among women 20-24 years of age; a late peak, which shows maximum fertility to occur among women aged 25-29; and a broad peak, in which fertility is equally or nearly equally high in those two age groups and higher in them than in any others. The shape of this curve varies not only among different populations, but over time in any single population. Analyses based on this curve can provide an understanding of the factors underlying fertility change and thus can aid the construction of assumptions for population estimates and projections. The fertility age patterns in the countries of Latin America having relatively good data are assessed below.

Peak ages of fertility

Statistics on the number of live births per 1,000 women in each group are provided in table 16. Table 19 shows the relative contribution of women in each age group to gross total fertility for every fifth year, where available, from 1950 to 1970; and table 20 provides the same data for selected age groups. The primary factors of significance about the age pattern of fertility are the ages at which age-specific fertility is at a maximum and the degree of concentration of fertility in the age groups of highest fertility.

Around 1970, or at the most recent year for which requisite data are available, the fertility age patterns among the countries with relatively good statistics were diverse, in that each of the three established patterns could be identified. A vast majority exhibited the early-peak type of pattern, as maximum fertility occurred in the age group 20-24. In the countries of Temperate

^{80/} Population Bulletin, No. 7, pp. 101-102.

Table 19. Relative contribution of women in each age group to gross total fertility, selected countries of Latin America having relatively good statistics, 1950-1970

(Percentage distribution of age-specific fertility rates)

Region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Caribbean									
Cuba	1953	100.0	12.3	19.7	18.9	16.7	13.9	11.2	7.3
	1965	100.0	16.1	29.1	23.3	16.3	10.9	3.5	0.8
	1970 ^{a/}	100.0	14.1	28.0	24.3	16.6	11.1	4.9	1.0
Guadeloupe	1950	100.0	8.5	22.6	26.9	20.2	14.8	6.2	0.8
	1955	100.0	6.9	20.3	25.1	22.4	16.4	8.0	0.9
	1960	100.0	5.8	19.1	24.1	23.2	18.0	8.8	1.0
	1965	100.0	5.8	19.7	26.0	22.5	16.5	8.2	1.3
	1967	100.0	5.4	20.7	27.0	22.4	15.5	8.1	0.9
Jamaica	1950	100.0	13.0	28.2	24.1	17.4	12.3	4.2	0.8
	1955	100.0	13.2	28.1	25.7	17.2	11.2	4.0	0.6
	1960	100.0	13.8	26.7	23.6	19.0	11.8	4.4	0.7
	1964	100.0	12.7	25.5	23.4	19.5	13.7	4.5	0.7
	1970	100.0 ^{a/}	13.5	26.4	23.8	19.3	12.0	4.3	0.7
Martinique	1950	100.0	6.7	21.6	25.2	20.5	17.0	7.9	1.1
	1955	100.0	6.0	19.7	25.5	23.6	16.1	8.2	0.9
	1960	100.0	4.5	19.4	24.1	24.1	18.0	8.8	1.1
	1965	100.0	4.3	19.1	25.4	23.3	17.8	9.0	1.1
	1970	100.0	5.5	23.4	28.7	20.5	14.3	6.7	0.9
Puerto Rico	1950	100.0	9.5	26.7	24.8	19.1	13.7	5.1	1.1
	1955	100.0	10.1	27.8	23.9	17.9	13.2	6.0	1.1
	1960	100.0	10.4	30.0	25.2	16.6	11.5	5.4	0.9
	1965	100.0	13.7	32.4	24.3	14.4	10.4	4.0	0.8
	1970	100.0	11.5	30.7	28.8	16.3	8.9	3.3	0.5

Table 19 (continued)

Region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Caribbean (continued)									
Trinidad and Tobago	1950	...	...	...	...	...	...	...	...
	1955	100.0	15.6	27.8	23.9	17.4	11.2	3.5	0.6
	1960	100.0	11.9	28.1	25.5	19.1	11.5	3.4	0.5
	1965	100.0	11.8	27.3	25.9	18.2	12.7	3.6	0.5
	1970	100.0	12.2	30.0	24.6	17.0	11.5	4.1	0.6
Middle America									
Costa Rica	1950	100.0	7.8	23.7	25.6	19.7	15.6	6.4	1.2
	1955	....	...	...	...	...	...	...	...
	1960	100.0	8.1	24.5	24.8	20.1	15.2	6.2	1.1
	1965	100.0	8.3	22.6	24.5	20.2	16.4	6.7	1.3
	1970	100.0	10.5	23.9	22.8	19.3	15.2	7.0	1.3
El Salvador	1950	100.0	10.3	26.6	25.4	18.5	13.0	4.7	1.5
	1955	100.0	10.9	25.8	26.0	17.3	13.9	4.8	1.3
	1960	100.0	10.5	24.4	24.8	19.3	14.5	5.0	1.5
	1965	100.0	10.8	24.6	23.1	18.4	16.1	5.3	1.7
	1970	100.0	11.2	24.2	22.9	17.8	15.9	6.2	1.8
Guatemala	1950	100.0	12.6	22.3	22.3	17.5	16.2	6.6	2.5
	1955	100.0	13.0	23.3	22.6	17.6	14.6	6.7	2.2
	1960	100.0	12.1	24.3	22.6	18.2	14.7	6.2	1.9
	1965	100.0	11.5	23.6	23.4	18.3	15.3	6.1	1.8
	1970	100.0	11.9	24.0	22.5	18.8	14.9	6.1	1.8
Mexico	1950	...	...	...	...	...	...	...	...
	1955	100.0	9.4	24.8	25.8	18.0	15.8	6.2 ^{b/}	...
	1960	100.0	8.3	23.7	24.8	20.0	16.0	7.2 ^{b/}	...
	1965	100.0	7.7	22.4	24.2	18.8	16.2	10.7 ^{b/}	...
	1970	100.0	6.9	22.2	24.1	19.0	16.2	11.6 ^{b/}	...

Table 19 (continued)

Region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Middle America (continued)									
Panama	1950	100.0	14.2	29.8	25.9	16.2	10.1	2.8	1.0
	1955	100.0	14.3	28.0	26.7	16.4	10.8	3.2	0.6
	1960	100.0	13.5	28.3	24.8	17.5	11.5	3.6	0.8
	1965	100.0	13.3	27.9	25.5	17.1	11.8	3.7	0.7
	1970	100.0	13.2	27.7	24.3	17.8	12.0	4.2	0.8
Temperate South America									
Argentina	1950	100.0	8.8	23.5	28.1	20.5	12.5	5.0	1.6
	1955	...	...	...	...	...	...	...	...
	1960	100.0	9.5	26.8	27.4	19.3	11.3	4.7	1.0
	1965	100.0	9.7	26.3	27.9	19.6	11.6	4.0	0.9
	1970	...	...	...	...	...	...	...	...
Chile	1952	100.0	8.1	23.6	24.2	19.9	14.9	7.3	2.0
	1955	100.0	8.0	22.1	26.6	20.0	14.1	7.4	1.8
	1960	100.0	8.2	22.3	25.4	22.1	14.2	6.3	1.5
	1965	100.0	8.9	23.9	24.2	20.0	15.6	6.3	1.1
	1970	100.0	10.6	26.2	25.7	17.9	12.2	6.3	1.1
Uruguay	1963	100.0	10.4	28.7	27.8	18.0	10.0	4.4	0.7
Tropical South America									
Surinam	1965	100.0 ^{c/}	12.1	27.3	25.1	18.7	11.5	5.3 ^{b/}	
	1970	100.0 ^{c/}	10.1	27.6	25.9	18.4	12.2	5.8 ^{b/}	
Venezuela	1950-1951	100.0	10.4	25.3	25.4	19.5	12.9	4.7	1.8
	1961	100.0	10.3	25.3	25.7	18.6	14.1	4.8	1.2
	1971	100.0	9.6	24.0	24.9	20.2	14.3	5.9	1.1

a/ For 1969-1971.

b/ Women aged 40-49.

c/ Based on births to mothers aged 15-44.

South America, childbearing at the maximum level covered a greater span of the reproductive years, i.e., ages 20-29; otherwise, however, the type of age pattern did not vary systematically by region, nor did it vary by level of aggregate fertility. The latter finding is compatible with the results of the study of fertility age patterns for 72 countries around 1960. 81/

For Argentina (1960), Chile and Uruguay, the broad-peak type of age pattern is evident, although for Uruguay (1963), the age curve shown in figure IV is slanted slightly to the right, inasmuch as the contribution that women aged 20-24 made to gross total fertility in that year barely exceeded the share of women in the 25-29 age bracket. The respective shares were 28.7 and 27.8 per cent.

During the years under review, the shape of the age-specific fertility curve changed from one type to another in some countries; and in certain of those countries, this change took place more than once. In others, the basic shape of the age curve was unaltered, though fertility changes did occur mainly in respect of the concentration of childbearing in the age group of maximum fertility. Countries in the latter category were Jamaica, Panama, and Trinidad and Tobago; although the early-peak type of age pattern characterized fertility in Surinam in 1965 and 1970, there was no change in the concentration of fertility, possibly owing to the short time period.

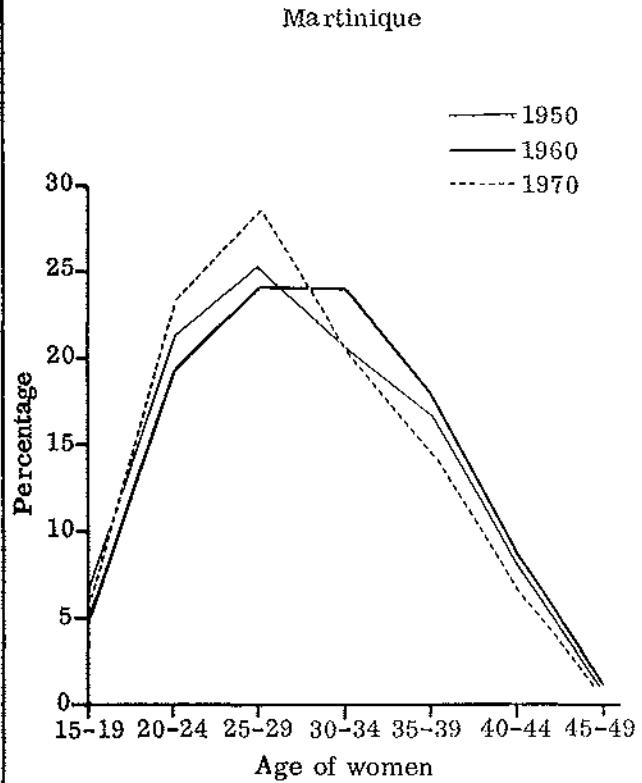
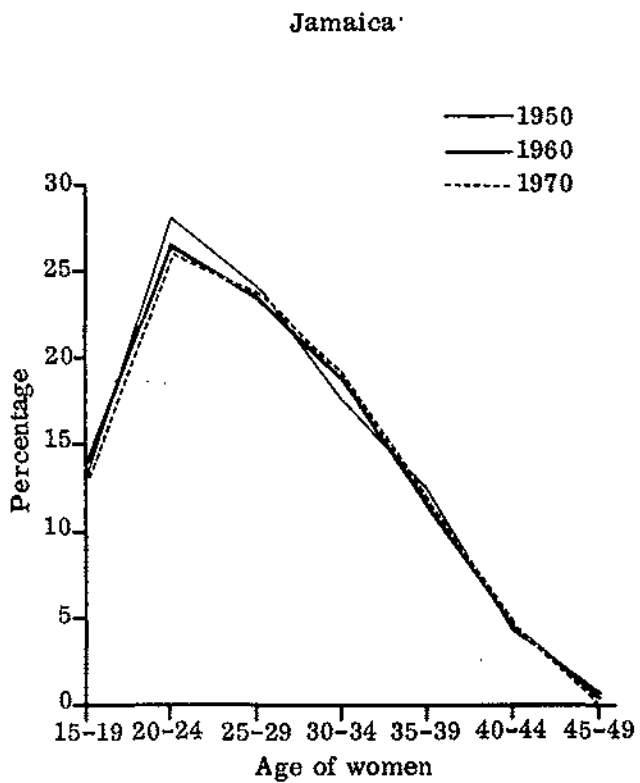
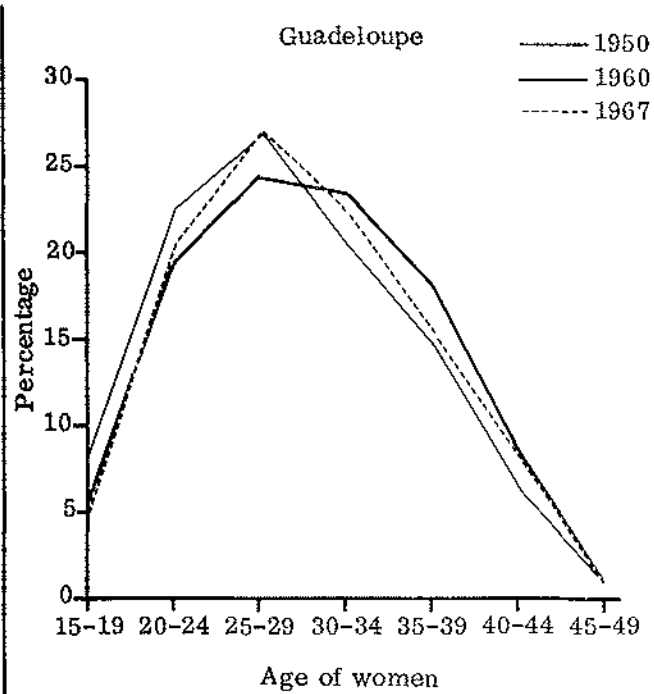
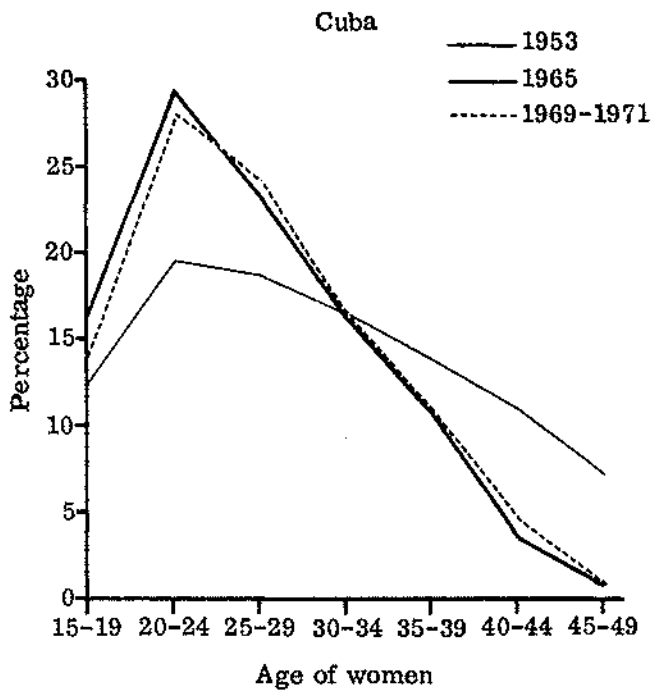
Figure IV shows that, in certain countries, the pattern of age-specific fertility gradually changed from the broad-peak type, in which maximum fertility continued over a greater number of the childbearing years, to the late-peak type found in Guadeloupe and Martinique, or to the early-peak type, which occurred in Cuba and Guatemala. In the first study of this series, similar changes were found to have occurred in some of the currently more developed countries when they were undergoing a decline of fertility. However, although Cuba and Martinique experienced important decreases in crude birth-rates and gross reproduction rates, no such changes were recorded in Guadeloupe and declines in Guatemala were indeed modest.

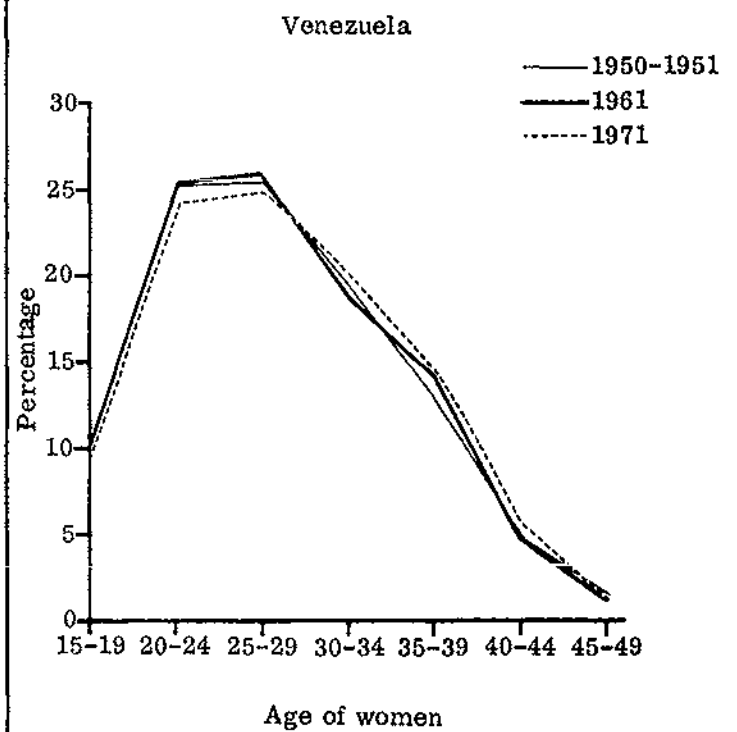
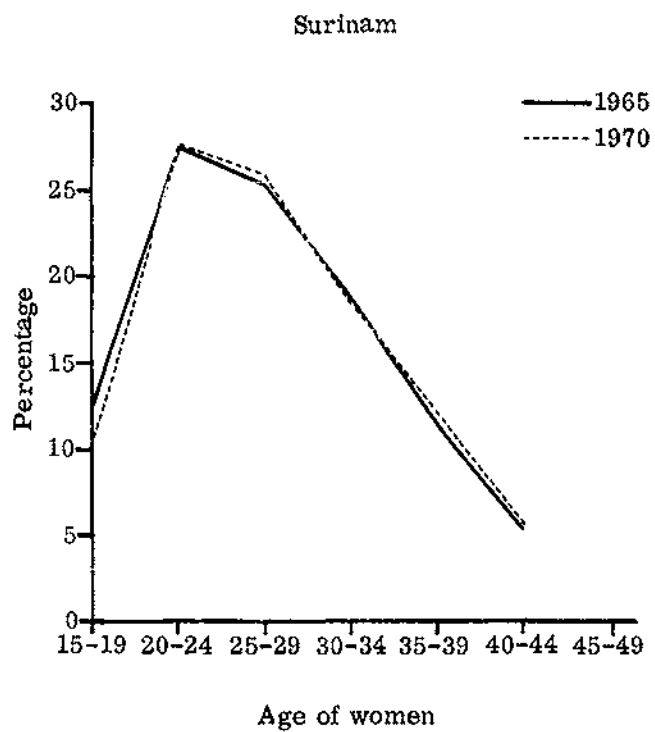
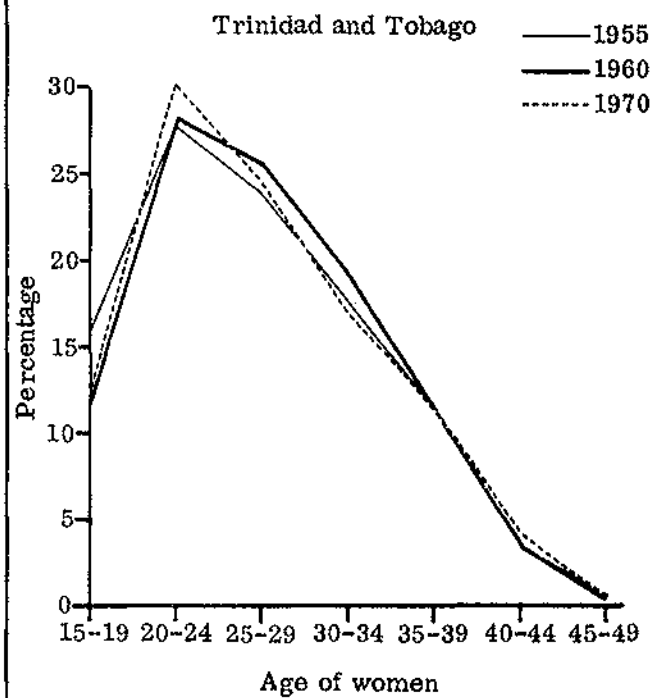
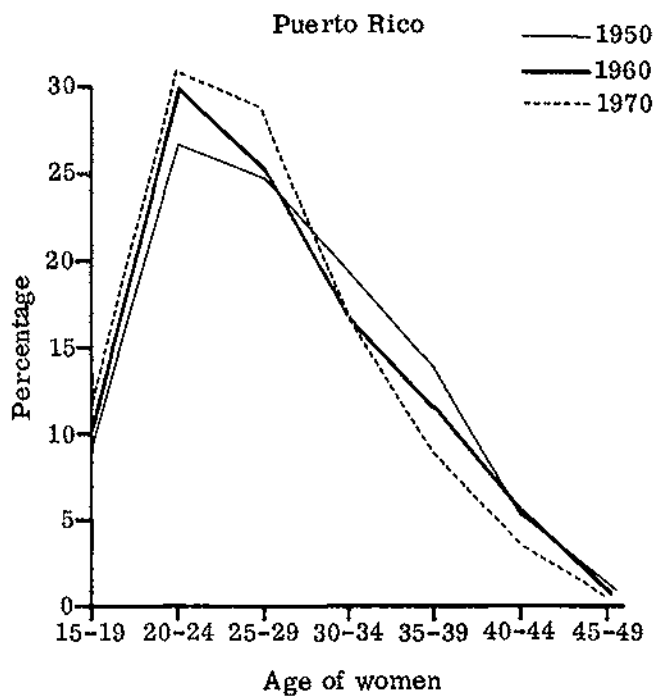
In Costa Rica, changes in the age group of maximum fertility were such that the age curves show a shift from the late-peak type, in 1950, to the broad-peak type in 1960; and to the early-peak type, in which the maximum share of fertility is contributed by women 20-24 years of age, in 1970. These changes are evidence that women in Costa Rica have tended to concentrate childbearing in an earlier and shorter period of the reproductive span, which may have been of immense importance in the marked decline of fertility in that country.

One of the salient features of fertility age patterns is the difference in the ages at which fertility is concentrated in countries of high and low fertility. Around 1960, in 32 of the 36 countries with gross reproduction rates between 1.0 and 2.0, 75 per cent or more of gross total fertility occurred at ages 20-34. At that time, none of the 15 Latin American countries included (all of which were characterized by gross reproduction rates of 2.1-3.5) had so high a degree of concentration.

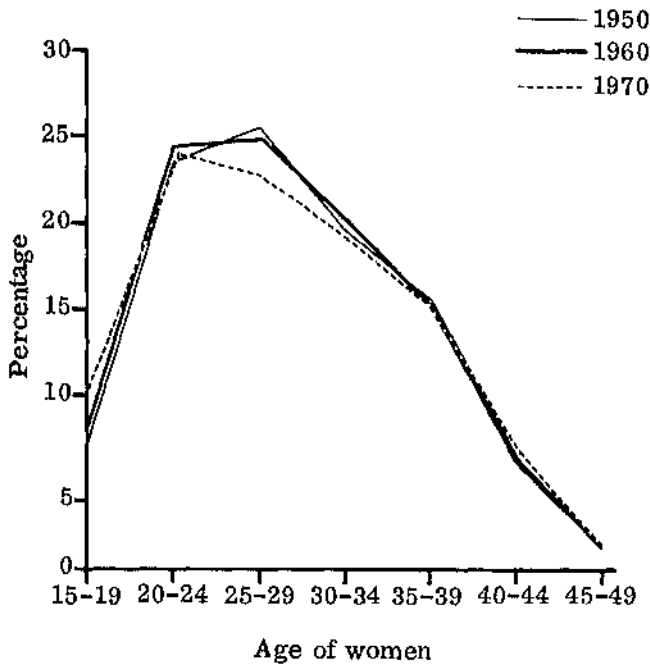
As of 1970, there had been very little change; and only the data for Puerto Rico indicated 75 per cent or more of gross total fertility to have taken place between the ages of 20 and 34 years, although the pattern in Uruguay (1963)

81/ Ibid., chap. VII, in which this topic is discussed in more detail.

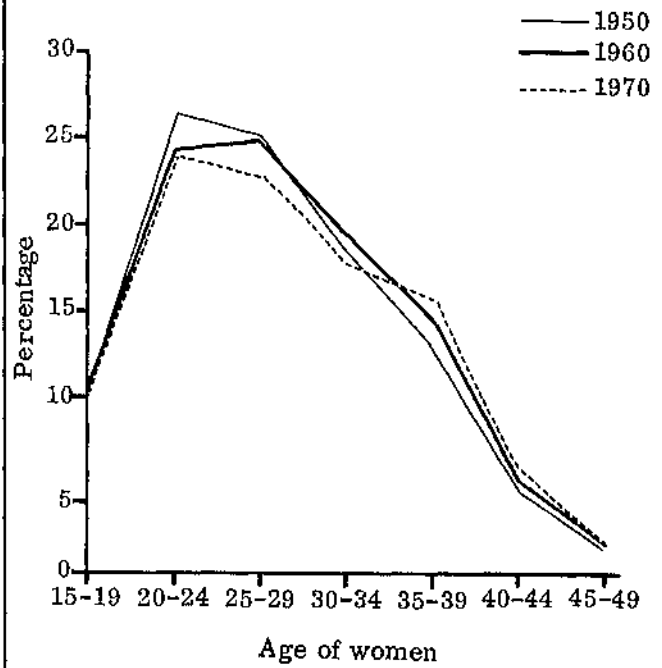




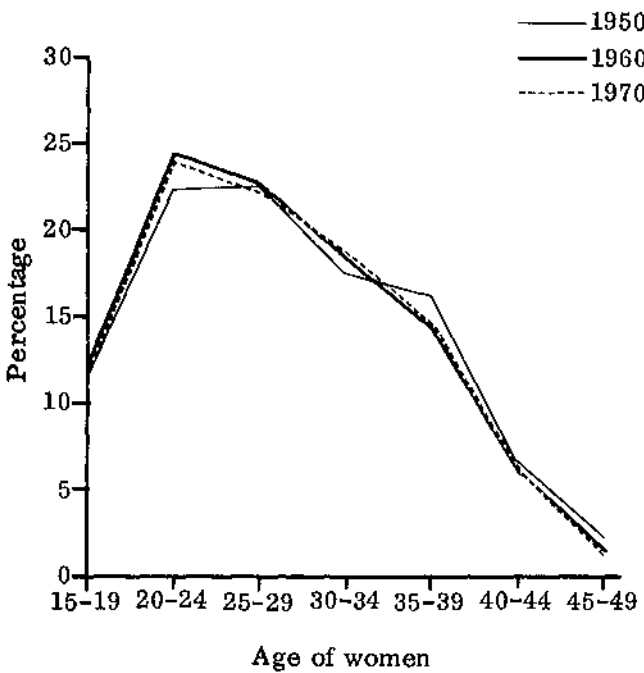
Costa Rica



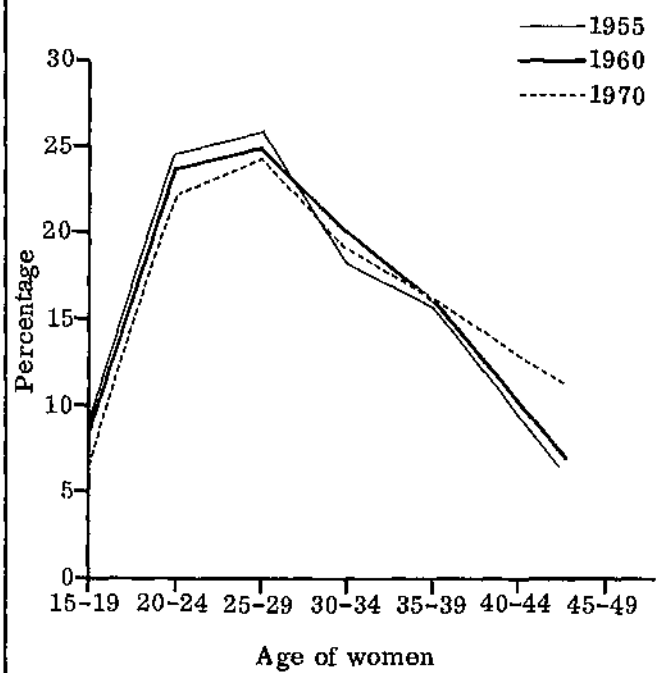
El Salvador



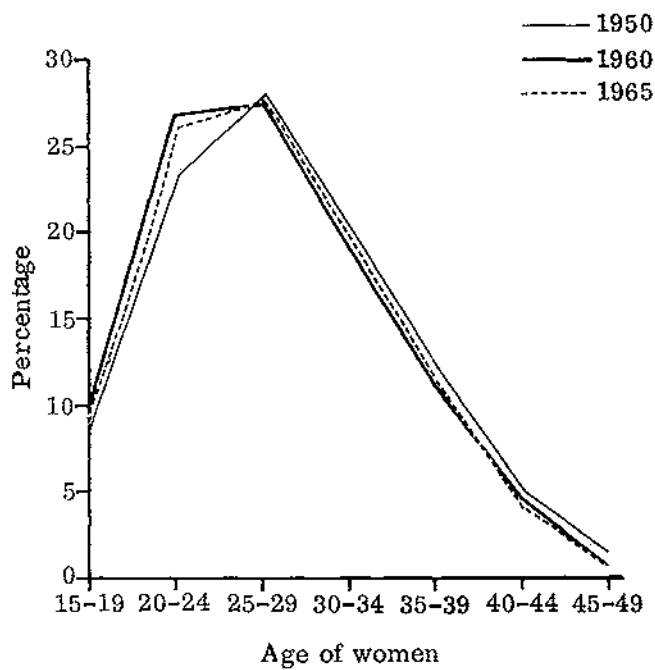
Guatemala



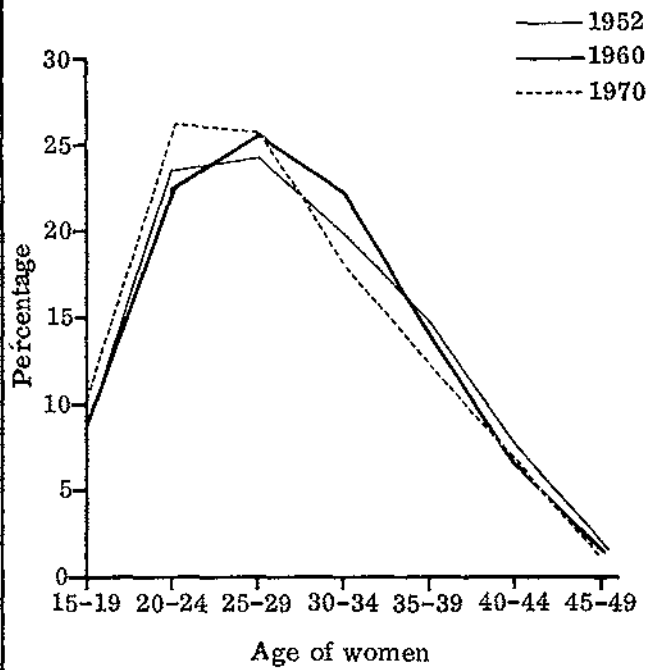
Mexico



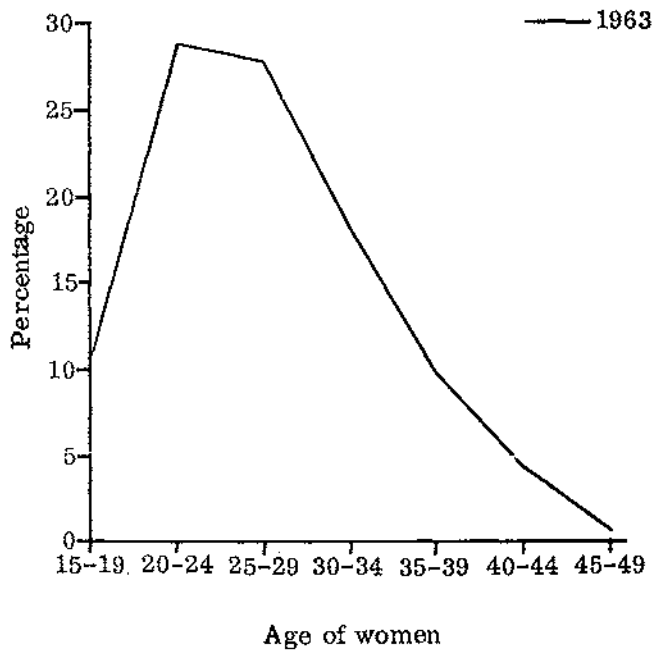
Argentina



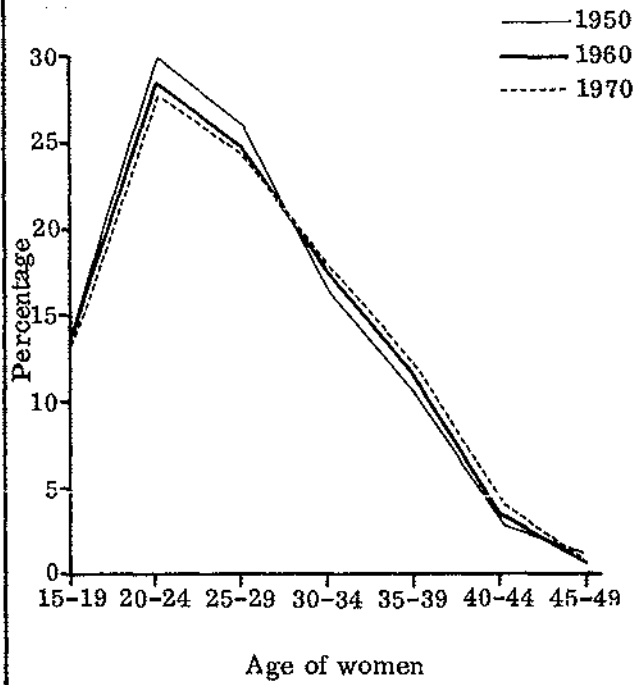
Chile



Uruguay



Panama



was nearly approximate. In general, the degree of concentration of childbearing in the age groups of highest fertility ranged from about 65 per cent in El Salvador, Guatemala and Mexico, to 73 per cent or over in Argentina, Martinique, Puerto Rico and Uruguay. But relatively low concentration within the peak ages of childbearing is by no means indicative of a lack of change for, as previously described, in many countries of Latin America, fertility has undergone considerable changes in levels, and in some, the direction of the trend has been reversed. However, it is certainly worthy of note that the countries of Latin America in which fertility declined have not, possibly excluding Puerto Rico, experienced such changes in degree of concentration by age as would facilitate greater similarity to the patterns observed for more developed, low-fertility countries.

To understand the changes that accounted for the alternation of the amount of concentration in ages of peak fertility, it is useful to examine changes in the broad age group 20-34 years in relation to other changes (table 20). This broad age group of women was responsible for a growing share of gross total fertility in many, but not all, countries of Latin America. In Argentina, Cuba, Guadeloupe, Guatemala, Martinique and Puerto Rico, the share of fertility contributed by women between the ages of 20 and 34 years increased steadily between 1950 and 1970. However, in Argentina and Guatemala, the increase was uneven; and in Guatemala, between 1955 and 1965, the share of gross total fertility contributed by these women first rose and then declined. The result in both countries was that the relative contribution of these groups increased, though this was not necessarily true of their absolute level of fertility. In Guadeloupe, women aged 20-34 increased their share of gross total fertility substantially during the early 1950s, after which it changed relatively little, as was true of the absolute level of their fertility.

Among the countries of this region, the change in the extent to which childbearing was concentrated in the age groups of maximum fertility was most pronounced in Cuba and was the result of both increasing fertility among younger women and falling fertility among older women (table 20). Consequently, when the two groups reversed these trends between 1965 and 1970, the concentration of gross total fertility within ages 20-34 remained relatively unchanged. Major changes in the concentration of childbearing within ages 20-34 apparently took place in Argentina and Chile prior to 1950, so that in the succeeding years, there was more or less stability. This situation may also be true with respect to Uruguay. Sharply declining fertility among women over 35 years of age in relation to the trend among younger women led to a shift downward in the ages at which fertility is highest. Consequently, the proportion of gross total fertility occurring to women aged 20-34 years increased from 70.6 in 1950 to 75.8 in 1970.

In Martinique, after an increase during the early 1950s, the fertility of women under 30 years of age generally declined. Among women over 29, the increase evident during the early 1950s persisted until after 1960. The subsequent declines were considerably more marked among women 30 years of age and older, particularly among those aged 30-34, than among other women. The result was a modest increase in the relative contribution of women aged 20-34 years to gross total fertility.

In El Salvador, Panama and, to some extent, Mexico, similar changes occurred. There was increasingly less concentration of childbearing within the 20-34 age span which corresponded to increases in the share of fertility attributable to older women.

Table 20. Percentage contribution to gross total fertility of women in specified age groups, countries of Latin America having relatively good statistics, selected years 1950-1970

Region and country	Year	Age of women			
		15-19	20-34	35-39	40-49
Caribbean					
Cuba	1953	12.3	55.3	13.9	18.5
	1965	16.1	68.7	10.9	4.3
	1970	14.1	68.9	11.1	5.9
Guadeloupe	1950	8.5	69.7	14.8	7.0
	1960	5.8	66.4	18.0	9.8
	1970	5.4	70.1	15.5	9.0
Jamaica	1950	13.0	69.7	12.3	5.0
	1960	13.8	69.3	11.8	5.1
	1970	13.5	69.5	12.0	5.0
Martinique	1950	6.7	67.3	17.0	9.0
	1960	4.5	67.6	18.0	9.9
	1970	5.5	72.6	14.3	7.6
Puerto Rico	1950	9.5	70.6	13.7	6.2
	1960	10.4	71.8	11.5	6.3
	1970	11.5	75.8	8.9	3.8
Trinidad and Tobago	1955	15.6	69.1	11.2	4.1
	1960	11.9	72.7	11.5	3.9
	1970	12.2	71.6	11.5	4.7
Middle America					
Costa Rica	1950	7.8	69.0	15.6	7.6
	1960	8.1	69.4	15.2	7.3
	1970	10.5	66.0	15.2	8.3

Table 20 (continued)

Region and country	Year	Age of women			
		15-19	20-34	35-39	40-49
Middle America (continued)					
El Salvador	1950	10.3	70.5	13.0	6.2
	1960	10.5	68.5	14.5	6.5
	1970	11.2	64.9	15.9	8.0
Guatemala	1950	12.6	62.1	16.2	9.1
	1960	12.1	65.1	14.7	8.1
	1970	11.9	65.3	14.9	7.9
Mexico	1955	9.4	68.6	15.8	6.2
	1960	8.3	68.5	16.0	7.2
	1970	6.9	65.3	16.2	11.6
Panama	1950	14.2	71.9	10.1	3.8
	1960	13.5	70.6	11.5	4.4
	1970	13.2	69.8	12.0	5.0
Temperate South America					
Argentina	1950	8.8	72.1	12.5	6.6
	1960	9.5	73.5	11.3	5.7
	1965	9.7	73.8	11.6	4.9
Chile	1952	8.1	67.7	14.9	9.3
	1960	8.2	69.8	14.2	7.8
	1970	10.6	69.8	12.2	7.4
Uruguay	1963	10.4	74.5	10.0	5.1
Tropical South America					
Surinam	1965	12.1	71.1	11.5	5.3 ^{a/}
	1970	10.1	71.9	12.2	5.8 ^{a/}
Venezuela	1950-1951	10.4	70.2	12.9	6.5
	1961	10.3	69.6	14.1	6.0
	1971	9.6	69.1	14.3	7.0

^{a/} Ages 40-44 only.

The sharp increase in Jamaican fertility from 1950 to 1964 arose from a greater incidence of births to women of all ages, and the modest decrease in aggregate fertility that was recorded in 1970 reflected a drop mainly among women aged 25 and older, so that there was barely a perceptible change in the degree of concentration or in the age groups in which the greatest share of gross total fertility was experienced.

Both an alteration of timing and a decrease in widowhood appear to have affected the age pattern of fertility in Venezuela, for sharp rises in birth-rates are seen in all age groups during the 1950s, whereas during 1961-1971, significant declines characterize the fertility of all but women aged 40-44. According to one study, the census results show a decline in marital fertility among older Venezuelan women and indicate a rise in the marital fertility of younger women. ^{82/} Although significant declines did indeed take place during the 1960s among women aged 30-39 whose fertility was elevated during the previous decade when they were younger and initiating their childbearing, the sharpest reductions occurred among women under 30, so that the frequency of childbearing among women aged 20 and 34 years fell just slightly, and there was almost no change in the extent to which gross total fertility was concentrated in this age span.

The level of fertility in Trinidad and Tobago was rising in 1955, the earliest year for which age-specific rates are available, and it is therefore unfortunate that changes in relative shares of gross total fertility during the early 1950s cannot be assessed. However, it appears that, after 1955, the more sustained and sometimes larger reductions among women under 20 and over 34 years of age led to an increase in the proportion of fertility contributed by women between the ages of 20 and 34, so that, in 1970, this share was 71.6 per cent. These changes indicate either an advancement of many births to earlier ages or a reduction of completed family size and the concentration of childbearing within a shorter portion of the reproductive age span.

Fertility change at other ages

In addition to the degree of concentration of fertility within the prime childbearing years, it is important to consider trends in the contribution that other age groups make to gross total fertility, for without comparable alterations throughout the age span, a change in one age group necessarily influences the relative contribution of another. There appear to have been important changes at each extreme of the age distribution. The relative contribution to gross total fertility of women aged 40-49 has undergone a notable change in several countries (table 20). In Mexico and Panama, fertility at these ages has continued to rise and because of declining fertility at other ages, their relative contribution to gross total fertility has increased. This has occurred in other countries as well (for examples, Costa Rica, Surinam, Trinidad and Tobago and Venezuela), mainly because the fertility decline among older women has not kept pace with that of younger women. In Jamaica, the proportion of fertility contributed by women over 40 years of age was never very high and has undergone little change. In all other cases, both the absolute and relative contribution of women over 40 has fallen, often to relatively low levels, most notably in Cuba between 1953 and 1965, and in Puerto Rico where, in 1970, only 3.8 per cent of fertility occurred to women over 40 years of age.

^{82/} E. E. Arriaga, "The effect of a decline in mortality on the gross reproduction rate", p. 338.

The changes among women aged 35-39 are more complex, possibly because the fertility of this group was affected by both declining widowhood and changes in reproductive behaviour. With some exceptions, the relative change in their contribution to gross total fertility has been commensurate with that in other age groups. The most notable change was in Puerto Rico, where the proportion of fertility contributed by these women fell from 13.7 in 1950 to 8.9 in 1970. Smaller but noteworthy reductions have taken place also in Guadeloupe and Martinique.

As pointed out in the first study ^{83/} an important difference between high and low fertility countries is the proportion of gross total fertility for which women under 20 years of age are responsible, presumably reflecting differences in age at marriage between the two types of countries. But, as stated earlier, this generalization has less validity for Latin America, owing mainly to the types of marital unions that are common in many countries of that area. For example, around 1970, the gross reproduction rate of 1.88 in Cuba was in sharp contrast with the 2.59 measure registered for Panama. Yet, the proportion of gross total fertility borne by women aged 15-19 in that year was 14.1 in Cuba and 13.2 in Panama. Similarly, in 1965, the Argentine gross reproduction rate was 1.48 and that of Surinam in 1970 was 2.69; but in each country, women under 20 years of age contributed about 10 per cent to gross total fertility. Due to the variety of forms of marital unions, childbearing among women under 20 is not so much an indication of the age at first marriage as it is a reflection of the age at initiation into sexual activity, so that changes in fertility rates among these young women may not necessarily indicate an increase in age at legal marriage.

Around 1970, in most countries of Latin America having adequate statistics, young women in the age group 15-19 contributed from 10 to 14 per cent of gross total fertility (table 20). But in Martinique and Guadeloupe, this proportion was particularly low, 5.5 and 5.4 per cent, respectively.

The extent and direction of changes in fertility of women aged 15-19 have varied considerably. During the period 1960-1970, the 37.3 per cent decline in Trinidad and Tobago was outstanding (annexed table 66). Venezuela also experienced a significant decline at these ages of 25.8 per cent, and decreases of 26.1 and 33.5 per cent between 1965 and 1970 in Cuba and Puerto Rico, respectively, are notable in that they occurred within a much shorter span of time. Declines between 1960 and 1970 were more modest in other countries.

^{83/} Population Bulletin, No. 7, p. 107.

D. Notes on fertility data and estimates
for individual countries

Caribbean

Cuba

The Cuban birth rate fell from levels that may have exceeded 50 per 1,000 early in this century to about 34 during the 1940s. ^{84/} However, only the general magnitude and the approximate timing of this decline can be assessed owing to the deficient nature of the vital registration system during that period. ^{85/} A rough estimate has been made indicating that registered births during 1943-1957 were about 90 per cent complete. ^{86/} This figure may not apply, however, to the earlier years of this interval. ^{87/} Births for 1958-1962 were officially corrected, assuming from 89 to 91 per cent under-registration. ^{88/} These sets of figures coincide closely with calculations which show that official crude birth-rates during 1955-1960 deviated by less than 10 per cent from the estimate made by the Economic Commission for Latin America. ^{89/} Thus, there appears to have been considerable improvement in the quality of birth registration during recent years, particularly since the early 1960s, such that data for those years are considered satisfactory. ^{90/}

Official estimates of the crude birth-rate for recent years show an upswing in Cuban fertility that crested around 1964 (from about 25 per 1,000 in the early 1950s to about 28.2 in 1959 and 36.3 in 1964) and subsequently declined to levels close to those of the late 1950s (table 14). A somewhat similar pattern is shown by the gross reproduction rates, which rose slightly from an estimated 2.1 in 1953 to 2.2 in 1965 and then declined to 1.9 in 1969-1971 (table 16).

The increase in fertility from the early 1950s to the mid-1960s was

^{84/} Population Bulletin, No. 7, p. 76. See also O. A. Collver, op. cit., pp. 105-112.

^{85/} A complete series of official crude birth-rates has been available only in recent years. In addition to underestimating the true level of fertility because of omissions and late registration, total registered births previously excluded live-born infants dying within 24 hours of birth.

^{86/} Fernando González Q. and Jorge Debasa, "Cuba: evaluación y ajuste del censo de 1953 y las estadísticas de nacimientos y defunciones entre 1943 y 1958. Tabla de mortalidad, por sexo, 1952-1954", CELADE Series C, No. 124; Santiago, Chile, 1970, pp. 11-12 (mimeographed).

^{87/} Population Bulletin, No. 7, p. 80.

^{88/} F. González Q. and J. Debasa, op. cit., p. 12, citing JUCEPLAN, Resumen de estadísticas de población, No. 3 (1967).

^{89/} Zulma Camisa, "Assessment of registration and census data on fertility", Milbank Memorial Fund Quarterly, vol. XLVI, No. 3 (July 1968), part 2, pp. 18-20.

^{90/} The Cuban Ministry of Health currently considers birth registration to be "complete". See Cuba, Ministerio de Salud Pública, Cuba: Organización de los servicios y nivel de salud (La Habana, 1974), p. 122.

characterized by a pronounced concentration of childbearing in the younger ages (table 19). The percentage of all fertility at ages 15-24 jumped from 32 in 1953 to 45 per cent in 1965; for ages 15-34, the corresponding increase was from 63 to 65 per cent. These age patterns of fertility are similar to those observed among the socialist countries of Eastern Europe (chap. VI). In the fertility decline after 1965, this pattern was not modified substantially, although at the youngest ages, 15-24, the relative contribution to total fertility dropped somewhat, from 45 per cent in 1965 to 42 per cent in 1969-1971.

Among the variety of factors that may have brought about the rise and subsequent fall of Cuban fertility are the basic structural changes associated with the change in government in 1959 and the substantial out-migration amounting to an estimated 500,000. 91/ With respect to the possible effect of emigration, little can be said because of the current lack of information as to the social and demographic characteristics of the emigrants. 92/

Dominican Republic

The registered birth rate in the Dominican Republic was of the order of 40-42 per 1,000 population during most of the 1950s. From that level, it declined to 30.4 in 1965 and then rose to 40.1 in 1970. However, the official statistics of births are subject to large deficiencies owing to omissions and the effects of late registration. It has been pointed out that births registered during the period 1960-1970 amounted to only 1,205,706, while the population enumerated at ages 0-10 in the 1970 census, the survivors of the children born during the previous decade, totalled 1,337,230. 93/

Estimates by CELADE place the crude birth rate at a much higher level than do the official figures, i.e., at between 45 and 50 live births per 1,000 for the period 1950-1970. 94/ Estimates of the gross reproduction rate (table 18) suggest a level of 3.5 or higher during those years. 95/

91/ See Gerardo González-Cortés, Developmental Measures Leading to a Decline in Fertility in Underdeveloped Countries of Latin America: The Cases of Brazil, Chile and Cuba, CELADE Series A, No. 120 (Santiago, Chile, 1974); and A. M. Conning, loc. cit.

92/ United Nations Secretariat, "International migration trends, 1950-1970", in The Population Debate: Dimensions and Perspectives, Papers of the World Population Conference, Bucharest, 1974, vol. I (United Nations publication, Sales No.: E/F/S.75.XIII.4), pp. 237-248.

93/ Agustín García L., República Dominicana: Estudio de la evolución demográfica en el período 1950-1970 y proyecciones de la población total, período 1970-2000, CELADE SUBSEDE Series A, No. 19 (San José, Costa Rica, 1974), p. 68.

94/ Boletín Demográfico, vol. VII, No. 13 (January 1974), table 3.

95/ Mellon estimated the gross reproduction rate for 1950 at 3.39. Because García utilized similar methodology but had the advantage of the 1970 census data in his investigation, the latter's estimates are presented here. See Roger Mellon, "Estimación de los principales índices demográficos de la República Dominicana en el año 1950 y proyección de la población total por sexo y grupos quinquenales de edad", CELADE Series C, No. 16; Santiago, Chile, 1963. Ramírez' estimate of the gross reproduction rate for 1960 of 3.51 agrees closely with that of García for the same year. See Nelson Ramírez, "República Dominicana: Proyecciones de la población por sexo y grupos de edades, 1960-2000", CELADE Series C, No. 116; Santiago, Chile, 1969.

In view of the fact that estimates of the crude birth rate and the gross reproduction rate are based on admittedly deficient birth registration and population census data, little significance should be attached to the slight decline in these rates. It is probable that there has been little change in fertility during the past decade and that it remains at very high levels.

Guadeloupe

As in many other Caribbean countries, fertility in Guadeloupe appears to have increased during the late 1940s and early 1950s. However, because birth registration became complete during the 1950s, it is not known to what extent the upward movement of the measures reflects improving vital registration rather than a genuine rise in fertility.

The registered crude birth rates fluctuated between 37 and 40 per 1,000 population during the 1950s, with the highest level occurring in 1955. From 1967 onward, the measure oscillated downward, until a level of 28.8 per 1,000 was recorded in 1970. However, the gross reproduction rate declined at a much slower pace: it decreased by only 7 per cent between 1955 and 1967 (from 2.86 to 2.66), compared with the 19 per cent decrease in the crude birth rate (table 66). This fact, along with the relative changes in crude birth rates as compared with standardized birth rates constitutes further indication that changes in age composition were responsible for much of the reduction (table 15). The decline in the proportions of the total population comprised of women aged 15-49 years, from 25.2 to 22.0 between 1950 and 1967, exercised a significant negative effect upon the crude birth rate. Census data indicate that between 1955 and 1967, the proportion of women aged 15-49 who were at the peak fertility ages (20-34) declined from about 47.2 to 42.0 per cent (table 17). Such changes have been associated with heavy out-migration in other Caribbean countries. In so far as the pattern of fertility by age is concerned, the increase in fertility during the period 1950-1955 was primarily attributable to older women. The slight decrease registered after that time derived mainly from changes among very young women and among those between ages 30 and 39. Women at the most fertile ages have yet to experience any sizable fertility reduction.

Haiti

A national vital registration system does not exist in Haiti. Censuses were conducted in 1950 and 1971, but fertility estimates based solely on them are relatively weak because of inaccuracies in age reporting.

Considering the scarcity of reliable data, the lack of agreement in past estimates of Haitian fertility is not unexpected. The crude birth rate for the early 1950s has been variously put at between 35 and 45 per 1,000; ^{96/} for the period 1965-1970, CELADE estimated the crude birth rate at about 45 per 1,000. However, a careful appraisal of information collected in the national demographic survey of 1973, undertaken during the course of this study and supplemented by 1950 and 1971 census data, suggests that the current fertility level is considerably lower. On the basis of this information, it is considered that a crude birth rate

^{96/} See, O. A. Collver, *op. cit.*, p. 132; Population Bulletin, No. 7, p. 82; and Boletín Demográfico (CELADE), vol. VII, No. 13 (January 1974).

of about 36 per 1,000 and a gross reproduction rate of approximately 2.4 are reasonable estimates of Haitian fertility.

The analysis of data obtained in the 1973 survey also indicated a strong possibility that between 1950 and 1971, males predominated among Haitian emigrants aged 15-50 years and especially among those aged 25-39. This factor, along with the high proportions of women who never marry or who marry late and the evidence of very low sex ratios at ages 15-49 in both 1950 and 1971, might have helped to moderate the level of Haitian fertility. 97/

Jamaica

Birth registration in Jamaica has been complete or nearly complete for many years. Compared with that in other countries of Latin America, Jamaican fertility has never been exceptionally high. As far back as the beginning of this century, relatively complete statistics suggested a crude birth rate under 40 per 1,000. 98/ This measure declined slowly until after the Second World War, when it was under 32 per 1,000. However, it subsequently rose to 42.0 in 1960, after which it again declined; by 1973, it had returned to the rather moderate levels achieved during 1945-1949, i.e., 31.3 per 1,000 population (table 14).

Between 1950 and 1960, the crude birth rate rose by 26.9 per cent, from 33.1 to 42.0, its highest level (table 66). During those same years, however, the gross reproduction rate rose by 45 per cent (from 1.9 to 2.8), indicating a considerably greater rise in fertility and suggesting that the level of the crude birth rate was depressed by the age structure. The GRR continued to rise until at least 1964, by which time it had increased by nearly 50 per cent of the 1950 figure. Compared with other countries in the region with similar tendencies, this is a very impressive increase. The sharpest percentage increases in age-specific fertility occurred among women aged 30-44 years, among whom almost half of the rise in gross total fertility took place.

Relative changes in the crude birth rate were substantially different from those in the standardized birth rate (especially during the 1960s), indicating that changes in age structure exercised a strong negative effect upon trends in the former (table 15). Due to emigration, there was a sharp reduction of the proportion of the total population comprised of women aged 15-49, from 26.5 in 1950 to 20.2 in 1970.

Investigation of the factors responsible for the rise in Jamaican fertility indicates that the decline in the proportion of childless women was far more

97/ Some evidence concerning the plausibility of the relatively low fertility estimates comes from preliminary analysis of data collected in a 1972 demographic survey of a rural Haitian village of 1,100 inhabitants. A research group from the International Institute for the Study of Human Reproduction of Columbia University (New York), reported a crude birth rate of around 37.5, and attributed this relatively low rate to the low percentage of women of fertile ages who are currently married, the high percentage of "never mated", the high percentage of separated and widowed, late marriage and a long period of separation among the married population. Communication from Kwan-hwa Chen of the Institute, 1973.

98/ Population Bulletin, No. 7, p. 74.

important than increases in the number of children per women. ^{99/} Improving economic conditions probably had as one effect the entrance of women into common-law unions, which are much more stable and more fertile than visiting unions, in increasing proportions and at an earlier age. In addition, however, improvements in maternal and child health care, as well as improved nutrition and reduced sub-fecundity may have helped to account for declining rates of childlessness. ^{100/}

As previously stated, the crude birth rate peaked at 42.0 in 1960; it declined by about 18 per cent to 34.4 in 1970 and fell further to 31.3 in 1973. The gross reproduction rate and the standardized birth rate declined only slightly from their peak values in 1964, by 4.9 and 3.1 per cent, respectively (tables 65 and 66). The greater rate of decline in the crude birth rate is due almost entirely to the continued decline (associated with emigration) in the proportion of women in the reproductive ages in relation to the total population. Nevertheless, some genuine reduction in fertility has occurred, primarily among women between the ages of 30 and 39, as evidenced by the 4.9 per cent decrease in the gross reproduction rate from 2.85 in 1964 to 2.71 in 1970.

Martinique

As is the case for Guadeloupe, it is unclear to what extent the rise in the crude birth rate in Martinique following the Second World War reflects improved birth registration. A level of about 40 per 1,000 was reached in 1953 and was maintained until 1957, after which official figures recorded a decline of about 12 per cent (to around 35 per 1,000) by 1965 (table 14). The rate of decline quickened thereafter and the crude birth rate fell more than 20 per cent to 27.5 in the next five years. Further reductions have occurred since then and in 1973, the crude birth rate in Martinique was the lowest in the Caribbean region.

The gross reproduction rate rose by about 17 per cent between 1950 and 1955, from 2.44 to 2.86. It remained at approximately that level until 1965 and then declined brusquely by 20 per cent to 2.28 in 1970 (tables 16 and 66). Except during 1965-1970, changes in the crude birth rate during these same periods do not correspond closely with the movements of the gross reproduction rate. The change in the former measure (4.9 per cent) was less than one third that of the latter during the early 1950s, and during 1955-1965, when the GRR scarcely changed, the crude birth rate declined by 12.2 per cent. With respect to the distribution of women in the reproductive ages, there were declines in the proportion of women aged 15-49. These reductions, sharpest among women under 35, were particularly notable during the 1950s and 1960s. The effect of these changes upon the crude birth rate was to obscure the amount of the increase in 1950-1955 and to exaggerate the amount of change between 1955 and 1965 (table 15). Changing age composition had only a slight effect upon the decline of the crude birth rate between 1965 and 1970. In this connexion, it is pertinent to take note of an increase in the proportion of women aged 15-19, particularly during 1965-1967, a change that is consistent with an interpretation of rising fertility during the late 1940s and early 1950s (table 17).

^{99/} G. W. Roberts, "Fertility in some Caribbean countries", pp. 699-700.

^{100/} K. Tekse, A Study of Fertility in Jamaica (Jamaica, Department of Statistics, 1968), pp. 7 and 10. The author stresses also widespread venereal disease and malaria as factors in depressing fertility prior to the late 1940s.

Although women in all reproductive age groups contributed to the rise and subsequent decline of fertility, there were pronounced changes among women over 30 years of age. Significant increases of 34.4 and 19.4 per cent were recorded among women aged 30-34 and 40-44 years, respectively, during 1950-1955. Over the years 1965-1970, however, the fertility of all age groups of women over 30 declined by 30-40 per cent. With the fertility of women aged 20-29 remaining comparatively stable, the changes resulted in a greater concentration of fertility at these ages. In 1950, 46.8 per cent of gross total fertility occurred among females in these age groups; the comparable 1970 figure is 52.1.

Puerto Rico

Until about 1940, statistics of birth registration in Puerto Rico were unreliable. Data corrected for under-registration show the crude birth rate to have declined slowly, but to have been as high as 40 per 1,000 until 1950, when tests showed birth registration to be about 96 per cent complete. 101/ There has been little change in the quality of these statistics since then.

In 1972, the registered crude birth-rate stood at 24.1 and the gross reproduction rate was 1.49. The decline in the crude birth rate was moderate during the 1950s, more rapid during the past decade and particularly marked after 1965 (see figure III). Changes in age composition (particularly reductions among women in the peak reproductive ages due to heavy out-migration), 102/ had a negative effect upon the crude birth rate during the 1950s (table 15). On the other hand, during the 1960s emigration tapered off; and by 1970, the relative distribution of women in the reproductive ages was nearly similar to that which prevailed around 1950, while the proportion of women aged 15-49, in relation to the total population, increased from slightly less than 23 per cent in 1950 and 1960 to 24.4 per cent in 1970 (table 17). The result is that the 22.9 per cent decline in the crude birth rate minimized the actual change in fertility, as can be seen by the sharper fall (32.0 per cent) in the gross reproduction rate (table 66).

The changes described above show important variations by age. In percentage terms, the decline was greatest at first among older women, and although their fertility continued to fall throughout the period 1950-1970, significant decreases were evident among progressively younger groups.

An additional perspective of the decline in Puerto Rican fertility may be gained by examining the relative contribution of the various age groups to the change in the gross total fertility rate. Between 1950 and 1960, the decline among women aged 30-34 represented nearly 40 per cent of the decline in this measure. More than 90 per cent of the total change occurred in the relatively narrow age range of 25-39 years. During the 1960s, however, not only was the contribution of

101/ José L. Vázquez, loc. cit., p. 859.

102/ It appears to be clear that the substantial out-migration of females of reproductive age was largely responsible for the difference in percentage decline between the crude birth rate and the standardized rate. Vázquez, using information on the fertility of Puerto Rican residents of New York City (where 74 per cent of all residents born in Puerto Rico were enumerated in 1960), estimated that the crude birth rate of all persons born in Puerto Rico declined by only about 7 per cent. Ibid., pp. 861-862.

younger women greater but nearly all age groups contributed significantly to the decline:

Period	Age of women							
	<u>15-49</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>40-44</u>	<u>45-49</u>
1960-1970								
Absolute decline	294.5	23.0	84.0	51.5	50.7	50.5	29.0	5.7
Percentage decline	100.0	7.8	28.5	17.5	17.2	17.2	9.9	1.9

The fact that 46.0 per cent of the decline during 1960-1970 occurred at the peak fertility ages of 20-29 helps to explain the rapidity of the decline in the crude birth rate during the decade, for women of these ages accounted for over 55 per cent of gross total fertility in 1960.

The effect of changes in marital composition upon fertility trends is discussed by Vázquez in the report cited above. Comparison of crude birth rates with age-marriage standardized birth rates indicates that in Puerto Rico, changes in age and marital status accounted for about one half of the reduction during 1950-1960, but had little effect upon declines in the crude birth rate between 1960 and 1967. With respect to recent years, factors related to the control of fertility within marriage appear to be closely associated with declining fertility.

Trinidad and Tobago

For Trinidad and Tobago, a series of crude birth rates based on complete birth registration is available dating back to the early decades of this century.

The trend in fertility parallels that of Jamaica, except that in Trinidad and Tobago, the key changes occurred somewhat earlier. Thus, the lowest levels were achieved during the 1930s, and the subsequent recovery was under way by the mid-1940s. ^{103/} In 1955, the official crude birth rate stood at 41.9 per 1,000. In Population Bulletin, No. 7, the gross reproduction rate for 1949-1951 is estimated at 2.3. By 1955, however, it was officially recorded at 2.82 (table 16). The magnitude of the increase, though substantial, was lower than that in Jamaica. Investigation of census results indicates rises in fertility due both to larger numbers of children born per mother and to decreasing childlessness. ^{104/}

After 1955, the crude birth rate declined, slowly at first and then more rapidly (figure III). The percentage change accelerated in each five-year interval between 1955 and 1970. Between 1965 and 1970, the crude birth rate fell by about 25 per cent, from 32.8 to 24.5 per 1,000, and the gross reproduction rate fell by nearly the same percentage to about 1.7 in 1970 (tables 16 and 66).

It is noteworthy that the pattern of the decline in crude birth rates is very nearly mirrored by that of the age-standardized rates, indicating that changes in age composition had relatively little to do with the decline.

^{103/} Population Bulletin, No. 7, p. 75.

^{104/} G. W. Roberts, "Fertility in some Caribbean countries".

With respect to the contribution of various age groups to the reduction in gross total fertility, there is a negative association with age. The decline among women over age 35 in contribution to gross total fertility lagged behind that of younger women, particularly during the 1960s, when the decrease in fertility among younger women was particularly sharp.

Middle America

Costa Rica

The utility of the registered births for analysis of fertility trends in Costa Rica has been seriously questioned in the past, because of data deficiencies introduced by late registration. Although official publications contained estimates of the number of births by year of occurrence, the validity of these estimates had not been established. It has been shown, however, that official figures including adjustments for late registration adequately reflect fertility levels and trends, especially after 1958. 105/

In contrast with the situation a decade ago, when Costa Rica was generally regarded as a country of very high fertility, the 1972 crude birth rate was about 31 per 1,000 (table 14). The gross reproduction rate of 2.13 106/ was also moderately low compared with that of other countries in Latin America.

The two decades between 1950 and 1970 have witnessed two distinct trends in Costa Rican fertility. Between 1950 and 1959, the crude birth rate rose to very high levels (about 48 per 1,000) though improvement of registration statistics during these years makes it unclear how much of this change reflects an increase in fertility. 107/ Thereafter, a decline set in and by 1970 the level of the crude birth rate had fallen to 33.3 per 1,000, nearly 30 per cent below the 1960 level (table 66). The decline in the gross reproduction rate was only slightly larger, 32.2 per cent. The data in table 15 confirm that changes in age composition of the population had little to do with the decline in the crude birth rate. Thus, the sharp decline in Costa Rican birth rates appears to reflect a genuine decline in fertility.

Births were not tabulated by age of mother until 1953, but an estimate of age-specific fertility rates for 1949-1951 has been made by Gómez. 108/ His

105/ M. Gómez B., loc. cit., pp. 271-308.

106/ Miguel Gómez B. and Jack Reynolds, "Numerator analysis of fertility change in Costa Rica: a methodological examination", Studies in Family Planning, vol. 4, No. 12 (December 1973), p. 319.

107/ The crude birth rate of 42.9 shown in table 14 for 1950 is probably too low because no adjustment was made for under-registration, while the 1950 census total was corrected for under-enumeration. Using Gómez' estimate of total births for 1949-1951 results in the more reasonable figure of 45.5. See Miguel Gómez Barrantes, República de Costa Rica: Evaluación de las estadísticas de nacimientos y de las cifras censales por medio de las estadísticas de asistencia escolar y de defunciones, CELADE Series C, No. 29 (Santiago, Chile, 1964), p. 20.

108/ Ibid.

calculations, based on adjusted census and registration data, result in a gross reproduction rate of about 3.2. The latter figure is regarded as a minimum, indicating that the subsequent decline to 2.1 (table 13) in fertility by no means represents merely a return to a previous level. 109/

An indication of the contribution of different age groups to changes in gross total fertility can be calculated by dividing the absolute change for each group by the absolute change in gross total fertility:

	Age group							
	<u>15-49</u>	<u>15-19</u>	<u>20-24</u>	<u>25-29</u>	<u>30-34</u>	<u>35-39</u>	<u>40-44</u>	<u>45-49</u>
Percentage increase, 1950-1960	100.0	10.6	31.7	17.9	24.0	11.5	4.2	0.1
Percentage decline, 1960-1970	100.0	3.0	25.7	29.2	21.8	15.1	4.5	0.7

The same age groups that were largely responsible for the rise in fertility prior to 1960 were those which contributed heavily to the subsequent decline. Women between the ages of 20 and 34 were responsible for 73.6 per cent of the increase in 1950-1960 and 76.7 per cent of the decline in 1960-1970. However, the change during 1960-1970 was not uniform among all age groups (table 66). Declines appear to have taken place at first among women under 30 and then to have spread to women aged 30-49 during 1965-1970.

Because the pattern of change between 1960 and 1970 closely paralleled the relative contribution of the different age groups to gross total fertility, there was relatively little change in the age pattern of Costa Rican fertility.

El Salvador

Birth registration in El Salvador may have been complete as early as 1922-1925. 110/ There do not appear to have been any significant variations in the adequacy of birth statistics during the period 1950-1970, although information for the most recent years is lacking. 111/

During the 1950s, the crude birth rate in El Salvador was one of the highest in the region. A significant decline has occurred since then, however, and by 1972 a rate of 40.7 was registered. The 1970 gross reproduction rate was about 2.9.

The annual crude birth rate fluctuated between 48 and 50 per 1,000 until about 1963, after which it began to decline (table 14). However, changes in age structure

109/ For estimates of the crude birth rate prior to 1950, see Population Bulletin, No. 7, p. 74.

110/ Ibid., p. 81.

111/ Concerning the years 1950-1961, see Carmen Arretx, "Proyecciones de la población de El Salvador, por sexo y grupos de edad, 1961-1981", CELADE Series A, No. 67; Santiago, Chile, 1967 (mimeographed).

exerted a slightly negative effect upon crude birth rates during the 1950s and early 1960s, but were of scant influence between 1965 and 1970 (table 15). From the gross reproduction rates for 1950-1970, it may be seen that the pattern observed in several other countries of Middle America also occurred in El Salvador. The gross reproduction rate in 1960 was about 9 per cent higher than that in 1950, but the greater change during the decade 1960-1970 resulted in a 1970 rate about 8 per cent lower than the GRR for 1950 (table 66). It is noteworthy that nearly 95 per cent of the decline during 1960-1970 occurred after 1965.

The age-specific rates given in table 16 were calculated for every fifth year and hence do not necessarily show the exact pattern of the trend. None the less, a general idea of variations by age may be seen. Between 1950 and 1960, fertility rose among all groups except women aged 20-24 years. The groups that contributed most heavily to the increase in gross total fertility were those between the ages of 30 and 39. Even while aggregate fertility was rising, however, there was evidence of the beginning of declines among younger women. This trend became more noticeable among women aged 25-34 during the first part of the period 1960-1970, and declines spread to all ages between 1965 and 1970. Fully 73 per cent of the decline in gross total fertility during 1965-1970 occurred among women 20-34 years of age.

Guatemala

Since 1950, birth registration in Guatemala has been considered to be complete. However, there is little firm evidence with which to judge the quality of earlier statistics. 112/

During the 1950-1960 decade, Guatemalan fertility was among the highest in the region (tables 14 and 16). Although this is no longer the case, fertility is still relatively high, as evidenced by crude birth rates of 40-42 per 1,000 in recent years and a gross reproduction rate of 2.8 in 1970.

Crude birth rates close to or in excess of 50 per 1,000 may have existed for some time prior to 1950. 113/ Between 1951 and 1958, there was a slow decline from this level to about 46 per 1,000 (table 17). After a small rise of 3.5 per cent between 1958 and 1961, the decline continued at a faster pace and a fall of 15.4 per cent was registered between 1961 and 1970. Gross reproduction rates are not available for the same years, but during the four five-year periods between 1950 and 1970, the trend in this measure was very similar to that of the crude birth rate. Between 1950 and 1955, the GRR fell slightly, by about 3 per cent; rose somewhat more than did the crude birth rate during 1955-1960, by 4.6 per cent as opposed to the 1.1 per cent increase in the latter; and fell by nearly the same amount, about 13 per cent, during the 1960s. As is suggested by the foregoing comparison, only during 1955-1960 did changes in age composition affect the crude birth rate (table 15). In that period, there was a slight reduction in the proportion of the female population aged 20-29 years.

112/ Population Bulletin, No. 7, p. 82.

113/ Knowledge of fertility levels is complicated by uncertainties concerning the accuracy of census counts and official estimates of mid-year population. See J. D. Early, loc. cit.

The age-specific rates indicate that between 1960 and 1970 fertility declined among women of all ages. There was little variation in percentage change among the different age groups (table 66). By dividing the absolute change for each age group by the total gross decline, an indication of the relative contribution of different age groups to the over-all decline has been calculated:

Period	Age group							
	15-49	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1960-1970								
Absolute decline	182.1	24.3	47.0	41.7	26.5	24.8	12.8	5.0
Percentage decline	100.0	13.3	25.8	22.9	14.6	13.6	7.0	2.8

Although the percentage decline in fertility was greatest among women 40 years of age and older, younger women, mainly those aged 20-29, made substantially greater contributions to the drop in gross total fertility. Nearly half of the decline (48.7 per cent) was due to changes in the fertility of women in these ages.

The broad-peak age type of fertility pattern that characterized age-specific rates in 1950 did not change significantly prior to 1970, but measures for that year indicate a tendency for fertility to have become more highly concentrated in the 20-24 age group and for the fertility pattern to have shifted to the early-peak type (table 20). This change, the declining gross reproduction rates and some probable shifts to later age at marriage (or first union) reinforce the likelihood that fertility regulation is becoming more widespread among older women.

Honduras

Birth registration in Honduras is reported to have been about 86 per cent complete in 1956. 114/ On the basis of adjusted population figures and reverse-survival procedures, Arretx corrected registered births for 1951 and 1961 by factors of 23.5 and 13.5 per cent, respectively. 115/ Results of the Honduran National Demographic Sample Survey yielded a crude birth rate for 1970-1972 that exceeded the official rate for 1972 by 9.6 per cent. 116/ This evidence tends to confirm the suggestion that Honduran birth registration, though incomplete, is sufficiently accurate to serve as a basis for demographic analysis. 117/

According to returns from the Honduran National Demographic Sample Survey, which was fielded between December 1970 and October 1972, the crude birth rate was on the level of 49.3 per 1,000 population and the gross reproduction rate was

114/ Population Bulletin, No. 7, p. 82.

115/ C. Arretx, "Proyecciones de la población de Honduras, por sexo y grupos de edad 1961-1981", p. 59.

116/ Antonio Ortega, "Estimaciones demográficas en países con estadísticas incompletas: La Encuesta Demográfica Nacional de Honduras (EDENH)", Notas de Población, Año 1, vol. 2 (August 1973), pp. 37-43.

117/ O. A. Collver, op. cit.

3.64 (table 18). CELADE, relying in part upon information from the national survey, calculated a crude birth rate of 51.1 for 1965-1970. 118/ These figures would suggest that Honduran fertility is among the highest in Latin America.

Although the crude birth rates show an over-all decline in level between 1950 and 1970, estimates of the gross reproduction rate 119/ suggest that fertility has actually increased during this period. This evidence tends to support the earlier United Nations estimates, 120/ indicating the possibility of an increase of the gross reproduction rate between 1940-1945 and 1951-1956.

The age-specific rates show some change in the pattern of Honduran fertility between 1951 and 1970-1972. The fertility of younger women (ages 15-19) has undergone relatively little change, but that of older women (particularly those aged 35-39) has risen considerably and accounts for nearly all of the rise in gross total fertility during this period. The result is that whereas in 1951, women 20-29 years of age contributed nearly half of gross total fertility and women aged 30-44 about 38 per cent, in 1970-1972, these two groups contributed equally (about 44 per cent each).

Mexico

Although information concerning registered births in Mexico extends back to the beginning of this century, it was only after 1930 that crude birth rates based upon official statistics began to reflect the true level of Mexican fertility. Under-registration in the early 1930s has been estimated to be about 19 per cent, but by 1950, total births were about 94 per cent complete. 121/ Figures for the 1960s are generally accepted without correction. Some uncertainty, however, has arisen regarding recent statistics, as a result of the official estimate that registered births for 1972 were less than 90 per cent complete. 122/

In Mexico, the most populous country of Middle America (the 1972 estimated population was well in excess of 50 million), fertility continues to be high.

118/ Boletín Demográfico, vol. VII, No. 13 (January 1974).

119/ Owing to differences in data sources and analytical procedures, the figures for 1951 and 1961 are not strictly comparable with those for 1970-1972, and this incomparability should be borne in mind as a factor influencing the validity of the following discussion of fertility trends.

120/ Population Bulletin, No. 7, p. 82. Using reverse-survival procedures, the crude birth rate and gross reproduction rate for 1940-1945 were calculated as 43 and 2.9, respectively. For 1951-1956, reverse-survival estimates of the crude birth rate and the gross reproduction rate were 54 and 3.6. Among other factors, differences in the mortality assumption adopted and the extent of revision of the base population were such that these figures are not directly comparable to those of C. Arretx for 1951 and 1961.

121/ Centro de Estudios Económicos y Demográficos, Dinámica de la población de México (Mexico, D.F., El Colegio de México, 1970), p. 48.

122/ Information supplied to the Statistical Office of the United Nations in the 1972 questionnaire. The exact degree of completeness was not stated. Whether this statement is true only of 1972 or applies to earlier years is not known.

Calculations based on registered births and official estimates of the mid-year population indicate a crude birth rate for 1972 of about 45 per 1,000 and for 1970 a gross reproduction rate of 3.3.

Rates for 1950-1970 based on official birth registration indicate that the crude birth rate has remained fairly stable since 1950 (tables 14 and 16). There is some suggestion of an increase, however, from the low of 42.9 in 1952 to about 45.46 during the late 1950s. A slight decline is observed during the last years of the period 1960-1970, followed by another small increase in 1971-1972. The information on changes in age composition (table 15) 123/ facilitates a clearer picture of the trend in fertility as indicated by the gross reproduction rate, which increased by about 10 per cent between 1955 and 1965 before declining by about 2 per cent. 124/

To what extent the observed rise in Mexican fertility is due to improvement of the registration system cannot be determined, although it is likely that at least part of the increase is attributable to this factor. Results of the population census show that an increase in fertility probably did occur.

The average number of children ever born per 1,000 women of reproductive age rose by 8.5 per cent, from 2.45 in 1950 to 2.66 in 1960. 125/ However, because the women had not completed their fertility, this change in period fertility could be merely an outgrowth of a shift in the timing of childbearing by age.

The pattern of changes in age-specific fertility is interesting in that two contrary trends are observed (table 66). The fertility of very young women, particularly those aged 15-19, began to decline around 1955; but that of older women increased rather substantially, resulting in moderate increases in the gross

123/ An additional factor that may distort the annual trend relates to the system of tabulating births by year of registration rather than occurrence. In 1970, for example, of the total births registered, only 38.1 per cent were inscribed before the child reached one month of age, and an additional 46.2 per cent were registered before the age of one year. Almost 16 per cent of those registered were older than one year (Mexico, Anuario Estadístico, 1971, p. 69). To the extent that births registered in a given year actually occurred in previous years, the numerator of the fertility measures calculated with such statistics includes, incorrectly, a mixture of birth cohorts (some of which may have originated more than 10 years previously). Variations in the age of those registered would therefore introduce fluctuations not related to variations in annual fertility.

124/ Estimates of gross reproduction rates lower than those given in table 14 have been reported for the early 1950s. Much appears to depend, however, upon the magnitude of the adjustment for under-registration of births and/or under-enumeration. See Raúl Benítez Zenteno and Gustavo Cabrera Acevedo, Proyecciones de la población de México, 1960-1980 (México, D.F., Banco de México, S.A., 1966), chaps. 1, 2 and 4; Zulma L. Recchini, Proyección de la población de México por sexo y grupos de edades: 1960-1980, CELADE Series C, No. 33 (Santiago, Chile, 1963): chaps. 4 and 6; and Centro de Estudios Económicos y Demográficos, op. cit.

125/ A. O. Zárate, loc. cit., p. 372.

reproduction rate. During the 1960s, fertility levels of older women also tapered off and then began to decline. The initiation of fertility declines among young women and the subsequent spread of this trend to older age groups has been observed elsewhere in countries of Latin America in which fertility has fallen sharply. The appearance of such a pattern in Mexico raises the possibility that it may experience reductions along a similar pattern. On the other hand, there is some indication of a recovery to previous high levels in the crude birth rates reported for 1971 and 1972. At best, the situation is unclear in view of official estimates of under-registration of births for 1972 and the possibility of distortions due to late registration. In addition, the observed changes are very small, and the uncertain quality of the registration data dictates that any such interpretations be made with caution.

Nicaragua

The combination of under-registration of births and the reporting of vital events as relating to a given year, whether occurring during that or a previous year, results in an unreliable series of official annual crude birth rates for Nicaragua. Omissions amounting to 20 per cent (for 1940-1944) 126/ and 13 per cent (for 1954-1963) 127/ have been reported.

Official crude birth rates for the period 1965-1970 varied between 42 and 44 live births per 1,000 population, but CELADE estimates place it at about 49. 128/ In 1970, the estimated gross reproduction rate was about 3.5 (table 18). Nicaraguan fertility, like that of Honduras and the Dominican Republic, appears to be very high compared with that of most other countries in Latin America.

According to the estimates of the gross reproduction rate (table 18), there may have been a substantial rise between 1950 and 1970, 129/ although it is also possible that the apparent increases are due to variations in the methodology employed in their calculation.

Assuming the age-specific rates to be comparable, 130/ close inspection reveals that whereas the rise in fertility between 1950 and 1963 was primarily due

126/ Population Bulletin, No. 7, p. 83.

127/ G. A. Macció, op. cit., p. 16.

128/ Boletín Demográfico, vol. VII, No. 13 (January 1974).

129/ Macció, writing in 1967, suggested that observed increases as of that year may have begun during the 1940s. He also argues that this rise cannot be exclusively attributed to improvements in the registration system in view of the absence of widespread and prolonged efforts to exercise fundamental improvements. G. A. Macció, op. cit., pp. 38 and 40.

130/ Owing to the lack of adequate information concerning international migration, Macció assumed a "closed" population in revising the Nicaraguan census and vital registration statistics used to calculate age-specific fertility rates. The continued absence of reliable information concerning either the volume or characteristics of migration (especially that of Nicaraguans to north-western Costa Rica) makes it difficult to assess the possible effect of this factor upon the estimates presented. See Julio Morales, Panorama de la migración internacional entre países latinoamericanos, CELADE Series A, No. 121 (Santiago, Chile, 1974).

to increases among younger women, aged 20-29 years, the change between 1963 and 1970 is attributable to women over 30. Furthermore, the higher gross reproduction rate indicated for 1970 appears to be the net result of increased fertility among women aged 30-49 and somewhat lower fertility among women at younger ages. These rather complex changes produced a higher concentration of fertility among women aged 20-29 in 1970, so that the 1970 age distribution of fertility resembles a late-peak type age pattern in contrast to the broad-peak type pattern that described this distribution in 1950.

Panama

Prior to the late 1950s, Panamanian birth registration was incomplete. Omissions amounted to 10 per cent or more; ^{131/} and during the period 1948-1952, under-registration probably exceeded that figure. ^{132/} Beginning in the late 1950s, improvements were made so that these statistics are currently regarded as relatively complete. After 1966, however, statistics of registered births include those occurring to the entire tribal Indian population, which numbered about 62,000 in 1960. These births are subject to considerable under-registration, ^{133/} and their inclusion probably introduced some distortion into the annual rates.

Because of the improvement in the quality of birth registration during 1950-1960, it is impossible to determine whether the trend in crude birth rates during those years reflects a rise in actual fertility (table 14). As indicated above, births at the beginning of the decade appear to have been substantially under-registered, making it risky to use 1950 as a base year for comparisons. At any rate, should an increase have occurred during the 1950s, it was probably of more moderate proportions than those indicated by official figures. The percentage change in the crude birth rate between 1955 and 1960 was less than 4 per cent (table 66).

The trend of the crude birth rate during the 1960s probably does reflect a genuine change in fertility. Both the crude birth rate and the gross reproduction rate declined by about 5-6 per cent. The actual decline may have been somewhat smaller in view of improving registration. On the other hand, the addition of about 50 per cent of the births among tribal Indians no doubt inflated rates towards the end of this decade, since estimates of their total number had previously been included in mid-year population figures.

Throughout the 1960s, therefore, the registered crude birth rate fluctuated downward, but the changes were not in fact very marked. The problems of registration make it extremely difficult to assess the true trend. However, it appears reasonable to conclude from available data that the crude birth rate in Panama has been at a rather modest level, at least over the past two decades. Recently, available

^{131/} Population Bulletin, No. 7, pp. 83-84.

^{132/} Hildebrando Araica, "Proyección de la Republica de Panamá, 1950-1980", in Centro Latinoamericano de Demografía, República de Panamá, Volumen I, Proyecciones de población, 1950-1980, Series C, No. 19 (Santiago, Chile, 1964), p. 26.

^{133/} Hildebrando Araica, "Tendencias actuales de la fecundidad y diferenciales en Panamá", in Conferencia Regional Latinoamericana de Población (Actas 1) (Mexico, D.F., El Colegio de México, 1972), p. 302.

official data for the early 1970s have appeared to verify the onset of a decline in fertility. Between 1970 and 1973, the crude birth rate declined by 10.5 per cent and the gross reproduction rate fell by 11.0 per cent. In 1973, the official crude birth rate was registered at 33.2 and the gross reproduction rate at 2.19. 134/

Temperate South America

Argentina

Birth registration has been relatively complete in Argentina for some time. During the period under consideration, omissions probably did not exceed 2-3 per cent. 135/ By 1950, Argentine fertility had already declined to moderately low levels; 136/ at that time, the crude birth rate was about 26 per 1,000 and the gross reproduction rate was 1.55. The crude birth rate for 1968 (the most recent year for which information is available) shows a further decline of about 15 per cent to 21.9 per 1,000. A gross reproduction rate of 1.48 has been calculated for 1965, which is 4.5 per cent below the 1950 level.

Although the crude birth rate declined by 12.8 per cent from 1950 to 1965, the standardized birth rate declined by only 3.5 per cent (table 65). This difference is not unexpected in view of the decline, though modest, in the proportion of women of reproductive age in general and of women aged 20-29 years in particular.

Fertility patterns by age did not change markedly. The slight decline in the gross reproduction rate between 1960 and 1965 was due almost entirely to reductions in the fertility of women 20-24 years of age (table 16).

Two factors make it difficult to interpret Argentine fertility trends during the 1960s. First, prior to 1965, births were reported according to year of occurrence. For that year, however, the births of two provinces, which represented 11.8 per cent of total births, were reported by year of registration. Beginning in 1968, births for all but two provinces were reported by year of registration. 137/ For 1965-1968, therefore, it is likely that an undetermined number of births were registered in a year other than that in which they occurred, introducing some degree of distortion into annual rates.

The second factor that may have influenced fertility trends is international migration. Neither its volume nor its possible impact upon fertility can be determined with any certainty, because much of the migration from neighbouring

134/ These figures are not strictly comparable with those presented in table 16 because the latter are based on estimates of the female population prepared by the Latin American Demographic Centre (CELADE). See note e/ of table 16.

135/ Population Bulletin, No. 7, p. 85.

136/ This decline, which dates from the end of the nineteenth century, has been widely studied. See, for example, Population Bulletin, No. 7, chap. V; and Centro Latinoamericano de Demografía, Temas de población de la Argentina, Aspectos demográficos, Series E, No. 13 (Santiago, Chile, 1973).

137/ Argentina, Boletín de Estadística, October/December 1972, table 1.

countries (principally Paraguay, Bolivia and Chile) has gone unrecorded. It has been estimated that in 1970 as many as 1 million persons originating in neighbouring countries were living in Argentina. ^{138/} There are indications that the fertility of these migrants is significantly higher than that of the native-born population. ^{139/} The fertility of the latter group, therefore, may have declined somewhat more than is indicated by figures for the country as a whole.

Chile

Chilean birth registration has long been considered relatively complete, but there was no agreement as to the extent of omissions until recently. The National Statistical Institute now publishes registered births corrected for under-registration of about 10 per cent. ^{140/} In calculating the figures given in tables 14 and 16, Zubicueta used registered births adjusted by an average of 10 per cent and corrected census data for 1952, 1960 and 1970. ^{141/} These figures are consistent with official statistics, and this source provides more detailed information concerning age-specific fertility than is available from official sources.

For most of this century, the trend in Chilean fertility was very similar to that of Argentina and Uruguay, but at a substantially higher level. In 1950, the crude birth rate was about 35 per 1,000. Although the trend since then has been more similar to that observed in some Middle American countries where fertility rose and then fell, the end result was a level of fertility not very much higher than that of Argentina and Uruguay. In 1970, the crude birth rate was about 27 per 1,000, and the gross reproduction rate had fallen to 1.78.

Because the requisite information with which to calculate standardized rates for the 1950s was not available, the index of the effect of changes in age composition upon the crude birth rate was calculated using the gross reproduction rate, a measure also relatively independent of such changes (table 15). These figures indicate that changes in age composition had relatively little influence on trends in the crude birth rate. Between 1950 and 1960, the crude birth rate and the gross reproduction rate rose by similar amounts, 13.0 and 14.1 per cent, respectively (tables 16 and 66). In 1960, the number of live births per 1,000 population had attained a level of 38.3 and the GRR had reached 2.51. During 1960-1970, the percentage decline in these two measures was virtually identical, about 29 per cent. During 1952-1960, all women except those over 40 years of age contributed to the increase in gross total fertility, but the change among women aged 25-34 was particularly sharp. Referring to the period 1969-1970, the age pattern of the decline is interesting for a number of reasons. The same age groups (25-34) that were largely responsible for the increase during 1952-1960 contributed most heavily, in absolute terms, to the subsequent decline.

^{138/} Julio Morales, *op. cit.*, p. 14.

^{139/} E. M. Brito V., *loc. cit.*, pp. 156-185.

^{140/} Chile, National Statistical Institute, *Demografía, Año 1969*, p. 5.

^{141/} S. Zubicueta, "Chile: IV Censo de Población de 1970. Evaluación y ajuste y proyecciones de población 1970-2000, en base a la muestra de adelanto de cifras", Santiago, Chile, Centro Latinoamericano de Demografía, 1972 (unpublished).

The fertility of all age groups fell, but the percentage reduction is closely associated with age. The figures given in table 66 suggest a direct association between age and percentage fall in fertility.

Uruguay

It is not possible to document reliably the level and trend of Uruguayan fertility, except in regard to very recent years. This difficulty is due primarily to the absence of periodic censuses, which has hindered the preparation of reliable population estimates (censuses were taken in 1900, 1908 and 1963). Birth registration, on the other hand, was probably about 90 per cent complete during the early 1950s and has improved steadily since that time. 142/

Official figures based on births tabulated by year of registration indicate that from 1950 to 1962, the crude birth rate rose from about 19 to 25 per 1,000 population. This increase may have been the result of improvements in birth registration coupled with increasingly underestimated mid-year populations rather than to a genuine rise in the birth rate. A figure of 23.3 was recorded for 1963, and the gross reproduction rate for that year has been calculated to be about 1.4. 143/ The registered crude birth rate declined slightly to about 22 per 1,000 in 1965 and has remained at about that level.

Age-specific fertility rates, available only for 1963, show that, as in Argentina, fertility is heavily concentrated at ages 20-29 (table 19). Nearly 60 per cent of gross total fertility occurred to women of these ages.

Tropical South America

Bolivia

There is no firm basis for assessing either the level or the trend of fertility in Bolivia. Defective birth registration and weak population estimates due to the lack of a population census since 1950 provide an unreliable official crude birth rate. The reported official birth rate for the period 1950-1955 was between 41 and 42 per 1,000 population; in 1956, it fell to 30.6 and declined to and remained in the mid-20s until 1966. Rates for recent years, affected by both late and non-registration, are even lower. CELADE has estimated the crude birth for 1965-1970 at 43.9 per 1,000, but even this rate is a provisional estimate based on the projection of estimated demographic parameters from 1950. 144/

142/ Agustín García L., Uruguay: Proyección de la población por sexo y grupos de edades, 1963-2003, CELADE Series A, No. 101 (Santiago, Chile, 1970), pp. 8-9.

143/ Ibid., p. 12, based on census returns adjusted for age misstatement and under-enumeration, and births adjusted for late registration and corrected for 3.6 per cent omissions. Because of these adjustments, the crude birth rate calculated from these figures and presented in table 16 differs slightly from the official crude birth rate.

144/ Boletín Demográfico, vol. VII, No. 13 (January 1974).

The first study of this series 145/ provided an estimated gross reproduction rate of 2.9 for the years 1940-1945; Somoza's estimate for 1960 is only slightly higher (table 18).

Brazil

In the absence of an adequate vital registration system, estimates of Brazilian fertility are generally derived from census data. The fertility estimates for 1945, 1955 and 1965 (table 18) are based on comparisons of differences in the total number of children born to birth cohorts of women enumerated in the four censuses taken between 1940 and 1970. 146/ The estimates for 1970 are based on a subsample of 1970 census data on the number of children born in the year prior to the census, adjusted for about 13 per cent underestimation of births. 147/

These estimates suggest that the crude birth rate declined slowly from about 42 per cent per 1,000 in the mid-1940s to approximately 39 by the mid-1960s. If the estimate for 1970 of 36.3 can be accepted, it would appear that the birth rate has experienced a somewhat accelerated decline in recent years. 148/ Changes in the gross reproduction rate show a similar pattern. Additional evidence indicating a decline in fertility is found in the reduction in the percentage of population enumerated at ages 0-4 in the 1960 and 1970 censuses. In view of the indications that infant and early childhood mortality were declining during that time, it would appear that, barring a deterioration in the quality of census results between 1960 and 1970, the apparent reduction in enumerated numbers of children aged 0-4 years was due to lower fertility. 149/

Because of the vast size of Brazil and its large population, which was officially estimated at nearly 102 million in 1970, the national fertility level and trends may obscure important internal variations. Data from the 1960 and 1970

145/ Population Bulletin, No. 7, p. 66.

146/ Only minor adjustments were introduced in the data used to calculate the gross reproduction rate and age-specific fertility. For the calculation of crude birth rates, adjusted estimates of the mid-year population were employed. See Carmen Arretx, "Revisión de las estimaciones de la fecundidad de Brasil, a base de los censos de 1940, 1950, 1960 y 1970", CELADE report S.66/25, Santiago, Chile, 1970 (mimeographed); and idem, "Fertility estimates derived from information on children ever born using data from successive censuses", in International Union for the Scientific Study of Population, International Population Conference, Liège, 1973 (Liège, 1974), vol. 2, pp. 247-261.

147/ Richard Irwin and Evelyn Spielman, "Estimativas e projeções preliminares das taxas de fecundidade: Brasil, 1970 a 2000", Revista Brasileira de Estatística, vol. 34, No. 134 (April/June 1973), pp. 252-270.

148/ A slightly higher estimate of the 1970 crude birth rate (37.3) is presented in C. Poláez and G. Martine, loc. cit., pp. 95-125. The method of calculation is not given.

149/ See United States of America, Department of Commerce, Demographic Estimates based on the 1970 Population Census of Brazil, by Jerrold W. Huguet, Research Document No. 5, n.d., p. 5; and Thomas W. Merrick, "Interregional differences in fertility in Brazil, 1950-1970", Demography, vol. 11, No. 3 (August 1974), pp. 423-440.

censuses indicate that fertility in south-eastern Brazil, a region that has long had significantly lower fertility levels than the rest of the country, experienced the sharpest declines. More moderate declines occurred in all but the sparsely settled northern region, where fertility increased. In general, the level of "modernization and dynamism of the respective regional economies" is closely associated with the extent of fertility change. 150/ There is evidence that the pattern of interregional migration is complex and has led to a widening, rather than a narrowing, of regional fertility differentials. 151/

Colombia

Under-registration of births in Colombia during the period 1951-1964 was probably at least 20 per cent. 152/ For this reason, estimates of fertility for these years depend heavily upon analysis of census information. Nearly all such estimates indicate that fertility prior to the 1960s was high and very nearly constant at about 45-47 per 1,000. 153/

The estimated gross reproduction rates suggest a rise of about 11 per cent between 1951 and 1965 (table 18). However, owing to the deficient nature of vital registration data and to difficulties in estimating the amount of under-enumeration in the 1951 census, it is not possible to state with any assurance whether the trend in these rates reflected a genuine rise in fertility. 154/

Since 1965, there have been indications of the beginning of a decline in Colombian fertility. On the basis of information collected in 1969 in the Colombia National Fertility Survey, a crude birth rate of 41.3 per 1,000 and a gross reproduction rate of 2.94 were calculated for 1967-1968. Comparison with estimates for 1965 suggests a decline of approximately 9 per cent in the gross reproduction rate. In view of the disparity of the data upon which these two estimates are based, perhaps a better indication of changes during the 1960s is provided by the analysis of pregnancy histories recorded in the national survey, which indicates a decline of 14 per cent in age-standardized general fertility rates between 1960-1964 and 1967-1968. This analysis also indicates that women

150/ C. Peláez and G. Martine, loc. cit., p. 100.

151/ T. W. Herrick, loc. cit.

152/ Jorge Arévalo, Colombia: Ajuste del censo de población de 1964, CELADE Series A, No. 89 (Santiago, Chile, 1968), p. 18. Alvaro López Toro reports a much higher figure of 32.8 per cent for the same period; cited in Elena Prada Salas, "Aplicación de la técnica de historia de embarazo para el análisis de cambios en fecundidad en Colombia", in Rodolfo Heredia B. and Elena Prada S., eds., La Fecundidad en Colombia. Encuesta nacional de fecundidad (Bogotá, Asociación Colombiana de Facultades de Medicina, 1973), p. 7.

153/ See, for example, J. Arévalo, op. cit.; and Alvaro López, "New techniques to estimate fertility and mortality", Milbank Memorial Fund Quarterly, vol. XLVI, No. 3 (July 1968), part 2, pp. 75-83.

154/ See J. Arévalo, op. cit., and Rodolfo Heredia B., "Naturaleza y características de las fuentes de datos demográficos en el país", Revista de Cámara de Comercio de Bogotá, vol. 3, No. 12 (September 1973), pp. 89-105.

aged 25-34 contributed most heavily to the change, although decreases occurred among all women 15-49 years of age. ^{155/} Bearing in mind the inadequacies of the data, especially those pertaining to age, it is noteworthy that the pattern of fertility change by age is somewhat similar to trends in some countries of Latin America that have satisfactory statistics, such as Guadeloupe, Martinique, Panama and Venezuela, where declines among the youngest women were accompanied by increases among older women before reductions spread to all age groups.

Ecuador

Although officially reported to be incomplete for the entire period under consideration, numerous investigations have concluded that birth registration in Ecuador is, in fact, fairly complete. ^{156/} This appears to have been the case up until about 1966, but since that time there are indications that the quality of the registration of births has deteriorated. ^{157/}

Official reports show that the crude birth rate fluctuated between about 44 and 47 per 1,000 population between 1950 and 1963. Gross reproduction rates based on official data, with minor adjustments for under-registration, confirm the fairly high level of Ecuadorian fertility, although a very slight decline is suggested (table 18).

Crude birth rates calculated on the basis of registered births appear to have fallen by a considerable magnitude between 1963 and 1970, when a level of 37.8 per 1,000 was recorded. However, the probability of increasing under-registration of births indicates the crude birth rate of 44.6 for 1965-1970 estimated by CELADE ^{158/} as probably being closer to the actual level of fertility.

Guyana

Birth registration has been considered complete for some years in Guyana. For recent years, however, only crude birth rates are available from official sources. Trends in Guyana prior to 1960 appear to have paralleled those in neighbouring Surinam, but at a somewhat lower level of fertility. The gross reproduction rate

^{155/} H. G. Elkins, loc. cit., pp. 29-42.

^{156/} See, for example, Population Bulletin, No. 7, p. 87; O. A. Collver, op. cit., p. 114; Zulma Camisa, loc. cit.; and Pedro M. Merlo, Ecuador: Evaluación y ajuste de los censos de población de 1950 y 1962 y proyecciones de la población total del año 1960 al año 2000, CELADE Series C, No. 113 (Santiago, Chile, 1969).

^{157/} In an unpublished analysis made available to the United Nations, it is argued that although such factors as urbanization, industrialization and educational improvements among women at fertile ages may have precipitated some of the recent decline in the crude birth rate, it is likely that a major portion of the reduction arose as a result of the Civil Registry Law of 1966. Noting that the decline in registered births coincides with its promulgation, various features of this law are indicated as having an adverse effect upon the completeness and timing of birth registration.

^{158/} Boletín Demográfico, vol. VII, No. 13 (January 1974).

rose from 2.6 to 3.0 during 1950-1960. 159/ Tabulations of births by age of mother are not available for years after 1961 so that the course of this measure over the succeeding decade cannot be determined. The crude birth rate reached a high of approximately 44 per 1,000 early in the 1950s and declined slowly to 38.2 by 1963 (table 14).

Paraguay

Adequate birth registration data are also unavailable for Paraguay. Crude birth rates for the years 1960-1970, based on official information, are from 18 to 44 per cent lower than the CELADE estimate of 43.7 per 1,000. 160/

The fertility estimates for 1960 should be considered tentative (table 18). They were calculated on the basis of 1950 and 1962 adjusted population census data. 161/ The crude birth rate was found to be about 44 per 1,000 and the gross reproduction rate 3.20. There is no way of knowing whether any basis for determining what trends, if any, occurred in the fertility of Paraguayan women since 1960.

Peru

Birth registration is incomplete in Peru. The estimates for 1961 (table 18) were calculated by applying the Brass technique to census information on the number of children per woman in combination with registration data. 162/ Those for 1969 are also the result of the application of the Brass technique; but, in this instance, information from a national sample of women in the reproductive ages provided the basic data. 163/

There is some question as to the level and trend in fertility prior to 1961. Investigators disagree as to whether the level of fertility around 1940 was higher or lower than in 1961. Estimates of the gross reproduction rate for the period 1940-1961 vary from a low of 2.93 164/ to a high of 3.2. 165/ A recent

159/ Population Bulletin, No. 7, p. 76.

160/ Boletín Demográfico, vol. VII, No. 13 (January 1974).

161/ Jorge Vidal L., Paraguay: Proyección de la población, por sexo y grupos de edades, 1960-2000, CELADE Series A, No. 95 (Santiago, Chile, 1969), p. 7. The method employed is that known as "Thompson's Replacement Index". Other approaches considered that depend solely upon census information yielded estimates that were deemed too low.

162/ Centro de Estudios de Población y Desarrollo, Informe Demográfico del Perú (Lima, 1972).

163/ Data of Centro de Estudios de Población y Desarrollo, cited in A. M. Conning, "Latin American fertility trends and influencing factors", CELADE report S.91/12, Santiago, Chile, 1972.

164/ Centro de Estudios de Población y Desarrollo, Informe Demográfico del Perú.

165/ Guillermo Abad, "Peru: proyecciones de la población por sexo y grupos quinquenales de edades, período 1960-2000", CELADE Series C, No. 115; Santiago, Chile 1969, p. 43 (mimeographed).

government publication 166/ suggests that instead of slowly declining fertility, it is more reasonable to assume that there was a slight rise occurred between 1940 and 1961.

Both the crude birth rate and the gross reproduction rate suggest a slight decline between 1961 and 1969. For the later date, the crude birth rate is estimated at 42.6 and the gross reproduction rate at about 3.0. The pattern of change by age, assuming comparability between the two estimates, was irregular, with the greatest declines occurring among very young women.

Surinam

Birth registration in Surinam is reported to have been complete only since 1958, and information is available from official publications for only five of the years from 1960 to 1970. Using official sources, Lamur 167/ recently compiled a series of crude birth rates and gross reproduction rates (see tables 14 and 16 above).

Between 1950 and 1962, the crude birth rate rose by about 25 per cent, from 39.0 to 48.7. In addition, information from official sources cited by Lamur shows that the general fertility rate (number of live births per 1,000 women aged 15-44) increased by the same relative amount, from 205.2 in 1951 to 256.9 in 1962. Both measures are, though in different ways, subject to the effect of changes in age composition. However, a comparison of the proportion of women at the ages of highest fertility (20-29) shows virtually no change in this figure between 1950 and 1962. Thus, it is unlikely that changes in age composition account for the increase. The effect of improvement in vital registration cannot be ruled out as having contributed to the change, although neither can the possibility of a genuine rise in fertility, as Lamur states that there were significant improvements in public health and nutrition prior to and during this period.

After 1962, the crude birth rate declined rather sharply; and by 1970, it had reached 36.5 per 1,000, a 25 per cent reduction. Detailed information by age is available only for 1964-1970. During the period 1965-1970, gross reproduction rates excluding births to women under 15 and over 45 168/ (estimated to constitute about 0.7 per cent of all births) declined from 3.1 to 2.7 (table 16), about 13 per cent, and paralleled very closely the 14 per cent decline in the crude birth rate, which dropped from 42.3 in 1965 to 36.5 in 1970, despite indications that emigration had led to a decrease during this period in the proportion of women aged 20-29. There were significant declines in the fertility of women under 40 years of age (table 66).

166/ Peru, La Población del Perú, CICRED Series (Lima, 1974), pp. 57-58.

167/ Unless otherwise indicated, data in the section on Surinam taken from H. B. Lamur, The Demographic Evolution of Surinam, 1920-1970, trans. by Dirk H. van der Elst (The Hague, Martinus Nijhoff, 1973) pp. 39-56.

168/ It is normal procedure to attribute births to women under 15 to those aged 15-19 and births to women over 50 to those aged 45-49.

Venezuela

Birth registration statistics are officially reported to be incomplete, but various sources ^{169/} indicate that they have been fairly adequate since about 1960. During 1940-1950, omissions appear to have varied by between 10 and 15 per cent, ^{170/} although they were reduced during the following decade and have been estimated at about 4 per cent in 1960. ^{171/}

Figures based on official statistics show that between 1950-1951 and 1961, the crude birth rate rose by slightly less than 5 per cent, from 43.3 to 45.3, while the gross reproduction rate increased from 2.8 to 3.3, a change of about 18 per cent (table 16). There was a decline in the proportion of women in the reproductive ages of from 23.7 to 21.8 per cent of the total population (table 17), which prevented an increase in crude birth rate comparable to that of the gross reproduction rate. It is possible that there was a genuine increase in fertility during the 1950s, inasmuch as the improvements in birth registration, indicated previously, do not appear to account for all of the rise in the gross reproduction rate. It may be further stated that an analysis of census data for 1951 and 1961 indicates a rise of 6.3 per cent in the number of children ever born to all mothers, an increase that is attributed to "improving health and economic conditions, increasing stability in marriages, increasing proportions of legally married and declining proportions of widows". ^{172/} Decreased childlessness also appears to have played a role in the increase.

Between 1961 and 1971, fertility declined substantially, apparently slightly more than it increased during the 1950s. The crude birth rate fell by about 16 per cent to 38.3 and the gross reproduction rate declined by 20 per cent to about 2.6. Actual fertility probably fell by a similar amount, as there is no indication of a deterioration in birth registration. The age-specific rates indicate that the reduction in fertility took place primarily among women 20-29, but that some decline occurred at all ages. The result is that fertility was more evenly distributed among the prime reproductive ages (20-34) in 1971 than previously (table 19).

^{169/} See Population Bulletin, No. 7, p. 88; Zulma Camisa, *loc. cit.*; E. E. Arriaga, New Life Tables for Latin American Populations ..., p. 263; and F. W. Oechsli and D. Kirk, "Modernization and the Caribbean", Economic Development and Cultural Change, vol. 23, No. 3 (April 1975), pp. 409-411.

^{170/} Population Bulletin, No. 7, p. 81; and Universidad del Zulia, Facultad de Ciencias Económicas y Sociales, Centro de Investigaciones Económicas; and Comité Internacional de Coordinación de la Investigación Nacional en Demografía (CICRED), Venezuela: Aspectos demográficos de la población, Año Mundial de la Población (Maracaibo, Venezuela, 1974), p. 12.

^{171/} E. E. Arriaga, New Life Tables for Latin American Populations ..., p. 263.

^{172/} Maria Davidson, "Some demographic and social correlates of fertility in Venezuela", Estadística, vol. XXVII, No. 105 (December 1969), pp. 600-601.

V. ASIA

Conditions in most of the countries of Asia are such that the estimated fertility level is, on the whole, comparatively high, the most recent available estimates of the crude birth rate varying from 18.8 in Japan and 20.0 in Hong Kong to possibly 54 births per 1,000 population in Nepal. Moreover, in 33 of the 38 countries for which recent crude birth rates are available, this measure ranges from about 30 to as much as 54 per 1,000 (table 21 and map 13). There are only five countries (Cyprus, Hong Kong, Israel, Japan and Singapore) for which crude birth rates significantly below 30 may currently be observed. Similarly, among the countries for which recent estimates of the gross reproduction rate are available, roughly the same small group of countries manifests moderate or relatively low fertility, i.e., rates between 1.0 and 1.9; but among the remaining countries, gross reproduction rates between 2.0 and 3.6 are indicated. Thus, the range in gross reproduction rates among the countries of Asia is also wide, from 1.0 in Japan and 1.7 in Hong Kong to 3.6 in Kuwait (table 21 and map 14). According to the most recent estimates ^{1/} of regional averages, the countries of high fertility are in South Asia. For the period 1970-1975, the number of live births per 1,000 in the three regions, namely, Eastern South Asia, Middle South Asia and Western South Asia, have been estimated at between 42 and 43, with the gross reproduction rate approximately between 2.9 and 3.1. On the other hand, current estimates place the countries of low fertility in East Asia. During the same period, the crude birth rate for Japan, which is demographically out of step with the rest of Asia, was about 19.2 per 1,000, with a corresponding gross reproduction rate of 1.0. For China and the other areas of East Asia (the Democratic People's Republic of Korea, Hong Kong, Mongolia and the Republic of Korea), the respective crude birth rates have been estimated at 26.9 and 30.2 per 1,000; the gross reproduction rates are 2.1 or under. The levels of the most recent current estimates of the crude birth rates and gross reproduction rates are shown in map 13 and figure V, respectively. Map 14 and figure VI show the respective estimates for a year around 1960; but, for reasons specified above in chapter II, changes evident when the maps were prepared are not necessarily indicative of trends.

There is evidence that a decline has been under way in a few countries of Asia; but in others, fertility levels have remained stable or may even have increased. Of course, Asia is a continent of heterogeneous people, and there are vast differences among them in culture and in levels of socio-economic development. These and other related differences, along with the quality of the data, help to account for the wide range of fertility levels and the variations in conditions and patterns of reproduction. But there is another factor of substantial significance and of which, therefore, account must be taken in any assessment of fertility levels and trends in countries of Asia: a number of them have long-standing

^{1/} "Selected world demographic indicators by countries, 1950-2000" (ESA/P/WP.55), pp. 98-142.

Table 21. Estimated fertility levels in countries of Asia

Major area, region and country	Most recent estimates				Estimates given in Population Bulletin, No. 7			
	Year or period ^{a/}	Method of esti- mation	Crude birth- rate (births per 1 000 population)	Gross repro- duction rate	Year or period	Method of esti- mation	Crude birth- rate (births per 1 000 population)	Gross repro- duction rate
East Asia								
China	1972	D	31.0	...	1957	D	(37-40)	...
Japan ^{b/}	1970	A	18.8	1.0	1960 ^{c/}	A	17.4	1.0
Japan	1970	A	18.8	1.0	1960 ^{c/}	A	17.3	1.0
Okinawa prefecture	1970	A	22.3	1.5	1960 ^{c/}	A	25.0	1.6
Other East Asia								
Democratic People's Republic of Korea	1972	C (6)	44.0	...	...	D	...	...
Hong Kong	1970	A	20.0	1.7	1961	A	34.2	2.4
Mongolia	1972	C (6)	40.0	...	1958	D	(39)	...
Republic of Korea	1970	C (4)	29.0	1.9	1950-1955	C	45.0	3.1
South Asia								
Eastern South Asia								
Burma	1972	C (6)	40.0	...	1948-1954	C (1)	43.0	2.6
Democratic Kampuchea	1957-1962 ^{d/}	C (5)	45.9	3.5	1948-1954	C (1)	51.0	3.3
East Timor	1970	A	43.0	...	...	D	...	...
Indonesia ^{e/}	1966-1970 ^{f/}	C (2)	44.0	2.7	1951-1956 ^{g/}	C (1)	52.0	2.8
Lao People's Democratic Republic	1972	C (6)	42.0	...	...	D	...	...
Malaysia	1972	C (6)	38.0	...	...	...	...	...
Peninsular Malaysia	1970	A	34.0	2.5	1960	A	40.9	2.9
Sabah and Sarawak	...	D	...	...	1950-1955 ^{h/}	C (1)	54.0	3.4
Philippines	1970 ^{i/}	D	43.2	2.9	1950-1955	C (1)	50.0	3.5
Singapore	1970	A	22.1	1.5	1960	A	37.5 ^{j/}	2.8
Socialist Republic of Viet Nam								
Former Democratic Republic of Viet Nam	...	D	...	...	1960	D	(47.0)	...
Former Republic of South Viet Nam	1973 ^{k/}	D	42.0	3.3	...	D	...	...
Thailand	1964-1965 ^{l/}	B	41.8	3.1	1950-1955	C (1)	46.0	3.2
Middle South Asia								
Afghanistan	1972	C (6)	51.0	...	...	D	...	...
Bangladesh	1961-1971 ^{m/}	C (6)	48.0-51.0	3.0-3.4	^{n/}	...	...	...
Bhutan	1972	C (6)	47.0	...	...	D	...	...
India	1970 ^{o/}	B	37.0	2.7 ^{p/}	1958-1959	B	39.0	2.5
Iran	... ^{q/}	C (6)	48.0	3.4	1946-1951	C (1)	48.0	3.1
Nepal	1965-1966 ^{r/}	C (6)	50.0-54.0	...	1944-1949	C (1)	45.0	2.7
Pakistan	1966 ^{s/}	C (6)	50.0	...	1946-1951 ^{t/}	C (1)	48.0	3.3
Sri Lanka	1970	A	29.4	2.2 ^{u/}	1960	A	36.6	2.5

Table 21 (continued)

Major area, region and country	Most recent estimates			Estimates given in Population Bulletin, No. 7				
	Year or period a/	Method of esti- mation	Crude birth- rate (births per 1 000 population)	Gross repro- duction rate	Year or period	Method of esti- mation	Crude birth- rate (births per 1 000 population)	Gross repro- duction rate
Western South Asia								
Cyprus	1970	A	21.3	1.3	1960	A	25.3	1.7
Democratic Yemen	1972	C (6)	50.0	...	...	D	...	...
Iraq	1965 ^{y/}	C (4)	49.5	3.5	1947-1952	C (1)	48.0	3.3
Israel	1970	A	26.7	1.9	1960 ^{w/}	A	26.6	1.9
Jordan	1972 ^{x/}	B	45.0	3.4	1951-1956	C (1)	45.0	3.4
Kuwait	1965 ^{y/}	C (4)	45.2	3.6	z/	...	...	...
Lebanon	1970 ^{aa/}	B	40.9	...	1960	D	(39.0)	...
Oman	1972	C (6)	50.0	...	...	D	...	...
Saudi Arabia	1972	C (6)	50.0	...	...	D	...	...
Syrian Arab Republic	1965 ^{bb/}	C (4)	47.9	3.5	1961	D	(25.0)	...
Turkey	1965-1967 ^{cc/}	B	40.0	2.6	1950-1955	C (1)	(43.0)	2.9
Yemen	... ^{dd/}	D	45.0-50.0	...	...	D	...	...

Note: Methods of estimation:

A: "complete" birth registration statistics;

B: birth data from sample survey;

C: other estimates, including estimates whose basis cannot be clearly determined from available information:

(1) "reverse-survival" method;

(2) on the number of children reported as having been born to each woman during her lifetime;

(3) on the reported births occurring during the 12 months prior to a survey or census and the number of children ever born, both by age of mother;

(4) on the analysis of the age composition of the population, supplemented by indications of the rate of natural increase or of an approximate level of mortality;

(5) on the number of reported births by age of mother in the year preceding the census, adjusted by graphic techniques;

(6) basis either unknown or cannot be clearly determined from available information;

D: either no data available or birth registration statistics so deficient as to be useless for describing order of magnitude.

a/ Rates for 1972 taken from United States of America, Bureau of the Census, International Statistical Programs Center, "Research document No. 6", Washington D.C., Department of Commerce, 13 March 1974.

b/ Including data for Okinawa prefecture, formerly referred to as the Ryukyu Islands.

c/ Most recent revised rates; for 1960, crude birth-rates and gross reproduction rates of 17.2 and 1.0, respectively, for Japan; and 23.1 and 1.6, respectively, for Okinawa prefecture (formerly referred to as the Ryukyu Islands), were published in Population Bulletin of the United Nations No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XIII.2).d/ George S. Siampos, "The population of Cambodia, 1945-1980", The Milbank Memorial Fund Quarterly, vol. XLVIII, No. 3 (July 1970). p. 336.

e/ Including West Irian.

f/ Suwardjono Surjaningrat and others, "Indonesia - East Asia review, 1973", Studies in Family Planning, vol. 5, No. 5 (May 1974), pp. 148-149. See also Geoffrey McNicoll and Si Gde Made Mamas, The Demographic Situation in Indonesia, Papers of the East-West Population Institute, No. 28 (Honolulu, Hawaii, East-West Center, 1973), pp. 18-19 and 45.

(Foot-notes continued on following page)

(Foot-notes to table 21) (continued)

g/ Excluding West Irian.

h/ For Sarawak only.

i/ For crude birth-rate in 1970, see Mercedes B. Concepción, "Philippines-East Asia review, 1973", Studies in Family Planning, vol. 5, No. 5 (May 1974), p. 160. The gross reproduction rate was derived from the fertility model used in the World Bank population projections. See "Country statement of the Philippines" (POP/APC.2/CP/3), submitted to the Second Asian Population Conference, Tokyo, 1-13 November 1972, p. 11.

j/ Most recent revised estimate; Population Bulletin, No. 7 gives a crude birth-rate of 37.8 per 1,000 for 1960.

k/ Truong-Minh-Cac and Ngo Yen-Tuan-Phong, "Viet-Nam (South) - East Asia review, 1973", Studies in Family Planning, vol. 5, No. 5 (May 1974), p. 172.

l/ Thailand, National Statistical Office, Office of the Prime Minister, Report - The Survey of Population Change, 1964-1967 (Bangkok, 1968), p. 10.

m/ Bangladesh, Ministry of Home Affairs, Census Organization, Projection and Estimate of Population of Bangladesh, Bulletin No. 1, 1973; Census 1974, Publication No. 7 (Dacca), p. 3.

n/ Included in Pakistan, listed separately below.

o/ "Country statement of India" (POP/APC.2/CP/17), submitted to the Second Asian Population Conference, Tokyo, 1-13 November 1972, chap. 4, p. 8.

p/ Calculated on the basis of age-specific fertility rates obtained from the Sample Registration System for rural areas in India in 1969. See "Country statement of India" (POP/APC.2/CP/17), p. 9.

q/ No specific date was given for the estimated fertility rates in the source; see "Country statement of Iran" (POP/APC.2/CP/5), submitted to the Second Asian Population Conference, Tokyo, 1-13 November 1972, p. 4.

r/ Daniel Taylor and Rita Thapa, Nepal, Country Profile (New York, The Population Council, 1972), p. 2.

s/ "Pakistan's population situation", Birthright, Special Number, 1971, p. 3.

t/ Including Bangladesh.

u/ For 1969.

v/ K. C. Zachariah and Wisad Hamoreddi, "Use of census data for estimating demographic measures of Iraq", in Cairo Demographic Centre, Demographic Measures and Population Growth in Arab Countries, Research Monograph Series, No. 1 (Cairo, 1970), p. 46.

w/ Most recent revised rates; for the Jewish population in 1960, Population Bulletin, No. 7 gives a crude birth-rate of 23.9 and a gross reproduction rate of 1.7.

x/ Jordan, Department of Statistics, Draft Final Report of National Seminar on Population Policy as Related to Development Strategy, 2-7 December 1972 (Amman, 1972), p. 1.

(Foot--notes to table 21) (continued)

y/ K. C. Zachariah, "The demographic measures of Arab countries, a comparative analysis", in Cairo Demographic Centre, Demographic Measures and Population Growth in Arab Countries, p. 321.

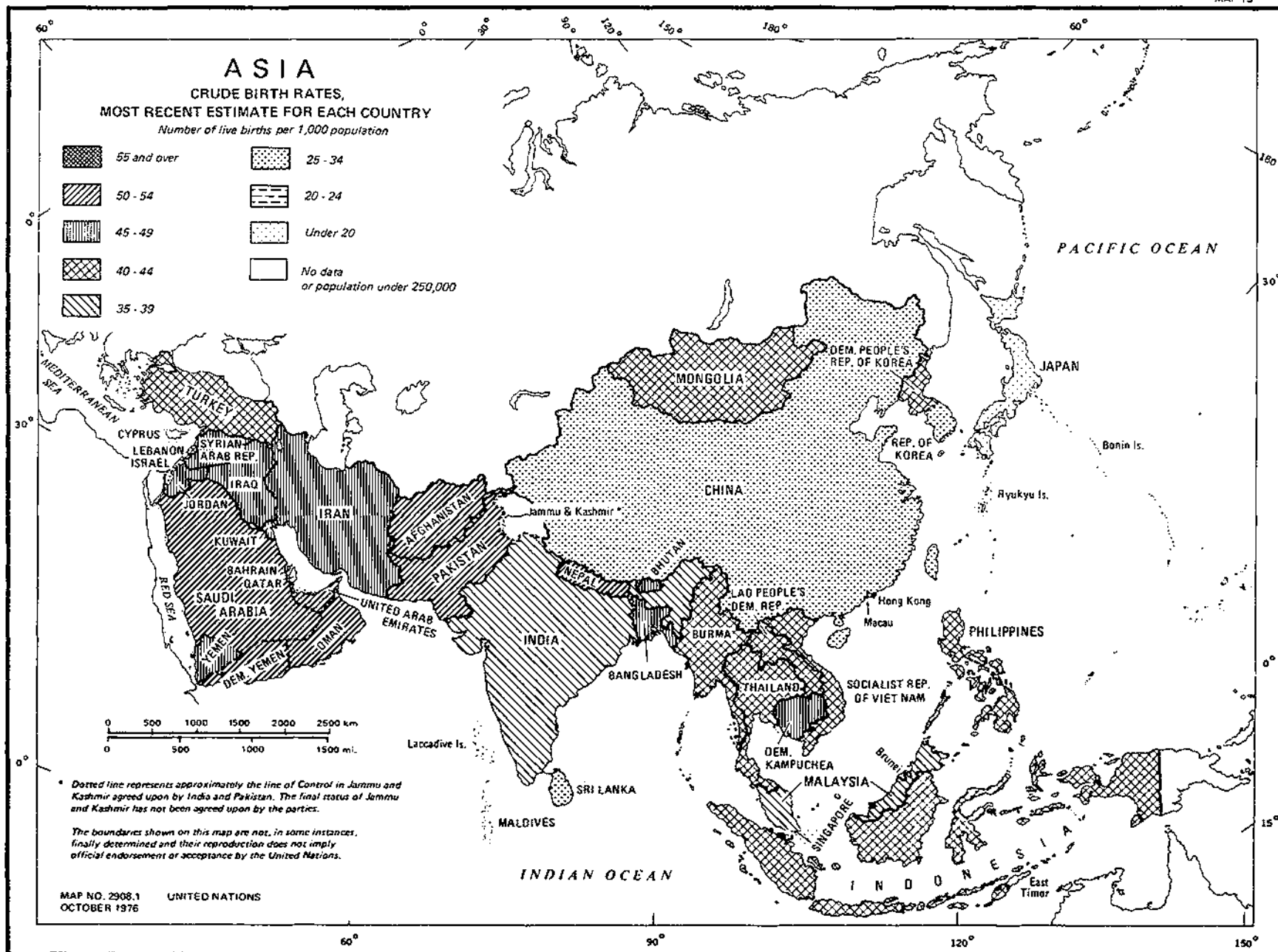
z/ Not included in Population Bulletin, No. 7.

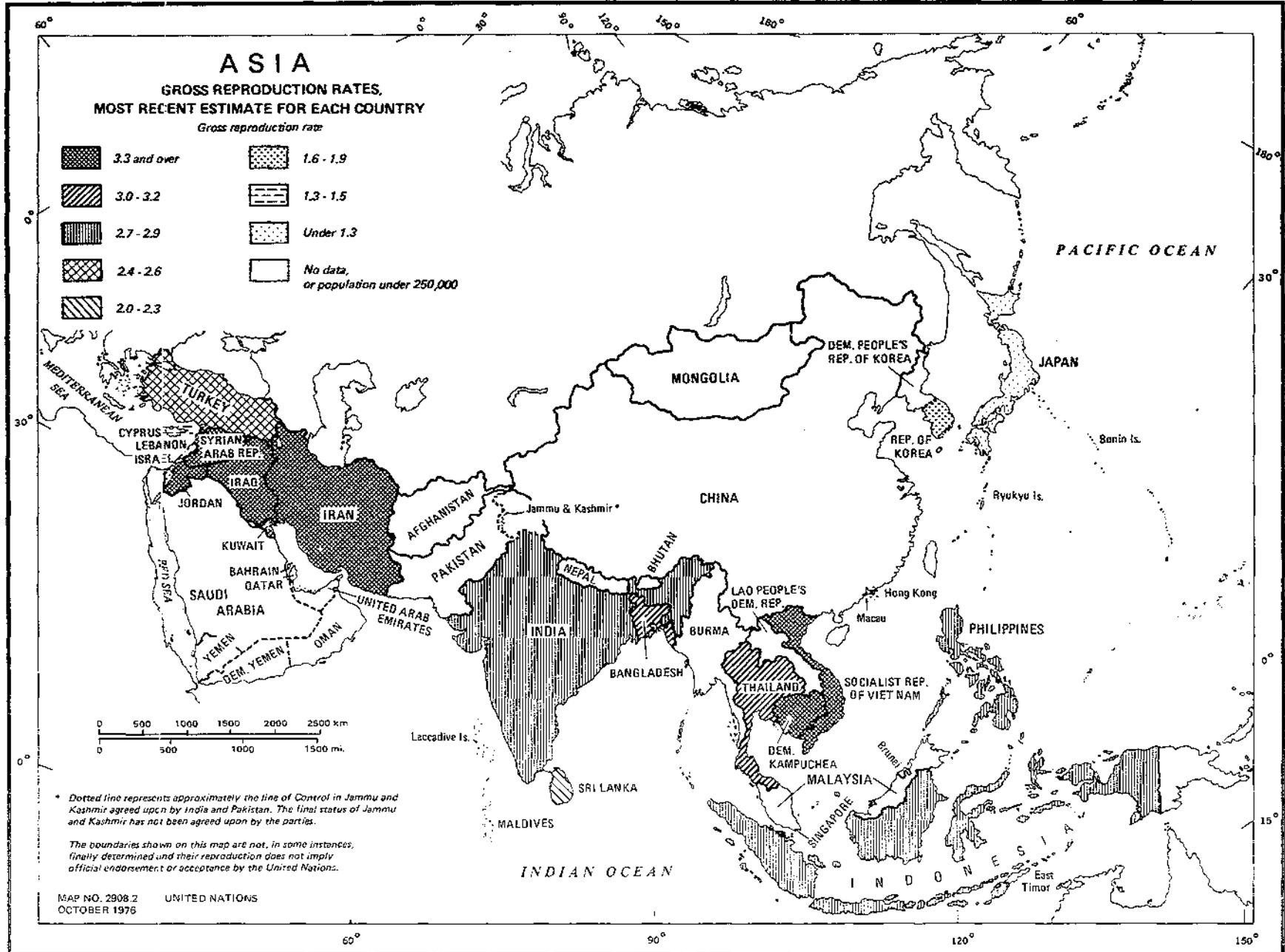
aa/ Youssef Courbage and Philippe Fargues, La situation démographique au Liban. I. Mortalité, fécondité et projection: méthodes et résultats (Beirut, Université Libanaise, 1973), p. 36, table II.

bb/ A. Thavarajah, "Fertility, mortality and population growth in Syria", in Cairo Demographic Centre, Demographic Measures and Population Growth in Arab Countries, p. 214.

cc/ Haluk Cillov and others, The Population of Turkey, CICRED Series (Ankara, Hacettepe University, Institute of Population Studies, 1974), chap. 2, p. 20.

dd/ No specific date was given for the estimated fertility rates in the source. See W. B. Fisher, "Southern Arabia: a human reservoir", in J. I. Clarke and W. B. Fisher, eds., Population of the Middle East and North Africa, A Geographical Approach (New York, Holmes and Meier, 1972), p. 281.





national family planning programmes. 2/ The impact of these programmes upon fertility has proved difficult to determine precisely for a variety of reasons, but mainly because family planning programmes and the processes of socio-economic development are interacting phenomena that cannot be assessed satisfactorily in isolation.

The Asian experience does, however, provide some basis for the conclusion that the introduction of a national family planning programme is not in itself an assurance that fertility will decline. Among the countries with programmes in effect for seven or more years, some have experienced a decline of fertility and some have not: where a significant decline has been registered, an incipient downward trend was evident prior to introduction of the programme; conversely, where an incipient decline of fertility was not under way prior to the programme, evidence of one is still lacking. 3/

Apart from Japan (and China, for which essential information is unavailable), the countries that have experienced a fertility decrease are comparatively very small. They are also inhabited mainly by people of Chinese culture. These facts suggest the hypotheses that:

(a) Family planning programmes may influence fertility levels in small countries where communication and education for change can be effective and programme logistics are not fraught with major obstacles;

(b) Conditions peculiar to a culture may enhance or impair the possibilities of success of family planning programmes in lowering fertility. (Indeed, it has been observed, apparently on the basis of the Asian experience, that "... the tendency for a reduction of fertility to be identified with a particular culture is especially striking in respect to cultures of Chinese origin". 4/);

(c) Although family planning programmes may be capable of precipitating a fertility decline, evidence to date suggests that they serve mainly to accelerate a downward trend.

Whether fertility among the countries in Asia has declined or remained relatively stable, the levels in the various countries can be attributed to many factors in addition to those mentioned above, including conditions of development. The current low level of Japanese fertility, for example, was achieved rapidly during a socio-economic revolution from widespread traditionalism and a moderately

2/ Countries with officially sponsored programmes are China (1962), India (1952), Indonesia (1968), Iran (1967), Malaysia (1966), Nepal (1966), Pakistan (1960), Philippines (1970), Republic of Korea (1961), Singapore (1965), Sri Lanka (1965) and Thailand (1970). Hong Kong and the former Republic of South Viet-Nam have private, rather than Government-sponsored, programmes, but these are implemented on a national scale.

3/ Examples of the first type are the Republic of Korea and Singapore; India and Pakistan are in the second category.

4/ Ansley J. Coale, "The demographic transition", in International Union for the Scientific Study of Population, International Population Conference, Liège, 1973 (Liège, 1974), vol. I, p. 69.

advanced level of development to a technologically modern and sophisticated society. In Japan and in the other countries in which fertility has decreased, significant, if less markedly important, strides are reported to have been made in education and, in some cases, in raising age at marriage. Furthermore, in certain countries, for example, Malaysia 5/ and Thailand, differences in fertility have emerged between rural and urban residents, education groups and economically active and inactive females. 6/ These developments support the contention of many scholars that fertility decreases where the societies undergo increased urbanization and achieve improvements in levels of education among all strata of inhabitants, and where women engage in non-familial economic activities outside the home. 7/

Comprehensive birth registration exists in very few countries of Asia. The Statistical Office of the United Nations reports as "complete" the registration statistics for Cyprus, Hong Kong, Israel, Japan, 8/ Malaysia, Singapore and Sri Lanka. Reasonably reliable estimates are available for the Republic of Korea. For all other countries of Asia, the quality of information on annual numbers of births is entirely inadequate. The countries with acceptable birth registration data are by no means representative of Asia as a whole. Most of them cover only a small geographical area and have relatively very small populations which, together, constitute only a fraction of the total population of Asia, Japan being the exception. Furthermore, most of them have achieved a comparatively more advanced level of economic and social development than has been registered elsewhere in Asia. For lack of satisfactory birth registration statistics for the three most populous countries - China, India and Indonesia - along with Bangladesh, Pakistan and the Philippines, it is not possible to provide with any confidence a picture of fertility levels and trends for Asia as a whole. In addition to the inadequacies of data for the larger countries, the relevant statistics on births are either incomplete or lacking altogether for the Arab countries in Western South Asia. Further, for the Republic of Korea and the former Republic of South Viet-Nam, registration statistics are of unknown degrees of completeness; and seven countries, namely, Afghanistan, Bhutan, Democratic Kampuchea, the Democratic People's Republic of Korea, the Lao People's Democratic Republic, Nepal and the former Democratic Republic of Viet-Nam, do not publish any such data.

5/ Unless otherwise indicated, references to Malaysia are based on data only for Peninsular Malaysia, formerly referred to as West Malaysia.

6/ United Nations Secretariat, "Fertility trends in the world", in The Population Debate: Dimensions and Perspectives. Papers of the World Population Conference, Bucharest, 1974, vol. I (United Nations publication, Sales No. E/F/S.75.XIII.4), p. 210.

7/ See, for example, the statement of R. Freedman, Moderator of Meeting A.1, Fertility, in World Population Conference, 1965. Volume I. Summary Report (United Nations publication, Sales No. 66.XIII.5), pp. 36-49.

8/ Including Okinawa prefecture, formerly referred to as the Ryukyu Islands.

A. Levels, trends and patterns of fertility in countries having adequate data

Levels and trends of fertility

The number of live births per 1,000 population during the years from 1950 to 1970 or later has been calculated for seven Asian countries with adequate statistics, and estimates of the crude birth rate are available for the Republic of Korea for various years from 1958 to 1970 (table 22). These measures show clearly the marked changes that occurred in fertility levels in these countries over that 20-year period. Except in Japan and Israel, the most remarkable decreases took place after 1960 (see figure V). Indeed, in all the countries but Japan and Israel, the first half of the 1950s was a period in which the crude birth rate was relatively stable, though some mild fluctuations occurred.

Among these countries, the decline varied both in respect to timing and to declivity. Decreases were first notable in Cyprus, Singapore and Malaysia during the latter half of the 1950s, whereas an unmistakable decline of the crude birth rate was not evident in Hong Kong and Sri Lanka until the early 1960s. As for the amount of the decrease, the changes were more moderate in Cyprus and Sri Lanka, relatively moderate in Malaysia and sharpest in Hong Kong and Singapore. The figures for the Republic of Korea do not cover years sufficiently early to give evidence as to the timing or steepness of the decline. However, the estimated crude birth rates do show a sharp decrease from 44.8 to 29.0, a drop of about 35 per cent in 12 years.

Japan achieved a moderate level of fertility prior to 1950; and although there were marked decreases in the crude birth rate during the first half of the 1950s, the measure has changed relatively little since around 1955. ^{9/} The nadir of the trend occurred around 1961, and the birth rate then stabilized at a slightly higher level, approximately 19.0 per 1,000 population. The decline of the crude birth rate in Israel ceased in the early 1960s and the rates fluctuated thereafter at from 24 to 26.

The trend of the gross reproduction rates for these countries has been markedly similar to the movement of the crude birth rate (tables 23 and 24). Excluding Israel, it decreased in each of the eight countries for which trends could be observed. However, the magnitude of the decline in the gross reproduction rate varied considerably, from about 50 per cent in Singapore to about 17 per cent in Malaysia. The course of the gross reproduction rate in Japan from 1950 to 1970 was decidedly dissimilar from that observed in the other countries, for the measure dropped from 1.78 in 1950 to 1.0 in 1960, after which the rate moved upwards and in 1970 was 1.02. In Israel, it has remained stable at least since 1955. It will be seen in subsequent sections that there were also variations among the countries as to the demographic factors influencing these fertility declines.

^{9/} The outstanding exception is the crude birth rate of 13.9 posted in 1966, the year of the "Fiery Horse", which recurs every 60 years, according to Japanese folklore. The superstition is that ill luck befalls a child, particularly a girl, who is born in that year. Apparently, many births were deliberately avoided in 1966; some may also have been registered as having occurred either in 1965 or in 1967, since the birth rate in those years was correspondingly higher. See Japan, Ministry of Health and Welfare, Division of Health and Welfare Statistics, "On the extraordinary decline in births in 1966", Tokyo, May 1968 (unpublished mimeographed report).

Table 22. Trends of crude birth-rates, selected countries of Asia having relatively good statistics, 1950-1973

(Live births per 1,000 population)

Year	East Asia			South Asia				
	Japan ^{a/}	Other East Asia		Eastern South Asia		Middle South Asia	Western South Asia	
		Hong Kong	Republic of Korea	Malaysia ^{b/}	Singapore	Sri Lanka	Cyprus	Israel
1950	28.4	...	...	42.3	45.4	39.7	29.4	34.5
1951	25.6	34.0	...	44.0	45.0	39.8	28.7	34.1
1952	23.6	33.9	...	45.0	45.4	38.8	26.3	33.0
1953	21.7	33.7	...	44.4	45.8	38.7	26.1	32.1
1954	20.3	35.2	...	44.6	45.7	35.7	26.6	29.2
1955	19.7	36.3	...	44.0	44.3	37.3	25.9	29.2
1956	18.8	37.0	...	46.7	44.4	36.4	25.9	28.8
1957	17.5	35.8	...	46.2	42.7	36.5	25.8	28.1
1958	18.3	37.4	44.8	43.6	41.1	35.8	25.7	26.5
1959	17.8	35.2	43.7	42.6	39.4	37.0	25.4	26.7
1960	17.4	36.1	43.0	41.5	37.5	36.6	25.3	26.6
1961	17.1	34.3	42.2	42.8	35.2	35.8	25.9	25.3
1962	17.2	36.1	40.0	41.5	33.7	35.5	25.0	24.8
1963	17.5	34.6	38.2	40.7	33.2	34.4	24.6	25.0
1964	17.9	31.8	34.4	40.4	31.6	33.2	24.2	25.6
1965	18.8	29.6	31.3	38.0	29.5	33.1	24.4	25.8
1966	13.9 ^{c/}	26.6	33.0	38.0	28.3	32.3	23.9	25.5
1967	19.5	25.3	...	36.9	25.6	31.6	23.2	24.2
1968	18.7	22.0	30.0	37.0	23.5	32.0	22.8	25.5
1969	18.6	21.3	...	34.8	21.8	30.4	22.4	26.2
1970	18.8	20.0	29.0	34.0	22.1	29.4	21.3	26.7 ^{d/}
1971	19.3	19.7	...	34.5	22.3	29.9	21.7	... ^{d/}
1972	...	19.7	...	...	23.1	29.5	22.0	...
1973	...	19.3	...	...	...	...	19.1	...

Source: For Republic of Korea, crude birth-rates for 1960, 1966 and 1970 taken from Lee-Jay Cho, The Demographic Situation in the Republic of Korea, Papers of the East-West Population Institute, No. 29 (Honolulu, Hawaii, East-West Center, 1973), p. 10; rates for other years taken from J. A. Ross and others, Findings from Family Planning Research, Reports on Population/Family Planning, No. 12 (New York, The Population Council, 1972), p. 8, table 2. Rates for other countries compiled from data available from the Statistical Office of the United Nations or from official records of the country concerned.

a/ Including data for Okinawa prefecture, formerly referred to as the Ryukyu Islands.

b/ Data cover only Peninsular Malaysia, formerly referred to as West Malaysia.

c/ Low birth-rate reported in 1966 was associated with a belief that the year was unpropitious (year of the "Fiery Horse").

d/ Crude birth-rate including Eastern Jerusalem estimated at 27.3 in 1970 and 28.5 in 1971.

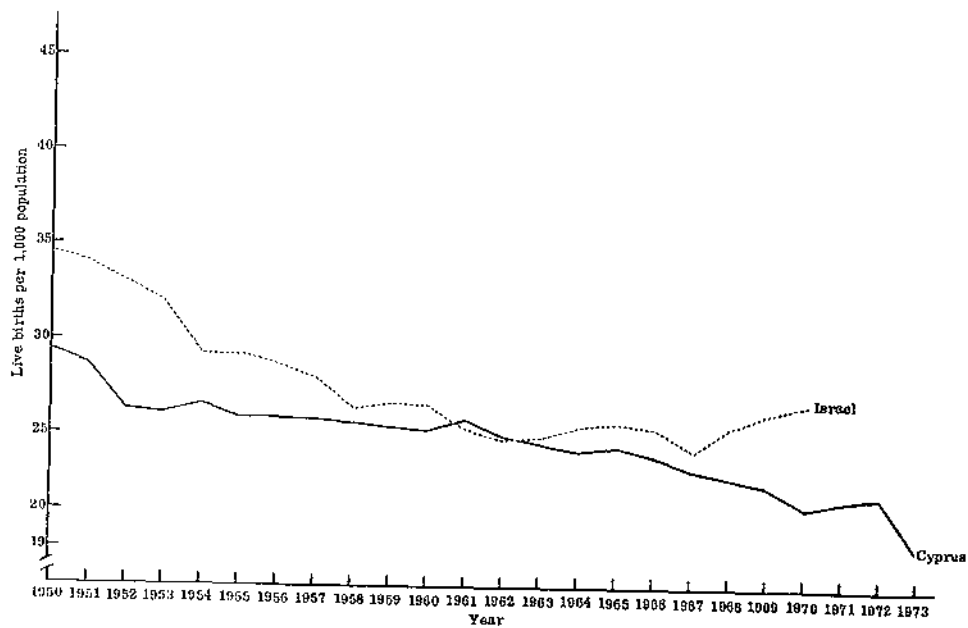


Table 23. Crude birth rates, gross reproduction rates and age-specific fertility rates, selected countries of Asia having relatively good statistics, 1950-1970

Major area, region and country	Year	Crude birth- rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates (births per 1 000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
East Asia											
Japan ^{a/}	1950 ^{b/}	28.30	1.78	732.6	13.4	161.8	237.9	175.9	105.1	36.2	2.3
	1955	19.68	1.17	480.7	6.0	112.8	182.8	114.2	50.9	13.2	0.9
	1960	17.41	0.99	406.9	4.4	107.7	182.9	81.2	24.8	5.5	0.4
	1965	18.77	1.06	433.1	3.4	113.5	205.1	87.9	19.9	3.1	0.2
	1970	18.83	1.02	421.7	4.6	96.9	209.9	86.9	20.3	2.8	0.2
Other East Asia											
Hong Kong	1955	36.34	...	...	...	...	...	...	...	...	...
	1961	35.5	2.50	1 034.0	47.0	238.0	313.0	231.0	139.0	57.0	9.0
	1965	28.8	2.40	986.0	41.0	252.0	318.0	211.0	122.0	39.0	3.0
	1970	19.99	1.67	683.5	18.3	139.2	237.4	164.5	88.7	30.8	4.6
Republic of Korea	1957	...	2.75	1 126.0 ^{e/}	41.0	251.0	301.0	256.0	192.0	85.0	...
	1960	43.0	2.99	1 226.0 ^{e/}	36.0	259.0	336.0	283.0	212.0	100.0	...
	1966	33.0	2.39	981.0	22.0	211.0	309.0	219.0	138.0	64.0	18.0
	1970	29.0	1.93	795.0	13.0	168.0	278.0	189.0	101.0	39.0	7.0
South Asia											
Eastern South Asia											
Malaysia ^{d/}	1950	42.30	...	...	...	...	...	...	...	...	...
	1955	44.02	...	...	...	...	...	...	...	...	...
	1960	41.53 ^{e/}	2.93	1 197.1	101.5	300.8	306.8	243.6	156.4	69.6	18.4
	1965	38.01 ^{e/}	2.76	1 128.1	77.1	235.9	333.0	237.0	157.1	67.8	20.2
	1970	33.99 ^{e/}	2.47	1 014.0	57.3	236.0	277.1	226.1	143.4	57.9	16.3
Singapore	1950	45.37	3.06	1 259.7	81.9	324.6	312.2	248.2	201.4	81.8	9.9
	1955	44.28	3.17	1 300.6	88.4	324.1	370.0	259.4	173.8	76.0	8.9
	1960	37.52	2.77	1 137.0	58.2	253.7	315.7	267.2	164.3	66.2	11.6
	1965	29.53	2.25	923.2	42.5	193.6	268.6	216.2	142.7	52.0	7.6
	1970	22.14	1.51	620.0	26.2	139.5	209.6	138.5	74.8	26.8	4.7

Table 23 (continued)

Major area, region and country	Year	Crude birth- rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates (births per 1 000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
South Asia (continued)											
Middle South Asia											
Sri Lanka	1950	39.68	...	...	...	...	...	...	...	...	...
	1955	37.32	2.64	1 074.5	63.5	261.5	304.5	223.7	174.1	39.0	8.2
	1960	36.55	2.61	1 061.4	57.7	250.2	303.6	229.0	174.0	40.3	6.6
	1965	33.09	2.36	960.1	47.5	219.0	268.0	217.6	164.1	37.9	6.1
	1969	30.43	2.17	882.2	46.7	211.7	249.4	190.3	137.7	40.3	6.1
Western South Asia											
Cyprus	1950	29.39	1.91	783.9	29.9	164.0	218.9	171.3	139.8	49.5	10.6
	1955	25.94	1.68	693.0	30.9	167.8	195.6	144.7	103.5	42.5	8.0
	1960	25.30	1.69	702.5	31.8	182.8	210.0	133.1	105.7	31.9	7.1
	1965	24.36	1.65	683.9	17.9	174.7	237.8	136.1	80.1	30.8	6.7
	1970	21.33	1.34	553.3	21.4	151.9	182.3	114.3	60.4	18.8	4.1
Israel	1950	34.52	...	...	...	...	...	...	...	...	...
	1955	29.18	1.91	794.6	69.1	241.7	213.8	155.0	83.6	25.0	6.5
	1960	26.65	1.91	784.4	54.2	227.6	233.6	153.0	82.0	28.3	5.6
	1965	25.81	1.91	792.3	42.3	227.6	244.2	166.3	79.4	25.6	6.9
	1970 ^{f/}	27.33	1.92	794.6	37.6	206.1	241.1	182.6	96.5	26.1	4.6

Sources: Data for Hong Kong in 1961 and 1965 taken from Ronald Freedman and others, "Hong Kong's fertility decline 1961-1968", *Population Index*, vol. 36, No. 1 (January-March 1970), pp. 4 and 10; for Republic of Korea, crude birth-rates for 1960, 1966 and 1970 taken from Lee-Jay Cho, *The Demographic Situation in the Republic of Korea*, Papers of the East-West Population Institute, No. 29 (Honolulu, Hawaii, East-West Center, 1973), p. 10; age-specific fertility rates for 1957, 1960, 1966 and 1970 taken from Lee-Jay Cho, "The own children approach to fertility estimation: an elaboration", in International Union for the Scientific Study of Population, *International Population Conference*, Liège, 1973 (Liège, 1974), vol. 2, p. 275. Other rates compiled from data available from the Statistical Office of the United Nations, or from official records of the country concerned.

a/ Including data for Okinawa prefecture, formerly referred to as the Ryukyu Islands.

b/ Excluding data for Okinawa prefecture.

c/ Fertility of women aged 15-44 years, i.e., excluding births to women aged 45-49.

d/ Data cover only Peninsular Malaysia, formerly referred to as West Malaysia.

e/ Crude birth-rates for 1960, 1965 and 1970 calculated on the basis of the total population revised unofficially in line with the 1970 census results.

f/ Including Eastern Jerusalem.

Table 24. Comparison of crude birth rates and gross reproduction rates, selected countries of Asia, 1950-1970

	East Asia				South Asia			
	Other East Asia		Eastern South Asia		Middle South Asia	Western South Asia		
	Japan ^{a/}	Hong Kong	Republic of Korea	Malaysia ^{b/}	Singapore	Sri Lanka	Cyprus	Israel
Crude birth rate								
1950	28.4	...	...	42.3	45.4	39.7	29.4	34.5
1955	19.7	36.3	...	44.0	44.3	37.3	25.9	29.2
1960	17.4	36.1	43.0	41.5 ^{c/}	37.5	36.6	25.3	26.6
1965	18.8	29.6	33.0 ^{d/}	38.0 ^{e/}	29.5	33.1	24.4	25.8
1970	18.8	20.0	29.0	34.0 ^{e/}	22.1	30.4 ^{e/}	21.3	27.3 ^{f/}
Percentage change in crude birth rate								
1950-1955	-30.7	41.5	...	4.1	-2.4	-6.0	-11.7	-15.4
1955-1960	-11.5	-0.6	...	-5.7	-15.3	-2.1	-2.5	-8.7
1960-1965	7.8	-18.0	-23.3 ^{g/}	-8.5	-21.3	-9.5	-3.7	-3.2
1965-1970	0.3	-32.4	-12.1 ^{h/}	-10.6	-25.0	-8.1 ^{i/}	-12.5	5.9
1960-1970	8.1	-44.6	-32.6	-18.2	-41.0	-16.8 ^{j/}	-15.7	2.6
1950-1970	-33.8	...	...	-19.6	-51.3	-23.4	-27.4	-20.8
Gross reproduction rate								
1950	...	...	...	...	3.06	...	1.91	...
1955	1.17	...	2.75 ^{k/} 1/	...	3.17	2.64	1.68	1.91
1960	0.99	2.50 ^{m/}	2.97 ^{k/}	2.93	2.77	2.61	1.69	1.91
1965	1.06	2.40	2.39 ^{d/}	2.76	2.25	2.36	1.65	1.91
1970	1.02	1.67	1.93	2.47	1.51	2.17 ^{n/}	1.34	1.92 ^{f/}
Percentage change in gross reproduction rate								
1950-1955	...	...	...	...	3.6	...	-12.1	...
1955-1960	-15.3	...	8.7 ^{n/}	...	-12.5	-1.1	0.5	0.0
1960-1965	6.6	-4.0 ^{o/}	-20.1 ^{p/}	-6.0	-18.8	-9.5	-2.5	0.0
1965-1970	-3.5	-30.4	-19.2 ^{q/}	-10.4	-33.1	-8.1 ^{r/}	-18.7	0.6
1960-1970	2.9	-33.2 ^{q/}	-35.5	-15.8	-45.7	-16.9 ^{t/}	-20.7	0.5
1950-1970	-12.9 ^{u/}	...	-29.8 ^{v/}	...	-50.7	-17.7 ^{w/}	-29.9	0.6 ^{u/}

Sources: For Hong Kong, gross reproduction rates for 1960 and 1965 calculated on the basis of total fertility rates given in Ronald Freedman and others "Hong Kong's fertility decline, 1961-1968", *Population Index*, vol. 36, No. 1 (January-March 1970), p. 4, table 1. Other rates compiled from data available from the Statistical Office of the United Nations or from official records of the country concerned.

a/ Including Okinawa prefecture, formerly referred to as the Ryukyu Islands.

b/ Data cover only Peninsular Malaysia, formerly referred to as West Malaysia.

(Foot-notes continued on following page)

(Foot-notes to table 24) (continued)

c/ Calculated on the basis of the total population revised unofficially in line with the 1970 census results.

d/ In 1966.

e/ For 1969.

f/ Including Eastern Jerusalem.

g/ For 1960-1966.

h/ For 1966-1970.

i/ For 1965-1969.

j/ For 1960-1969.

k/ Excluding births to women aged 45-49 years.

l/ For 1957.

m/ For 1961.

n/ For 1957-1960.

o/ For 1961-1965.

p/ For 1960-1966.

q/ For 1966-1970.

r/ For 1965-1969.

s/ For 1961-1970.

t/ For 1960-1969.

u/ For 1955-1970.

v/ For 1957-1970.

w/ For 1955-1969.

Influence of age structure and other factors upon trends in the crude birth rate

If, as a result mainly of past increases in fertility, the numbers of women who enter reproductive age annually, replacing those who move out of the reproductive span, raises the proportion of women aged 15-49 years in relation to the total population, or if relatively larger numbers of the women aged 15-49 years fall in the most fertile ages, one result can be larger numbers of births and a higher crude birth rate. This effect can occur even if age-specific fertility or aggregate fertility as measured by the gross reproduction rate remains constant or declines. Conversely, opposite changes in the ratio of women of fertile age to the total population or in the redistribution by age of women aged 15-49 could cause a decline in the crude birth-rate while age-specific fertility or the gross reproduction rate remains constant or increases.

Crude and standardized birth rates for the six countries during the period 1950-1970 illustrate the effect upon the birth rate of changes in the age structure of the population. In Sri Lanka and Malaysia, the difference between the crude and standardized rates is negligible (table 25), reflecting the fact that the proportion of women in the reproductive ages remained virtually unchanged during that period (table 26). In the four remaining countries, the standardized rates are found to be somewhat higher than the recorded crude birth rates, indicating the positive effect upon the birth rate of the increase in the proportion of the female population in the reproductive ages.

The parallel course of the gross reproduction rate and crude birth rate during 1960-1970 in Sri Lanka, which offers one of the more striking cases of similarity in the trends of the two measures, is further evidence of the effect upon the crude birth rate of the uniformity over that decade in the ratio of women of reproductive age to the total population (table 25). On the other hand, in Hong Kong and Malaysia, the decrease in the gross reproduction rate was smaller than the decline in the crude birth rate, reflecting a drop in the proportion of women in the most fertile ages. By contrast, in Cyprus, Singapore and the Republic of Korea, the gross reproduction rate underwent a greater decline than did the crude birth rate. These apparent differences can be partially explained by the fact that the change in the birth rate was also affected by changes in the proportion of women both in the reproductive ages as a whole and in the most fertile age groups in particular.

In Japan and Israel, during 1965-1970, the crude birth rate showed a slight increase while the gross reproduction rate remained almost unchanged, indicating a proportionate rise in the number of women of fertile age. The relative stability of the Japanese crude birth rate during the period 1965-1970, for example, may be attributed to the sharp increase in the proportion of women aged 20-24 years, while the relative number of women aged 15-49 did not change at all. Although age structure had a positive effect on crude birth rate in Israel during the latter half of the 1960s, during the period 1955-1960 the effect had been to deflate the crude birth rate. Of course, many factors impinge upon the birth rate, including, in some of these countries, an advance in average age at marriage and national family planning programmes designed to reduce the incidence of births. Thus, where suitable data exist, it is appropriate to consider the possible effect of these factors.

Various independent studies have analysed the effects of changes in age structure and/or nuptiality as well as marital fertility on the declining birth rates of some of these countries. In Hong Kong, most of the decline in the birth

Table 25. Comparison of crude and standardized birth-rates, selected countries of Asia having relatively good statistics, 1950-1970

	South Asia					
	East Asia	Eastern South Asia		Middle South Asia	Western South Asia	
	Japan ^{a/}	Malaysia ^{b/}	Singapore	Sri Lanka	Cyprus	Israel
Crude birth-rate						
1950	28.4	42.3	45.4	39.7	29.4	34.5
1955	19.7	44.0	44.3	37.3	25.9	29.2
1960	17.4	41.5	37.5	36.6	25.3	26.6
1965	18.8	38.0	29.5	33.1	24.4	25.8
1970	18.8	34.0	22.1	30.4 ^{c/}	21.3	27.3
Percentage change						
1950-1955	-30.7	4.1	-2.4	-5.9	-11.7	-15.5
1955-1960	-11.5	-5.7	-15.3	-2.1	-2.5	-8.7
1960-1965	7.8	-8.5	-21.3	-9.5	-3.7	-3.2
1965-1970	0.3	-10.6	-25.0	-8.1 ^{d/}	-12.5	5.9
1950-1960	...	...	-17.3	...	-13.9	...
1960-1970	8.1	-18.2	-41.0	-16.8 ^{e/}	-15.7	2.6
Age-standardized birth-rate:						
on 1970 age distribution						
1950	...	...	45.9	...	29.1	...
1955	21.2	...	47.5	37.3	26.1	28.6
1960	18.2	41.3	40.5	36.7	26.8	27.8
1965	19.5	37.8	32.5	33.0	26.1	27.8
1970	18.8	34.0	22.1	30.4 ^{c/}	21.3	27.3
Percentage change						
1950-1955	...	...	3.7	...	-10.2	...
1955-1960	-14.0	...	-14.8	-1.7	2.5	-2.9
1960-1965	6.7	-8.5	-19.6	-10.2	-2.7	-0.1
1965-1970	-3.2	-10.1	-32.0	-7.7 ^{d/}	-18.1	-2.6
1950-1960	...	...	-11.7	...	-8.0	...
1960-1970	3.3	-17.8	-45.3	-17.1 ^{e/}	-20.4	-1.6

a/ Including Okinawa prefecture, formerly referred to as the Ryukyu Islands.

b/ Data cover only Peninsular Malaysia, formerly referred to as West Malaysia.

c/ For 1969.

d/ For 1965-1969.

e/ For 1960-1969.

Table 26. Number of women in each childbearing age as a percentage of all women aged 15-49 years and total number of women aged 15-49 as a percentage of total population, selected countries of Asia having fairly complete statistics, 1950-1970

Major area, region and country	Year	Women in each childbearing age as a percentage of all women aged 15-49 years								Total women aged 15-49 years as a percentage of total population
		Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49	
East Asia										
Japan^{a/}										
	1950	...	...	...	...	...	...	...	...	...
	1955	100.0	18.4	18.1	16.4	14.3	12.0	11.2	9.6	26.1
	1960	100.0	18.3	16.6	16.3	14.9	12.9	10.9	10.1	27.0
	1965	100.0	19.2	16.3	15.0	14.6	13.4	11.9	9.6	28.5
	1970	100.0	15.3	18.1	15.4	14.2	13.8	12.4	10.8	28.5
Other East Asia										
Republic of Korea										
	1960	100.0	19.8	18.7	16.7	13.7	12.5	9.8	8.8	22.9
	1966	100.0	19.9	16.6	17.2	15.0	12.4	10.4	8.5	22.6
	1970	100.0	20.7	16.8	15.2	14.8	12.9	10.6	9.0	23.2
South Asia										
Eastern South Asia										
Malaysia^{b/}										
	1950	...	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...	...
	1960	100.0	22.7	18.9	15.4	13.3	11.6	9.7	8.4	22.3
	1965	100.0	24.0	19.0	14.6	13.5	11.2	9.5	8.2	22.4
	1970	100.0	24.9	19.1	14.0	13.6	10.9	9.5	8.0	22.5
Singapore										
	1950	100.0	20.5	17.1	15.4	15.0	12.9	10.8	8.3	23.5
	1955	100.0	21.2	17.8	15.0	13.3	12.6	10.9	9.2	22.4
	1960	100.0	20.1	19.0	16.1	13.3	11.6	10.8	9.1	21.6
	1965	100.0	20.6	17.6	16.5	14.0	11.7	10.2	9.4	21.1
	1970	100.0	24.3	20.4	13.4	13.8	11.0	9.5	7.6	23.8
Middle South Asia										
Sri Lanka										
	1950	...	...	...	...	...	...	...	...	...
	1955	100.0	21.9	18.9	17.1	14.0	11.4	9.3	7.4	21.9
	1960	100.0	21.9	18.5	15.9	14.5	11.8	9.6	7.8	22.1
	1965	100.0	22.4	18.5	15.6	13.4	12.2	9.9	8.0	22.6
	1970	100.0	21.4	18.8	15.7	13.4	13.2	9.1	8.4	22.3
Western South Asia										
Cyprus										
	1950	100.0	18.5	17.6	15.6	13.9	12.8	11.7	9.9	25.1
	1955	100.0	18.0	16.4	16.0	14.3	12.8	11.7	10.8	24.9
	1960	100.0	17.9	18.0	15.1	15.0	11.3	12.7	10.0	23.6
	1965	100.0	20.9	16.8	14.7	14.0	12.6	11.2	9.8	24.1
	1970	100.0	19.8	18.2	15.4	13.6	12.5	10.9	9.6	25.0
Israel										
	1950	...	...	...	...	...	...	...	...	...
	1955	100.0	15.4	15.5	15.3	14.9	12.0	14.6	12.3	24.6
	1960	100.0	16.0	15.2	14.8	14.5	14.2	11.5	13.8	23.0
	1965	100.0	21.6	14.9	13.6	13.2	13.2	13.1	10.4	22.9
	1970	100.0	21.5	19.2	13.1	11.8	11.5	11.5	11.4	23.7

a/ Including Okinawa prefecture, formerly referred to as the Ryukyu Islands.

b/ Data cover only Peninsular Malaysia, formerly referred to as West Malaysia.

rate up to 1965 was a result both of a decreasing proportion of women in the reproductive ages and of a decline in the proportion of women married. It was also due in part to a decline in age-specific marital fertility. 10/ According to one study, 11/ the drop in the crude birth rate in Hong Kong during 1965-1971 could be attributed to a greater extent to the decline in age-specific marital fertility and to a lesser extent to changes in age and marital status distributions of the female population. In Sri Lanka, the declining birth rate during the period 1953-1963 is said to have been the result of a change in age structure of women in the reproductive age groups, which was favourable to lower fertility, and to increasing postponement of marriage. 12/ One researcher reported that the birth rate declined during 1963-1968 largely as a result of decreasing nuptiality; however, changes in age structure had a counter-effect which partially offset the effect of the advancement of age at marriage. 13/ On the other hand, it was observed that during 1968-1970, the decline in the crude birth rate was caused solely by the decrease in marital fertility. 14/ A study of the recent birth rate decline in the Republic of Korea showed that the largest proportion of this phenomenon was due to reduced marital fertility and, to a lesser degree, to rising average age at marriage of women and changes in age structure. 15/

10/ R. Freedman and A. L. Adlakha, "Recent fertility declines in Hong Kong: the role of the changing age structure", Population Studies, vol. XXII, No. 2 (July 1968), pp. 187-188. See also Ronald Freedman and others, "Hong Kong's fertility decline, 1961-1968", Population Index, vol. 36, No. 1 (January-March 1970), pp. 6-9.

11/ "Population of Hong Kong", Economic and Social Commission for Asia and the Pacific, Country Monograph Series, No. 1 (E/CN.11/1120), Bangkok, Thailand, 1974, p. 94.

12/ Nicholas H. Wright, "Recent fertility change in Ceylon and prospects for the national family planning program", Demography, vol. 5, No. 2 (1968), pp. 745-750.

13/ D. F. S. Fernando, "Recent fertility decline in Ceylon", Population Studies, vol. XXVI, No. 3 (November 1972), pp. 447-449.

14/ Economic Commission for Asia and the Far East (now designated as Economic and Social Commission for Asia and the Pacific), "Family planning programmes and fertility in the countries of the ECAFE region", in The Population Debate: Dimensions and Perspectives, Papers of the World Population Conference, Bucharest, 1974, vol. II (United Nations publication, Sales No. E/F/S.75.XIII.5), p. 520, table 5.

15/ Lee-Jay Cho and Robert D. Retherford, "Comparative analysis of recent fertility trends in East Asia", in International Union for the Scientific Study of Population, International Population Conference, Liège, 1973, vol. 2, p. 167, table 1.

Trends in fertility patterns by age

It has been established that among the countries of the world, there are three basic types of age patterns of fertility: the early-peak type, in which fertility is highest at ages 20-24 years; the late-peak type, in which peak fertility occurs at ages 25-29; and the broad-peak type, characterized by maximum and nearly uniform fertility levels in age groups 20-24 and 25-29. ^{16/} No systematic differences in types of age patterns have been found to exist between the more developed and the less developed countries. Among the countries of Asia that have adequate statistics for observing the phenomena, data for 1970 show that fertility patterns were mainly of the late-peak type (table 27).

It might be expected that later age at marriage would influence the age fertility pattern, but the statistics available for analyses are not adequate to show this effect. Mainly, it would be necessary at least to have single-year data on age at marriage, as well as fertility age patterns, at least for several countries over a number of years. Data are available, however, which show that in three of the countries that have late-peak type fertility patterns (table 27 and figure VI), median age at marriage was relatively high, 23.5 years in Japan, 23.1 years in Singapore and 21.6 years in Israel. ^{17/}

In some countries, the type of age pattern of fertility that prevailed in 1970 followed one or more shifts during the period 1950-1970 in the age group of greatest contribution to gross total fertility. For example, in 1950, fertility levels among women in Singapore were highest in the age group 20-24; but in 1955 and subsequent years, there was a shift to the late-peak type of fertility age pattern, and the maximum fertility was recorded among women 25-29 years of age. The age pattern type in Israel did not change abruptly, but evolved from the early-peak type in 1955 through the broad-peak type in 1960 to the late-peak type in 1965 and 1970. The possibility exists that during or prior to the period under review, this gradual change in types may also have occurred among others of these countries, as suggested by the shift from the broad- to the late-peak type in Malaysia after 1960. In order to verify this trend, however, it would be necessary to observe data for years prior to those represented in table 27.

Unlike the type of age fertility pattern, the concentration of fertility at peak ages appears to differ systematically between high- and low-fertility populations. ^{18/} Specifically, childbearing takes place over a much shorter segment of the reproductive age span in low-fertility countries than is the case where fertility is high. Therefore, a characteristic of declining fertility should be the concentration of fertility in an increasingly narrow portion of the reproductive period.

^{16/} Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publications, Sales No. 64.XIII.2) (hereinafter referred to as Population Bulletin, No. 7), p. 106.

^{17/} A discussion of the relationship between age patterns of nuptiality and of fertility is provided in A. J. Coale, "Age patterns of marriage", Population Studies, vol. XXV, No. 2 (March 1970), pp. 193-214. The measures of median age at marriage were calculated from data in the files of the Statistical Office of the United Nations.

^{18/} Population Bulletin, No. 7, p. 106.

Table 27. Relative contribution of women in each age group to gross total fertility, selected countries of Asia having relatively good statistics, 1950-1970

(Percentage distribution of age-specific fertility rates)

Major area, region and country	Year	Age of women							
		Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49
East Asia									
Japan ^{a/}	1950	...	...	...	...	...	...	...	...
	1955	100.0	1.2	23.5	38.0	23.7	10.6	2.8	0.2
	1960	100.0	1.1	26.5	44.9	20.0	6.1	1.3	0.1
	1965	100.0	0.9	26.2	47.3	20.3	4.6	0.7	0.0 ^{b/}
	1970	100.0	1.1	23.0	49.8	20.6	4.8	0.7	0.0 ^{b/}
Other East Asia									
Hong Kong	1950	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...
	1961	100.0	4.5	23.0	30.3	22.4	13.4	5.5	0.9
	1965	100.0	4.2	25.5	32.2	21.4	12.4	4.0	0.3
	1970	100.0	2.7	20.4	34.7	24.1	13.0	4.5	0.5
Republic of Korea	1957	100.0	3.6	22.3	26.7	22.7	17.1	7.6	0.0
	1960	100.0	2.9	21.1	27.4	23.1	17.3	8.2	0.0
	1966	100.0	2.3	21.5	31.5	22.3	14.1	6.5	1.8
	1970	100.0	1.6	21.1	35.0	23.8	12.7	4.9	0.9
South Asia									
Eastern South Asia									
Malaysia ^{c/}	1950	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...
	1960	100.0	8.5	25.1	25.6	20.4	13.1	5.8	1.5
	1965	100.0	6.9	20.9	29.5	21.0	13.9	6.0	1.8
	1970	100.0	5.7	23.3	27.3	22.3	14.1	5.7	1.6

Table 27 (continued)

Major area, region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
South Asia (continued)									
Eastern South Asia (continued)									
Singapore	1950	100.0	6.5	25.7	24.8	19.7	16.0	6.5	0.8
	1955	100.0	6.8	24.9	28.4	20.0	13.4	5.8	0.7
	1960	100.0	5.1	22.3	27.8	23.5	14.5	5.8	1.0
	1965	100.0	4.6	21.0	29.1	23.4	15.5	5.6	0.8
	1970	100.0	4.2	22.5	33.8	22.3	12.1	4.3	0.8
Middle South Asia									
Sri Lanka	1950	...	...	...	...	...	...	...	...
	1955	100.0	5.9	24.3	28.4	20.8	16.2	3.6	0.8
	1960	100.0	5.4	23.6	28.6	21.6	16.4	3.8	0.6
	1965	100.0	5.0	22.8	27.9	22.7	17.1	3.9	0.6
	1969	100.0	5.3	24.0	28.2	21.6	15.6	4.6	0.7
Western South Asia									
Cyprus	1950	100.0	3.8	20.9	27.9	21.9	17.8	6.3	1.4
	1955	100.0	4.5	24.2	28.2	20.9	14.9	6.1	1.2
	1960	100.0	4.5	26.0	29.9	19.0	15.1	4.5	1.0
	1965	100.0	2.6	25.5	34.3	19.9	11.7	4.5	1.0
	1970	100.0	3.9	27.4	33.0	20.7	10.9	3.4	0.7
Israel	1950	...	...	...	...	...	...	...	...
	1955	100.0	8.7	30.4	26.9	19.5	10.5	3.2	0.8
	1960	100.0	6.9	29.0	29.8	19.5	10.5	3.6	0.7
	1965	100.0	5.4	28.7	30.8	21.0	10.0	3.2	0.9
	1970 ^{d/}	100.0	4.7	26.0	30.3	23.0	12.1	3.3	0.6

Sources: For Hong Kong, data for 1961 and 1965 taken from Ronald Freedman and others, Hong Kong's fertility decline, 1961-1968, *Population Index*, vol. 36, No. 1 (January-March 1970), p. 10. Other rates compiled from data available from the Statistical Office of the United Nations or from official records of the country concerned.

a/ Including data for Okinawa prefecture, formerly referred to as the Ryukyu Islands.

b/ Under 0.1.

c/ Data cover only Peninsular Malaysia, formerly referred to as West Malaysia.

d/ Including Eastern Jerusalem.

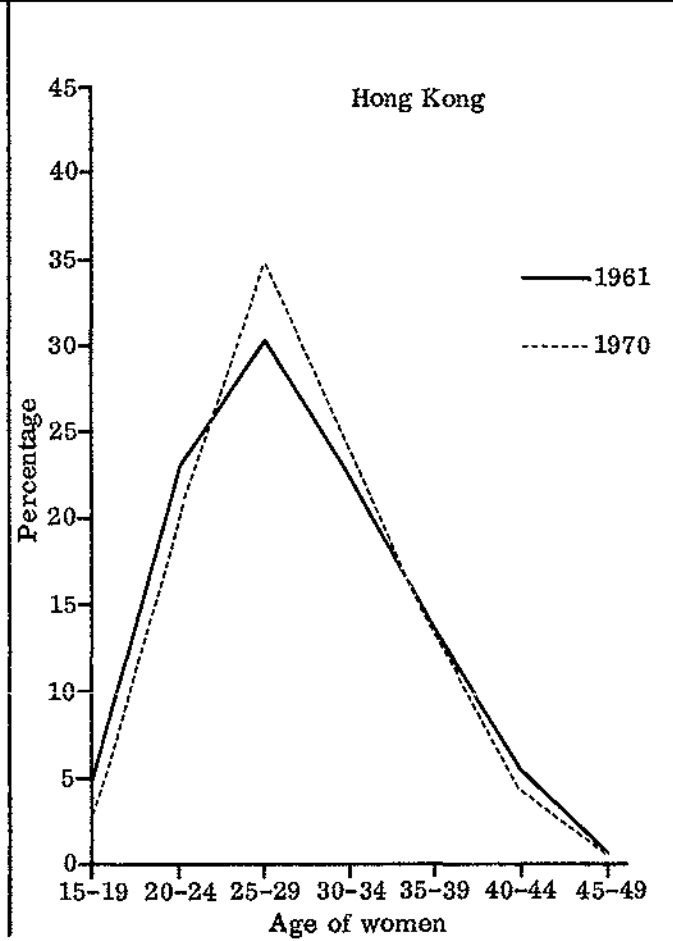
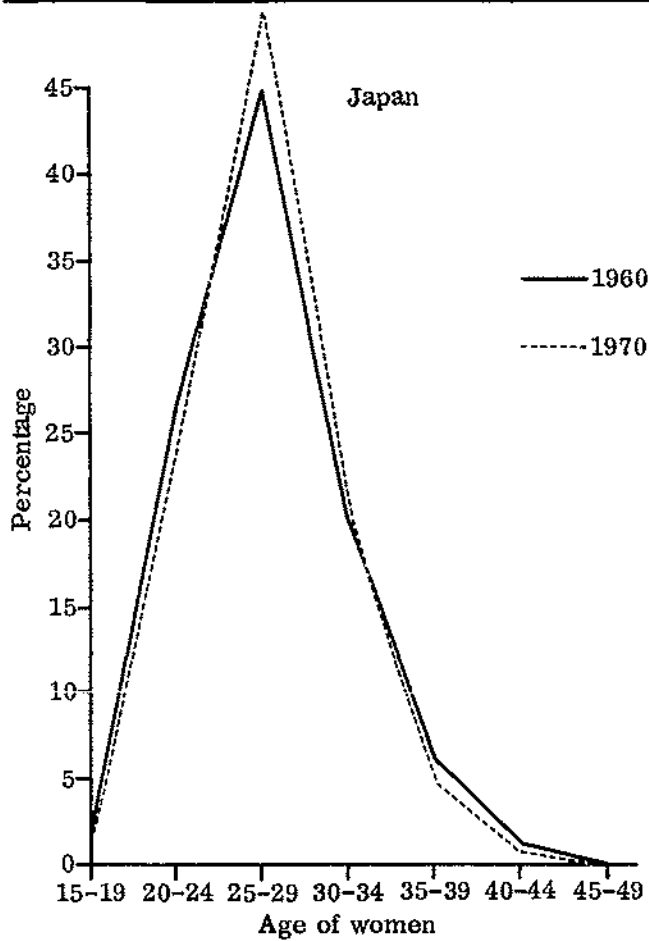
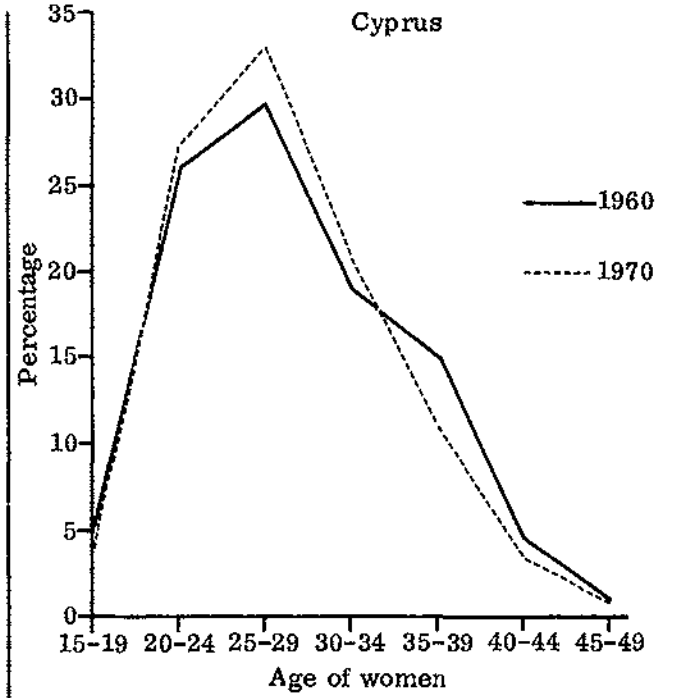
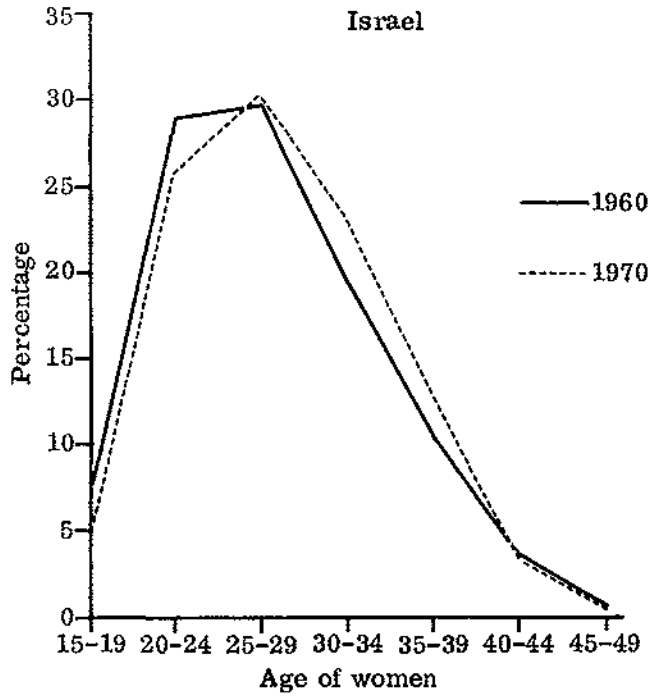
Fertility declined more or less considerably in each of the countries for which information is provided in table 27 and figure VI; but the drop in gross reproduction rates over the years for which data are available were most pronounced, respectively, in Singapore, Japan, the Republic of Korea, Hong Kong and Cyprus. It is thus noteworthy that, in these four countries during the two decades of interest, there was marked contraction of the ages at which childbearing is concentrated. And in all the countries but Sri Lanka, there has been increased concentration of fertility in the age group of peak fertility. In Japan, for example, women aged 20-29 contributed 73 per cent of gross total fertility in 1970, compared with about 62 per cent in 1960. The comparable figures for the Republic of Korea were 58.8 and 49.4, respectively; but in Sri Lanka, women aged 20-29 and 25-34 had roughly the same share of gross total fertility in 1960 as in 1970. In Malaysia also no notable change in amount of concentration occurred. At the same time, about 50 per cent of gross total fertility in Japan was attributable to women in the age group of peak fertility, i.e., ages 25-29 (table 27). Comparable figures for the Republic of Korea, Hong Kong and Singapore were, respectively, 35.0, 34.7 and 33.8.

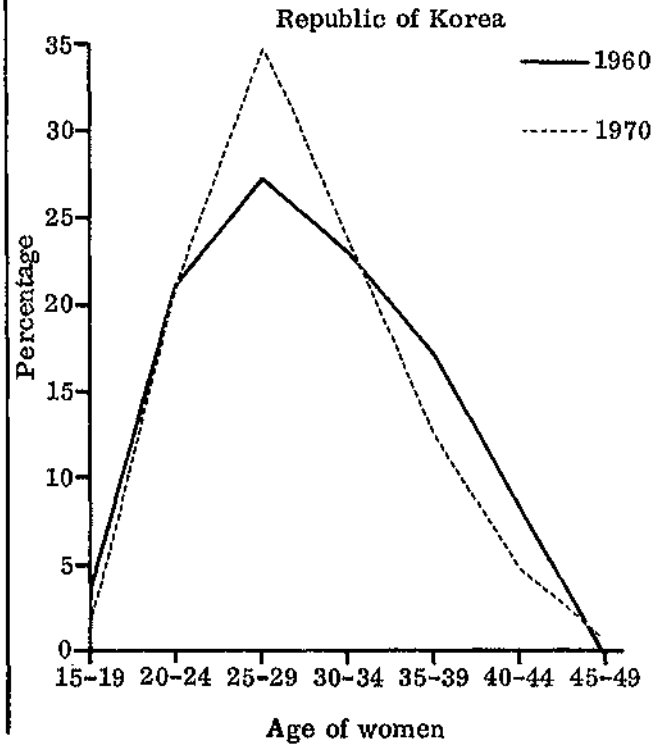
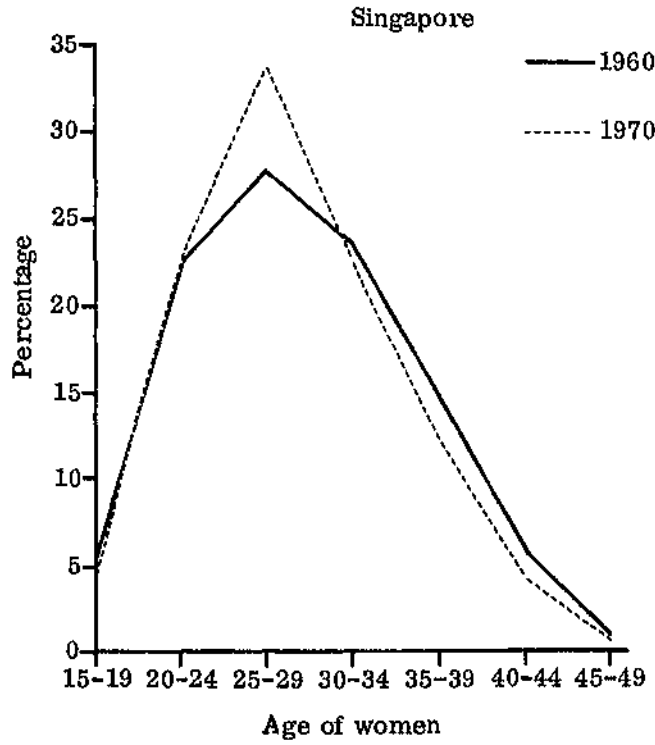
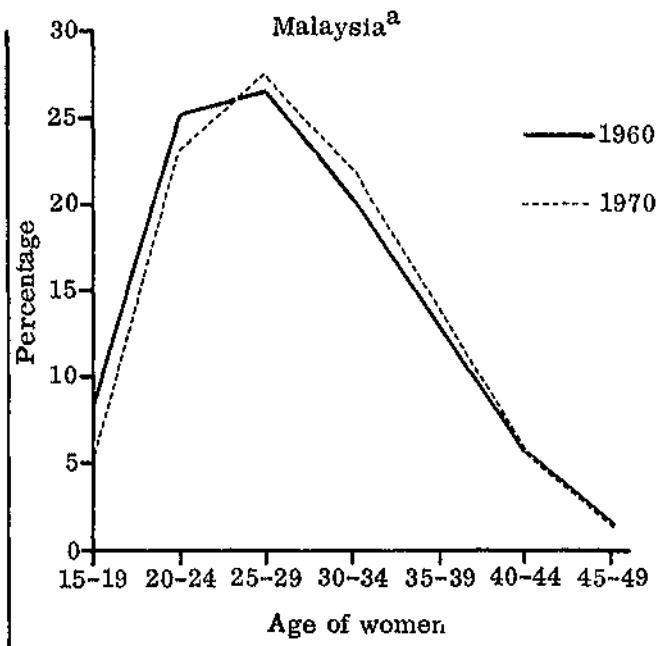
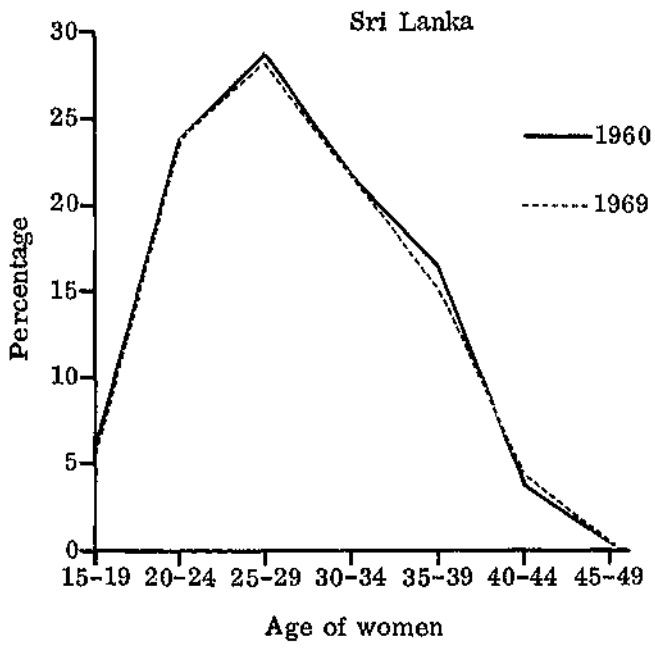
These patterns of change in the concentration of fertility within a certain segment of the reproductive age span reflect reproductive behaviour not only in the age groups of highest fertility but in other age groups. Thus, increased concentration, for example, could arise from declines among women aged 15-19 and those aged 30 and over in their actual contribution to gross total fertility without any alteration of fertility among women aged 20-29 years, or from other combinations of age-specific contributions to gross total fertility. Among these countries, as elsewhere, ^{19/} the various age groups of women have contributed differentially, sometimes negatively, to the decline of aggregate fertility.

The share of gross total fertility attributable to younger women, those aged 15-19 years, declined everywhere during the years under review, except in Japan, where it fluctuated at a rather stable level. But the relative contribution of women aged 20-24 years decreased in Hong Kong, Israel and Singapore, where fertility became concentrated in the 25-34 age group; rose considerably in Cyprus, as reproduction tended to occur increasingly among women aged 20-29; and showed approximate stability in the three remaining countries - Japan, the Republic of Korea and Sri Lanka.

In summary, changes in fertility among women under 30 years of age accounted for about 58 per cent of the decline in gross total fertility in Sri Lanka and 75 per cent of the drop in Malaysian fertility. Conversely, in Cyprus, the Republic of Korea and Singapore, the most significant contribution to the fertility decline was made by women 30 years of age and older. Where the drop in fertility occurred principally among the younger women, no doubt an advance in age at marriage was a significant factor. On the other hand, reduced marital fertility has tended to be most marked among older women.

^{19/} Ibid., p. 106.





B. Levels, trends and patterns of fertility in countries with inadequate data

General data problems

There are no reliable bases for deriving crude birth rates and gross reproduction rates for the remaining countries of Asia: 30 of the 38 countries are without adequate data. The following discussion is based on fertility measures estimated from analyses of statistics on the age composition of the population, and these measures are generally of poor or doubtful quality. Table 21 presents improved fertility estimates for several countries of Western South Asia, as well as for Thailand. These relatively more reliable measures ^{20/} could be developed because of somewhat better vital statistics registration, the availability of results of more recent population censuses and demographic surveys and through the application of new analytical techniques. It should be noted that for Sabah and Sarawak in Malaysia and for the former Democratic Republic of Viet Nam, no basis exists for estimating either crude birth rates or the gross reproduction rates. Estimated crude birth rates are now available for 36 of these countries; but for 17 of the 38 countries, gross reproduction rates could not be calculated.

Fertility levels, trends and patterns

The best available estimates place the crude birth rate in these countries (i.e., all but the eight with reasonably reliable statistics discussed earlier) as being in the moderate to high range of from about 31 to possibly 54 live births per annum per 1,000 population (table 21). Gross reproduction rates are available for so few countries that the range of this measure among those for which it could be calculated hardly communicates meaningful information about the variation in fertility levels within Asia. However, among the seven countries for which the gross reproduction rates could be estimated, the rates varied from 2.5 in the Philippines to 3.6 in Kuwait; the countries in this group do not include China, Pakistan or those of Middle and Western South Asia, for which crude birth rates are estimated to be highest. The estimated crude birth rate of 31 per 1,000 population for China (table 21) is probably very weak, owing to the unavailability of vital registration statistics, survey or recent census data on which to develop a reliable measure. Other estimates of the crude birth rate for China in 1972 place the measure at from 26.7 (1970-1975) to 38.6. ^{21/} One set of estimates, derived by an analysis of official vital registration statistics for periods during the 1950s, results of the 1953 population census and an official estimate of the total population for around 1964, places the Chinese crude birth rate and gross reproduction rate in 1970, respectively, at 26.9 per 1,000 population and 1.84. ^{22/}

^{20/} The improvements are in relation to the quality of data presented at earlier dates for these countries in Population Bulletin, No. 7.

^{21/} L. A. Orleans, "China's population figures: can the contradictions be resolved", Studies in Family Planning, vol. 7, No. 2 (February 1976), pp. 54-55.

^{22/} "Selected world demographic indicators by countries, 1950-2000" (ESA/P/WP.55), p.99.

The estimated crude birth rates and gross reproduction rates do not vary in level systematically according to regions. On the contrary, moderate fertility levels can be found in each region. But the concentration of high rates is pronounced in Middle and Western South Asia, where crude birth rates of 47 and over are common, ranking these regions along with Eastern and Western Africa as the world's regions of highest fertility.

The unreliable statistics not only make it difficult to gauge levels of fertility with any confidence but render it most hazardous, if not impossible, to determine trends. Thus, little can be said of the actual or even probable trends of crude birth rates and gross reproduction rates in the countries under consideration. This clouds the world picture of fertility change for, as stated earlier, no reliable information on this phenomenon is available for the two most populous countries, China and India.

The current levels of the crude birth rates and the gross reproduction rates estimated in several sources 23/ acknowledge considerable decreases in China. Certainly, the reported success of the national family planning programme, the rises in education over the past two decades and other positive changes in the conditions of life among the people would support an assumption that fertility is probably declining.

The moderate level of the estimated crude birth rates and gross reproduction rates for India and several countries of Eastern South Asia suggests that, if any confidence can be placed in their quality, fertility in them is or has been declining. This applies to Philippines (1970) and especially the former Republic of South Viet Nam (1973), and, more recently, perhaps also to Indonesia, where the organized efforts to reduce fertility are reported to be relatively successful. 24/ On the other hand, the crude birth rates and gross reproduction rates estimated for countries of Middle and Western South Asia are of the level that would be expected where fertility had been relatively stable at a high level possibly for a considerable length of time and/or where recent increases have occurred as a result of improved levels of living. Thus, it is not considered that any noteworthy declines have taken place among these countries.

Estimated age-specific rates for eight countries based on data of less than adequate quality, are presented in table 28; the relative contribution of women in each age group to gross total fertility is shown in table 29 and figure VII. Except for Democratic Kampuchea and Indonesia, for which the broad-peak type pattern is indicated, the fertility pattern in these countries appears to be of the late-peak type. In Jordan, maximum fertility is estimated to be at ages 25-34, a late broad-peak type pattern; thus, it appears to fit none of the three models to which most other countries throughout the world conform. However, in view of the insufficient quality of the data and of the small size of the age differentials, little emphasis is given to the seemingly unusual characteristic of the Jordanian age-type fertility curve. 25/

23/ L. A. Orelans, loc. cit., pp. 54-55; and "Selected world demographic indicators by countries, 1950-2000" (ESA/P/WP.55), p. 99.

24/ The bases for these conjectures are provided below in section C.

25/ Population Bulletin, No. 7, chap. VII.

Table 28. Estimated crude birth rates, gross reproduction rates and age-specific fertility rates, selected countries of Asia with inadequate statistics, most recent available dates

Region and country	Year or period	Crude birth rate	Gross reproduction rate	Gross total fertility rate	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
South Asia											
Eastern South Asia											
Democratic Kampuchea	1957-1962 ^{a/}	45.9	3.5	1 402.0	102.0	306.0	323.0	295.0	233.0	118.0	25.0
Indonesia ^{b/}	1966-1970 ^{c/}	44.0	2.7	1 093.0	151.0	274.0	265.0	206.0	124.0	55.0	18.0
Philippines	1970 ^{d/}	43.2	2.9	1 185.0	51.0	269.0	304.0	261.0	189.0	100.0	11.0
Socialist Republic of Viet Nam Former Democratic Republic of Viet Nam	1973	42.0	3.3	...	...	...	...	...	...	...	...
Thailand	1964-1965 ^{e/}	41.8	3.1	1 223.8	66.4	258.9	302.6	237.1	222.4	112.3	24.1
Middle South Asia											
Iran	... ^{f/}	48.0	3.4	...	...	...	...	...	...	...	...
Western South Asia											
Iraq	1965 ^{g/}	49.5	3.5	1 435.0	129.0	301.0	402.0	316.0	201.0	72.0	14.0
Jordan	1965 ^{h/}	49.2	3.5	1 418.5	122.6	309.7	363.7	335.7	206.8	63.4	16.6
Kuwait	1965 ^{i/}	45.2	3.6	...	...	...	...	...	...	...	...
Kuwaiti	1965	51.0	3.7	1 505.0	150.0	347.0	399.0	308.0	230.0	71.0	...
Syrian Arab Republic	1965 ^{j/}	47.9	3.5	1 425.5	122.0	329.8	377.8	314.6	197.4	76.6	7.3
Turkey	1965-1967 ^{k/}	40.0	2.6	...	...	...	...	...	...	...	...

^{a/} George S. Siempos, "The population of Cambodia, 1945-1980", *The Milbank Memorial Fund Quarterly*, vol. LXVII, No. 3 (July 1970), p. 336.

^{b/} Including West Irian.

^{c/} Suwardjono Surjaningrat and others, "Indonesia - East Asia review, 1973", *Studies in Family Planning*, vol. 5, No. 5 (May 1974), pp. 148-149. See also Geoffrey Mcnicoll and Si Gde Made Mamas, *The Demographic Situation in Indonesia*, Papers of the East-West Population Institute, No. 28 (Honolulu, Hawaii, East-West Center, 1973), pp. 18-19 and 45.

^{d/} For crude birth rate in 1970, see Mercedes B. Concepción, "Philippines - East Asia review, 1973", *Studies in Family Planning*, vol. 5, No. 5 (May 1974), p. 160. The gross reproduction rate was derived from the fertility model used in the World Bank population projections. See "Country statement of the Philippines" (POP/APC.2/CP/3), submitted to the Second Asian Population Conference, Tokyo, 1-13 November 1972, p. 11.

^{e/} Thailand, National Statistical Office, Office of the Prime Minister, *Report - The Survey of Population Change, 1964-1967* (Bangkok, 1968), p. 10.

^{f/} No specific date for these measures was given in the source; see "Country statement of Iran" (POP/APC.2/CP/5), submitted to the Second Asian Population Conference, Tokyo, 1-13 November 1972, p. 4.

^{g/} K. C. Zachariah and Widad Hamoiedi, "Use of census data for estimating demographic measures of Iraq", in Cairo Demographic Centre, *Demographic Measures and Population Growth in Arab Countries*, Research Series, No. 1 (Cairo, 1970), p. 46.

^{h/} Not included in *Population Bulletin of the United Nations*, No. 7.

^{i/} K. C. Zachariah, "The demographic measures of Arab countries, a comparative analysis", in Cairo Demographic Centre, *Demographic Measures and Population Growth in Arab Countries*, p. 321.

^{j/} A. Thavarajah, "Fertility, mortality and population growth in Syria", in Cairo Demographic Centre, *Demographic Measures and Population Growth in Arab Countries*, p. 214.

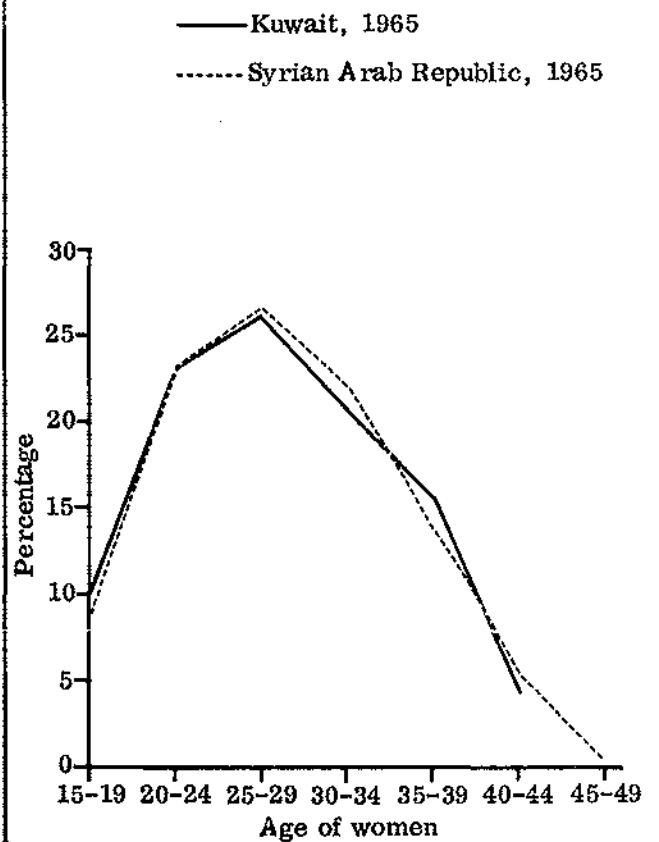
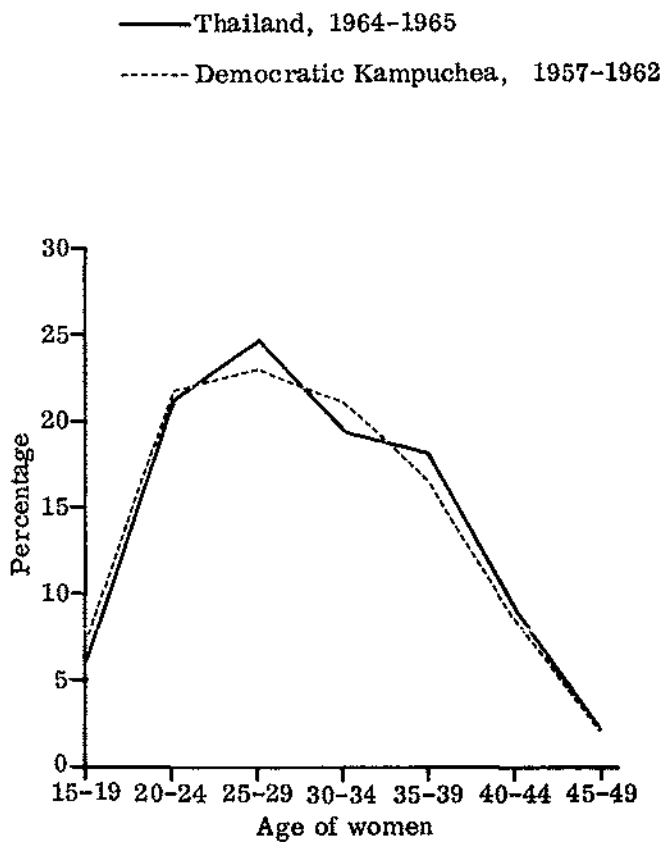
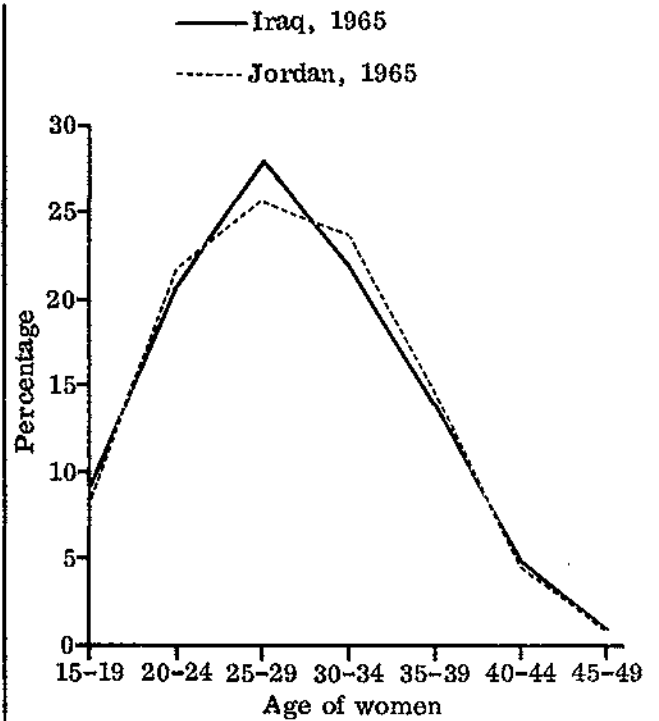
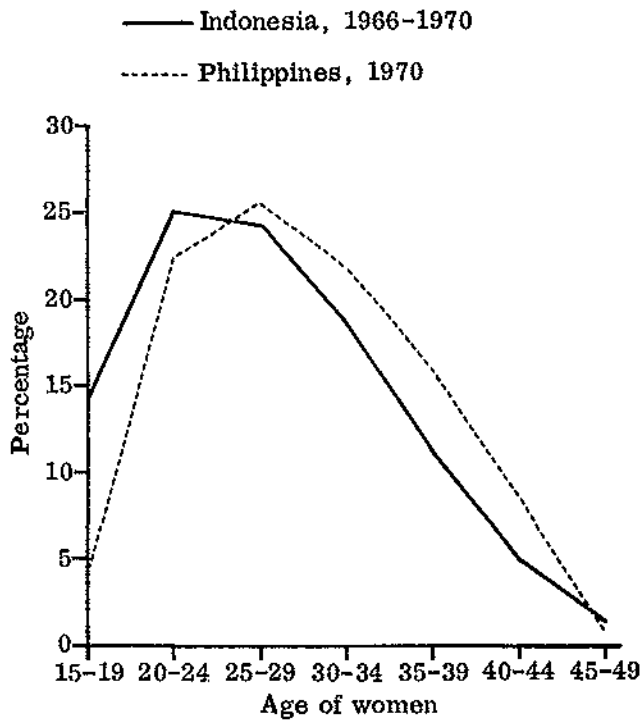
^{k/} Haluk Cillov and others, *The Population of Turkey*, CIGRED Series (Ankara, Hacettepe University, Institute of Population Studies, 1974), chap. 2, p. 20.

Table 29. Relative contribution of women in each age group to gross total fertility, selected countries of Asia with inadequate statistics, most recent available dates

(Percentage)

Region and country	Year or period	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
South Asia									
Eastern South Asia									
Democratic Kampuchea	1957-1962	100.0	7.3	21.8	23.0	21.1	16.6	8.4	1.8
Indonesia	1966-1970	100.0	13.8	25.1	24.3	18.9	11.3	5.0	1.6
Philippines	1970	100.0	4.3	22.7	25.7	22.0	16.0	8.4	0.9
Socialist Republic of Viet Nam Former Democratic Republic of Viet Nam	1973	...	...	...	...	...	...	...	...
Thailand	1964-1965	100.0	5.4	21.1	24.7	19.4	18.2	9.2	2.0
Middle South Asia									
Iran	...	...	...	...	...	...	...	...	...
Western South Asia									
Iraq	1965	100.0	9.0	21.0	28.0	22.0	14.0	5.0	1.0
Jordan	1965	100.0	8.6	21.8	25.6	23.7	14.6	4.5	1.2
Kuwait	1965	...	...	...	...	...	...	...	...
Kuwaiti	1965	100.0	10.0	23.0	26.0	20.5	15.3	4.7	
Syrian Arab Republic	1965	100.0	8.6	23.1	26.5	22.1	13.8	5.4	0.5
Turkey	1965-1967	...	...	...	...	...	...	...	...

Source: Calculated from table 28.



In light of the tendency in most Moslem countries for women to marry at comparatively early ages and inasmuch as fertility is considered to occur largely within marriage and deliberate fertility regulation is not widespread, some explanation is warranted as to why the late-peak type of fertility patterns is found for the Moslem countries other than Democratic Kampuchea and Indonesia. One possibility is that the reporting of age by women who have children is biased upwards, as has been noted for some Arab countries of northern Africa. In those cases, it was found that in population censuses, the ages of unmarried and childless women were understated, whereas women with children tended to overstate their ages. 26/

Fertility is estimated to be less sharply concentrated in a segment of the reproductive age span among these countries than among the low-fertility countries of Asia having higher quality data (tables 27 and 29). Indeed, a noteworthy difference between the two groups is that among the high-fertility peoples, women bear children over a much longer period of their reproductive life and more intensively during the middle age group, i.e., 20-34 years, so that the differences in fertility among the five-year age groups in that span are generally less marked than in the countries where fertility is low. As figure VII illustrates, none of these countries, possibly excepting Iraq, exhibits significantly higher fertility in any of the five-year age groups involved.

C. Notes on levels and trends of fertility in individual countries

East Asia

Among the countries included in East Asia, only Hong Kong and Japan (including Okinawa prefecture) have reliable registration statistics. Satisfactory birth registration data are lacking for China, the largest country in this major area and indeed, in Asia, and for the Democratic People's Republic of Korea, Mongolia and the Republic of Korea.

In Japan (including Okinawa prefecture), the second largest country in East Asia, fertility had already reached a very low level by 1960, the gross reproduction rate having fallen from about 1.8 in 1950 to 1.2 in 1955 and about 1.0 in 1960. It then remained almost constant at approximately this level throughout the 1960s and registered 1.02 in 1970 (table 23). The course of the crude birth rate also reflects the change in Japanese fertility from moderate to low levels. Japan experienced better than a 30 per cent fall in the crude birth rate during the early 1950s (table 22). The measures for 1950 and 1955 were, respectively, 28.4 and 19.7 per 1,000 population. After 1955, the crude birth rate fluctuated at from about 17 to 19, except in 1966, when it dropped to a low of 13.9 per 1,000 population.

During the period 1955-1970, fertility in Hong Kong underwent a very impressive decline. In so far as the crude birth rate is concerned, this measure fell from 36.3 in 1955 to 20.0 per 1,000 in 1970, a decrease of 45 per cent. Most of the decline in the crude birth rate in Hong Kong before 1965 appears to have been due to changes in the age structure and marital status of women and, to a lesser extent, to a decline in fertility of married women. 27/ During the period

26/ Communication from the United Nations Cairo Demographic Centre.

27/ See R. Freedman and others, loc. cit., pp. 3-9.

1965-1971, on the other hand, the Economic and Social Commission for Asia and the Pacific (ESCAP) reports 28/ that 69 per cent of the decline in the crude birth rate was due to the decline in marital fertility rates and 31 per cent to changes both in age structure of females in the reproductive ages and in the proportions married. Significantly, the relative numbers of women married in the age group 15-19 declined from 6.4 in 1961 to 4.7 in 1966 and dropped to only 2.9 per cent in 1971 - a negative change of 55 per cent for the entire period. The report further states that during the same time, the relative number of women in age group 20-24 decreased from 51.0 per cent in 1961 to 42.7 in 1966 and had fallen to 32.3 by 1971, a 37 per cent drop during the period in question.

Birth registration data for the Republic of Korea are incomplete, but an analysis of reasonably accurate statistics on the distribution of population by age obtained at various censuses shows the crude birth rate to have declined from 43.0 per 1,000 population in 1960 to 33.0 in 1966 and 29.0 in 1970, or by about 33 per cent during the decade. 29/ The corresponding gross reproduction rate showed a similar decline of 36.7 per cent for the same period, dropping from about 3.0 in 1960 to 2.4 in 1966 and 1.9 in 1970. The over-all reduction in fertility level was due largely, on the one hand, to an increased control of fertility within marriage, by abortion as well as contraception and, on the other hand, to delayed age at marriage.

Knowledge of the levels and trends of fertility in the three remaining countries of East Asia is entirely inadequate. The crude birth rate of 31 per 1,000 shown for China in table 21 was taken from a published source, and its basis is not known. 30/

Published figures indicate a crude birth rate of about 40 per 1,000 in Mongolia and about the same, or perhaps a little higher, in the Democratic People's Republic of Korea. No information on trends is available for either of these countries.

South Asia

Middle South Asia

Sri Lanka is the only country in Middle South Asia for which registration statistics are of satisfactory quality. For the remaining seven countries - Afghanistan, Bangladesh, Bhutan, India, Iran, Nepal and Pakistan - data are so deficient as to be useless for the identification of trends and barely adequate to suggest the order of magnitude of current levels.

28/ See "Population of Hong Kong" (E/CN.11/1120), p. 94, tables 126 and 127.

29/ Lee-Jay Cho, The Demographic Situation in the Republic of Korea, Papers of the East-West Population Institute, No. 29 (Honolulu, Hawaii, East-West Center, 1973), pp. 10-12.

30/ United States of America, Bureau of the Census, International Statistics Program Center, "Research document No. 6", Washington, D.C., Department of Commerce, 31 March 1974.

Sri Lanka experienced a steady and slow birth rate decrease, though not as spectacular as that registered in either Hong Kong or Singapore. The number of births per 1,000 population during the 20-year period under consideration fell from 39.7 per 1,000 in 1950 to 36.6 in 1960 and 30.4 in 1970, a decline of 23 per cent; thereafter, the rate fluctuated around this level, with an upward inclination. Like the crude birth rate, the gross reproduction rate also dropped by about 18 per cent or from 2.6 in 1960 to 2.4 in 1965 and 2.2 in 1969. But lack of a measure of the gross reproduction rate for 1950 makes it impossible to compare the relative change from 1950 to 1970 in it and the crude birth rate. During the decade 1960-1970, however, the two measures declined by identical amounts.

Analyses by various authors of the changes in the age structure and marital status, as well as in marital fertility, provided an additional glimpse into the characteristics of the fertility decline in Sri Lanka during the years under review. Wright ^{31/} observed that from 1953 to 1963, the decline in the crude birth rate was due to the combined effect of changes in the distribution of women by age within the reproductive ages, which was favourable to lower fertility, and also to the declining proportion of women married. The relative number of women married in the age group 15-19 dropped by 37 per cent, from 24.3 in 1953 to 15.3 in 1963, while those married among women aged 20-24 years decreased by 13 per cent, from 67.5 to 58.5 per cent. It will be observed from the age-specific fertility rates in table 23 that from 1955 to 1969, the decline of fertility was most marked among women in the 15-19 age group. According to Fernando's analysis, ^{32/} the decline of the crude birth rate during 1963-1968 was attributable mainly to the changes in the proportion of persons married. However, in his findings, changes in age structure had a counter-effect that partially offset the influence of change in marital structure. During that period, the declines in the proportion of women married in the age groups 15-19 and 20-24 are said to have accelerated significantly by comparison with the trend observed earlier. The percentage of women aged 15-19 who were married dropped from 15.0 per cent in 1963 to 9.1 per cent in 1968, or by 39 per cent; but the fall in the age group 20-24 was much less pronounced, from 57.4 to 48.0, or by 16 per cent. According to a more recent study, ^{33/} there was an indication that the decline in the crude birth rate during 1968-1970 was caused solely by the decrease in marital fertility rates.

Because reliable vital registration statistics are lacking for India, the level of fertility in that country must be estimated either from the census data or from data obtained from the National Sample Survey and the Sample Registration System of the Registrar-General of India. Attempts have been made by numerous scholars to estimate and study the level and trend of fertility in India. The crude birth rate for the intercensal decade 1951-1961 was estimated at 41.7 per 1,000. On the basis of data obtained from the Sample Registration System, an estimated crude birth rate of 37.0 for 1970 was derived. ^{34/} Based on data obtained from the Sample Registration System in 1972, a crude birth rate of 37.2 per 1,000

^{31/} Loc. cit., pp. 745-750.

^{32/} Loc. cit., pp. 447-449.

^{33/} Economic and Social Commission for Asia and the Pacific, "Family planning programmes and fertility in the countries of the ECAFP region", p. 20, table 5.

^{34/} Government of India, Department of Statistics, Central Statistics Organization, "Country statement of India" (POP/APC.2/CP/12), submitted to the Second Asian Population Conference, Tokyo, 1-13 November 1972, p. 8.

was estimated, 35/ which tends to confirm the 1970 figure. But since the estimates for 1970 and 1972 and that for 1951-1961 have been derived from different sources and by different methods and thus may not be comparable, they may not be used for the purpose of assessing a trend. 36/

Compared with that of many other countries of Asia, the level of fertility estimated for India is not especially high, although according to some sources, the levels and trends prevailing within the country are rather diverse. Thus, according to the Indian National Sample Survey, fertility may have risen in the states of Bihar, Uttar Pradesh, West Bengal, Madhya Pradesh and Orissa. But it is likely to have decreased in Assam, Mysore and Maharashtra; and in other states it may hardly have changed. 37/

An important feature of the Indian demographic situation is the very early marriage of women. It has been suggested, on the basis of the 1966-1970 survey data, that the average age at marriage of women, though still comparatively low, has risen significantly from 13 years prior to 1951 to 18 years during 1966-1970, 38/ a circumstance which, owing to Indian social institutions and customs, decreases the likelihood of pregnancy at a very early age. This effect, however, may be partially compensated by a lengthening in the average marriage due to decreased mortality and consequently less frequent early widowhood.

In Pakistan also, the vital registration system is inadequate. Again, it is necessary to rely upon both censuses and survey data for reasonably reliable measures of fertility or of the birth rate. On the basis of data obtained from the Population Growth Estimation Project (PGE) for 1962-1965, an average birth rate of 52 per 1,000 was estimated, the values being 53 for Bangladesh (formerly referred to as East Pakistan) and 52 for Pakistan (formerly West Pakistan). 39/ However, for purposes of the third five-year plan (1965-1970), the Government assumed a birth rate of 50 per 1,000. Yet another value was derived by an analysis of data obtained in a more recent national sample survey, yielding a crude birth rate of 43 per 1,000 population for 1969. 40/

35/ N. R. Parthasarathy, "Fertility decline in India during 1961-1971", The Journal of Family Welfare, vol. XX, No. 2 (December 1973), p. 68.

36/ It is probable that some births failed to be recorded in the Sample Registration System.

37/ P. M. Visaria, "Mortality and fertility in India, 1951-1961", The Milbank Memorial Fund Quarterly, vol. XLVII, No. 1, part I (January 1969), p. 95.

38/ N. R. Parthasarathy, loc. cit., p. 70.

39/ J. Gilbert Hardee and Adeline P. Sattesthwaite, Pakistan, Country Profiles (New York, The Population Council, 1970), p. 1. The Population Growth Estimation technique is self-checking and makes an approximate correction for births omitted in the survey.

40/ "Pakistan's population situation", Birthright, Special number, 1971, p. 14.

In Bangladesh, as in Pakistan, the birth registration system is very defective and yields statistics that are insufficient for any meaningful analysis of levels and trends of fertility of that country. However, many attempts have been made at estimating an approximate level of fertility, utilizing census and survey data. Accordingly, a crude birth-rate in the range of 48-51 and a gross reproduction rate of between 3.0 and 3.4 have been estimated for the decade 1961-1971. 41/

Registration of demographic events in Iran is also incomplete. Census data and various surveys make it possible to derive an approximate measure of the fertility level. By "reverse-surviving" the age data from the 1956 census, a crude birth-rate of 48 per 1,000 was estimated for the period 1946-1951. 42/ According to results of fertility surveys conducted in four rural areas and at Teheran City in 1965, the total fertility rate for rural women was about 7.6 children per woman and for the average woman at Teheran it was six. The corresponding crude birth-rate for Iran as a whole was estimated by the Government to be about 50 per 1,000 population. 43/ On the basis of available data and research findings, a crude birth-rate of 48 and an average completed fertility of seven births per woman are held by the Government to be the prevailing fertility indicators for the Iranian population. In other words, fertility in Iran is still high, though the lower urban fertility suggests that a decline may already have commenced among certain groups residing in urban areas, where living conditions are more favourable than elsewhere in the country.

Only highly tentative estimates are available for Nepal. On the basis of the censuses of 1952-1954 and 1961, to which different analytical methods have been applied, a variety of estimates have been made of the current level of Nepalese fertility. These estimates range from as low a crude birth-rate as 40 per 1,000 to as high a figure as 54 for the period 1951-1961. 44/ Results of the 1961 census and the 1963 population survey permitted an analysis that yielded an estimated crude birth-rate of 40 per 1,000 for 1971, and an analysis of statistics collected in the 1965-1966 National Health Survey gave a crude birth-rate in the range of 50-54 live births per 1,000 population. 45/

In Afghanistan and Bhutan, vital statistics are entirely lacking. The 1972 estimated crude birth-rates of 51.0 for Afghanistan and 47.0 for Bhutan are mainly conjectures. 46/

Eastern South Asia

The region of Eastern South Asia includes a number of countries that have a relatively large number of inhabitants and for which substantial demographic data

41/ Bangladesh, Ministry of Home Affairs, Census Organization, Projection and Estimate of Population of Bangladesh, Bulletin No. 1, 1973; Census 1974, No. 7 (Dacca), pp. 2-3.

42/ Population Bulletin, No. 7, p. 43.

43/ "Country statement of Iran" (POP/APC.2/CP/5), submitted to the Second Asian Population Conference, Tokyo, 1-13 November 1972, p. 4.

44/ "Country statement of Nepal" (POP/APC.2/CP/13), submitted to the Second Asian Population Conference, p. 4.

45/ Daniel Taylor and Rita Thapa, Nepal, Country Profiles (New York, The Population Council, 1972), p. 2.

46/ United States Bureau of the Census, "Research document No. 6".

are lacking. These countries are Burma, Indonesia, the Philippines, the Socialist Republic of Viet Nam and Thailand. Singapore and Malaysia are the only two countries in this region that have reliable birth registration statistics. In both of them, the crude birth rate has been declining, although in Malaysia, the decline has been rather moderate.

Singapore can be said to have a low level of fertility. The crude birth-rate had fallen to 23.1 in 1972; and in 1970, the gross reproduction rate was only 1.51 (tables 22 and 23). These levels are well below the indicators of high and low fertility (a crude birth rate of 30 and a gross reproduction rate of 2.0 or over) that were identified in the analysis reported in Population Bulletin No. 7. Singapore is one of a few of the countries of Asia that experienced a marked increase in the crude birth rate in the years following the Second World War. Its birth rate remained at a high level of 45 or 46 per 1,000 until 1956, when a rapid and steady decline got under way. The crude birth rate of 45.4 per 1,000 in 1950 had decreased to 29.5 in 1965, and continued downward to 22.1 in 1970 for a reduction of little more than 50 per cent during the 20-year period. Indeed, the birth rate reached its nadir (21.8) in 1969, moving up steadily, if moderately, thereafter, to 23.1 in 1972. As for the gross reproduction rate, it followed a more or less similar course, decreasing by one half from 3.1 in 1950 to 1.5 in 1970 and remaining almost at that level until 1972. ^{47/} The downward movement of both the crude birth rate and the gross reproduction rate continued in 1973, the measures being 22.1 and 1.4, respectively. ^{48/}

Several researchers have reported on the factors in the decline of fertility in Singapore. One analysis showed that the effect of the changes in age composition upon the reduction of the crude birth rate during the period ending in 1969 was almost nil, the most important factors in the birth rate decline being the changes in age-specific marital fertility rates and in the proportions married among women of childbearing ages, especially those aged 15-29 years. ^{49/} Results of a more recent study led the author ^{50/} to conclude that the subsequent rise in the crude birth rate during the years 1970-1972 was mainly caused by an increase in the proportion of the female population in the reproductive ages. He observed, moreover, that the subsequent decline of the crude birth rate in 1973 was caused entirely by a decline in fertility, and that the amount of the decrease was moderated by the increase in the proportion of women in the reproductive ages. An examination of the changes in age-specific fertility rates for the years 1972-1973 revealed that the drop in fertility of women in all age groups within the reproductive ages had contributed to the fertility decline in 1973.

Furthermore, the author noted that the decline had been more pronounced among older than among younger women. This pattern is in contrast with that observed to have characterized the fertility decrease during the late 1950s and early 1960s, when decreases among younger women, especially and in particular those aged 15-19 years, occurred primarily as a result of an increase in average age at

^{47/} Saw Swee-Hock, "The rising number of births in Singapore since 1970", Singapore Statistical Bulletin (National Statistical Commission of Singapore), vol. 2, No. 1 (June 1973), p. 29.

^{48/} Saw Swee-Hock, "Singapore: resumption of rapid fertility decline in 1973", Studies in Family Planning, vol. 6, No. 6 (June 1975), p. 166, table 1.

^{49/} Chen-tung Chang, "Factors influencing the declining birth rate in Singapore", The Malayan Economic Review, vol. XV, No. 1 (April 1970), p. 97.

^{50/} Saw Swee-Hock, "Singapore: resumption of rapid fertility decline in 1973", p. 167; and tables 2, 4 and 5.

marriage. The greater decline during the 1970s in fertility among women in the older age groups appears to have resulted from their success in limiting family size and appears to be the major factor causing the already low fertility to continue to decline in 1973.

In Malaysia, as mentioned earlier, the fertility decline has been moderate and the current level can hardly be considered low. In Peninsular Malaysia, the crude birth-rate of about 46.7 per 1,000 in 1956 had declined to 34.0 by 1970, and the corresponding gross reproduction rate dropped from 2.9 to 2.5 over the same period. These levels are, of course, much higher than the 1970 rates observed for Singapore. Based on an analysis by Cho and associates, 51/ the decline of the crude birth-rate during 1957-1966 was attributable to the decline in the proportions married especially at younger ages, reportedly accounting for about one third of the reduction, while the changes in marital fertility were responsible for about two thirds.

The statistics for Malaysia (table 23) show a decline in age-specific fertility rates for women of all ages in Peninsular Malaysia. The most dramatic decrease occurred among women aged 15-19, but there was a substantial fertility reduction among all women below 30 years of age. A large part of the decrease is said to have taken place among Chinese women, who comprise a considerable proportion of the total.

Attempts were made in the 1950s and 1960s to estimate fertility levels in Indonesia by various methods, including estimates based on birth registration in certain areas, "reverse-survival" from the 1961 census, use of data from demographic surveys and stable population methods. The estimated crude birth-rate obtained from these sources and methods is found to range between 40 and 52 per 1,000. 52/

In one study, 53/ a total fertility rate of 5.5 for Indonesia as a whole during the period 1966-1970 was computed from the 1971 census tabulation of own children by age and residence of mother, with a mortality adjustment from census data on children ever born and surviving. On this basis, the total fertility rate was estimated to be 5.2 for Java and 5.9 for the other islands. The corresponding crude birth-rate was estimated to be 42 per 1,000 for Java, 48 for the other islands and 44 for all Indonesia.

For the Philippines, vital registration is so seriously incomplete that no reliance can be placed on the recorded figures. Estimates of the birth-rate obtained indirectly from the number of children enumerated in various censuses and special inquiries on the number of children born furnish evidence of the fertility level of the population. Based on these data, one researcher derived crude birth-

51/ Lee-Jay Cho, James A. Palmore and Lyle Saunders, "Recent fertility trends in West Malaysia", Demography, vol. 5, No. 2 (1968), p. 739.

52/ P. McDonald, "Fewer Indonesians?", Bulletin of Indonesia Economic Studies (Department of Economics, Research School of Pacific Studies, Australian National University), vol. VII, No. 1 (March 1972), p. 73.

53/ Geoffrey McNicoll and Si Gde Made Mamas, The Demographic Situation in Indonesia, Papers of the East-West Population Institute, No. 28 (Honolulu, Hawaii, East-West Center, 1973), p. 19, table 5. See also Swardjono Surjaningrat and others, "Indonesia - East Asia review, 1973", Studies in Family Planning, vol. 5, No. 5 (May 1974), p. 149, table 2.1.

rates ranging between 45 and 50 per 1,000 and offered the hypothesis that the crude birth rate had probably not changed for the past 70 years. 54/

Another study 55/ proposed crude birth rates for the Philippines of 40.4 per 1,000 in 1960 and 38.6 in 1968, which were estimated on the basis of the 1960 and 1970 censuses and the 1968 National Demographic Survey. These rates would suggest a very slight decline. However, compared with the crude birth rate of 46-48 estimated by Lorimer 56/ and the rate of 47 per 1,000 estimated by Keyfitz and Flieger, 57/ the 40.4 figure for 1960 appears low. This is especially so in light of another estimate of 43.2 live births per 1,000 population in 1970 reported by Concepción (see table 21). Although the proposition is difficult to substantiate, it is possible that in recent years the birth rate did in fact decline somewhat.

Analysis of preliminary results of the 1970 census of Thailand yields a crude birth rate in the range of 45-50 per 1,000 population. 58/ This indication of relatively high fertility is associated with an average completed family size among Thai women of 6.5 live births. 59/ The statistics obtained in the Survey of Population Change in 1964-1967 and the 1969 data from the National Longitudinal Survey in 1969-1973 served as bases for an analysis that revealed a decline in the marital fertility of Thai women between 1960 and 1969. Results of the 1969-1970 round of the Longitudinal Survey of Social, Economic and Demographic Change, and analyses based on them disclosed that the general marital fertility rate for currently married women aged 15-49 years in 1969-1970 might be as much as 256 per 1,000, which is high by Asian standards. 60/ The rate was estimated to be highest in the rural areas (272), and lower by 29 per cent in provincial urban areas (193) and by 39 per cent at Bangkok Thonburi (165). Moreover, the authors state that the age pattern of fertility in Thailand was observed to be unusual in that women at older ages in the rural areas had comparatively very high fertility. It is believed that perhaps as many as half of the live births in rural areas occur to women over 30 years of age, a proportion seldom observed elsewhere.

Western South Asia

In Western South Asia, Cyprus and Israel are the only countries for which demographic data are relatively complete. The only basis for a fertility estimate for Lebanon, apart from results of the 1952 census, is a sample survey conducted

54/ Mercedes B. Concepción, The Philippines, Country Profiles (New York, The Population Institute, 1970), p. 1.

55/ Lee-Jay Cho and R. D. Retherford, loc. cit.; appendix, "Notes on data sources", p. 180.

56/ Frank W. Lorimer, Analysis and Projections of the Population of the Philippines, in University of the Philippines, Population Institute, First Conference, 1965 (Quezon City, University of the Philippines Press, 1966).

57/ N. Keyfitz and W. Flieger, Population: Facts and Methods of Demography (San Francisco, W. H. Freeman and Co., 1971), p. 85.

58/ "The demographic situation of Thailand" (POP/APC.2/CP/7), country statement prepared for the Second Asian Population Conference, Tokyo, 1-13 November 1972, p. 6.

59/ Lee-Jay Cho and R. D. Retherford, loc. cit., pp. 173-174.

60/ Chaichana Survanavejh and Peter J. Donaldson, "Thailand - East Asia review, 1973", Studies in Family Planning, vol. 5, No. 5 (May 1974), p. 170.

in 1970. The four other countries - Democratic Yemen, Oman, Saudi Arabia and Yemen - possess no data suited for estimating a crude birth rate or gross reproduction rate.

The 1970 crude birth rate of 21.3 for Cyprus represents a substantial drop of 27 per cent during the period 1950-1970. The measure, which is based on reliable vital statistics registration, corresponds to a gross reproduction rate in 1970 of 1.3. During 1950-1970, the latter followed a course similar to that of the crude birth rate, experiencing a decrease of about 30 per cent.

In Israel, the crude birth-rate, after declining during 1950-1960 at a decelerating rate from 34.5 to 26.6, has remained relatively stable, fluctuating between 24 and 27 live births per annum per 1,000 population. Approximately two thirds of the 20 per cent drop that occurred during 1950-1970 took place during the first five years of the period. The gross reproduction rate could not be calculated for 1950, but for the years thereafter up to 1970, the measure remained remarkably stable at 1.9.

Turkey is the only country of this region that has a long series of population censuses; and owing to lack of adequate vital statistics, these censuses, along with the demographic surveys of 1963 and 1966-1967, constitute the principal sources of information on Turkish fertility. In recent years, several scholars have analysed relevant data from a variety of sources with the view to obtaining reasonably reliable estimates of Turkish fertility. ^{61/} One analysis of the 1960 census age distribution with mortality estimates obtained from the Turkish Demographic Survey of 1963 yielded a crude birth rate of 44.2 per 1,000 around 1960 and a corresponding total fertility rate of 6.2. ^{62/} That study also reported a decline in the birth rate in the 1960s and marked fertility differentials between the major cities, smaller towns and rural areas, with estimated birth rates of 23.7, 35.1 and 48.9 per 1,000 population, respectively, in 1960 and corresponding total fertility rates of 3.1, 4.9 and 6.8.

Analysis of results of the Turkish Demographic Survey of 1966-1967 gave, for the country as a whole, a crude birth rate of 40 per 1,000 and a gross reproduction rate of 2.6. ^{63/} The crude birth rate in rural settlements with a population under 10,000 was estimated at 44, while a figure of 31 per 1,000 was derived for the urban areas; the corresponding total fertility rates derived from the analysis were 6.1 and 3.9, respectively. The aggregate national fertility measures clearly do not reveal the striking rural-urban and regional differentials. Fertility is lowest in the metropolitan centres of Istanbul and Ismir, which are at the western end of the country, where economic and social development is comparatively advanced; and it appears to be low in rural areas of the more

^{61/} Paul Demeny and C. F. Shorter, Estimating Turkish Mortality, Fertility and Age Structure, Application of Some New Techniques (Istanbul, 1968).

^{62/} C. F. Shorter, "Information on fertility, mortality and population growth in Turkey", Population Index, vol. 34, No. 1 (January-March 1968), p. 13, table 4.

^{63/} Serim Timur, "Components of growth. Section A - fertility", in Haluk Cillov and others, The Population of Turkey, CICRED Series (Ankara, Hacettepe University, Institute of Population Studies, 1974), pp. 20-22.

developed west, compared with the rural parts of the less developed central and eastern regions. Such differences have been viewed by some as evidence that the level of fertility is not stable and that a decline may be under way.

Both Kuwait and Iraq have taken three censuses since the cessation of the Second World War. Until relatively recently, the demographic data for Kuwait were very sparse. In addition to its population censuses of 1957, 1965 and 1970, the country has, since 1952, built a system of vital registration that provides a considerable quantity of valuable data on the dynamics of population growth. The most recent population census of Iraq was taken in 1965; and although vital statistics for that country are available for a number of years, they are not adequate for use in developing demographic measures.

Birth registration data for Kuwait are available for each year beginning in 1958, and the quality of the data collected appears to have improved over time, so that for the more recent years, statistics of births may be more or less reliable. The crude birth rate is high, varying from 43 per 1,000 in 1965 to 55 in 1971, with the rates being higher for the Kuwaitis than for the non-Kuwaitis, who comprised 53 per cent of the population at the census of 1970. Births tabulated by age of mother are available for 1965, and these data yielded a gross reproduction rate of about 3.6. One study showed that age-specific fertility rates were also relatively higher for Kuwaitis than for non-Kuwaitis at all age groups except 15-19. In addition, the peak ages of fertility were 25-29 years, a late-peak type pattern, for Kuwaitis; and 20-24 years, or an early-peak type fertility pattern, for the non-Kuwaitis.

Based on the age distribution of the 1957 population census, the only useful source of information on fertility in Iraq, a crude birth rate of 48.0 per 1,000 was estimated for the period 1947-1952 by "reverse-surviving" the number of children enumerated in age group 5-9 at the census. Reliable statistics of the distribution of births by age of mother are not available, and the gross reproduction rate of 3.3, corresponding to the estimated crude birth rate, was calculated on the assumption that the pattern of the age-specific fertility rates conformed with that observed for Egypt. These measures were published in Population Bulletin, No. 7. Subsequently, the stable population technique was applied to the age distribution in the 1957 census, yielding an estimated crude birth rate of 49.5, a gross reproduction rate of 3.5, which relate to the years 1947-1952. In view of the lack of any indication of change in fertility, the rates were assumed to have been obtained also for 1965. 64/

The first population census of the Syrian Arab Republic was taken in 1960; and because vital statistics registration is still poorly developed there, the population census constitutes the main source of information on fertility. By applying the stable population method of analysis to the age distribution

64/ K. C. Zachariah and Widad Hamoredi, "Use of census data for estimating demographic measures of Iraq", in Cairo Demographic Centre, Demographic Measures and Population Growth in Arab Countries, Research Monograph Series, No. 1 (Cairo, 1970), chap. III, p. 46.

constructed from results of the 1960 population census, a crude birth rate of 47.9 per 1,000 and a gross reproduction rate of 3.5 were obtained. 65/

In Jordan, the only complete population enumeration was carried out in 1961; and although vital statistics registration was introduced in 1926, it was not until very recently that the recording of vital events was sufficiently adequate to yield any reasonable fertility indicator. But the recent improvements in the registration of births, a change from 80 per cent complete in 1955 and 90 per cent in 1965 66/ to the current level of about 98 per cent, 67/ have been so marked that trends in the birth rate are obscured. Through an analysis based on the estimated rate of population growth in Jordan during the 1950s, between 2.7 and 3.3 per cent per annum, and through application of the quasi-stable population method, a crude birth rate of between 49 and 43 per 1,000 population was obtained. However, the multiple-variant regression procedure produced somewhat lower estimates, from 42 to 48 per 1,000 for 1961. 68/ One study, based on the stable or quasi-stable population analysis of the 1961 census, estimates a crude birth rate of 49.2 and a gross reproduction rate of 3.5 for 1965, 69/ and an analysis of data from the National Fertility Sample Survey for Jordan carried out in 1972 yielded for that year, an estimated crude birth rate of 45 per 1,000 and a gross reproduction rate of 3.4. 70/

As with a majority of the other countries of Western South Asia, birth registration is known to be deficient in Lebanon. The registered crude birth rate fluctuated between 30 and 34 per 1,000 during 1960-1968. But an analysis of data

65/ A. Thavarajah, "Fertility, mortality and population growth in Syria", in Cairo Demographic Centre, Demographic Measures and Population Growth in Arab Countries, pp. 210-214.

66/ S. Zaghoul and Amal El-Ghamry, "Present levels and trends of fertility in Arab countries", in Cairo Demographic Centre, Fertility Trends and Differentials in Arab Countries, Research Monograph Series, No. 2 (Cairo, 1971), p. 21.

67/ Population and Vital Statistics Report, Data Available as of 1 July 1974, Statistical Papers, series A, vol. XXVI, No. 3 (SA/ESA/STAT/SER.A/109) pp. 18-19.

68/ T. Paul Schultz, Fertility Patterns and Their Determinants in the Arab Middle East, Research Program on Economic and Political Problems and Prospects of the Middle East (RM-5978-FF) (Washington, D.C., The Rand Corporation and Resources for the Future, 1970), p. 65.

69/ A. Thavarajah, "Mid-decade demographic parameters of Jordan and population growth", in Cairo Demographic Centre, Demographic Measures and Population Growth in Arab Countries, p. 72. See also S. Zaghoul and Amal El-Ghamry, loc. cit., pp. 16-21.

70/ Jordan, Department of Statistics, in collaboration with the United Nations Secretariat, Draft Report of the National Seminar on Population Policy as Related to Development Strategy, 2-7 December 1972 (Amman, 1972), "Seminar conclusions and recommendations", p. 1. See also Hanna Rizk, "National fertility sample survey for Jordan, 1972. The study and some findings", Population Bulletin of the United Nations Economic and Social Office in Beirut, No. 5 (July 1973), p. 21, table 4.

from the 1970 survey of the economically active population 71/ produced a crude birth rate of 40.9 per 1,000 for the country as a whole and 25.1 for Beirut. Birth rates estimated by projecting backward the population as of 1 January 1971 to 1959-1962, with assumed rates of increase of 2.5 and 3.0 per cent per annum, suggest that the birth rate may have declined slightly.

Due to lack of demographic information in Democratic Yemen, Oman, Saudi Arabia and Yemen, the crude birth rate of 50 per 1,000 population estimated for each of those countries is little more than conjecture.

71/ See Youssef Courbage and Philippe Fargues, La situation démographique au Liban. I. Mortalité, fécondité et projections: méthodes et résultats (Beirut, Université Libanaise, 1973), p. 36, table II; and p. 38, table III.

VI. EUROPE, NORTHERN AMERICA, OCEANIA AND THE UNION OF SOVIET SOCIALIST REPUBLICS

The Union of Soviet Socialist Republics and the countries of Europe, Northern America and Oceania constitute, with a few important exceptions, the world's regions of low fertility. ^{1/} Around 1971-1973, crude birth rates among countries in the low-fertility regions varied from 10.8 (Luxembourg, 1973) to 22.7 (Ireland, 1971), if the less developed countries of Albania (1970) and Fiji (1973) with much higher birth rates of 32.5 and 28.2 per 1,000 population, respectively, are excluded. The range in gross reproduction rates was of comparable dimension, from 0.75 in Luxembourg to 1.93 in Ireland. Relatively low fertility is also found in a few other countries of Asia, the Caribbean and Temperate South America.

The relatively greater uniformity in levels of the crude birth rates and gross reproduction rates for the countries of Europe and Northern America, and for the USSR, in particular, around 1970 as compared with 1950, is an outgrowth of accelerated declines in some countries mainly after 1960, relative stability or more moderately paced decreases in others, and even very slight increases in several. None the less, the range among these countries remains wide, with both crude birth rates and gross reproduction rates being twice as high in Ireland as in Luxembourg, the country in which the lowest indicators for 1973 were recorded.

In the years following the Second World War, annual fertility rates rose in nearly all the more developed countries. This phenomenon was short-lived in Eastern Europe and the Soviet Union; and in most of Southern Europe, it was milder and took place somewhat later. In Northern America, Northern and Western Europe and Oceania, the "baby boom" was more pronounced and persisted over a longer period. However, by the mid-1960s it had ended; and except in Eastern Europe where slight increases were recorded, crude birth rates and gross reproduction rates fell to levels close to or below those achieved during the 1930s. Albania continues to have relatively high fertility, but even there, birth rates and gross reproduction rates are falling rapidly. Only in Ireland did reductions fail to occur. In the Federal Republic of Germany, Finland, the German Democratic Republic and Luxembourg, gross reproduction rates are now significantly below replacement. Fertility has reached quite low levels also in Sweden and in the Soviet Union and the United States of America, the two developed countries with the largest populations.

^{1/} Among the most outstanding exceptions are Japan, Albania and Fiji. Japan has the distinction of being a low-fertility country in a continent where the majority of countries have relatively high fertility. Albania and Fiji, on the other hand, are countries with moderately high fertility situated in major areas with low fertility. For practical purposes, including ease of developing the measures for major areas and regions as described in chapter I, fertility in these countries is discussed in the chapters dealing with the major areas in which they are located.

Normalization of age and sex composition, along with important changes in governmental population policy, appears to have had a positive impact on fertility in the Eastern European countries. The effect of the former factor is temporary; but the impact of policy changes is as yet undetermined, although in Romania, the prohibition of induced abortion in 1966 led to an immediate and sharp rise in fertility. This consequence also proved to be temporary, however, for Romanian fertility has since resumed its long-term decline.

The rise and subsequent fall in annual crude birth rates and gross reproduction rates do not, as may seem apparent, represent separate trends. Nor did increases in fertility signal a reversal of the long-term transition to low fertility. Rather, these movements were largely the result of the way in which the decline occurred in the changing post-war milieu. This fact is seen most clearly in comparisons of trends in calendar-year rates with those of birth cohorts of women who have completed or nearly completed their childbearing, showing very large increases in annual fertility, but only modest changes in completed family size. Declining childlessness and a marked preference for two or three children, as opposed to four or more, provides additional evidence that no return to the large-family pattern had taken place. ^{2/} What appeared at first to be a renewal of earlier fertility patterns was instead a fundamental change in the incidence and timing of marriage and family formation. As more women married at increasingly younger ages and began to bear children, their reproductive careers coincided with those of older women and the number of annual births rose sharply. Although they began their marital life relatively early, however, these women went on to have their children more quickly than before and terminated childbearing sooner, before age 35. As a result, fertility has become highly concentrated in the relatively short span of time between ages 20-24 and 30-34. In the late 1960s, reduced fertility among such women, coupled with declining fertility among younger women, led to sharp reductions in over-all fertility.

The factors underlying the trends of the 1950s and 1960s are complex, but the general picture is fairly clear. The birth cohorts entering the reproductive ages in the post-war years were born during the 1920s and 1930s, a period of very low fertility. As a consequence, their numbers were relatively small. Given the economic recovery and transformation then under way, their employment opportunities were particularly favourable. In addition, many Governments were instituting programmes of support for the costs of having and rearing children. This combination of demographic, economic and social developments made it especially opportune during this period for young couples to marry and begin their families, and they did so in increasing numbers.

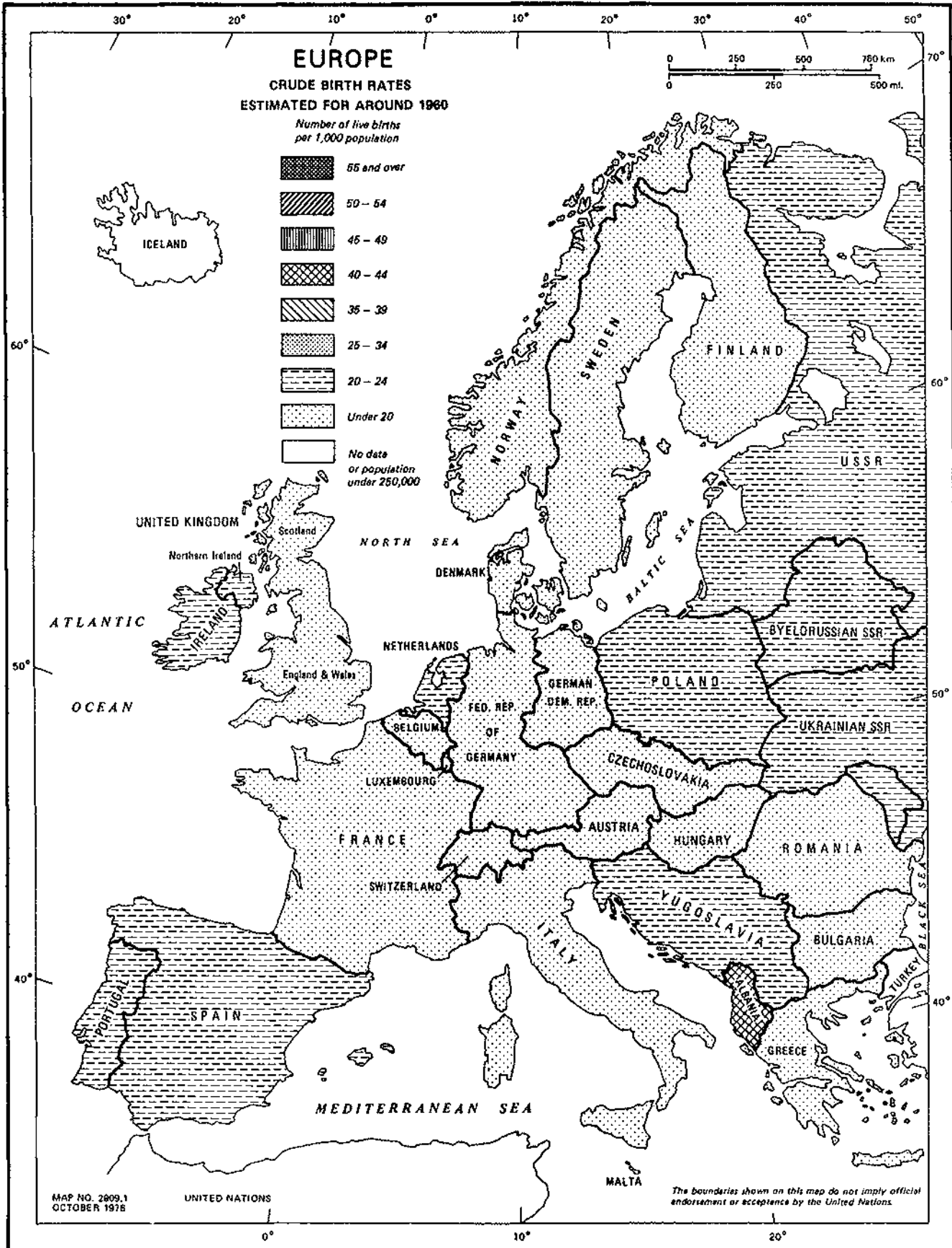
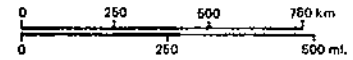
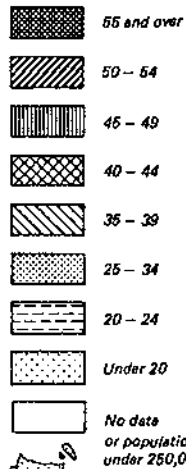
In Northern and Western Europe, where late marriage and spinsterhood had been frequent, these changes had a particularly strong effect upon annual fertility levels. Furthermore, improvements in maternal health care and particularly in contraceptive technology gave couples increased confidence that fertility could be controlled, thereby encouraging births early in marriage. The improvement in methods of fertility control was not a primary factor in the fertility declines, however, for the trend towards small families had begun long before the improved methods became widely available. They did, none the less, provide an important alternative to the postponement of marriage as a method of controlling family size. Young couples, in increasing numbers, could begin marriage with the expectation that they would be capable of spacing the desired number of children in accordance with their individual decisions.

^{2/} Fertility and Family Planning in Europe Around 1970: A Comparative Study of Twelve National Surveys (United Nations publication, Sales No. E.76.XIII.2) (in press).

EUROPE

CRUDE BIRTH RATES ESTIMATED FOR AROUND 1960

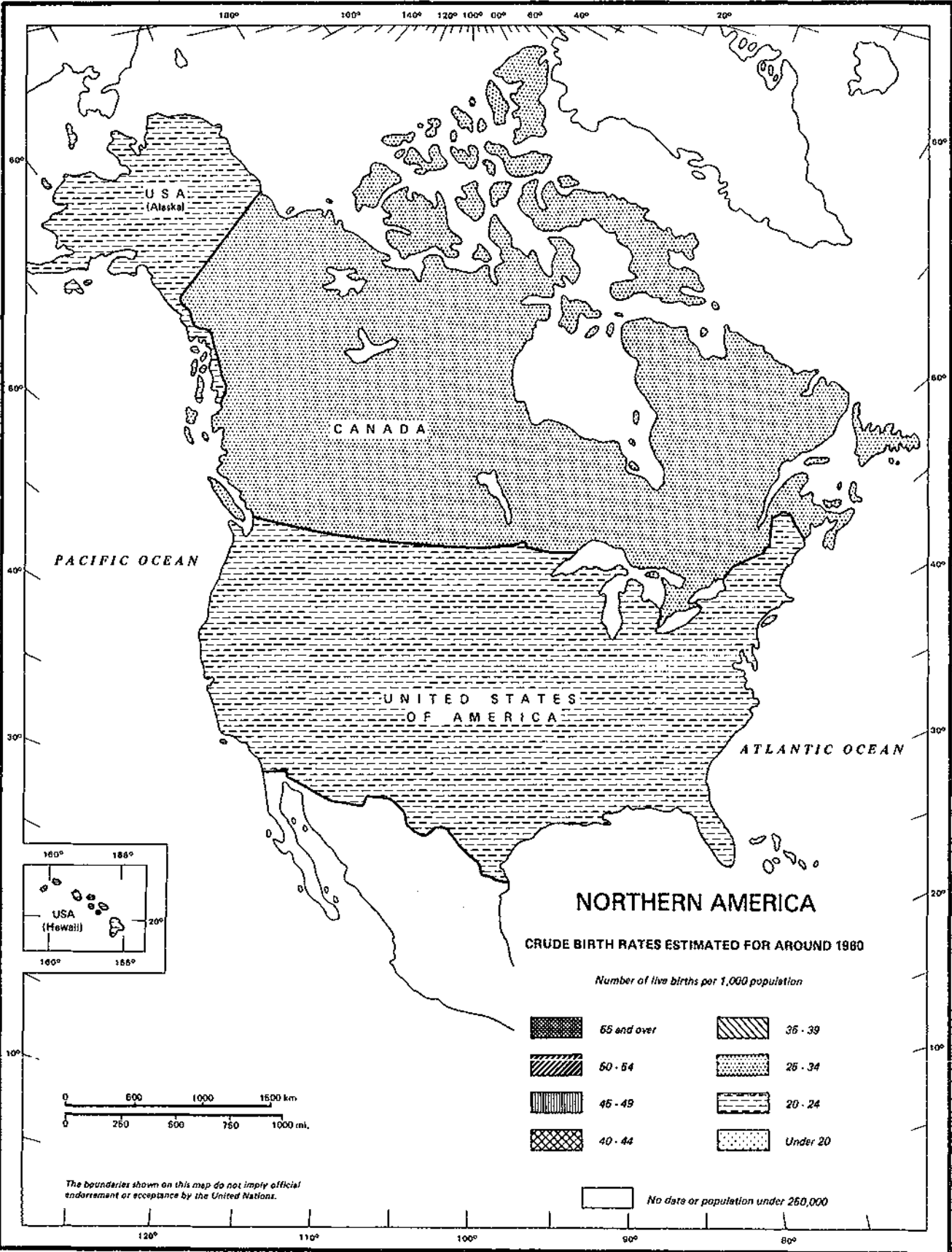
Number of live births
per 1,000 population



MAP NO. 2809.1
OCTOBER 1978

UNITED NATIONS

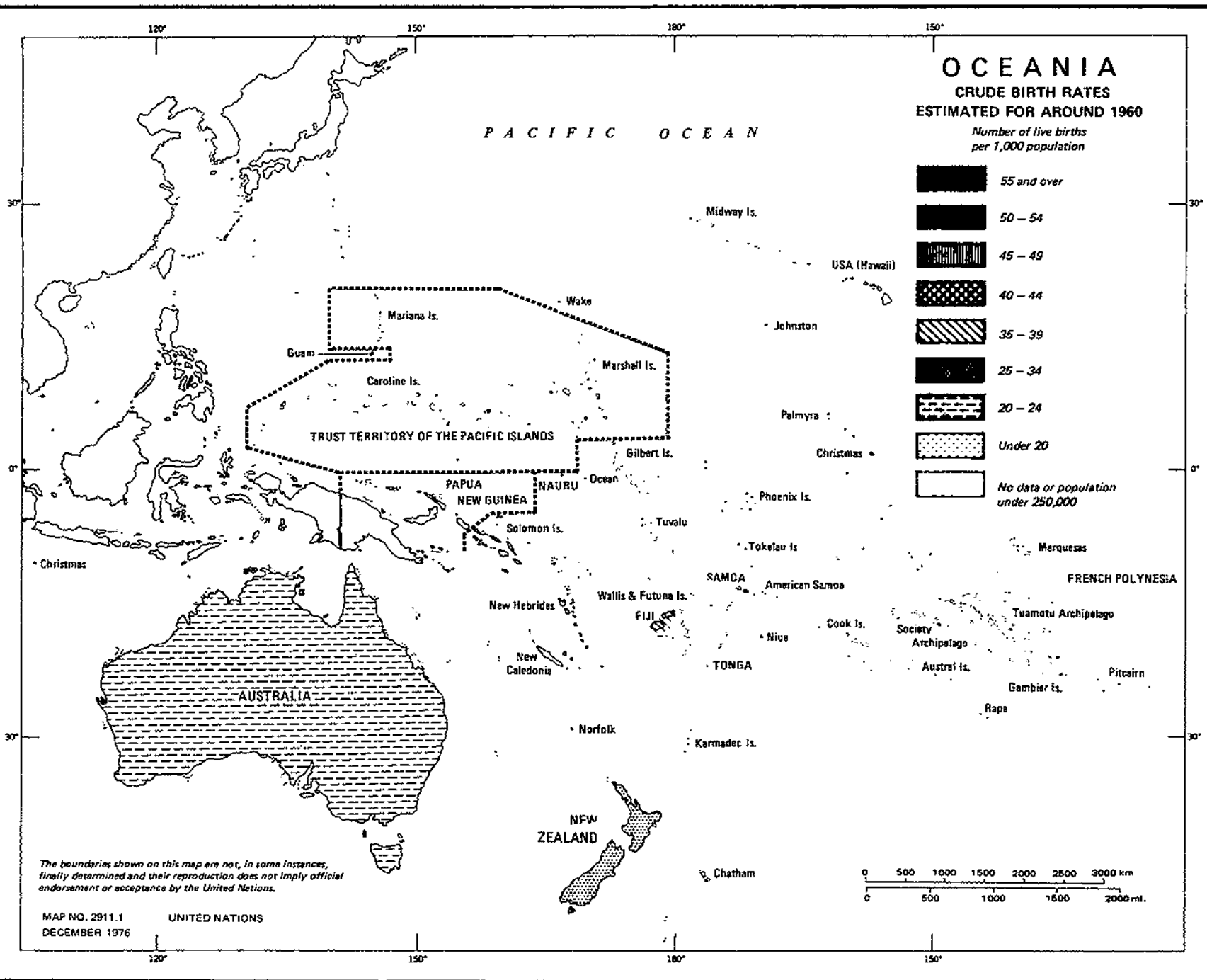
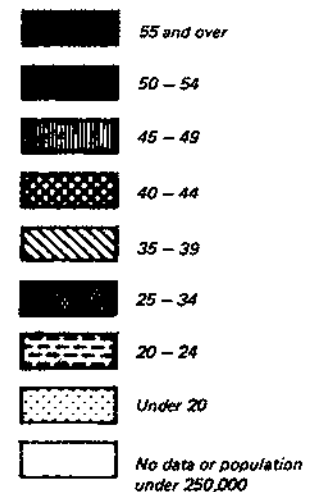
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OCEANIA

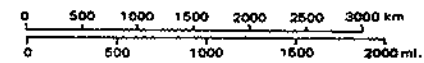
CRUDE BIRTH RATES ESTIMATED FOR AROUND 1960

Number of live births
per 1,000 population



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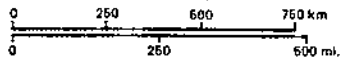
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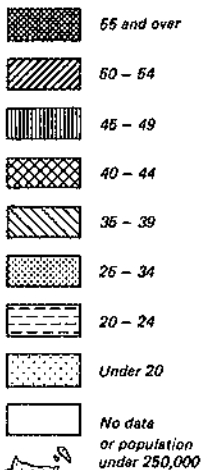
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EUROPE

CRUDE BIRTH RATES,
MOST RECENT ESTIMATE FOR EACH COUNTRY



Number of live births
per 1,000 population

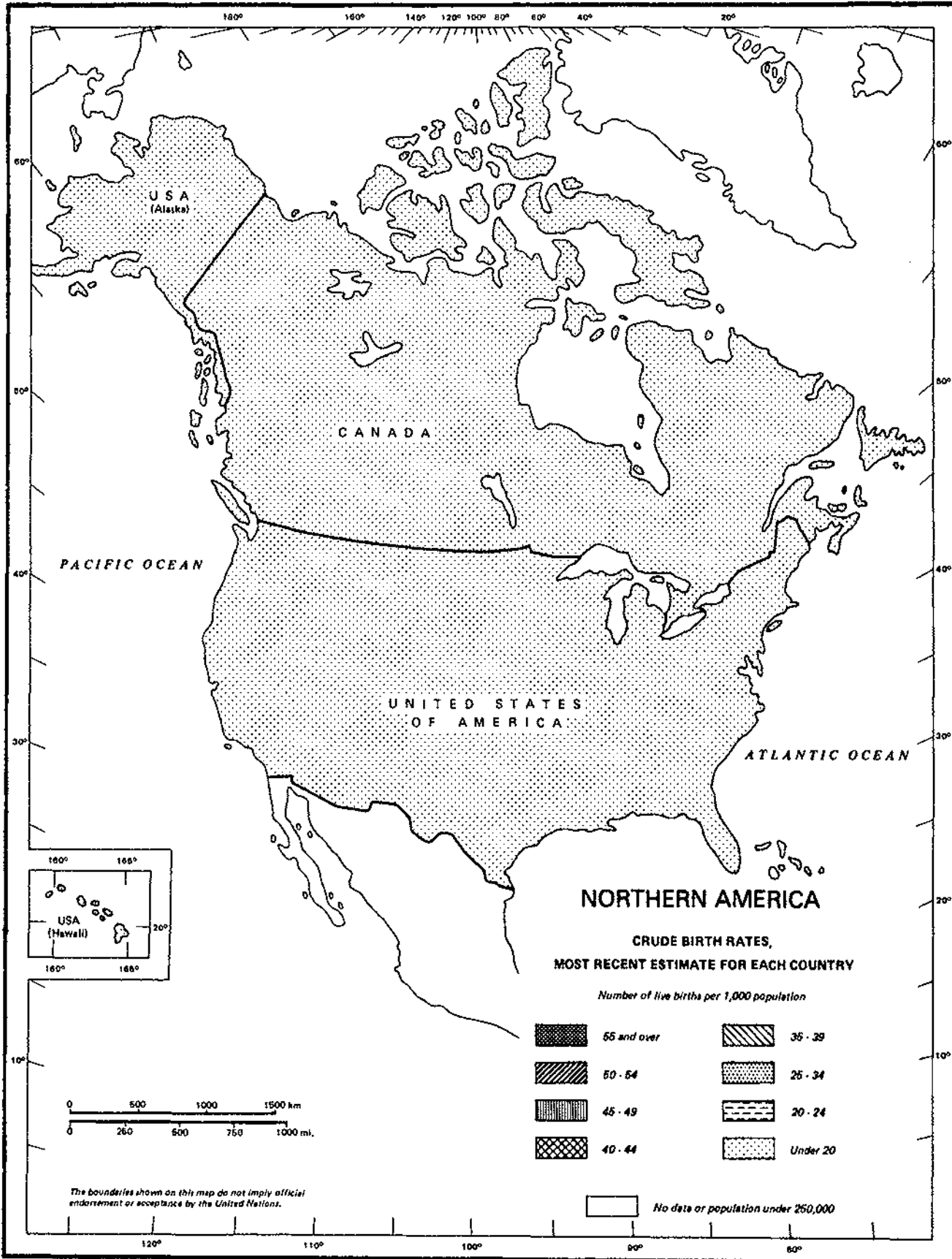


MAP NO. 2800.2
OCTOBER 1976

UNITED NATIONS

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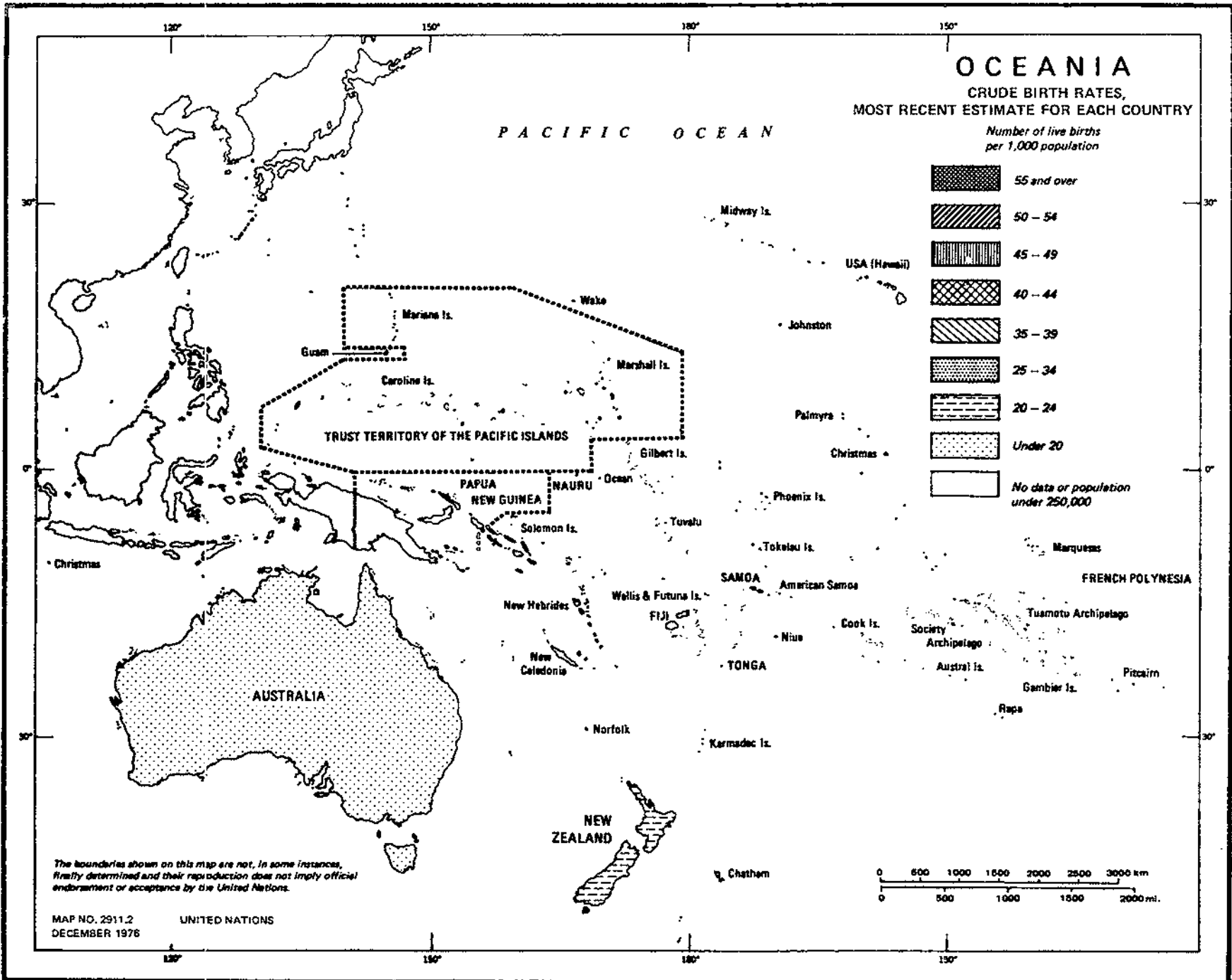
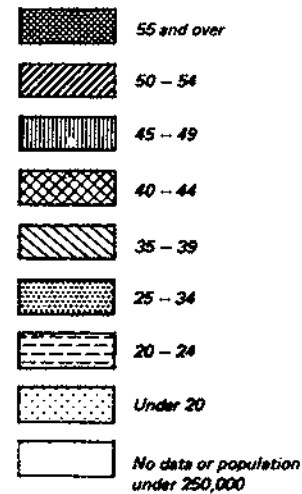
0° 10° 20°



OCEANIA

CRUDE BIRTH RATES,
MOST RECENT ESTIMATE FOR EACH COUNTRY

Number of live births
per 1,000 population

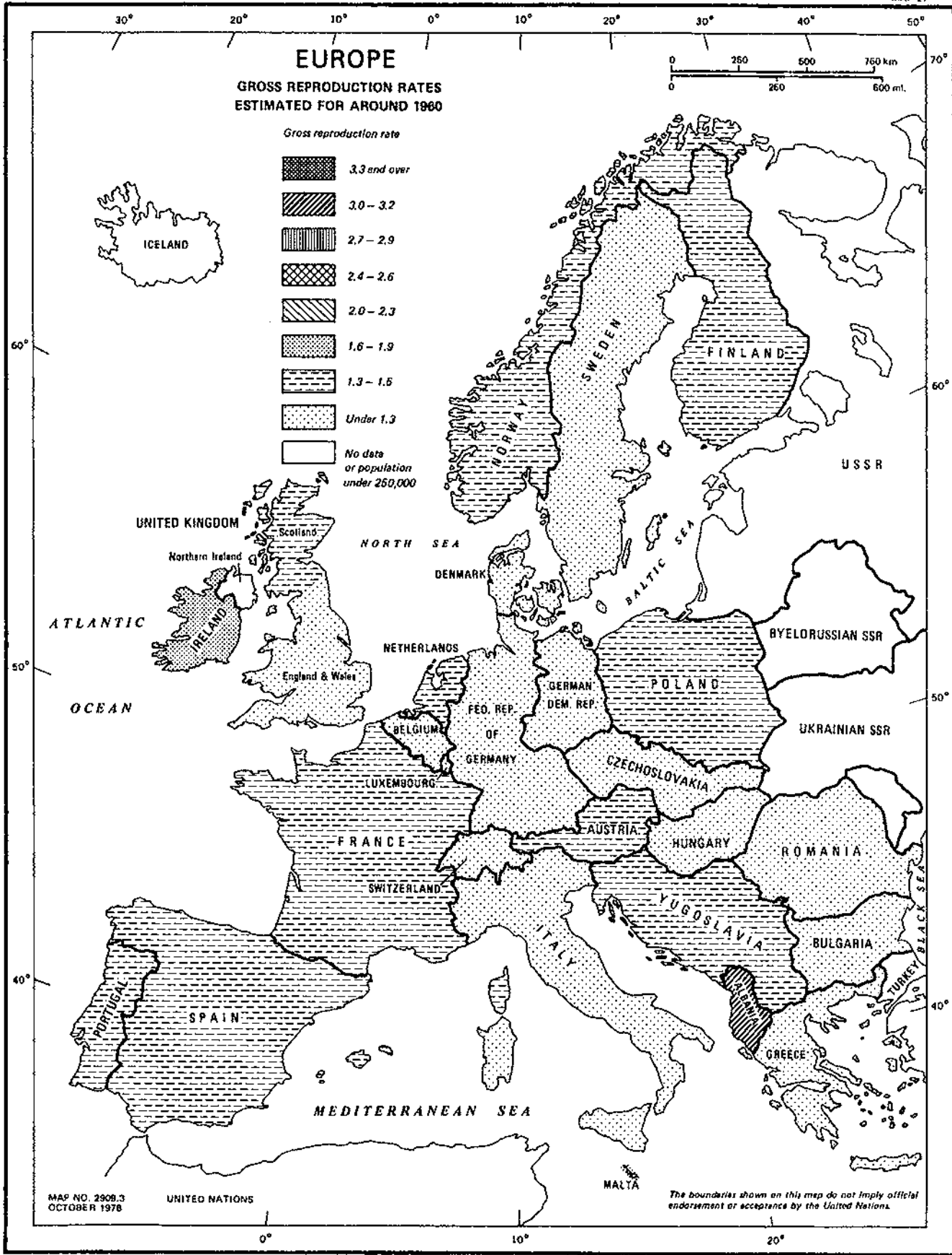
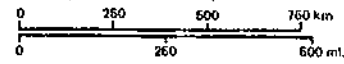
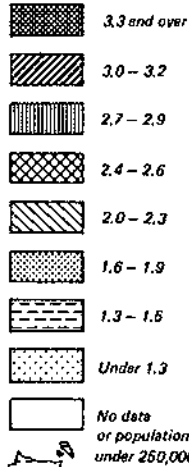


The boundaries shown on this map are not, in some instances, finally determined and their reproduction does not imply official endorsement or acceptance by the United Nations.

EUROPE

GROSS REPRODUCTION RATES ESTIMATED FOR AROUND 1960

Gross reproduction rate



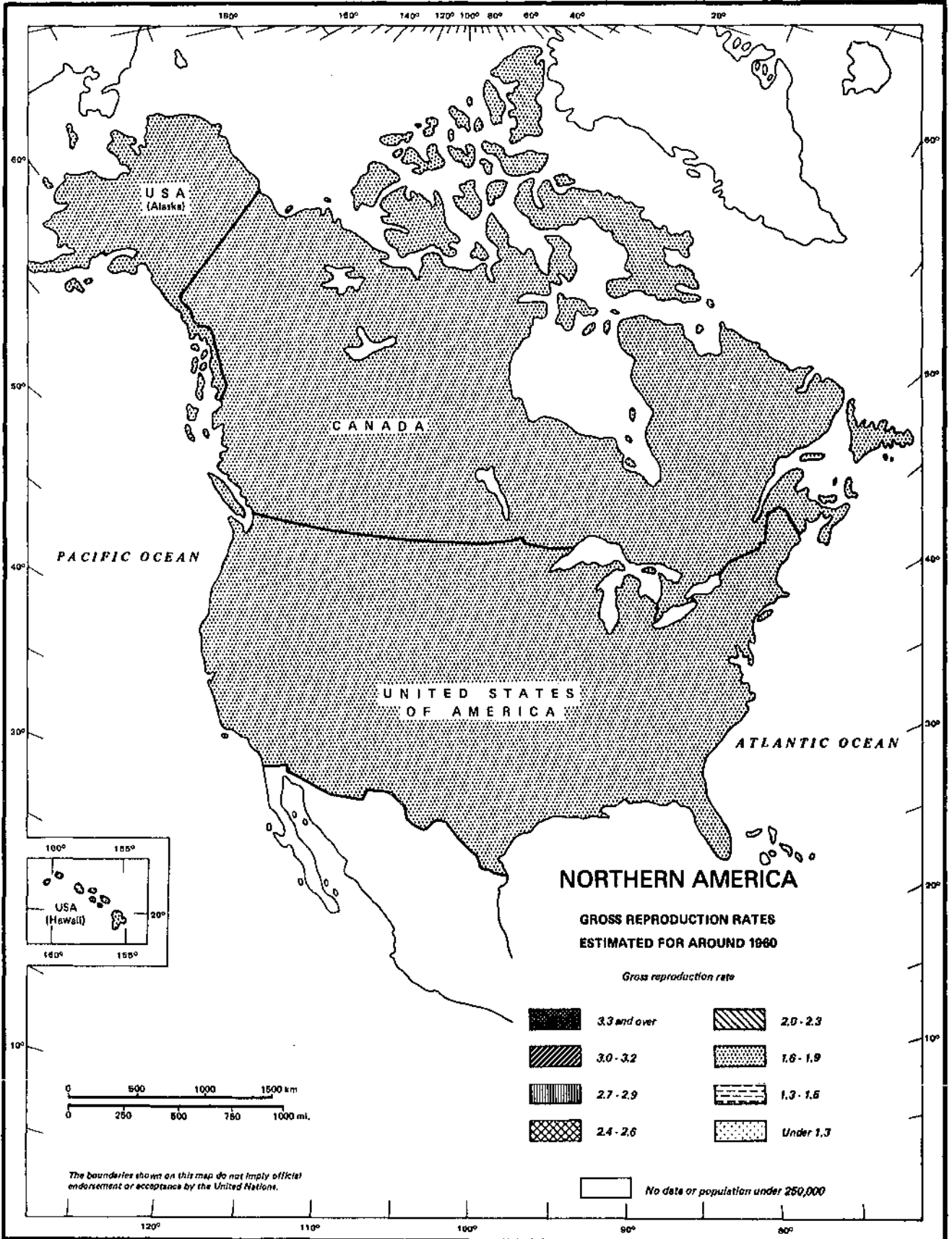
ATLANTIC OCEAN

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BALTIC SEA

MEDITERRANEAN SEA

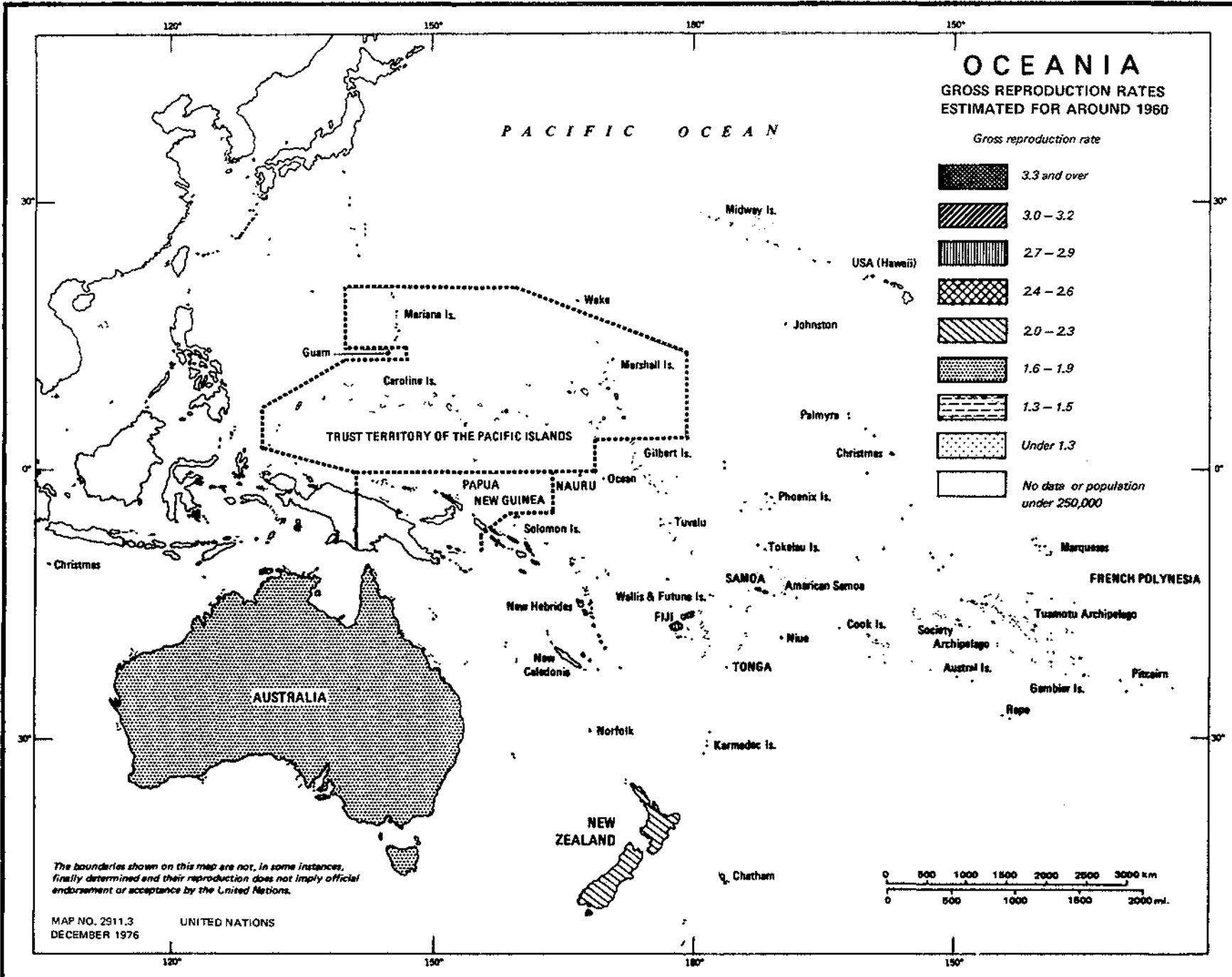
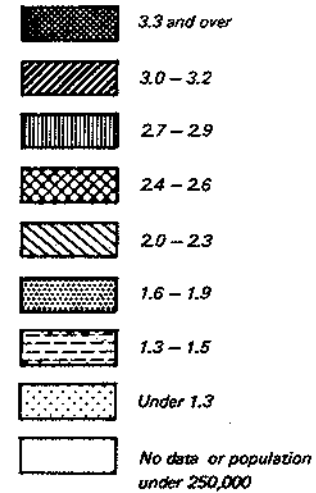
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OCEANIA

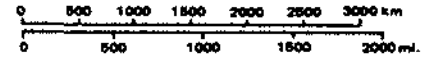
GROSS REPRODUCTION RATES
ESTIMATED FOR AROUND 1960

Gross reproduction rate



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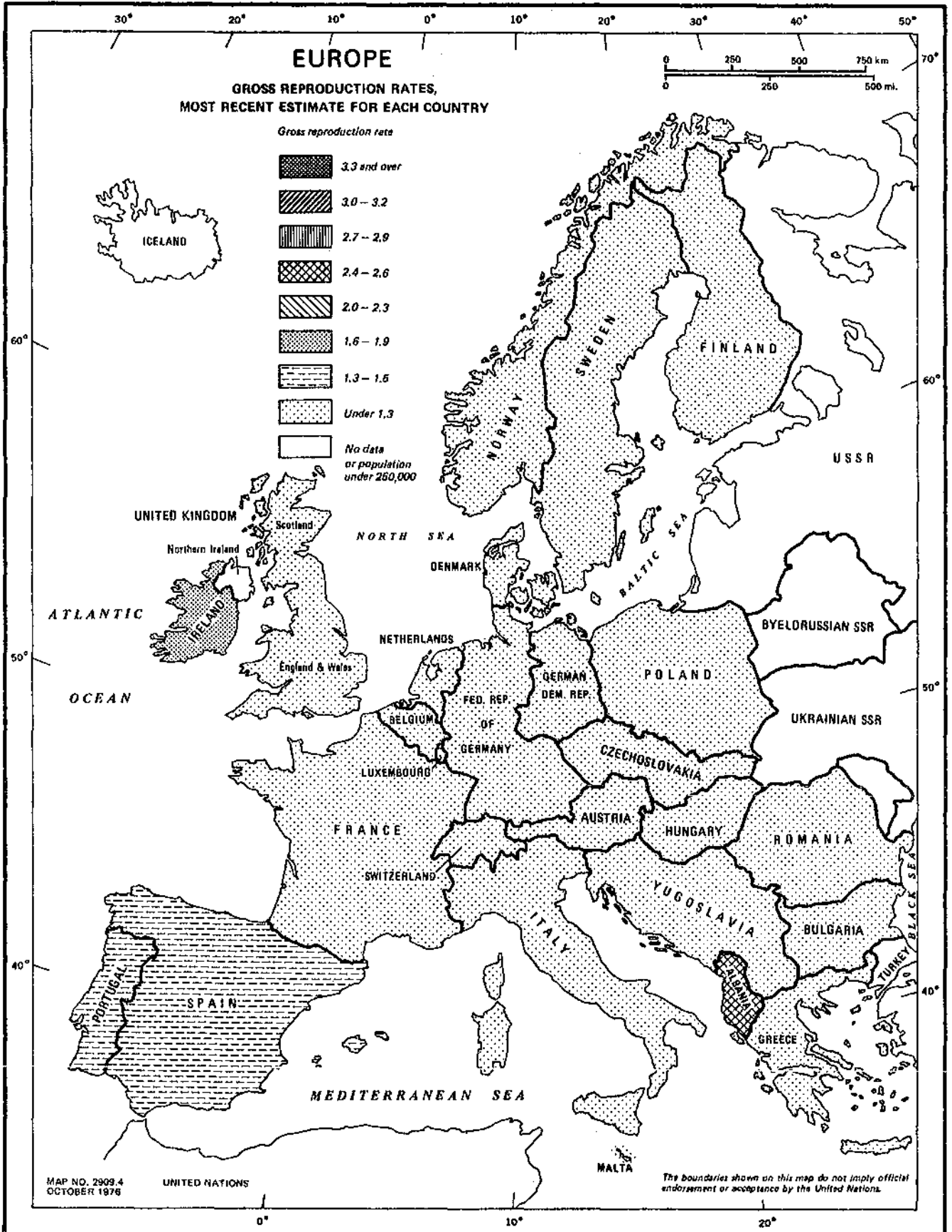
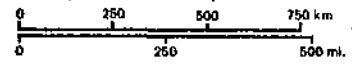
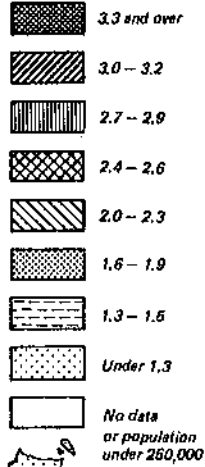
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DECEMBER 1976



EUROPE

GROSS REPRODUCTION RATES, MOST RECENT ESTIMATE FOR EACH COUNTRY

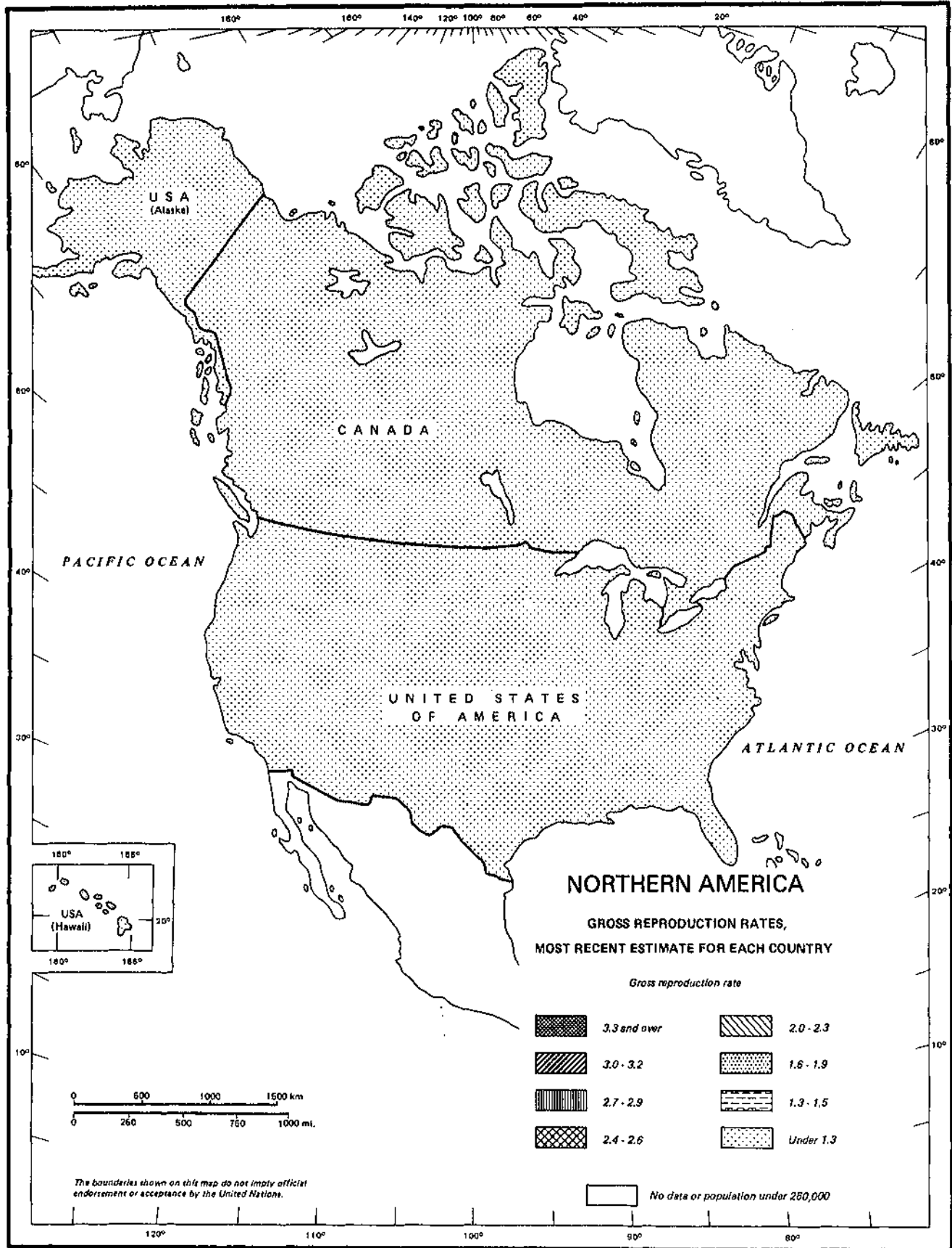
Gross reproduction rates

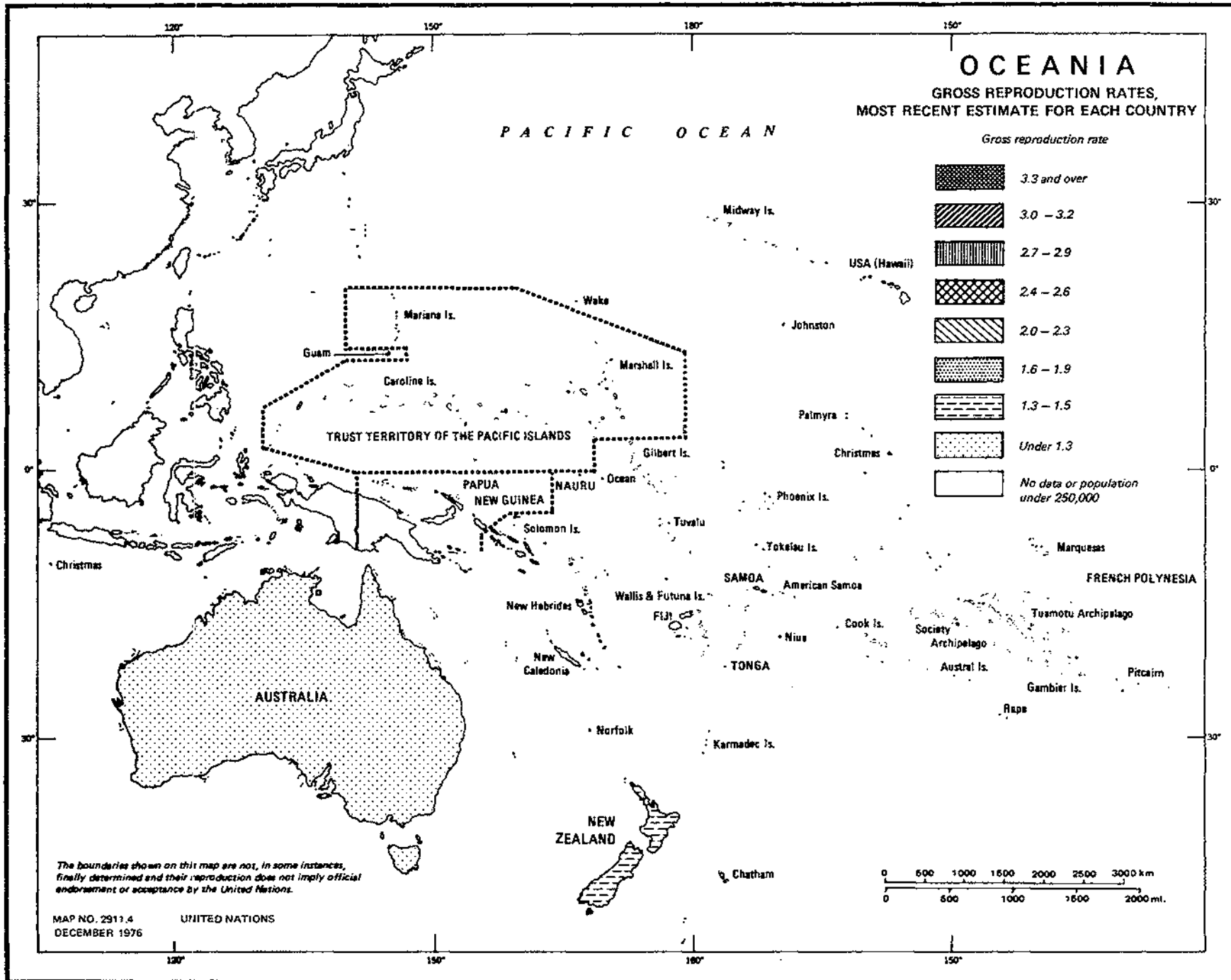


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UNITED NATIONS

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The pattern just described appeared in its clearest form in Northern and Western Europe. In Northern America, the fertility boom was more pronounced, in part because average family size did increase somewhat. In Eastern Europe, the Soviet Union and Yugoslavia, on the other hand, changes in nuptiality had a more modest effect, inasmuch as early and frequent marriage had been relatively common. The character of economic change in socialist countries was fundamentally different and took place much more rapidly than that which occurred elsewhere. During the post-war period, these countries were undergoing a transformation from rural agricultural to urban industrial societies, where married women were being employed in non-traditional occupations in large numbers and levels of education were rapidly rising. In these conditions, the forces making for continued reductions in fertility were particularly strong. Among the Southern Europeans, developments favouring a shift in the timing of marriage and reproduction appear to have been delayed or to have occurred more gradually, for the changing patterns observed elsewhere in Europe in the 1950s are only now appearing in these countries and in a less pronounced form.

Just as the improvement of contraceptive technology and the more efficient application of contraceptives enabled couples to respond to the favourable circumstances of the 1950s, so too did young couples respond to the less advantageous conditions of the late 1960s: the decline of fertility among women under 30 years of age was widespread. Exactly how this decline was accomplished, however, and its long-run implications are unclear. Later age at marriage was a factor in some cases, but reductions occurred even where age at marriage continued to decrease. A major question concerns whether recent changes constitute the avoidance or a mere postponement of childbearing, for there is ample time left for childless couples to have some children and for young parents to have additional children. A partial explanation lies, on the one hand, in evidence that couples expect to have fewer children than did their predecessors and, on the other, in the fact that intervals between marriage and the initiation of childbearing have lengthened in some countries. Yet another uncertainty regarding current as well as future fertility concerns the apparent trend towards consensual unions, as in Sweden, a country that has often been in the vanguard of important social and demographic changes. Such unions are difficult to identify in official statistics, and it is distinctly possible that similar trends have already commenced in other more developed countries - particularly those of Northern Europe and Northern America.

Whatever the nature of future trends, it is clear that their prediction and understanding will require more sensitive analytical tools than are currently available. Although, in many countries, from 75 to 80 per cent of childbearing now occurs to women under 30 years of age, resulting in smaller variations in completed fertility, information concerning trends in age at marriage and proportions married in developed countries appears to have lost some of its predictive utility. Furthermore, the increased ability of parents to adapt quickly to changing economic, social and political conditions means that fertility will be increasingly sensitive to temporary developments the details of which cannot be foreseen.

A. Levels of fertility

Crude birth rates and gross reproduction rates are generally lower in the more developed than in the less developed regions, and the gap in levels between these categories of countries is, on the whole, rather wide. But the range among the economically more advanced countries in the level of these measures is, as mentioned above, also of important dimensions. These differences among the more developed countries reflect a variety of factors, including cultural dissimilarities, and variations in conditions of development and in divergent past movements of the fertility indicators. Albania, discussed here only because of its geographical location, is the exception to uniformly low fertility throughout Europe. As late as 1971, the most recent year for which data are available, the Albanian crude birth rate was at the comparatively high level of 33.3, and the corresponding gross reproduction rate for 1970 was 2.4; both measures were at a level that around 1960 was found only among the economically less advanced countries. The figures for Ireland were much lower, 22.4 (1973) and 1.93 (1971). Among the remaining European countries, crude birth rates in 1973 were at or below 20 per 1,000 population, and in 1970, none of them had a gross reproduction rate in excess of 1.5. Indeed, for just under one half of the European countries, the most recent available crude birth rates were 15 or under; and for 11 of 28 countries, the gross reproduction rates, which are more suited for international comparison, were 1.0 or under (tables 30 and 31).

The level of fertility does not vary systematically by major area or region among the more developed countries; gross reproduction rates below 1.0 are found in Northern America and in every region of Europe, although the most recent values for a large majority of the more developed countries exceed that level. However, in the most recent year for which measures are available, both the crude birth rates and gross reproduction rates were, on the whole, lowest in Western and Northern Europe and highest in Southern Europe and Oceania.

In spite of the relative similarity in population policies among countries of Eastern Europe, their gross reproduction rates are not of a more uniform level than is found among countries in other regions. The measure varied from 11.8 in the German Democratic Republic to 18.8 in Romania. Of course, fertility rates are affected by many factors other than population policy, including the measures implemented to enforce the policy and a variety of demographic and other conditions.

The somewhat striking differences among the Southern European countries in birth rates and gross reproduction rates reflect the conflicting trends that have been apparent in this region over the past decade or more. Around 1973, among these countries, which record the highest fertility in Europe, the crude birth rate varied from 33.3 in Albania (1971) to 15.3 in Greece (1973) and the GRR from 2.35 in Albania (1970) to 0.96 in Malta (1972) (tables 30 and 31).

In Northern America, the Soviet Union and Australia, the crude birth rates and gross reproduction rates for the most recent years were within the range observed for European countries. However, only Ireland, Portugal and Albania had birth rates above the level of 20.5 per 1,000 population recorded for New Zealand in 1973, and that country's gross reproduction rate of 1.47 in 1972 was exceeded only by the very high values of 1.93 for Ireland and 2.35 for Albania (1970).

Table 30. Crude birth rates and gross reproduction rates in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, 1960 and most recent available year

Major area, region and country	Most recent available year <u>a/</u>		1960		
	Year	Crude birth rate (births per 1,000 population)	Gross repro- duction rate	Crude birth rate (births per 1,000 population)	Gross repro- duction rate
Europe					
Eastern Europe					
Bulgaria	1972	15.3	0.99	17.8	1.12
Czechoslovakia	1971	16.5	1.04	15.9	1.16
German Democratic Republic	1972	11.8	0.86	17.0	1.16
Hungary	1973	15.0	0.94	14.7	0.97
Poland	1972	17.4	1.08	22.6	1.48
Romania	1972	18.8	1.24	19.1	1.14
Northern Europe					
Denmark	1972	15.1	1.00	16.6	1.24
Finland	1970	14.0	0.89	18.5	1.31
Ireland	1971	22.7	1.93	21.4	1.86
Norway	1972	16.3	1.16	17.3	1.40
Sweden	1973	13.5	0.91	13.7	1.06
United Kingdom					
England and Wales	1973	13.7	0.98	17.1	1.29
Scotland	1973	14.3	1.03	19.6	1.42
Northern Ireland	1973	18.8	...	22.5	...
Southern Europe					
Albania	1970	32.5	2.35	43.4	3.16
Greece	1970	16.5	1.17	18.9	1.07
Italy	1970	16.8	1.14	18.3	1.15
Malta	1972	16.8	0.96	26.1	1.74

Table 30 (continued)

Major area, region and country	Most recent available year a/		1960		
	Year	Crude birth rate (births per 1,000 population)	Gross repro- duction rate	Crude birth rate (births per 1,000 population)	Gross repro- duction rate
Southern Europe (continued)					
Portugal	1971	21.9	1.42	24.0	1.52
Spain	1970	19.6	1.40	21.8	1.37
Yugoslavia	1972	18.3	1.14	23.5	1.37
Western Europe					
Austria	1972	13.9	1.02	17.9	1.30
Belgium	1970	14.8	1.09	17.0	1.24
France	1971	17.2	1.22	17.9	1.33
Germany, Federal Republic of	1972	11.4	0.83	17.5	1.17
Luxembourg	1973	10.8	0.75	16.0	1.13
Netherlands	1972	16.1	1.06	20.8	1.51
Switzerland	1971	15.2	0.97	17.6	1.20
Northern America					
Canada	1972	15.9	1.00	26.7	1.90
United States of America	1972	15.6	0.99	23.7	1.78
Oceania					
Australia	1973	18.8	1.21	22.4	1.68
Fiji	1973	28.2	1.68	39.9	2.74
New Zealand	1972	21.8	1.47	26.5	2.05
USSR	1970	17.4	1.17	24.7 ^{b/}	1.37 ^{b/}

a/ Most recent year for which both crude birth rate and gross reproduction rate are available.

b/ 1960-1961.

Table 31. Trends of crude birth-rates in countries of Europe,
Northern America and Oceania, and in the Union of
Soviet Socialist Republics, 1950-1973
(Live births per 1,000 population)

Europe						
Eastern Europe						
Year	Bulgaria	Czechoslovakia	German Democratic Republic	Hungary	Poland	Romania
1950	25.2	23.2	16.5	20.9	30.8	26.2
1951	21.1	22.8	16.9	20.2	31.0	25.1
1952	21.2	22.2	16.7	19.6	30.3	24.8
1953	20.9	21.2	16.4	21.6	29.7	23.8
1954	20.2	20.6	16.3	23.0	29.1	24.8
1955	20.1	20.2	16.3	21.4	29.2	25.6
1956	19.5	19.8	15.9	19.6	28.2	24.2
1957	18.4	18.9	15.6	17.0	27.7	22.9
1958	17.9	17.4	15.6	16.0	26.3	21.6
1959	17.6	16.0	16.9	15.2	24.8	20.2
1960	17.8	15.9	17.0	14.7	22.6	19.1
1961	17.4	15.8	17.6	14.0	20.9	17.5
1962	16.7	15.7	17.4	12.9	19.8	16.2
1963	16.4	16.9	17.6	13.1	19.2	15.7
1964	16.1	17.2	17.2	13.0	18.2	15.2
1965	15.3	16.4	16.5	13.1	17.5	14.6
1966	14.9	15.6	15.7	13.6	16.8	14.3
1967	15.0	15.1	14.8	14.6	16.4	27.4
1968	16.9	14.9	14.3	15.0	16.4	26.7
1969	17.0	15.5	14.0	15.0	16.4	23.3
1970	16.3	15.9	13.9	14.7	16.8	21.1
1971	15.9	16.5	13.8	14.5	17.1	19.5
1972	15.3	17.4	11.8	14.7	17.4	18.8
1973	16.2	18.8	10.6	15.0	17.9	...

Table 31 (continued)

Europe (continued)								
Northern Europe								
Year	Denmark	Finland	Ireland	Norway	Sweden	United Kingdom		
						England and Wales	Northern Ireland <u>a/</u>	Scotland <u>a/</u>
1950	18.6	24.5	21.3	19.1	16.5	15.8	21.0	17.9
1951	17.8	23.0	21.3	18.4	15.6	15.5	20.7	17.8
1952	17.8	23.1	21.9	18.8	15.5	15.3	20.9	17.7
1953	17.9	22.0	21.2	18.7	15.4	15.5	20.9	17.8
1954	17.3	21.5	21.3	18.5	14.6	15.2	20.8	18.1
1955	17.3	21.2	21.1	18.5	14.8	15.0	20.8	18.1
1956	17.2	20.8	21.0	18.5	14.8	15.6	21.1	18.6
1957	16.8	20.1	21.2	18.1	14.6	16.1	21.5	19.1
1958	16.5	18.6	20.9	17.9	14.2	16.4	21.6	19.3
1959	16.3	18.9	21.1	17.7	14.1	16.5	21.9	19.2
1960	16.6	18.5	21.4	17.3	13.7	17.2	22.5	19.6
1961	16.6	18.4	21.2	17.3	13.9	17.6	22.4	19.5
1962	16.7	18.1	21.8	17.1	14.2	18.0	22.7	20.1
1963	17.6	18.2	22.2	17.3	14.8	18.2	23.1	19.7
1964	17.7	17.7	22.4	17.7	16.0	18.6	23.6	20.0
1965	18.0	17.1	22.1	17.8	15.9	18.1	23.1	19.3
1966	18.4	17.0	21.5	17.9	15.8	17.8	22.5	18.6
1967	16.8	16.8	21.1	17.6	15.4	17.3	22.4	18.5
1968	15.3	15.9	20.8	17.6	14.3	16.9	22.1	18.2
1969	14.6	14.6	21.4	17.6	13.5	16.4	21.4	17.3
1970	14.4	14.0	21.7	16.6	13.7	16.1	21.0	16.8
1971	15.2	13.2	22.7	16.8	14.1	16.0	20.7	16.6
1972	15.1	12.7	22.4	16.3	13.8	14.8	19.4	15.1
1973	14.3	12.2	22.4	15.4	13.5	13.8	18.8	14.3

Table 31 (continued)

Europe (continued)							
Southern Europe							
Year	Albania	Greece	Italy	Malta	Portugal	Spain <u>b/</u>	Yugoslavia
1950	38.9	20.0	19.5	33.0	24.4	20.2	30.2
1951	38.5	20.3	18.3	30.4	24.6	20.1	27.0
1952	35.2	19.4	17.9	29.1	24.9	20.8	29.7
1953	40.9	18.4	17.7	28.3	23.7	20.5	28.4
1954	40.8	19.2	18.2	28.1	23.0	20.0	28.6
1955	44.5	19.4	18.0	27.2	24.4	20.5	26.9
1956	41.9	19.7	18.0	26.8	23.4	20.7	26.0
1957	39.1	19.3	18.0	27.6	24.4	21.8	23.9
1958	41.8	19.0	17.8	26.5	24.4	21.8	24.0
1959	41.9	19.4	18.3	26.2	24.3	21.7	23.3
1960	43.4	18.9	18.3	26.1	24.0	21.8	23.5
1961	41.2	17.9	18.5	23.3	24.5	21.3	22.7
1962	39.3	18.0	18.5	22.8	24.9	21.2	22.0
1963	39.1	17.5	18.8	20.4	24.1	21.4	21.4
1964	37.8	18.0	19.8	19.8	24.7	22.0	20.9
1965	35.2	17.7	19.2	17.7	24.1	21.1	21.0
1966	34.0	18.0	18.8	16.8	23.8	20.7	20.4
1967	35.3	18.7	18.1	16.7	23.3	20.8	19.6
1968	35.6	18.3	17.7	16.2	22.6	20.2	19.1
1969	35.3	17.6	17.6	15.9	22.2	19.9	18.9
1970	32.5	16.5	16.8	16.5	20.4	19.6	17.8
1971	33.3	16.0	16.8	17.3	21.9	19.7	18.3
1972	...	15.8	16.3	16.8	20.3	19.4	18.3
1973	...	15.3	16.0	17.1	20.1	19.2	18.0

Table 31 (continued)

Europe (continued)							
Western Europe							
Year	Austria	Belgium	France	Germany, Federal Republic of	Luxembourg	Netherlands	Switzerland
1950	15.6	16.9	20.7	16.3	13.9	22.7	18.1
1951	14.8	16.4	19.7	15.7	14.0	22.3	17.2
1952	14.9	16.8	19.4	15.7	15.2	22.3	17.4
1953	14.8	16.7	18.9	15.5	15.2	21.7	17.0
1954	15.0	16.9	18.8	15.7	15.6	21.5	17.0
1955	15.6	16.9	18.6	15.7	15.3	21.3	17.1
1956	16.7	16.9	18.4	16.2	15.8	21.3	17.4
1957	17.0	17.1	18.4	16.6	16.1	21.2	17.7
1958	17.1	17.2	18.1	16.7	16.0	21.2	17.6
1959	17.7	17.5	18.3	17.3	16.1	21.4	17.7
1960	17.9	17.0	17.9	17.5	16.0	20.8	17.6
1961	18.6	17.3	18.2	18.0	16.1	21.3	18.0
1962	18.7	16.8	17.7	17.9	16.0	20.9	18.4
1963	18.8	17.2	18.2	18.3	15.8	20.9	19.0
1964	18.6	17.2	18.2	18.3	16.0	20.7	19.2
1965	17.9	16.5	17.8	17.7	16.0	19.9	18.8
1966	17.7	16.0	17.6	17.6	12.1	19.2	18.3
1967	17.4	15.4	17.0	17.0	12.3	18.9	17.7
1968	17.1	14.9	16.7	16.1	14.0	18.6	17.1
1969	16.4	14.8	16.7	14.8	13.3	19.2	16.5
1970	15.1	14.8	16.8	13.4	13.0	18.3	15.8
1971	14.5	14.6	17.2	12.7	13.0	17.2	15.2
1972	13.9	14.0	17.0	11.4	11.8	16.1	14.3
1973	13.0	13.3	16.5	10.2	10.8	14.5	13.6

Table 31 (continued)

Year	Northern America	
	Canada	United States of America
1950	27.1	23.9
1951	27.1	24.9
1952	27.8	25.0
1953	28.1	24.9
1954	28.4	25.2
1955	28.1	24.9
1956	28.0	25.1
1957	28.1	25.2
1958	27.5	24.4
1959	27.4	24.2
1960	26.7	23.7
1961	26.0	23.3
1962	25.2	22.4
1963	24.6	21.7
1964	23.4	21.1
1965	21.3	19.4
1966	19.3	18.4
1967	18.1	17.8
1968	17.5	17.6
1969	17.5	17.9
1970	17.4	18.3
1971	16.8	17.2
1972	15.9	15.6
1973	15.7	15.0

Table 31 (continued)

Year	Oceania			
	Australia	Fiji	New Zealand	USSR
1950	23.3	39.8	25.9	26.7
1951	23.0	38.4	25.6	27.0
1952	23.3	40.6	26.0	26.5
1953	22.9	40.7	25.4	25.1
1954	22.5	40.2	25.9	26.6
1955	22.6	38.5	26.1	25.7
1956	22.5	40.9	26.0	25.2
1957	22.9	41.9	26.2	25.4
1958	22.6	40.3	26.6	25.3
1959	22.6	41.8	26.5	25.3
1960	22.4	39.9	26.5	25.2
1961	22.8	40.9	27.1	24.1
1962	22.1	39.5	26.2	22.7
1963	21.5	38.0	25.5	21.4
1964	20.5	37.8	24.2	19.8
1965	19.6	36.1	22.9	18.7
1966	19.3	35.1	22.5	18.4
1967	19.4	34.5	22.4	17.6
1968	20.1	30.8	22.6	17.4
1969	20.4	29.7	22.5	17.2
1970	20.6	29.9	22.1	17.4
1971	21.7	30.3	22.7	17.8
1972	20.5	28.0	21.8	17.8
1973	18.8	28.2	20.5	17.6

a/ Births tabulated by year of registration rather than occurrence.

b/ Excluding Ceuta and Melilla.

B. Trends of fertility

In the study of post-war fertility in developed countries, two categories of factors have been stressed as underlying observed trends and, in view of their significance in understanding reproductive behaviour, it is important that they be distinguished. The first concerns the distortions in age compositions arising from war losses, the relatively small cohorts born during the war and the relatively large cohorts born during the post-war rise in fertility. The USSR and many European countries (in particular, those of Eastern Europe) suffered severe losses of human resources during the Second World War. So destructive was that conflict that its effects have continued to be felt, especially in such countries as the German Democratic Republic, the Federal Republic of Germany, Poland, and the Soviet Union, throughout the period under study. The demographic consequences are reflected not only in post-war nuptiality and incidence of widowhood but in the size of the cohorts born during the war (sometimes referred to as "deficit" cohorts). The reduced size of these cohorts, which reached reproductive age during the 1960s, has had a negative effect upon crude birth-rates. On the other hand, the effect of the much larger cohorts born in the post-war period is now beginning to be felt as they approach and enter reproductive age. In this case, their presence exerts a positive effect upon crude rates. The effects of both the war and the subsequent rise in fertility have, of course, varied considerably from country to country. One or more of these factors, however, has affected fertility in nearly all the more developed countries considered in this report.

A second important consideration that should be borne in mind is the profound changes in European marriage patterns that occurred after the Second World War. ^{3/} Whereas most of Europe had been characterized by relatively late age at marriage and low proportions married, particularly among women under age 25, the 1950s witnessed a marked lowering of age at marriage and a sharp rise in the proportions married, particularly during the peak reproductive ages (see table 34 below). Early and widespread marriage had always been the case in Eastern Europe, but even there, proportions married at ages 20-29 increased. Because of the restriction of childbearing to within marriage, increases in the number of young women marrying were soon followed by larger annual numbers of births, which were reflected in higher crude birth-rates. In Southern Europe, these trends were much less marked during the 1950s, but continued into the 1960s and in some cases even accelerated. In other developed countries, they levelled off or were reversed during the 1960s, with varying effects upon fertility.

An additional consideration, the significance of which cannot be overstated, is the necessity to distinguish between period and cohort or generation fertility. Period (i.e., calendar-year) rates, representing as they do the combined reproductive behaviour of various, often dissimilar cohorts, can be very misleading should a change in timing of childbearing be under way. Such changes may inflate or lower period fertility, without resulting in marked changes in completed family size. The distinction between period and cohort fertility is especially important

^{3/} For the historical background, see J. Hajnal, "European marriage patterns in perspective", in D. V. Glass and D. E. C. Eversley, eds., Population in History (London, Aldine Publishing Company, 1965), pp. 101-143. Recent trends are discussed in D. V. Glass, "Fertility trends in Europe since the Second World War", Population Studies, vol. XXII, No. 1 (March 1968), pp. 103-146.

in the present instance because the fertility data available for this report are of the period type. It is, none the less, possible to derive some clues to cohort behaviour by examination of age-specific rates over time. In considering trends in crude birth-rates and in gross reproduction rates, however, this distinction should be maintained.

Europe

Post-war fluctuations in crude birth-rates in Europe do not lend themselves to easy generalization. The almost universal post-war baby boom lasted only a few years in most countries; subsequent development varied greatly between countries and regions, at least until the mid-1960s (table 31 and figure VIII).

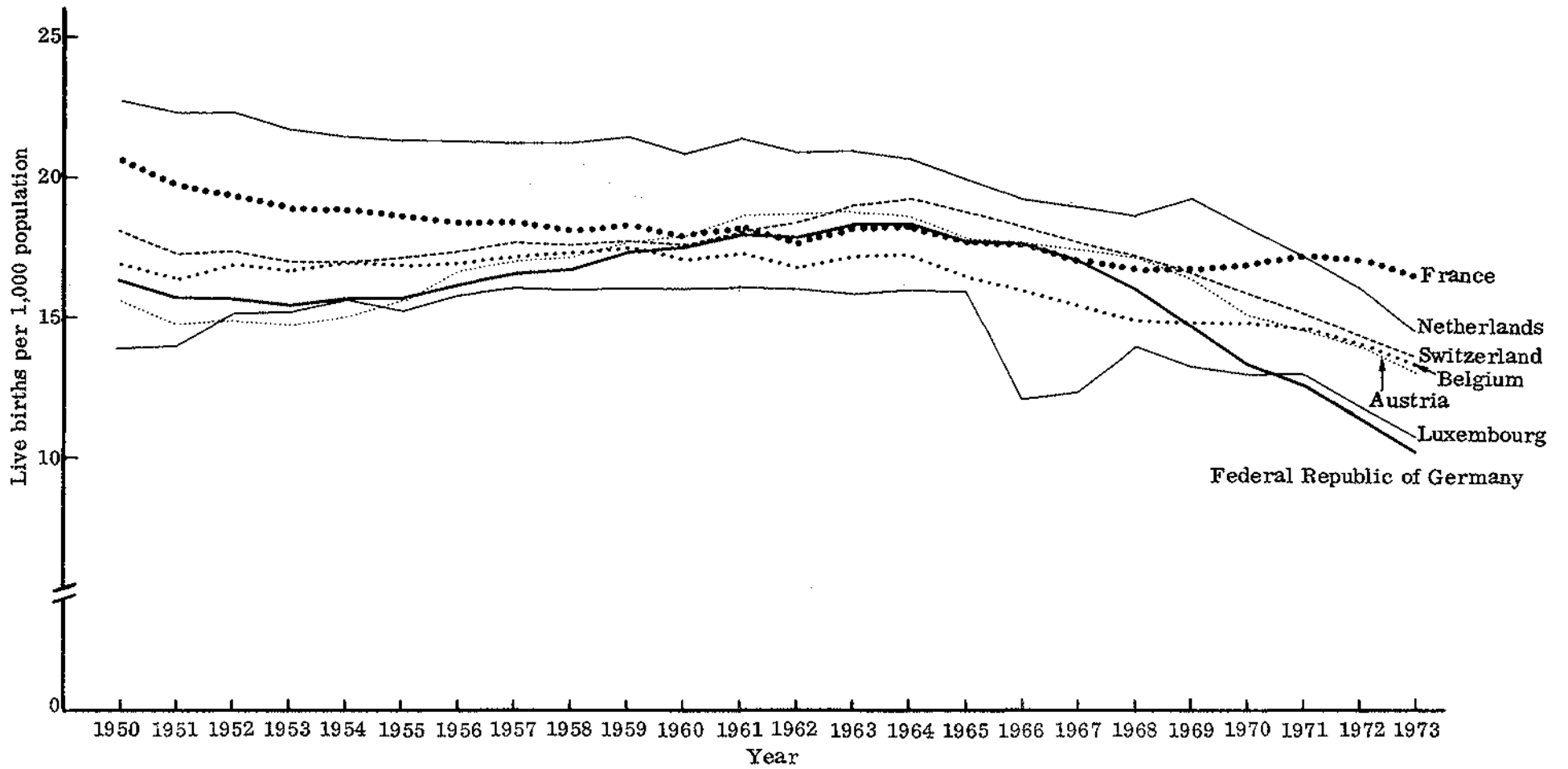
There was relative uniformity among the countries of Eastern Europe (and in Yugoslavia), where the common feature was the resumption of the decline in crude rates that had set in well before the war. In most countries, the recommencement of the downward trend got under way between 1950 and 1955, though somewhat later in the German Democratic Republic, and except in the latter country, resulted in a 25-40 per cent reduction in crude rates. The decreases generally came to a halt in the mid- or late 1960s and were followed in some countries (Bulgaria, Czechoslovakia, Hungary and Poland) by a temporary reversal of the trend, associated in part with pro-natalist measures introduced by the Governments concerned and in part with the entry into the reproductive ages of the larger cohorts of women born during the post war baby boom. ^{4/} In Romania, a sharp rise of 92 per cent in the crude birth-rate and a marked increment in the gross reproduction rate followed the abrupt modification of very liberal abortion laws in 1966, supported by the cessation of the official importation of contraceptives and the introduction of financial and other measures encouraging larger families. The impact of such changes appears to have been steadily diminishing, ^{5/} however, as reflected by a 30 per cent reduction in both the crude birth-rate and the gross reproduction rate since 1967.

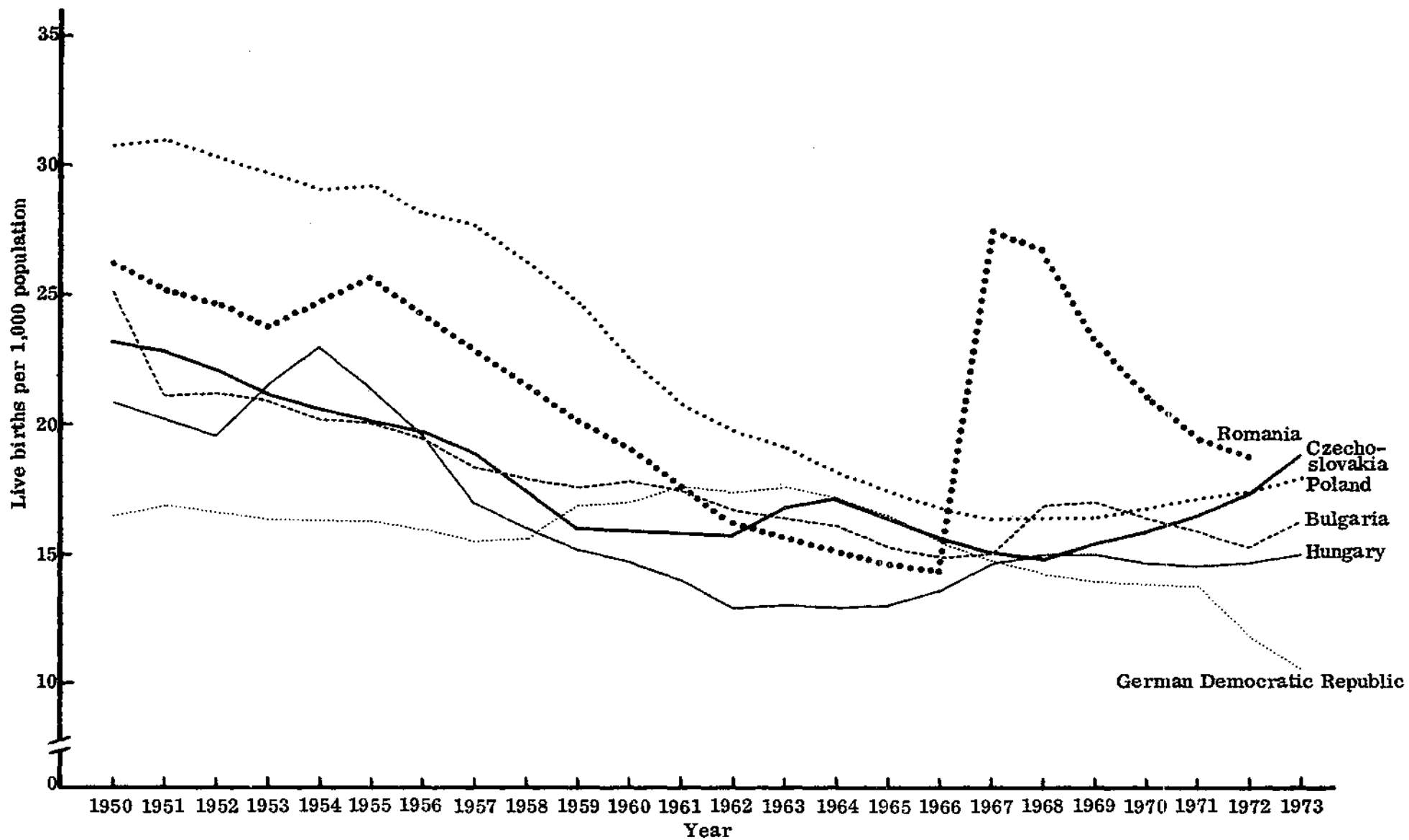
The effect of changes in age composition may be seen in annexed table 67 and in table 32 below, which contains ratios of changes in crude birth-rates to changes in age-standardized rates. ^{6/} Whereas during the 1950s, reduced proportions of women in the reproductive ages exerted a negative effect upon crude birth-rates, the influence of changes in age composition diminished during the early 1960s (except in Czechoslovakia and Poland, where it was reversed) as age structures began to normalize, and it was relatively unimportant towards the end of the decade.

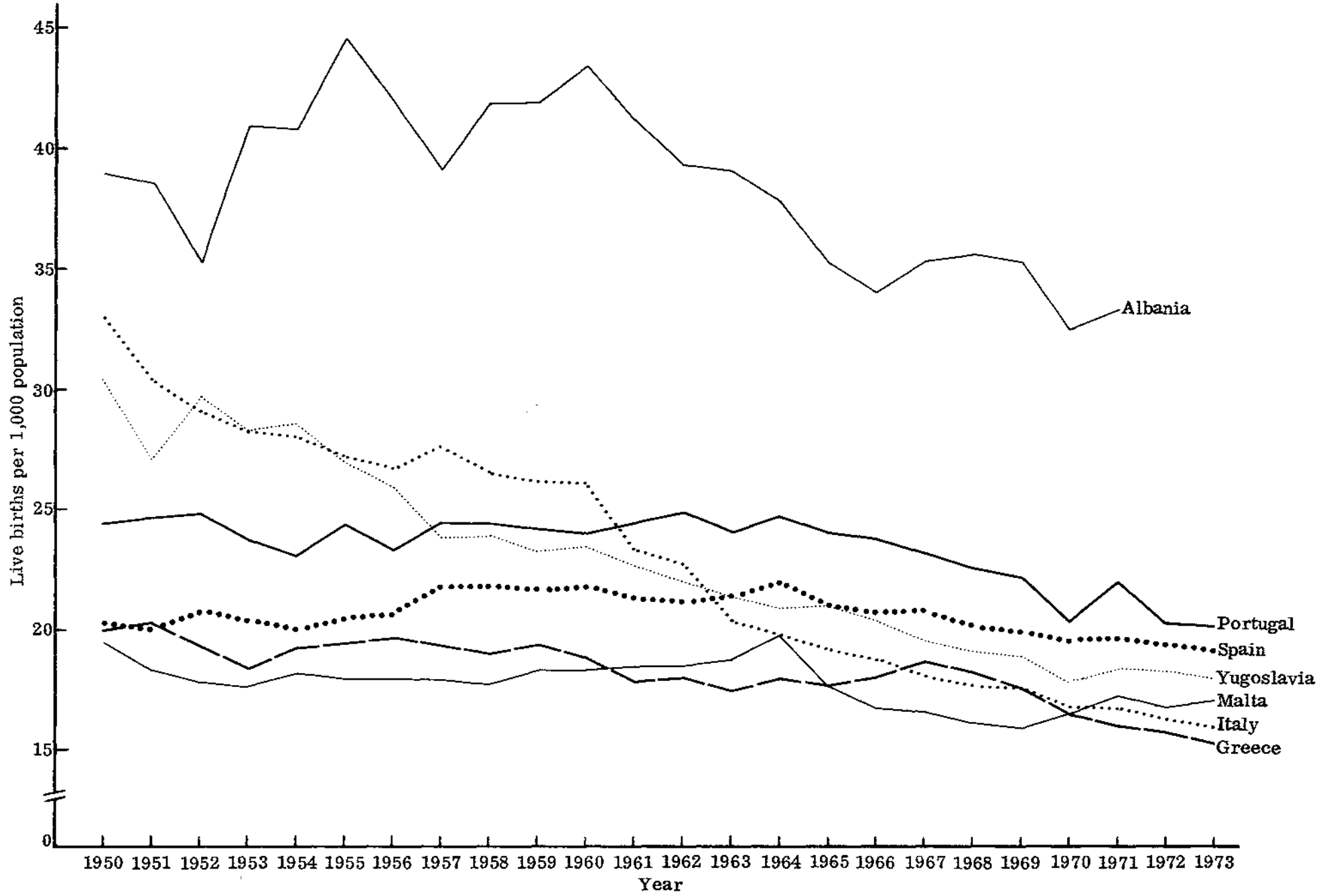
^{4/} Regarding recent developments in population policies of Eastern European countries, see Milos Maçura, "Population policies in socialist countries of Europe", Population Studies, vol. XXVIII, No. 3 (November 1974), pp. 369-379.

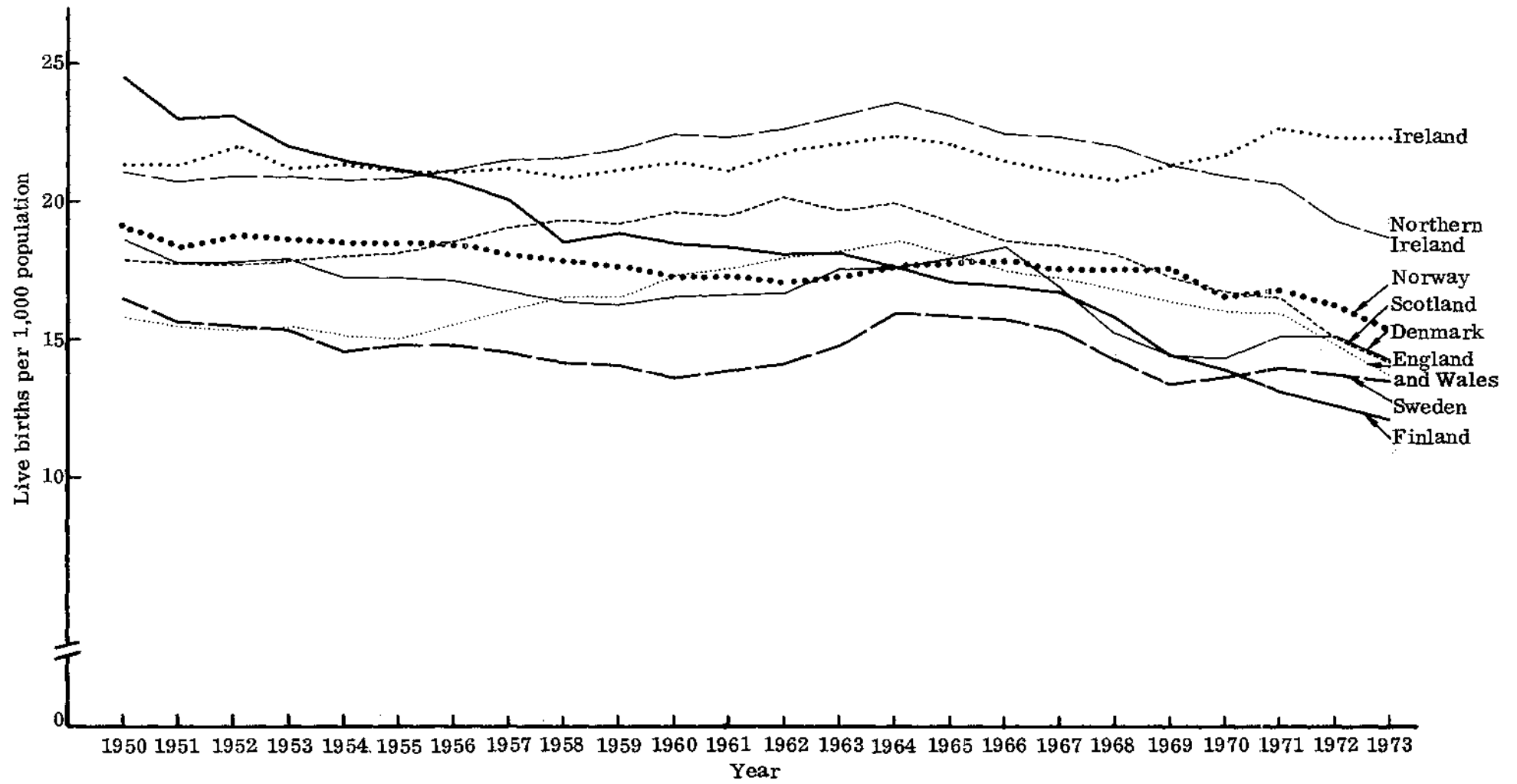
^{5/} Romanians appear to have relied extensively upon coitus interruptus, although condoms are also available and it is possible to obtain pills and intra-uterine devices. See H. P. David and N. H. Wright, "Abortion legislation: the Romanian experience", Studies in Family Planning, vol. 2, No. 10 (October 1971), p. 207.

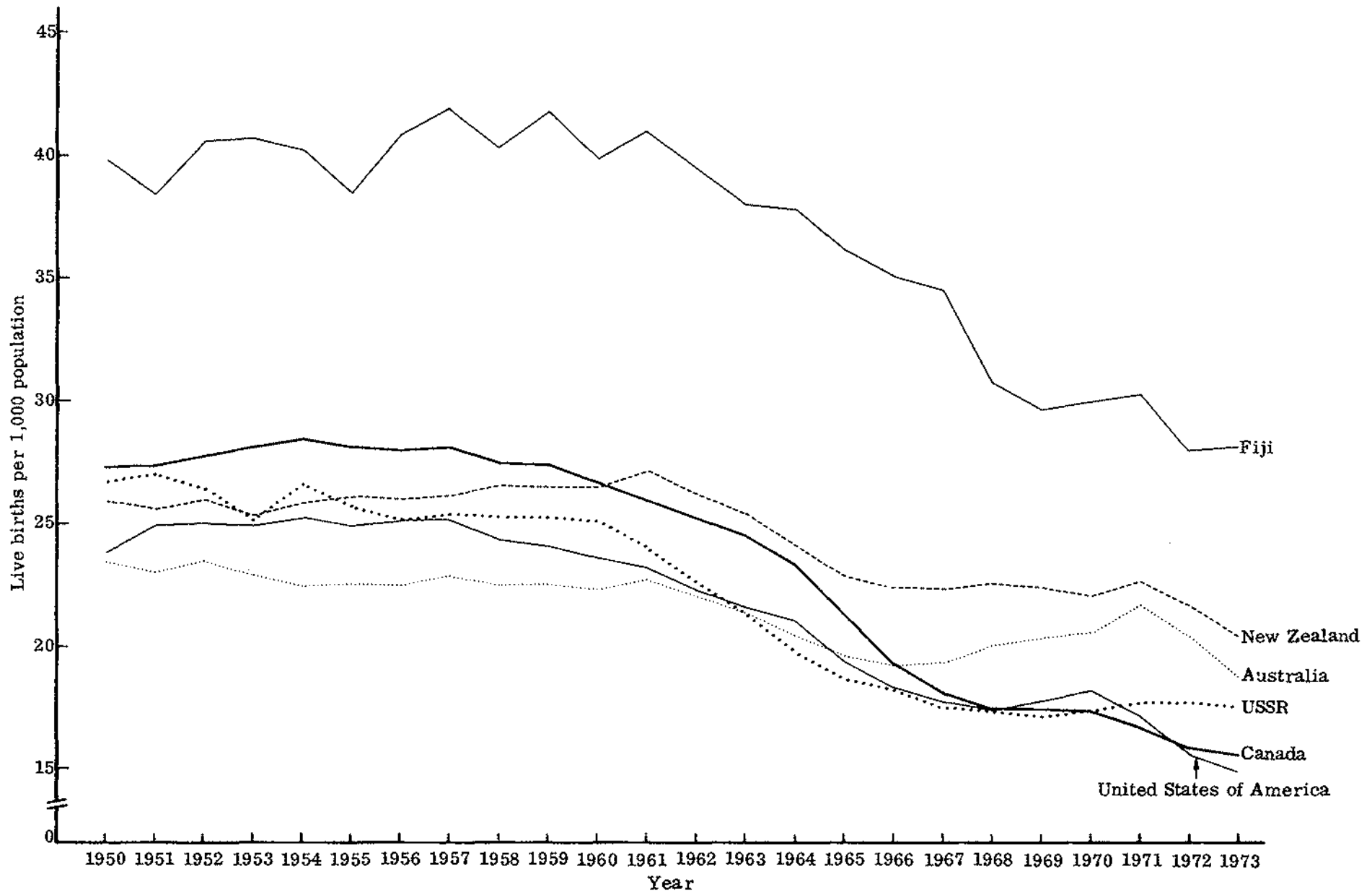
^{6/} For the method used to calculate ratios, see Jerzy Berent, "Causes of fertility decline in Eastern Europe and the Soviet Union. Part I. The influence of demographic factors", Population Studies, vol. XXIV, No. 1 (March 1970), pp. 41-42.











Comparison of percentage changes in gross reproduction rates (a measure largely independent of age composition) with those in crude birth-rates also indicates the effects of alterations in age structure (table 68). In Poland, for example, a decline of 26.5 per cent in the crude birth-rate between 1950 and 1960 contrasts with a decrease of only 17.4 per cent in the gross reproduction rate. Similar differences are observed for Czechoslovakia and Hungary. The reduced influence of changes in age composition of the female population during the 1960s (except in Czechoslovakia and Poland) is made evident by the similarity of the percentage changes in the birth-rate and the gross reproduction rate.

Eastern European fertility reductions take on added significance upon consideration of nuptiality changes (table 34). Between 1950 and 1960, increases occurred everywhere in the proportion of women of peak reproductive ages who were currently married (and were marked in Czechoslovakia, the German Democratic Republic and Hungary); none the less, fertility declined. During the 1960s, these proportions, having reached very high levels, tended to level off. It is clear, therefore, that the movement towards lower fertility was quite strong, and that the fall in general fertility in this region would have been even more severe had it not been for the positive effect generated by increases in the proportions married among young women.

The information concerning age-specific fertility shows that Eastern Europe has been characterized by consistent and rather large fertility declines among older women, i.e., those aged 35 and over, throughout 1950-1970, indicating that reductions in marital fertility played a major role in the over-all trend. These reductions have also resulted in a marked tendency to concentrate childbearing at younger ages.

Many factors have been emphasized as precipitating and/or facilitating the significant change in reproductive behaviour in Eastern Europe. In a region in which impressive progress has been made in many spheres of development, it has been stressed that the rapid assimilation of women into non-agricultural employment and the equally rapid rise of educational levels have played a central role. These factors, along with increasing urbanization, the spread of family planning and legislation legalizing abortion, are considered to have profoundly modified reproductive behaviour. [7/

Trends in Northern and Western Europe have been more complex. The post-war boom lasted in some countries until the mid-1960s, but reduced proportions of women in the reproductive ages exerted a negative influence upon crude birth-rates during the 1950s, and in Western Europe, during the early 1960s also (table 32). The result is that crude birth rates do not reflect the fertility increases indicated for many countries by the gross reproduction rate during these years (table 34 below and annexed table 68). The notable exceptions are Finland, where the gross reproduction rate declined continuously from 1945 to 1950; France and Sweden, where the decrease was confined to the decade 1950-1960; and Denmark and the Netherlands,

[7/ For a comprehensive review of these and other factors associated with the decline in fertility, see Jerzy Berent, *loc. cit.*, pp. 35-48; and *idem*, "Causes of fertility decline in Eastern Europe and the Soviet Union. Part II. Economic and social factors; Part III. Family planning and population policies", *Population Studies*, vol. XXIV, No. 2 (July 1970), pp. 247-292.

Table 32. Index of effect of changes in age composition upon crude birth-rates in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, 1950-1970

	1950-1960	1955-1960	1960-1965	1965-1970
Europe				
Eastern Europe				
Bulgaria	...	91.3	95.2	101.4
Czechoslovakia	93.1	92.3	104.3	110.9
German Democratic Republic	...	104.3	95.9	93.9
Hungary	94.7	94.1	99.4	102.5
Poland	96.1	90.5	92.4	109.0
Romania	...	...	93.6	95.5
Northern Europe				
Denmark	94.0	97.0	103.9	107.8
Finland	93.8	94.8	102.3	108.4
Ireland	...	91.1	97.1	104.0
Norway	89.8	89.6	101.9	109.4
Sweden	93.1	95.0	105.2	107.5
United Kingdom				
England and Wales	93.2	95.1	100.2	104.8
Scotland	100.6	94.2	96.1	103.7
Southern Europe				
Albania	...	99.8	98.3	97.8
Greece	...	99.5	91.7	85.3
Italy	98.4	100.6	94.7	96.4
Malta	...	98.9	100.0	111.2
Portugal	101.7	95.6	98.6	92.0
Spain	100.0	96.5	95.1	91.3
Yugoslavia	102.2	96.5	91.7	99.3

Table 32 (continued)

	1950-1960	1955-1960	1960-1965	1965-1970
Europe (continued)				
Western Europe				
Austria	95.7	95.9	99.5	100.2
Belgium	98.3	94.5	94.5	102.8
France	97.4	94.7	95.5	107.1
Germany, Federal Republic of	96.9	99.2	97.9	94.3
Luxembourg	97.5	94.4	94.1	100.9
Netherlands	95.1	94.7	97.8	106.6
Switzerland	97.7	97.4	104.0	101.1
Northern America				
Canada	93.4	93.5	97.3	111.4
United States of America	89.2	93.2	102.3	111.4
Oceania				
Australia	90.8	93.8	102.3	108.5
Fiji	104.1	98.3	102.9	105.6
New Zealand	92.6	93.9	102.6	108.3
USSR	...	...	83.3	97.5

Source: Calculated from method described in Jerzy Berent, "Causes of fertility decline in Eastern Europe and the Soviet Union. Part I. The influence of demographic factors", Population Studies, vol. XXIV, No. 1 (March 1970), p. 42.

Note: The figures represent the ratio, expressed in percentage, of the proportions of the crude birth rate in each period to the corresponding proportions of the standardized crude birth rate. An index above 100 indicates a positive effect and an index below 100 a negative effect of changes in age composition upon the crude birth rate.

which experienced relative stability of the GRR from 1950 to 1965. Elsewhere, increases were registered that varied from under 10 per cent in Belgium and Switzerland to over 30 per cent in Austria.

Changes in measures of over-all fertility, however, do not indicate the underlying complex and profound changes in marriage and family formation that were unfolding during those years. Alterations in age at marriage and proportions marrying, on the one hand, and in the timing of childbearing, on the other, were occurring at about the same time; and gross reproduction rates indicate only the summary effect of changes among different birth cohorts of women. Close examination of the age data (table 3) and annexed table 68) shows opposing trends among older and younger women for much of the period 1950-1965. Among women over 30 years of age, this period witnessed a continuation of the long-term fertility decline. They were not, to be sure, unaffected by conditions underlying the post-war boom, for during the late 1950s and early 1960s, their rate of decline slackened somewhat (as in Belgium, Denmark and Sweden) or they experienced moderate increases in fertility (as in Austria, England and Wales, Scotland and Switzerland) before reductions were resumed. In the Netherlands and Norway reductions among older women continued unabated during those years.

Clearly, the phenomenon of rising fertility was due primarily to increases among younger women. Although a number of factors have been identified as contributing to the over-all increase (such as the decreasing incidence of childlessness, a shift in the number of births per woman to two or three from one, and declining incidence of widowhood), it is generally agreed that the most important component of the rise in period fertility consisted of childbearing among the increased proportions of women marrying at early ages (table 34). As has been frequently pointed out, the largest increase in fertility tended to occur in countries where it had been lowest around 1950. However, those were also countries in which childbearing had been restricted largely to marriages that took place at a relatively late age. Because this pattern of family formation was an important factor underlying low fertility, it is not difficult to understand why, once its inhibiting effect began to diminish, fertility rose and did so precisely in those countries where late marriage had had the most impact.

The progressively larger numbers of relatively young couples marrying in the post-war period led to a sharp increase in the proportion of women exposed to conception during their peak reproductive years. The cohorts of women born roughly between 1920 and 1940 married relatively soon after entering the reproductive ages and began to bear children. This change in timing of marriage and childbearing resulted in an "overlap" of reproductive careers, so that births to young couples just initiating their family building occurred in the same years as births to older couples having a second or third child. The annual numbers of births, therefore, began to "pile up" as successive birth cohorts married earlier and earlier, producing rising calendar-year fertility rates.

It should be stressed, however, that the transfer of marriage and the commencement of childbearing to an earlier stage of the woman's life cycle did not signal a longer period of reproduction, for the subsequent behaviour of these cohorts clearly indicates that the termination as well as the initiation of childbearing was taking place at much younger ages. Another way of demonstrating this trend is to compare changes in completed cohort fertility with changes in period fertility. Thus, in the United Kingdom of Great Britain and Northern Ireland, the period gross reproduction rate increased by about 60 per cent between the

Table 33. Crude birth-rates, gross reproduction rates and age-specific fertility rates in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, 1950-1970

Major area, region and country	Year	Crude birth-rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates (births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Europe											
Eastern Europe											
Bulgaria	1950	25.2	...	...	...	...	...	...	...	...	...
	1955	20.1	1.17	479.3	60.1	179.8	129.8	64.1	33.1	10.5	1.9
	1960	17.8	1.12	461.5	75.0	187.2	120.1	51.3	19.7	7.2	1.0
	1965	15.3	1.01	425.4	68.5	175.5	104.1	45.4	16.6	4.5	0.9
	1970	16.3	1.05	435.7	71.5	189.2	111.6	45.0	14.8	3.2	0.4
Czechoslovakia	1950	23.3	1.48	613.1	50.7	197.3	170.9	108.8	61.9	21.6	1.9
	1955	20.3	1.38	571.5	44.4	200.6	160.8	95.7	51.7	16.8	1.4
	1960	15.9	1.16	478.9	46.0	198.7	131.8	63.8	29.1	8.8	0.6
	1965	16.4	1.15	473.9	45.2	193.4	134.8	65.8	27.2	6.9	0.5
	1970	15.9	1.01	414.9	45.6	180.5	113.9	51.5	18.6	4.5	0.3
German Democratic Republic	1950	16.5	...	...	...	...	...	...	...	...	...
	1955	16.3	1.21	503.5	46.8	208.6	127.3	77.5	32.9	10.1	0.3
	1960	17.0	1.16	477.5	81.0	166.1	123.5	67.8	31.7	7.1	0.4
	1965	16.5	1.19	491.6	70.7	191.0	124.4	68.7	29.8	6.6	0.3
	1970	13.9	1.06	434.1	77.6	171.8	106.2	53.1	22.1	3.2	0.1
Hungary	1950	20.9	1.25	520.1	51.2	169.8	139.8	88.7	50.4	18.6	1.6
	1955	21.4	1.36	561.5	54.1	191.0	151.0	95.3	52.4	16.4	1.3
	1960	14.7	0.97	403.8	52.6	159.4	105.4	52.9	25.0	8.0	0.5
	1965	13.1	0.88	361.4	42.2	147.6	100.5	47.8	18.2	4.7	0.4
	1970	14.7	0.95	394.3	50.4	159.3	110.3	51.4	18.4	4.3	0.3
Poland	1950	30.8	1.79	741.5	39.0	193.8	209.5	157.4	99.8	38.0	3.9
	1955	29.2	1.75	725.2	42.2	208.9	203.9	144.6	89.8	32.4	3.4
	1960	22.6	1.48	606.3	45.9	205.0	167.5	103.6	59.5	22.4	2.3
	1965	17.5	1.22	506.0	31.7	185.0	144.7	84.3	43.7	14.9	1.6
	1970	16.8	1.08	445.5	29.7	162.0	131.5	73.3	36.9	11.3	0.9
Romania	1950	26.2	...	...	...	...	...	...	...	...	...
	1955	25.6	...	...	...	...	...	...	...	...	...
	1960	19.1	1.14	469.7	59.1	165.8	122.0	67.9	39.7	13.7	1.5
	1965	14.6	0.93	381.5	52.6	140.7	99.8	53.5	25.1	8.9	0.8
	1970	21.1	1.40	577.5	66.0	201.4	151.6	94.9	48.8	13.8	0.9

Table 33 (continued)

Major area, region and country	Year	Crude birth- rate	Gross repro- duction rate	Gross total fertility (sum of age- specific rates)	Age-specific fertility rates (births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Northern Europe											
Denmark	1950	18.6	1.27	520.5	40.0	151.5	152.1	98.7	57.2	19.6	1.4
	1955	17.3	1.24	515.0	41.5	166.9	152.8	92.6	45.7	14.4	1.1
	1960	16.6	1.24	509.1	41.7	170.8	157.7	87.8	39.0	11.4	0.7
	1965	18.0	1.29	531.8	49.3	174.8	163.4	87.2	46.0	10.2	0.8
	1970	14.4	0.96	393.4	32.4	131.7	132.5	66.3	24.8	5.4	0.3
Finland	1950	24.5	1.55	635.1	27.5	155.7	177.5	135.4	94.4	40.1	4.6
	1955	21.2	1.42	584.2	28.4	160.1	164.8	117.4	77.3	33.2	3.2
	1960	18.5	1.31	536.2	28.5	160.3	155.7	103.0	61.4	25.0	2.4
	1965	17.1	1.18	484.5	34.1	140.4	144.6	91.3	52.4	19.4	2.3
	1970	14.0	0.89	365.0	32.2	119.1	108.6	64.5	30.5	9.3	0.8
Ireland	1950	21.3	...	...	...	...	...	...	...	...	...
	1955	21.1	1.67	683.1	10.4	91.7	182.6	201.4	137.9	55.3	3.9
	1960	21.4	1.86	763.2	8.8	105.7	213.6	217.5	157.2	56.2	4.2
	1965	22.1	1.98	810.2	13.7	122.5	236.8	221.6	153.0	58.5	4.2
	1970	21.7	1.86	767.3	16.8	145.7	225.0	199.7	131.6	44.9	3.7
Norway	1950	19.1	1.23	508.4	17.5	110.3	144.7	122.5	78.3	31.7	3.4
	1955	18.5	1.34	551.3	25.6	145.6	162.4	116.3	72.1	26.4	2.9
	1960	17.3	1.40	575.3	25.8	162.7	176.7	119.5	64.9	23.6	2.2
	1965	17.8	1.42	586.4	41.0	179.9	177.1	111.6	57.7	17.7	1.4
	1970	16.6	1.22	502.5	44.7	166.7	151.0	88.5	40.5	10.4	0.7
Sweden	1950	16.5	1.12	461.5	38.9	126.3	130.2	91.5	54.9	18.2	1.5
	1955	14.8	1.09	448.9	37.9	133.4	131.6	85.0	45.4	14.3	1.3
	1960	13.7	1.06	435.5	33.5	127.5	138.3	83.6	39.8	12.0	0.8
	1965	15.9	1.17	482.1	48.9	139.8	153.8	89.6	39.3	10.0	0.7
	1970	13.7	0.94	387.6	34.0	120.3	129.4	70.0	27.4	6.1	0.4
United Kingdom											
England and Wales	1950	15.9	1.06	437.7	22.2	126.3	136.2	89.4	48.2	14.2	1.1
	1955	15.0	1.08	444.0	23.6	137.0	141.7	84.3	44.2	12.4	0.8
	1960	17.1	1.29	533.4	34.0	165.6	171.9	100.8	46.4	13.8	0.8
	1965	18.1	1.37	564.7	44.9	176.8	178.7	101.9	48.9	12.6	0.9
	1970	16.1	1.16	478.5	49.9	154.1	151.9	79.0	34.4	8.7	0.6
Scotland	1950	18.1	1.25	516.6	20.9	127.8	157.6	126.3	64.7	18.1	1.2
	1955	18.1	1.24	507.8	22.6	147.1	160.9	104.1	56.5	15.6	1.0
	1960	19.6	1.42	582.7	32.5	177.1	186.4	113.7	56.6	15.6	0.9
	1965	19.3	1.44	595.7	40.9	180.9	190.9	112.2	55.9	13.9	1.0
	1970	16.8	1.21	500.5	47.2	155.2	158.7	89.4	39.5	9.9	0.6

Table 33 (continued)

Major area, region and country	Year	Crude birth- rate	Gross repro- duction rate	Gross total fertility (sum of age- specific rates)	Age-specific fertility rates (births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Southern Europe											
Albania	1950	38.9	...	...	...	...	...	...	...	...	...
	1955	44.5	3.30	1 351.4	56.8	245.8	306.0	304.5	240.7	119.9	77.8
	1960	43.4	3.16	1 303.0	62.4	262.1	294.4	253.8	226.6	141.1	62.6
	1965	35.2	2.57	1 054.6	43.2	246.4	260.0	212.7	148.5	94.0	49.9
	1970	32.5	2.35	968.1	37.4	259.3	257.1	194.1	132.9	62.2	24.9
Greece	1950	20.0	...	...	...	...	...	...	...	...	...
	1956	19.7	1.12	465.3	14.3	101.1	157.9	109.8	59.2	19.2	3.7
	1960	18.9	1.07	443.9	17.5	105.8	151.0	108.3	46.3	13.0	2.1
	1965	17.7	1.08	449.2	25.6	120.0	147.6	99.3	44.2	10.8	1.6
	1970	16.5	1.17	485.8	36.9	145.8	154.7	95.1	43.1	9.2	1.2
Italy	1950	19.5	1.22	502.7	17.4	107.7	149.6	111.5	81.7	31.8	3.1
	1955	18.0	1.15	471.7	16.0	107.8	144.9	110.8	64.0	26.2	2.1
	1960	18.3	1.15	474.1	19.1	107.7	151.6	109.6	61.6	22.6	1.9
	1965	19.2	1.27	522.5	16.9	139.6	165.6	117.1	62.0	19.3	2.0
	1970	16.8	1.14	470.8	19.5	135.3	148.4	98.1	52.5	15.9	1.2
Malta	1950	33.0	...	...	...	...	...	...	...	...	...
	1957	27.6	1.84	763.4	31.9	185.6	213.6	165.6	118.6	44.0	4.0
	1960	26.1	1.74	724.8	22.5	198.4	201.1	150.6	105.1	41.8	5.3
	1965	17.7	1.19	494.9	13.4	125.0	158.0	84.8	83.8	27.7	2.0
	1970	16.5	0.97	409.0	13.5	103.0	132.8	89.3	52.2	16.8	1.4
Portugal	1950	24.4	1.53	632.2	22.5	138.4	169.2	139.3	106.3	49.2	7.3
	1955	24.4	1.51	619.9	25.7	138.5	164.1	132.7	104.9	47.1	6.8
	1960	24.0	1.52	630.8	26.3	151.3	179.5	132.0	94.9	42.8	4.1
	1965	24.1	1.56	644.0	29.9	148.5	184.6	131.4	96.5	49.6	3.5
	1970	20.4	1.43	585.7	29.9	146.2	173.5	122.4	78.5	32.0	3.3
Spain	1950	20.2	1.24	510.8	8.0	88.3	157.3	129.4	88.1	33.9	5.7
	1955	20.5	1.26	516.2	9.3	92.3	170.0	126.2	82.2	31.3	4.8
	1960	21.8	1.37	565.6	9.4	107.6	190.3	144.2	80.9	29.6	3.5
	1965	21.1	1.40	576.3	11.3	105.8	193.6	146.4	85.9	29.3	4.0
	1970	19.6	1.40	579.3	14.3	123.1	202.9	131.7	78.1	26.3	3.1
Yugoslavia	1950	30.2	1.93	754.3	39.2	200.5	201.5	157.2	95.8	46.3	13.8
	1955	26.9	1.55	640.0	41.9	187.7	176.8	114.5	82.7	29.4	9.0
	1960	23.5	1.37	564.6	51.9	178.6	156.0	94.3	51.8	26.4	5.4
	1965	21.0	1.31	541.0	48.7	189.4	152.7	86.2	42.9	15.0	6.1
	1970	17.8	1.11	458.0	51.8	161.9	125.2	72.2	34.2	10.8	2.0

Table 33 (continued)

Major area, region and country	Year	Crude birth- rate	Gross repro- duction rate	Gross total fertility (sum of age- specific rates)	Age-specific fertility rates (births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Western Europe											
Austria	1951	14.8	0.99	406.4	34.0	114.3	112.2	83.9	44.7	15.9	1.4
	1955	15.6	1.09	446.6	30.5	131.3	128.7	89.6	49.9	15.3	1.2
	1960	17.9	1.30	533.6	48.5	157.5	156.4	99.6	53.6	16.8	1.1
	1965	17.9	1.31	538.0	56.8	159.0	154.8	100.2	50.4	15.5	1.3
	1970	15.1	1.11	459.5	61.0	157.7	110.7	77.5	40.5	11.4	0.7
Belgium	1950	16.9	1.16	475.9	22.1	123.2	144.4	104.8	60.0	19.8	1.6
	1955	16.9	1.18	483.1	21.2	135.1	150.4	98.8	57.6	18.6	1.3
	1960	17.0	1.24	512.1	25.7	152.3	163.6	101.2	50.7	17.5	1.1
	1965	16.5	1.27	522.8	30.4	165.9	166.1	97.5	48.0	13.7	1.0
	1969	14.8	1.11	456.6	30.7	150.3	146.7	80.7	37.0	10.3	0.8
France	1950	20.7	1.44	589.9	24.3	160.0	179.4	130.0	69.7	24.3	2.2
	1955	18.6	1.32	542.1	21.1	154.7	169.3	107.4	69.2	18.6	1.7
	1960	17.9	1.33	545.5	22.8	162.4	175.0	108.0	54.4	22.6	1.3
	1965	17.8	1.38	567.0	28.0	177.5	181.4	108.3	53.4	16.5	2.0
	1970	16.8	1.22	500.2	26.3	162.5	159.7	92.3	44.5	13.7	1.2
Germany, Federal Republic of	1951	15.7	1.01	418.0	32.8	120.2	124.8	80.7	45.8	12.9	0.8
	1955	15.7	1.04	429.2	17.3	113.6	133.2	94.6	54.0	15.0	1.3
	1960	17.5	1.17	481.2	23.7	128.6	159.3	100.2	50.2	18.2	1.0
	1965	17.7	1.22	500.1	31.9	138.4	162.4	104.6	47.5	13.9	1.4
	1970	13.4	0.98	401.3	29.5	127.8	111.8	79.6	40.6	11.2	0.8
Luxembourg	1950	13.9	0.90	369.5	13.9	87.6	131.7	82.8	41.0	11.6	0.8
	1955	15.3	1.01	416.7	16.7	116.8	139.9	91.2	39.1	12.4	0.6
	1960	16.0	1.13	458.1	23.4	143.3	149.9	90.6	38.0	11.9	1.0
	1965	16.0	1.19	486.3	29.0	156.1	165.5	84.5	38.7	12.1	0.5
	1970	13.0	0.97	391.2	27.9	130.9	124.4	65.3	32.7	9.5	0.5
Netherlands	1950	22.7	1.50	620.3	12.5	93.9	181.7	166.8	114.9	46.5	4.1
	1955	21.3	1.48	607.1	13.7	103.2	189.9	156.8	100.9	39.2	3.4
	1960	20.8	1.51	622.3	16.3	120.4	208.4	152.6	88.6	33.2	2.8
	1965	19.9	1.47	605.6	21.0	140.3	207.2	138.2	72.9	23.9	2.1
	1970	18.3	1.26	517.0	22.6	136.9	185.1	108.3	48.8	14.1	1.1
Switzerland	1950	18.1	1.17	481.7	12.8	102.1	156.4	119.5	67.2	21.9	1.7
	1955	17.1	1.13	465.4	14.2	112.8	151.5	108.4	57.8	19.0	1.6
	1960	17.6	1.20	491.6	15.4	124.7	167.2	111.2	54.1	17.6	1.3
	1965	18.8	1.23	505.6	21.7	131.4	176.3	108.7	51.0	15.3	1.1
	1970	15.8	1.02	419.8	22.9	125.3	137.6	84.0	38.5	10.5	0.7

Table 33 (continued)

Major area, region and country	Year	Crude birth- rate	Gross repro- duction rate	Gross total fertility (sum of age- specific rates)	Age-specific fertility rates (births per 1,000 women in each age group)						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-
Northern America											
Canada ^{a/}	1950	27.1	1.69	698.0	46.2	182.8	203.0	143.0	88.9	31.2	3.
	1955	28.1	1.88	772.7	54.2	219.6	217.2	155.6	90.7	32.5	2.
	1960	26.7	1.90	782.8	59.6	229.3	228.2	148.0	87.0	28.3	2.
	1965	21.3	1.56	642.1	49.5	192.6	186.7	122.3	67.0	22.1	2.
	1970	17.4	1.14	468.5	43.7	143.5	147.9	82.1	39.2	11.2	0.
United States of America	1950	23.9	1.49	613.3	81.3	195.5	165.5	103.0	52.0	14.8	1.
	1955	24.9	1.74	714.8	90.4	241.0	191.4	116.0	59.3	15.6	1.
	1960	23.7	1.78	729.9	89.4	256.6	198.2	113.2	56.2	15.4	0.
	1965	19.4	1.42	582.7	71.4	195.2	161.8	94.4	46.3	12.8	0.
	1970	18.3	1.20	492.9	69.1	166.1	144.4	73.0	31.7	8.1	0.
Oceania											
Australia	1950	23.3	1.49	613.4	36.8	173.7	186.0	124.8	68.8	21.5	1.
	1955	22.6	1.59	654.2	41.9	204.9	198.9	122.8		20.4	1.
	1960	22.4	1.68	690.8	44.2	220.6	216.3	127.2	62.8	18.3	1.
	1965	19.6	1.44	592.5	47.2	178.6	188.1	109.7	52.8	14.9	1.
	1970	20.6	1.40	573.7	51.1	172.6	190.3	102.1	45.0	11.8	0.
Fiji	1950	39.8	2.79	1 149.4	117.7	297.1	282.6	208.3	143.8	70.7	29.
	1955	38.5	2.56	1 059.0	109.4	279.9	270.2	179.9	140.7	59.1	19.
	1960	39.9	2.74	1 120.6	96.8	304.7	295.4	201.8	147.0	54.7	20.
	1965	36.1	2.39	995.7	67.7	279.7	268.2	183.7	125.8	49.1	21.
	1970	29.9	1.87	768.2	51.9	237.6	213.6	129.7	90.7	32.6	12.
New Zealand	1950	25.9	1.75	715.9	30.1	192.4	228.1	153.9	83.1	26.0	2.
	1955	26.1	1.89	779.4	34.2	230.5	248.6	158.8	81.7	23.7	1.
	1960	26.5	2.05	843.3	45.5	260.1	269.7	161.7	82.0	22.6	1.
	1965	22.9	1.72	712.1	59.1	233.3	216.1	120.4	62.2	19.6	1.
	1970	22.1	1.54	632.6	64.4	208.5	201.1	98.7	46.4	12.6	1.
USSR	1950	26.7	...	...	...	...	...	...	...	...	...
	1955	25.7	...	...	...	...	...	...	...	...	...
	1960- 1961	24.7	1.37	559.7	35.2	164.8	160.7	110.0	60.7	23.5	4.
	1966- 1967	18.0	1.19	486.1	26.9	158.6	132.7	97.0	49.2	17.7	4.
	1969- 1970	17.3	1.17	477.8	30.4	163.9	128.7	88.1	48.5	15.3	2.

Sources: For USSR, age-specific rates for 1960-1961, 1966-1967 and 1969-1970 taken from Union of Soviet Socialist Republics, Central Statistical Office, National Economy of the USSR, 1967 and 1970 (Moscow, 1968, 1971), pp. 38 and 49 respectively. Rates for other countries compiled from data available from the Statistical Office of the United Nations from official records of the country concerned.

^{a/} Births in Newfoundland (3.7 per cent of total births in 1972) prorated to the distribution by age for Canada excluding Newfoundland.

Table 34. Percentage of females currently married, at selected ages, in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, around 1950, 1960 and 1970

Major area, region and country	Ages 15-19			Ages 20-24			Ages 25-29			Ages 45-49		
	1950	1960	1970	1950	1960	1970	1950	1960	1970	1950	1960	1970
Europe												
Eastern Europe												
Bulgaria	...	18.8	18.1	65.3	71.1	72.7	85.9	88.2	90.0	87.7	89.5	89.6
Czechoslovakia	...	...	...	44.4	66.1	62.9	73.5	87.1	85.4	76.7	81.6	82.5
German Democratic Republic	3.0	19.3	6.7	38.3	64.6	63.0	63.3	83.6	85.2	74.2	71.8	75.4
Hungary	...	14.6	12.3	51.9	67.1	65.4	72.5	85.6	85.2	76.1	77.4	81.7
Poland	...	8.1	4.5	46.2	58.0	52.5	71.4	82.3	83.1	70.3	75.7	81.5
Romania	...	15.2	20.9	...	64.0	73.0	...	82.8	88.1	...	79.9 ^{a/}	80.4
Northern Europe												
Denmark	4.5	...	...	48.1	52.2	51.9	76.5	81.4	80.4	76.3	79.6	81.6
Finland	4.3	5.0	5.3	40.3	45.0	46.6	68.5	73.4	74.8	67.4	71.8	75.6
Ireland	1.1	1.1	2.1	17.6	21.8	31.0	45.2	54.7	68.6	66.2	71.6	76.1
Norway	3.0	4.7	5.5	33.8	49.3	52.4	65.1	80.3	80.6	71.7	79.9	84.1
Sweden	3.7	2.7	2.3	39.8	41.9	37.6	71.7	77.1	73.0	74.1	80.6	82.0
United Kingdom												
England and Wales	4.4	6.7	10.8	48.0	57.7	59.7	77.0	83.5	84.7	78.0	82.8	85.6
Northern Ireland	2.3	3.3	4.4	29.1	38.6	43.4	58.9	69.1	75.6	69.1	74.8	77.5
Scotland	3.5	5.8	...	39.6	51.6	57.4	69.8	80.3	83.7	72.0	78.3	81.3
Southern Europe												
Albania	...	...	...	...	...	...	...	...	...	...	...	...
Greece	...	5.6	11.0	29.4	34.2	46.7	59.5	63.9	73.0	77.3	78.7 ^{b/}	81.4 ^{b/}

Table 34 (continued)

Major area, region and country	Ages 15-19			Ages 20-24			Ages 25-29			Ages 45-49		
	1950	1960	1970	1950	1960	1970	1950	1960	1970	1950	1960	1970
Southern Europe (continued)												
Italy	3.8	4.4	...	32.0	34.2	43.0	64.4	68.3	73.9	75.9	77.3	78.6
Malta	...	6.1	2.7	...	42.2	32.7	...	65.7	66.3	...	68.9	73.9
Portugal	4.1	4.7	5.2	34.3	37.6	39.0	63.3	67.2	74.1	71.5	78.0	80.7
Spain	1.4	2.1	...	20.5	26.4	31.4	56.5	64.8	72.7	71.3	76.3	81.6
Yugoslavia	10.8	...	...	57.0	56.6	61.7	77.7	80.6	84.2	75.1	76.1	79.9
Western Europe												
Austria	3.5	5.9	7.3	32.8	40.8	53.6	59.7	72.8	72.6	70.1	68.3	75.2
Belgium	...	5.8	6.8	43.3	56.1	59.4	73.5	84.3	86.7	80.5	82.8	84.8
France	5.8	5.8	6.6	48.8	52.3	53.5	77.9	80.0	81.7	77.8	79.4	81.3
Germany, Federal Republic of	5.0	3.5	8.0	31.7	44.4	50.2	61.0	77.0	82.0	74.0	70.2	79.8
Netherlands	...	3.7	4.9	30.1	40.2	53.0	65.3	78.6	84.7	78.7	82.2	85.5
Switzerland	1.2	1.9	3.6	25.8	34.2	45.0	60.8	69.9	76.2	71.9	76.2	79.2
Northern America												
Canada	7.9	8.7	7.3	51.2	59.2	55.7	78.5	83.7	82.5	81.2	83.7	86.0
United States of America	15.9	15.1	10.8	63.4	67.2	57.9	80.7	83.4	79.2	77.3	80.0	80.4
Oceania												
Australia	...	6.9	8.7	57.5	59.1	62.0	81.8	84.6	84.3	78.7	82.1	84.1
Fiji	...	28.6	16.6	...	72.4	67.2	...	86.3	87.2	...	78.0	83.0
New Zealand	6.2	8.3	9.6	49.7	58.6	60.0	78.5	85.7	85.9	79.1	83.3	84.8
USSR	...	...	...	...	50.1	55.9	...	75.9	82.7	...	54.9	71.9

Source: Adapted from "Post-war demographic trends in Europe and the outlook until the year 2000" (ESA/P/AC.5/2/Add.1), prepared by the Economic Commission for Europe for the United Nations/United Nations Fund for Population Activities Post-World Population Conference Consultation among Countries of the ECE Region, Geneva, 7-11 July 1975.

a/ Ages 40-49.

b/ Ages 45-54.

mid-1930s and the early 1960s. This same measure, however, computed for cohorts that began their childbearing during that period, increased by only about 25 per cent. 8/ The cumulative fertility rates for birth cohorts show much the same picture (table 35). Among women who have reached at least age 35, and who may be regarded as having completed or nearly completed their fertility, comparison shows that the major difference in fertility between those beginning their childbearing during the 1940s and those doing so during the 1950s occurred at the younger ages. Even in countries where significant increases in "completed" fertility may be observed (Belgium, England and Wales, France and Norway), increases at younger ages were far more important. Thus, in Norway, by the time they reached ages 35-39, women born during the period 1931-1935 had had about 17 per cent more children than those born during 1921-1925 had produced at the same ages. At ages 20-24 and 25-29, however, the differences were 72 and 42 per cent, respectively.

Among the remaining European countries for which information is available, it may be noted that although cumulative rates at ages 20-24 and 25-29 were significantly higher among cohorts of women born during 1931-1935 than among those born earlier, completed fertility changed very little and even declined in Finland and the Netherlands. Clearly, then, the rise in period rates during the 1950s signalled a change in the ages at which women bear children much more than an extension of childbearing to older ages or an increase in completed family size. In other words, the rise in period rates reflected a change in the timing of births in the woman's life span and probably also within marriage, rather than a change in number of children per woman of completed fertility.

The factors underlying the marriage boom and fertility increases are not completely understood. Certainly there was some making-up of postponed births following the interruptions of the Second World War, but this does not account for the continuation of the boom until the early 1960s. In belligerent countries, sex ratios distorted by the conflict gradually improved and were conducive to earlier marriage. This fact in itself, however, does not explain why age at marriage fell to levels below those previously observed. The major factor appears to have been the economic recovery and development that not only created additional, and often different, types of employment, but may have evoked considerable optimism regarding the future. Furthermore, attention has been drawn to the fact that the cohorts entering the labour market under those favourable conditions were smaller and somewhat better educated in relation to the older cohorts with whom they competed. 9/ For these young people, then, the general climate of peace and prosperity favoured early marriage.

The role of developments concerning fertility control have also been stressed: "As methods become available with which to limit marital fertility, the marriage ceremony was no longer regarded as the prelude to a highly uncertain reproductive career. And as methods became more reliable, easier to use, and safer, the utility of late marriage declined still further." 10/

8/ United Kingdom of Great Britain and Northern Ireland, Report of the Population Panel, Cmnd. 5258 (London, HM Stationery Office, 1973), p. 39.

9/ R. A. Easterlin, "The American baby boom in historical perspective", American Economic Review, vol. 51 (5 December 1961), pp. 869-911. Norman B. Ryder, "The time series of fertility in the United States", in International Union for the Scientific Study of Population, International Population Conference, London 1969 (Liège, 1971), vol. I, p. 591.

10/ Arthur A. Campbell, "Beyond the demographic transition", Demography, vol. II, No. 4 (November 1974), p. 557.

Improvements in contraceptive technology alone, however, are unlikely to have caused earlier marriage and childbearing, especially in view of recent fertility declines among young women. Instead, they probably facilitated changes in reproductive timing and control. Of at least equal importance, perhaps, were changing economic conditions and the greater support provided by national Governments in bearing the financial cost of parenthood: education; medical attention; and living costs, subsidized by family allowances. 11/

The mid-1960s represented a turning-point in Northern and Western Europe, as it was during that period that both crude and gross reproduction rates declined everywhere. Except in the Federal Republic of Germany, where the severely depleted birth cohorts of 1940-1945 were reaching the peak reproductive ages, the female birth deficits of the war years were more than compensated for as children born during the subsequent baby boom began reaching reproductive age, causing crude birth rates to rise in most countries (tables 32 and 69). In spite of the positive influence of changes in age structure, however, crude birth rates declined. Between 1965 and 1970, a drop in the gross reproduction rate of less than 10 per cent was registered only in Ireland. Elsewhere, declines of 10-20 per cent took place, except in Denmark and Finland, where fertility fell by about 25 per cent.

Examination of age-specific rates for 1965 and 1970 shows why the fall in fertility was so brusque. Fertility among women over 30 years of age continued to decline, but those reductions were accompanied by falling rates among younger women. In previous years, the weight of numerically larger groups of women in the peak reproductive ages was sufficient to offset declining fertility among women of older ages and to affect a rise in crude birth rates; but during that period, reductions among even larger cohorts of young women having fewer births combined with continued declines among older women brought about even sharper decreases in crude rates.

At the same time, the movement towards a greater incidence of marriage at younger ages slowed appreciably in Northern Europe (except in Ireland). In most of Western Europe and Ireland, where proportions married among younger women had been abnormally low, the percentage of women married at ages 20-24 continued to increase (table 34). Significantly, it is in these countries that fertility at ages 20-24 years tended to decline the least or even to increase. In Denmark and Sweden, on the other hand, age at marriage appears to have risen. Interpretation of this trend in these two countries requires caution, however, for there is strong evidence that, at least in Sweden, a considerable number of young people currently live in consensual unions, but are recorded in official statistics as single. 12/

The age-specific fertility patterns of the 1960s show clearly that the rise in fertility during the previous decade among younger women represented a shift in family formation patterns rather than a return to large families. The same women whose fertility at younger ages was so much higher than that of previous cohorts had, at ages 30-34 and 35-39, far fewer children than their predecessors. In doing so, they concentrated their childbearing into a very narrow span of years.

11/ Ibid.

12/ Gertrude Svala, Sweden, Country Profiles
(New York, The Population Council, 1972), p. 3.

The situation among younger women is unclear, if only because they have not yet completed enough of their reproductive careers to permit conclusions as to the probable size of their completed families. It is interesting to note, however, that comparisons of age-specific fertility trends with those of proportions married at younger ages show no close relationship between the two phenomena. In Austria, the Federal Republic of Germany, and Switzerland, for instance, where the proportions married at ages 20-24 and 25-29 continued to increase, fertility among those age groups, none the less, declined, indicating that control of fertility within marriage rather than the event of marriage per se exercised the greater impact.

Evidence that recent fertility reductions among younger women represented a genuine fertility decline rather than postponement of births has emerged in the comparative analysis of 12 national fertility surveys. ^{13/} Information for Belgium, Denmark, England and Wales, Finland and France indicates that expectations of future births have declined from the oldest to the youngest marriage cohorts, and that there is an increasing concentration on the two-child family and a rapid disappearance of families with four or more children. For Denmark, England and Wales, and France, where the requisite data were available, the concentration of childbearing in the first few years of marriage appears to be on the increase. This last finding is not conclusive, however, because it refers only to women who had experienced a first birth. Furthermore, in the case of England and Wales, official statistics suggest a delay in the timing of the first birth for the proportion of women having a child within the first two years of marriage declined between 1961 and 1970. ^{14/} Considering the evidence in its entirety, it is likely that both postponement and reduced family size have played a role in recent declines, but much more information is required before the actual contribution of either factor can be properly assessed.

Detailed explanations of the reasons for the recent sharp declines will depend upon further observations to be made within the next few years. It appears safe to assume, however, that worsening economic conditions contributed significantly. Economic uncertainties were, no doubt, further aggravated by the relatively large cohorts entering the productive ages and seeking admittance to the work force. That fertility declines among young women often occurred independently of age at marriage is an indication of the profound changes in this institution, and one that has important implications for the prediction of future trends. Clearly, the postponement of marriage is no longer the only assured means of regulating fertility, for increased control of marital fertility in a variety of ways now provides couples with greater flexibility in reacting to economic, social and political conditions. This development greatly restricts the use of information on changes in nuptiality as an indicator of future changes in fertility. At the very least, much more caution must be exercised until more is known concerning the alternatives to marriage that are employed by young adults, changes in marriage itself and its association with the extent and timing of childbearing.

^{13/} "Post-war demographic trends in Europe and the outlook until the year 2000" (ESA/P/AC.5/2/Add.1), prepared by the Economic Commission for Europe for the United Nations/United Nations Fund for Population Activities Post-World Population Conference Consultation among Countries of the ECE Region, Geneva, 7-12 July 1975, chap. V.

^{14/} United Kingdom, Report of the Population Panel, pp. 43-44.

The recent fertility trends in Southern Europe (excluding Yugoslavia) are also difficult to characterize. Most of the countries of this region have only recently achieved relatively low levels and some (most notably Albania) are still in transition. Not only have trends not been uniform among countries but divergent fertility movements have been observed for geographical regions within at least two countries and may have occurred in others with geographically distinctive disparities in economic and social conditions. In Italy, for example, the apparent stability of the birth rate during the 1950s was due largely to compensatory changes in northern and southern Italy. During those years, fertility rose in the north but declined in the south. 15/

Two countries of this region, Albania and Malta, stand out as having had particularly sharp reductions in the crude birth rate. In Malta, this measure fell by more than 20 per cent during the 1950s and then underwent a further reduction of about 37 per cent during the 1960s, reaching the figure of 16.5 per 1,000 in 1970 (table 31). The decline of the Albanian crude birth-rate began later, during the early 1960s, and was not as great; none the less, the 25 per cent decline between 1960 and 1970 is noteworthy. In Greece, a slow reduction characterized the 1950s, but a drop of about 13 per cent occurred between 1960 and 1970. In both Italy (during 1954-1964) and Spain (mainly during 1957-1964), there was a slight rise before the crude birth rate continued its long-term decline. In Italy, a decline of about 12 per cent took place between 1965 and 1970; and in Spain, a reduction of about 10 per cent occurred during the 1960s. Portugal experienced relatively little change until 1965-1970, when the crude birth rate declined by about 15 per cent. After 1970, the most recent figures indicate that declines continued in all but Albania and Malta, where slight increases have been registered.

Inasmuch as the age composition of the populations of Southern European countries has been affected not only by war and its aftermath (which, in Greece, lasted throughout 1940-1949) but by out-migration, the crude birth rate is particularly unreliable in this region as an indicator of fertility trends. It is evident that the effect of these factors upon age composition has been substantial (see table 32). In Greece, Italy, Portugal and Spain, changes in age structure had a considerable negative effect upon crude birth rates during the 1960s.

Because of distortions in age structures, gross reproduction rates offer a much more accurate indication of fertility trends. Although in Albania, percentage changes in the GRR parallel those in the crude birth rate, in Malta during 1960-1970, the decline in the GRR was even sharper than that in the crude birth rate, 44 and 37 per cent, respectively (annexed table 68). However, in each of the remaining countries, the negative effect of changes in age composition upon the crude birth rate is seen to have obscured the small to moderate increases that took place and/or to have exaggerated the extent of subsequent declines. Thus,

15/ Massimo Livi Bacci, "Recent trends of Italian fertility," in International Union for the Scientific Study of Population, International Population Conference, London, 1969, vol. 1, p. 573. For a discussion of the even wider regional disparities in Portugal, see Massimo Livi Bacci, A Century of Portuguese Fertility (Princeton, New Jersey, Princeton University Press, 1971).

in Greece (1965-1970), Italy (1960-1965) and Spain (1955-1960), gross reproduction rates increased by 8-10 per cent. Spain recorded little change in the GRR after 1960, but Italy and Portugal experienced declines of 9-10 per cent during the years 1965-1970.

Although all age groups contributed to the decline of fertility in Albania and Malta, there was a tendency for percentage reductions among older and very young women to be sharpest (tables 33 and 68). In Greece, Italy and Spain, trends in age-specific rates approximate to varying degrees those that took place in Northern and Western Europe at somewhat earlier dates. Only Italy has duplicated the entire pattern of established declines among older women that became accentuated in those regions during the 1960s coupled with rising and then falling fertility among younger women. In Italy, this pattern has taken place within a much briefer span of time and to date has involved less drastic changes than those observed in Northern and Western Europe. In Spain, the fertility of older women evidently rose during 1960-1965; but Greece appears to be in the midst of the transformation just described, with no decline as yet evident among younger women. As concerns Portugal, changes in age-specific fertility resemble only faintly the Northern and Western European pattern, and it is unclear whether Portuguese fertility has already undergone the same changes, but in a much less dramatic way, or whether a delayed or, perhaps, a different pattern will yet emerge.

The data suggest that the differences in timing and degree of fertility change among countries of Southern Europe and Northern and Western Europe are closely associated with differences in marriage patterns (table 34). Whereas in the rest of Europe, substantial increases in proportions currently married took place during the 1950s, such changes did not occur in Greece and Italy until the 1960s. They began earlier in Spain, but were not as large; and by 1970, the proportions currently married among younger women had not attained the same levels. Thus, in much of Southern Europe, the changes in marriage patterns witnessed in other European countries appear to have been delayed and/or to have occurred at a more gradual pace, as have the economic changes and transformations underlying them. Unfortunately, no information concerning proportions currently married is available for Albania. For Malta, the evidence suggests that although the proportions eventually marrying, as indicated by the percentage currently married at ages 45-49, has increased, age at marriage also appears to have increased and rather sharply, for the percentage currently married under age 24 has declined substantially. The concentration of fertility at younger ages witnessed elsewhere is currently taking place also in Southern Europe. The proportion of gross total fertility attributable to women under 30, however, is below that of Northern and Western Europe and much lower than that of Eastern Europe.

Northern America and Oceania

The post-war upsurge in annual birth rates in Canada and in the United States of America ended in the late 1950s, and a fertility decline began that continued at a fairly steady pace throughout most of the 1960s. Towards the end of the period 1960-1969, in spite of the entrance of large numbers of women born during the boom years into the peak reproductive ages, there was a slight temporary increase in crude birth rates in the United States and a brief levelling-off in Canada. By 1971, the decline had resumed; and the 1973 rates

for both countries had fallen to below 16 per 1,000 population, which represented the lowest ever recorded. As in Europe, the effect of alterations in age composition upon crude birth rates changed from negative during the 1950s to positive during the late 1960s, so that such rates underestimated the extent of both the rise and the subsequent decline in fertility. Gross reproduction rates in Canada and the United States rose by about 13 and 20 per cent, respectively, between 1950 and 1960, while crude rates showed little change. Similarly, whereas crude birth rates in both countries fell by some 40 per cent between 1960 and the early 1970s, gross reproduction rates declined by about 48 per cent and currently stand at or below replacement levels.

Age-specific and cumulative age-specific fertility trends in Canada and the United States of America were very similar to those noted earlier as having occurred in Northern and Western Europe (tables 33, 35 and 68). It may be observed, however, that although the post-war rise was attributable primarily to higher fertility among younger women, during the early 1950s increases were registered among all but the oldest women, i.e., those aged 45-49 years, an indication that changes in marital fertility played a more significant role in these countries than in Europe. The most important factors contributing to the post-war rise in fertility, however, were declining age at marriage, higher proportions marrying, reduced childlessness and an increase in the proportion of women having at least two children. ^{16/} The rise in Northern American fertility is notable also in that, compared with Europe, exceptionally high levels of fertility were achieved among young women during the 1950s. As was the case in Europe, however, this was much less a reflection of increasing family size than a change in timing of childbearing. ^{17/}

During the late 1950s, fertility declines among older women had been moderate. As the younger women who had had exceptionally high fertility during those years passed age 30, they began to terminate their childbearing, and reductions at those ages, were significant during the 1960s. The sharp declines among younger women during the past decade appear to be closely linked with the equally sharp declines in proportions married at these ages (table 34).

As in other more developed countries, increased competition among relatively larger cohorts entering the labour force for a reduced number of economic opportunities appears to be a major factor underlying these declines. Emphasis has also been placed, however, upon the ever-increasing ability of couples to control their fertility occasioned by the wider availability and resort to oral contraceptives, intra-uterine devices (IUDs) and legal abortion. In the United States of America, the distinction between "wanted" and "unwanted" births has been stressed; and it is suggested that desired fertility levels probably did not change very much during the 1960s, but that improved fertility

^{16/} See, for example, Leroy O. Stone and Andrew J. Siggner, eds., The Population of Canada, CICRED Series (Geneva, 1974), p. 21; and Paul C. Glick, ed., The Population of the United States of America, CICRED Series (Washington, DC, 1974), chap. II.

^{17/} N. B. Ryder, *oc. cit.*, p. 589.

Table 35. Cumulative age-specific fertility rates for specified birth cohorts, selected more developed countries.

Women born in:	Aged 15-19 in:	Cumulative fertility rates up to ages:						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
<u>Europe</u>								
<u>Northern Europe</u>								
<u>Denmark</u>								
1921-1925	1940	27.6	185.9	338.0	430.6	469.6	479.8	480.1
1926-1930	1945	39.1	190.6	343.4	431.2	477.2	482.6	
1931-1935	1950	40.0	206.9	364.6	451.8	476.6		
1936-1940	1955	41.5	212.3	375.7	442.0			
1941-1945	1960	41.7	216.5	349.0				
1946-1950	1965	49.3	181.0					
1951-1955	1970	32.4						
<u>Finland</u>								
1921-1925	1940	14.9	146.7	324.2	441.6	503.0	522.4	523.2
1926-1930	1945	13.2	168.9	333.7	436.7	489.1	489.4	
1931-1935	1950	27.5	187.6	343.3	434.6	465.1		
1936-1940	1955	28.4	188.9	333.3	397.8			
1941-1945	1960	28.5	168.9	277.5				
1946-1950	1965	34.1	153.2					
1951-1955	1970	32.2						
<u>Norway</u>								
1921-1925	1940	9.5	95.1	239.8	356.1	421.0	438.7	439.4
1926-1930	1945	13.3	123.6	286.0	405.5	463.2	473.6	
1931-1935	1950	17.5	163.1	339.8	451.4	491.9		
1936-1940	1955	25.6	188.3	365.4	453.9			
1941-1945	1960	25.8	205.7	356.7				
1946-1950	1965	41.0	207.7					
1951-1955	1970	44.7						

Table 35 (continued)

Women born in:	Aged 15-19 in:	Cumulative fertility rates up to ages:						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
<u>Northern Europe (continued)</u>								
<u>Sweden</u>								
1921-1925	1940	22.3	150.8	281.0	366.0	405.8	415.8	416.2
1926-1930	1945	32.8	159.1	290.7	374.3	413.6	419.7	
1931-1935	1950	38.9	172.3	310.6	400.2	427.6		
1936-1940	1955	37.9	165.4	319.2	389.2			
1941-1945	1960	33.5	173.3	302.7				
1946-1950	1965	48.9	169.2					
1951-1955	1970	34.0						
<u>United Kingdom</u>								
<u>England and Wales</u>								
1921-1925	1940	15.4	118.4	254.6	338.9	385.3	397.9	398.5
1926-1930	1945	17.2	143.5	285.2	386.0	434.9	443.6	
1931-1935	1950	22.2	159.2	331.1	433.0	467.4		
1936-1940	1955	23.6	189.2	367.9	446.9			
1941-1945	1960	34.0	210.8	362.7				
1946-1950	1965	44.9	199.0					
1951-1955	1970	49.9						
<u>Southern Europe</u>								
<u>Portugal</u>								
1921-1925	1940	21.5	160.0	329.2	461.9	556.8	606.4	609.7
1926-1930	1945	22.8	161.2	325.3	457.3	553.8	585.8	
1931-1935	1950	22.5	161.0	340.5	471.9	550.4		
1936-1940	1955	25.7	177.0	361.6	484.0			
1941-1945	1960	26.3	174.8	348.3				
1946-1950	1965	29.9	176.1					
1951-1955	1970	29.9						

Table 35 (continued)

Women born in:	Aged 15-19 in:	Cumulative fertility rates up to ages:						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
<u>Western Europe</u>								
<u>Belgium</u>								
1921-1925	1940	7.2	105.5	249.9	348.7	399.4	413.2	413.9
1926-1930	1945	17.4	140.6	291.0	392.2	440.2	450.5	
1931-1935	1950	22.1	157.2	320.8	418.3	455.3		
1936-1940	1955	21.2	173.5	339.6	420.3			
1941-1945	1960	25.7	191.6	338.3				
1946-1950	1965	30.4	180.7					
1951-1955	1970	30.7						
<u>France</u>								
1921-1925	1940	20.7	130.8	310.2	417.6	472.0	488.5	489.7
1926-1930	1945	17.8	177.8	347.1	455.1	508.5	522.2	
1931-1935	1950	24.3	179.0	354.0	462.3	506.8		
1936-1940	1955	21.1	183.5	364.9	457.2			
1941-1945	1960	22.8	200.3	360.0				
1946-1950	1965	28.0	190.5					
1951-1955	1970	26.3						
<u>Netherlands</u>								
1921-1925	1940	10.7	90.3	272.0	428.8	517.4	541.3	542.4
1926-1930	1945	9.4	103.3	293.2	445.8	518.7	532.8	
1931-1935	1950	12.5	115.7	324.1	462.3	511.1		
1936-1940	1955	13.7	134.1	341.3	449.6			
1941-1945	1960	16.3	156.6	341.7				
1946-1950	1965	21.0	157.9					
1951-1955	1970	22.6						
<u>Switzerland</u>								
1921-1925	1940	7.8	107.3	263.7	372.1	426.2	441.5	442.4
1926-1930	1945	10.6	112.7	264.2	375.4	426.4	436.9	
1931-1935	1950	12.8	125.6	292.8	401.5	440.0		
1936-1940	1955	14.2	138.9	315.2	399.2			
1941-1945	1960	15.4	146.8	284.4				
1946-1950	1965	21.7	147.0					
1951-1955	1970	22.9						

Table 35 (continued)

Women born in:	Aged 15-19 in:	Cumulative fertility rates up to ages:						
		15-19	20-24	25-29	30-34	35-39	40-44	45-49
<u>Northern America</u>								
<u>Canada</u>								
1921-1925	1940	29.5	174.7	377.7	533.3	620.3	642.4	643.3
1926-1930	1945	32.0	214.8	432.0	580.0	647.0	658.2	
1931-1935	1950	46.2	265.8	494.0	616.3	655.5		
1936-1940	1955	54.2	283.5	470.2	552.3			
1941-1945	1960	59.6	252.2	400.1				
1946-1950	1965	49.5	193.0					
1951-1955	1970	43.7						
<u>United States of America</u>								
1921-1925	1940	53.6	196.9	362.4	478.4	534.6	547.4	547.9
1926-1930	1945	54.4	249.9	441.3	554.5	600.8	608.9	
1931-1935	1950	81.3	322.3	520.5	614.9	646.6		
1936-1940	1955	90.4	347.0	508.8	581.8			
1941-1945	1960	89.4	284.6	429.0				
1946-1950	1965	71.4	237.5					
1951-1955	1970	69.1						
<u>Oceania</u>								
<u>Australia</u>								
1921-1925	1940	23.7	157.0	343.0	465.8	528.6	543.5	544.3
1926-1930	1945	24.1	197.8	396.7	523.9	576.7	588.5	
1931-1935	1950	36.8	241.7	458.0	567.7	612.7		
1936-1940	1955	41.9	262.5	450.6	552.7			
1941-1945	1960	44.2	222.8	413.1				
1946-1950	1965	47.2	219.8					
1951-1955	1970	51.1						

regulation substantially reduced the number of unwanted children. ^{18/} In Canada, however, attention has been drawn to increased intervals between marriage and first birth, and between first and second births, raising the question whether recent low levels reflect a change in fertility or merely a delaying of births. ^{19/}

Trends in the crude birth rates of Australia and New Zealand were remarkably similar until the 1960s (figure VIII). Relative stability during the period 1950-1961 was followed by declines in these countries, during which the number of births per 1,000 population fell by 12-15 per cent between 1962 and 1967. After stabilizing or even rising somewhat, declines were resumed. The reduction was sharper in New Zealand, where measures had been higher, than in Australia, and by 1973 rates were only slightly higher in the former than in the latter (20.5 and 18.8 per 1,000, respectively). Although at different levels, the crude birth trend in Fiji had been rather similar to that of Australia and New Zealand until the 1960s. Being a less developed country with comparatively high fertility, its birth rate had varied downward from around 40 per 1,000 in 1950 to 28.2 in 1973. As for the pace of the decline, the 1972 crude birth was approximately one third lower than that registered in 1961.

In general, changes in age composition prevented crude rates from reflecting post-war fertility increases and minimized the extent of the subsequent decline. Thus, in Australia and New Zealand, during the 1950s reduced proportions of women in the reproductive ages, especially at ages 20-29, exerted a significant negative effect (tables 32 and 69). Thus, whereas crude birth rates were relatively stable, the gross reproduction rate rose by about 12 per cent in Australia and by about 18 per cent in New Zealand. During the 1960s, by contrast, women born during the post-war boom began achieving reproductive age and increasing proportions of such women affected crude birth rates positively, especially after 1965. From 1960 to 1970, the GRR declines by 25.0 per cent in New Zealand and 16.7 per cent in Australia. There is evidence that the decline in crude birth rates was, in each case, less pronounced, although also significant (see table 68). During 1965-1970, however, the crude birth rate of Australia rose somewhat while the GRR underwent a small decline. In New Zealand, the decreases in both crude birth-rates and gross reproduction rates continued into the 1970s; and in Australia, the most recent figures indicate that the decline in the crude birth-rate may have resumed (tables 30 and 31).

The age pattern of the Fijian fertility decline was similar to those of Albania and Malta, also countries of moderate development, in that there was a tendency for older and very young women to lead the way in fertility reduction, although all age groups contributed significantly to the decrease (table 33). Trends in Australia and New Zealand, however, fit the pattern previously described for Northern and Western Europe and Northern America, of a "piling up" of births among young women during the 1950s, a subsequent termination of childbearing by those same women during the 1960s, and reduction of fertility among younger women in recent years. The statistics show that fertility among

^{18/} Norman B. Ryder, "Recent trends and group differences in fertility," in Charles F. Westoff and others, Toward the End of Growth (Englewood Cliffs, New Jersey, Prentice-Hall, Inc., 1973), p. 67.

^{19/} D. Ian Pool and M. D. Bracher, "Aspects of family formation in Canada", Canadian Review of Sociology and Anthropology, vol. 11, No. 4 (1974), pp. 308-323.

women aged 15-34 years rose between 1950 and 1960, and that the extent of those increases tended to vary directly with age (tables 33 and 68). Among older women, reductions that were moderate during the 1950s became accentuated during the following decade, when declines occurred also among younger women.

In Australia, and particularly in New Zealand, increases in proportions of married among women aged 20-29 (table 34) coincided with the post-war rise in fertility. This trend levelled off during the 1960s, however, indicating that in New Zealand, as in many other more developed countries, fertility reductions were primarily accomplished within marriage. Nevertheless, Australian fertility has continued to be closely associated with trends in proportions currently married at the youngest ages. Census figures not shown in table 34 indicate that, between 1961 and 1965, the proportion of women aged 20-24 years who were currently married declined slightly (from 59.1 to 58.0 per cent) before rising at the end of the decade. Borrie presents data indicating a sharp drop in nuptial confinements in Australia between 1960-1961 and 1964-1965, particularly during the first two years of marriage. ^{20/} Noting that this reduction coincided with the beginning of a sharp economic recession, he suggests that, in view of the decreasing rates of childlessness, fertility declines among young women during those years were brought about by delayed childbearing among recently married women. Although it is likely that declining proportions of young women marrying also played a part in the reductions, such a view may help to explain the relative stability of fertility among slightly older (ages 25-34) women between 1965 and 1970 as resulting from postponed childbearing. More detailed information concerning childbearing among such women and their reaction to the economic conditions during the latter part of the decade is required before a conclusive statement can be made.

In contrast with the pattern of marriage in either Australia or New Zealand, the proportions married at younger ages in Fiji, as in many other less developed countries, have declined. This trend is especially notable among women aged 15-19, and suggests that rising age at marriage has played an important part in the decline of fertility in this country.

Union of Soviet Socialist Republics

The effect of the Second World War upon the population of the Soviet Union was particularly severe. Losses in the male population were heavy, and military mobilization as well as other war-time hardships sharply depressed fertility during 1940-1945 and greatly inhibited the extent of the post-war recovery in birth-rates. Whereas in many European countries there were significant increases in crude birth-rates during the early 1950s, in the Soviet Union only a mild fluctuation took place. Throughout most of the 1950s, however, the crude birth rates remained fairly stable at 25-27 per 1,000 population, but a sharp drop of approximately 27 per cent occurred between 1960-1961 and 1966-1967 (annexed table 68). During the remainder of the decade, the decline continued, but at a much slower pace; and this measure has now stabilized at between 17 and 18 live births per 1,000 population.

^{20/} W. D. Borrie, "Fertility in Australia: a review of recent trends", in International Union for the Scientific Study of Population, International Population Conference, London, 1969, vol. I, p. 522.

Unfortunately, gross reproduction rates are not available for the 1950s. Determination of the actual level of fertility for those years is further complicated by the likelihood that the crude birth-rate was affected positively by the abnormal age-sex composition of the population following the war and negatively by the low proportions married among females. The available data show that in 1959, an unusually large percentage of the population consisted of women of reproductive age and that women aged 20-34 years represented more than half of that group (table 69). However, a relatively small proportion of these women were married (table 34), due to acute imbalances in sex ratios caused by war losses among males and, at younger ages, to the unusually large size of the birth cohorts of the late 1930s.

During the early 1960s, the deficit cohorts of the war years began to reach marriageable age, and their reduced numbers exerted a sharp negative effect upon crude birth rates. Although the gross reproduction rate declined only from about 1.4 in 1960-1961 to about 1.2 in 1966-1967, a percentage change of 13 per cent, the crude birth rate for those years fell by 27 per cent. Towards the end of the decade, women born after the war began entry into the reproductive ages, and the negative effect of age composition began to diminish. The gross reproduction rate declined only slightly during those years and stood at 1.17 in 1969-1970.

The increasing normalization of the age and sex composition of the population of the Soviet Union during the 1960s facilitated marriage opportunities, particularly for young people. The increase in the proportion of women aged 20-29 who were married is undoubtedly a factor contributing to the apparent stabilization of fertility between 1966-1967 and 1969-1970. The data show that although all women except those aged 20-24 years contributed substantially to the decline between 1960 and 1967, only the fertility of those over 30 showed any significant subsequent reductions. (tables 33 and 68). However, the fertility of younger women was stable or increased slightly towards the end of the decade. It should be mentioned in this connexion, however, that it is still too early to determine whether nuptiality in the Soviet Union will follow the same course as in other socialist countries. The rise in proportions of women married during the 1960s was to be expected as the post-war (non-deficit) cohorts reached marriageable age and as those affected by the war passed steadily through the age structure.

The factors leading to the decline in fertility in the Soviet Union are, in the context of recent Eastern European history, familiar. Within a relatively short span of years, the Soviet Union has been transformed from a rural agricultural to a largely urban and industrial society. Along with these transformations, educational levels have risen sharply and married women in large numbers have been absorbed into the labour force. Little concrete information is currently available concerning the forms of fertility control practised in the Soviet Union, but it can be mentioned that legal abortion was reintroduced in 1955. It is not possible, however, to determine the impact that such legislation has had upon fertility trends, for its demographic effects may have been at least partially offset by other measures that might have had a positive influence. 21/

21/ For example, special taxes for bachelors, single citizens and those with small families. For a fuller discussion of such regulations, see Measures, Policies and Programmes Affecting Fertility, with Particular Reference to National Family Planning Programmes (United Nations publication, Sales No. E.72.XIII.2).

C. Age patterns of fertility

In view of the importance of the shift in fertility to younger ages, it is appropriate to examine in some detail the relative contribution of women in each age group to gross total fertility. Relevant data are provided in table 36 and illustrated in figure IX.

During the 1950s, fertility became concentrated in the earlier years of the reproductive cycle, i.e., between ages 20 and 29, because of a combination of two different trends: rising fertility among young women; and declining fertility among older women. The degree of concentration at younger ages continued during the 1960s, though at a slower pace; but the current contraction of the years during which women bear children is a result of declines at all or nearly all ages, with percentage reductions being positively correlated with age. As fertility declined more rapidly among older women, childbearing became, both relatively and in absolute numbers, even more concentrated among women under 30 years of age.

By 1970, the degree of concentration of fertility among women under age 30 had become more pronounced in all of the more developed countries. There were, however, several different manifestations of this change. In Eastern Europe, the Soviet Union and Yugoslavia, most of the increase took place among women aged 20-24 and, in some cases, among those aged 15-19. The result was that the existing pattern of peak fertility at ages 20-24 was accentuated. However, in several other countries (Austria, the Federal Republic of Germany, Luxembourg and Norway), peak fertility at these ages emerged as a result of increasing relative contributions among those aged 20-24 and decreasing contributions of women aged 25-29. A similar change occurred in Ireland, but in that case, the shift in peak fertility was from ages 30-34 to ages 25-29. A far more common pattern, however, was that of increases in the contribution of women aged 20-24 and 25-29, with fertility in the former age group usually changing more rapidly, resulting in a broadened peak at ages 20-29. In 1970, this pattern could be observed in most of Northern and Western Europe; in Albania, Greece and Italy; and in Northern America and Oceania. It may be mentioned, however, that in certain cases (Australia, Canada, Malta and the United States of America), there was a tendency during the 1960s for the pattern just described to reverse itself as the contribution of women aged 25-29 increased and that of women aged 20-24 decreased or levelled off.

Women under 20 years of age have generally made only a slight contribution to aggregate fertility in the more developed countries. In 1950, because so few women married before the age of 20, the fertility of women 15-19 years of age rarely exceeded 10 per cent of gross total fertility, even in Eastern Europe where the proportions married at very young ages were highest. Since then, however, both the absolute and relative contribution of these women has increased in all but a few countries. The change is especially evident in Eastern Europe (except Poland) and Yugoslavia, where between 11 and 18 per cent of all children are born to women in this age group. Their share of total fertility exceeds 10 per cent in Austria, England and Wales, and the United States. In Ireland and Spain, on the other hand, the contribution of women at these ages continues to be slight.

At ages 20-24, changes have been much more significant, for the proportions married increased sharply among these women during the 1950s. In 1950, women in

Table 36. Relative contribution of women in each age group to gross total fertility in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, selected years, 1950-1970

(Percentage distribution of age-specific fertility rates)

Major area, region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Europe									
Eastern Europe									
Bulgaria	1950	...	...	...	...	...	...	...	...
	1955	100.0	12.5	37.5	27.1	13.4	6.9	2.2	0.4
	1960	100.1	16.3	40.6	26.0	11.1	4.3	1.6	0.2
	1965	100.0	16.5	42.2	25.1	10.9	4.0	1.1	0.2
	1970	99.9	16.4	43.4	25.6	10.3	3.4	0.7	0.1
Czechoslovakia	1950	100.0	8.3	32.2	27.9	17.7	10.1	3.5	0.3
	1955	100.0	7.8	35.1	28.1	16.7	9.1	2.9	0.3
	1960	99.9	9.6	41.5	27.5	13.3	6.1	1.8	0.1
	1965	100.0	9.5	40.8	28.5	13.9	5.7	1.5	0.1
	1970	100.0	11.0	43.5	27.4	12.4	4.5	1.1	0.1
German Democratic Republic	1950	...	...	...	...	...	...	...	...
	1955	100.0	9.3	41.4	25.3	15.4	6.5	2.0	0.1
	1960	100.1	17.0	34.8	25.9	14.2	6.6	1.5	0.1
	1965	100.1	14.4	38.9	25.3	14.0	6.1	1.3	0.1
	1970	100.0	17.9	39.6	24.5	12.2	5.1	0.7	0.0
Hungary	1950	100.0	9.8	32.7	26.9	17.1	9.7	3.6	0.3
	1955	100.0	9.6	34.0	26.9	17.0	9.3	2.9	0.2
	1960	100.0	13.0	39.5	26.1	13.1	6.2	2.0	0.1
	1965	100.0	11.7	40.8	27.8	13.2	5.0	1.3	0.1
	1970	100.0	12.8	40.4	28.0	13.0	4.7	1.1	0.1
Poland	1950	100.0	5.3	26.1	28.3	21.2	13.5	5.1	0.5
	1955	100.0	5.8	28.8	28.1	19.9	12.4	4.5	0.5
	1960	100.0	7.6	33.8	27.6	17.1	9.8	3.7	0.4
	1965	100.0	6.3	36.6	28.6	16.7	8.6	2.9	0.3
	1970	100.0	6.7	36.4	29.5	16.5	8.3	2.5	0.2

Table 36 (continued)

Major area, region and country	Year	Age of women							
		Total	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Eastern Europe (continued)									
Romania	1950	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...
	1960	100.0	12.6	35.3	26.0	14.4	8.5	2.9	0.3
	1965	100.1	13.8	36.9	26.2	14.0	6.7	2.3	0.2
	1970	100.0	11.4	34.9	26.3	16.4	8.4	2.4	0.2
Northern Europe									
Denmark	1950	100.0	7.7	29.1	29.2	19.0	11.0	3.8	0.3
	1955	100.0	8.1	32.4	29.7	18.0	8.9	2.8	0.2
	1960	100.0	8.2	33.5	31.0	17.2	7.7	2.2	0.1
	1965	100.0	9.3	32.9	30.7	16.4	8.6	1.9	0.2
	1970	100.0	8.2	33.5	33.7	16.8	6.3	1.4	0.1
Finland	1950	100.0	4.3	24.5	27.9	21.3	14.9	6.3	0.7
	1955	100.0	4.9	27.4	28.2	20.1	13.2	5.7	0.5
	1960	100.0	5.3	29.9	29.0	19.2	11.4	4.7	0.4
	1965	100.0	7.0	29.0	29.8	18.8	10.8	4.0	0.5
	1970	100.0	8.8	32.6	29.8	17.7	8.4	2.5	0.2
Ireland	1950	...	...	...	...	...	...	...	...
	1955	100.0	1.5	13.4	26.7	29.5	20.2	8.1	0.6
	1960	100.0	1.1	13.9	28.0	28.5	20.6	7.4	0.6
	1965	100.0	1.7	15.1	29.2	27.3	18.9	7.2	0.5
	1970	100.0	2.2	19.0	29.3	26.0	17.1	5.9	0.5
Norway	1950	100.0	3.5	21.7	28.5	24.1	15.4	6.2	0.7
	1955	100.0	4.6	26.4	29.5	21.1	13.1	4.8	0.5
	1960	100.0	4.5	28.3	30.7	20.8	11.3	4.1	0.4
	1965	100.0	7.0	30.7	30.2	19.0	9.8	3.0	0.2
	1970	100.0	8.9	33.2	30.0	17.6	8.1	2.1	0.1

Table 36 (continued)

Major area, region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Northern Europe (continued)									
Sweden	1950	100.0	8.4	27.4	28.2	19.8	11.9	3.9	0.3
	1955	100.0	8.4	29.7	29.3	18.9	10.1	3.2	0.3
	1960	100.0	7.7	29.3	31.8	19.2	9.1	2.7	0.2
	1965	100.0	10.1	29.0	31.9	18.6	8.2	2.1	0.1
	1970	100.0	8.8	31.0	33.4	18.1	7.1	1.6	0.1
United Kingdom England and Wales	1950	100.0	5.1	28.9	31.1	20.4	11.0	3.2	0.2
	1955	100.0	5.3	30.9	31.9	19.0	10.0	2.8	0.2
	1960	100.0	6.4	31.0	32.2	18.9	8.7	2.6	0.2
	1965	100.0	8.0	31.3	31.6	18.0	8.7	2.2	0.2
	1970	100.0	10.4	32.2	31.7	16.5	7.2	1.8	0.1
Scotland	1950	100.0	4.0	24.7	30.5	24.5	12.5	3.5	0.2
	1955	100.0	4.5	29.0	31.7	20.5	11.1	3.1	0.2
	1960	100.0	5.6	30.4	32.0	19.5	9.7	2.7	0.2
	1965	100.0	6.9	30.4	32.0	18.8	9.4	2.3	0.2
	1970	100.0	9.4	31.0	31.7	17.9	7.9	2.0	0.1
Southern Europe									
Albania	1950	...	...	...	...	...	...	...	...
	1955	100.0	4.2	18.2	22.6	22.5	17.8	8.9	5.8
	1960	100.0	4.8	20.1	22.6	19.5	17.4	10.8	4.8
	1965	100.0	4.1	23.4	24.7	20.2	14.1	8.9	4.7
	1970	100.0	3.9	26.8	26.6	20.1	13.7	6.4	2.6
Greece	1950	...	...	...	...	...	...	...	...
	1956	100.0	3.1	21.7	33.9	23.6	12.7	4.1	0.8
	1960	100.0	3.9	23.8	34.0	24.4	10.4	2.9	0.5
	1965	100.0	5.7	26.7	32.9	22.1	9.8	2.4	0.4
	1970	100.0	7.6	30.0	31.8	19.6	8.9	1.9	0.2

Table 36 (continued)

Major area, region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Southern Europe (continued)									
Italy	1950	100.0	3.5	21.4	29.8	22.2	16.2	6.3	0.6
	1955	100.0	3.4	22.8	30.7	23.5	13.6	5.6	0.4
	1960	100.0	4.0	22.7	32.0	23.1	13.0	4.8	0.4
	1965	100.0	3.2	26.7	31.7	22.4	11.9	3.7	0.4
	1970	100.0	4.1	28.7	31.5	20.8	11.1	3.4	0.3
Malta	1950	...	...	...	...	...	...	...	...
	1957	100.0	4.2	24.3	28.0	21.7	15.5	5.8	0.5
	1960	100.0	3.1	27.4	27.7	20.8	14.5	5.8	0.7
	1965	100.0	2.7	25.3	31.9	17.1	16.9	5.6	0.4
	1970	100.0	3.3	25.2	32.5	21.8	12.8	4.1	0.3
Portugal	1950	100.1	3.6	21.9	26.8	22.0	16.8	7.8	1.2
	1955	100.0	4.2	22.3	26.5	21.4	16.9	7.6	1.1
	1960	100.0	4.2	24.0	28.5	20.9	15.0	6.8	0.7
	1965	100.0	4.6	23.1	28.7	20.4	15.0	7.7	0.6
	1970	100.0	5.1	24.9	29.6	20.9	13.4	5.5	0.6
Spain	1950	100.0	1.6	17.3	30.8	25.3	17.2	6.6	1.1
	1955	100.0	1.8	17.9	32.9	24.4	15.9	6.1	0.9
	1960	100.0	1.7	19.0	33.6	25.5	14.3	5.2	0.6
	1965	100.0	2.0	18.4	33.6	25.4	14.9	5.1	0.7
	1970	100.0	2.5	21.3	35.0	22.7	13.5	4.5	0.5
Yugoslavia	1950	99.9	5.2	26.6	26.7	20.8	12.7	6.1	1.8
	1955	99.9	6.5	29.0	27.6	17.9	12.9	4.6	1.4
	1960	100.0	9.2	31.6	27.6	16.7	9.2	4.7	1.0
	1965	99.9	9.0	35.0	28.2	15.9	7.9	2.8	1.1
	1970	100.0	11.3	35.3	27.3	15.8	7.5	2.4	0.4

Table 36 (continued)

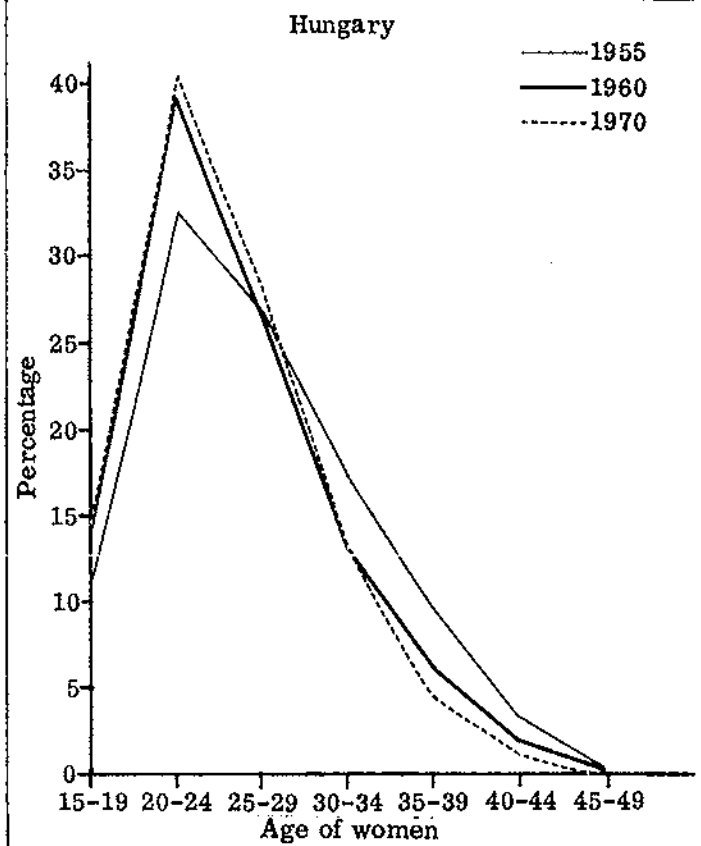
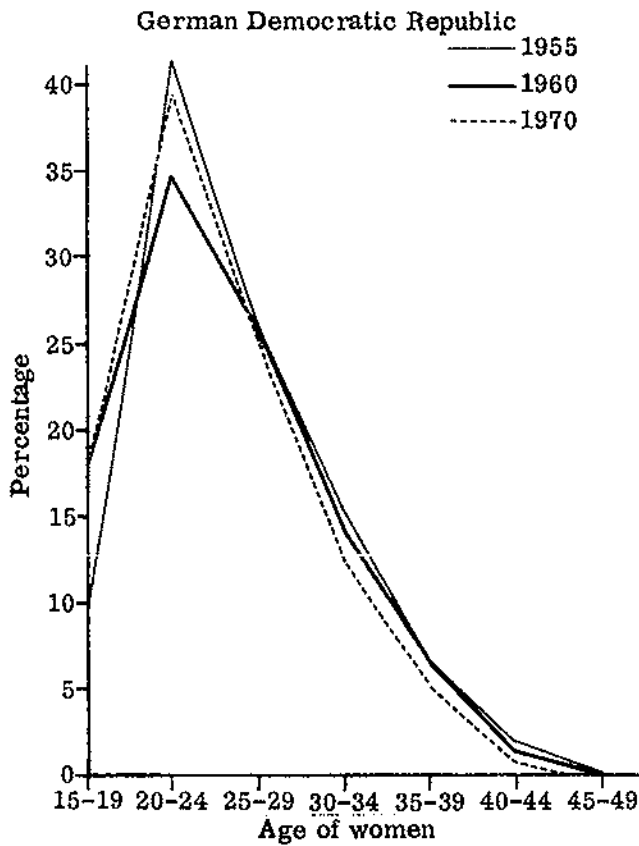
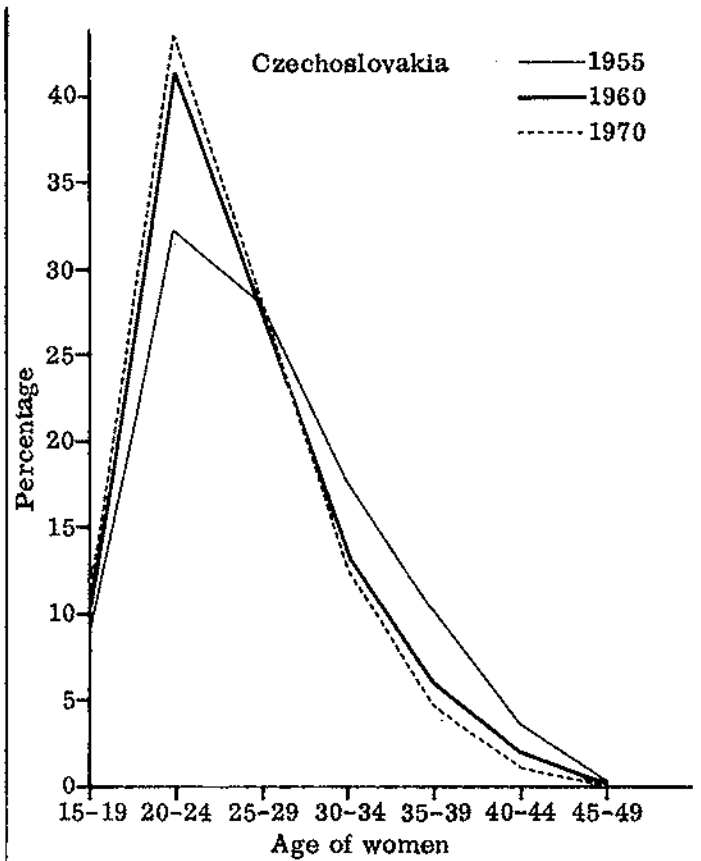
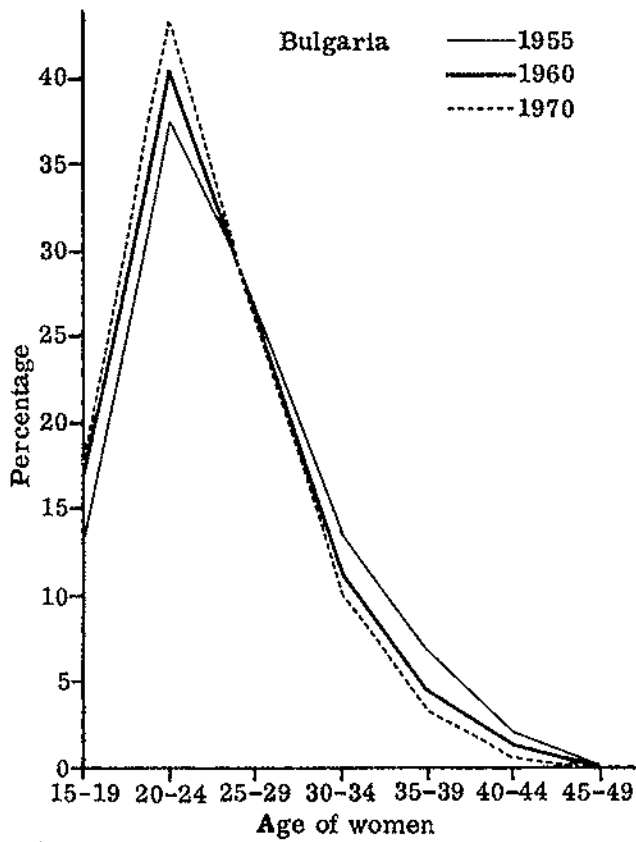
Major area, region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Western Europe									
Austria	1951	100.0	8.4	28.1	27.6	20.6	11.0	3.9	0.3
	1955	100.0	6.9	29.4	28.8	20.1	11.2	3.4	0.3
	1960	100.0	9.1	29.5	29.3	18.7	10.0	3.2	0.2
	1965	100.0	10.6	29.5	28.8	18.6	9.4	2.9	0.2
	1970	100.0	13.3	34.3	24.1	16.9	8.8	2.5	0.2
Belgium	1950	100.0	4.7	25.9	30.3	22.0	12.6	4.2	0.3
	1955	100.0	4.4	28.0	31.1	20.5	11.9	3.9	0.3
	1960	100.0	5.0	29.7	32.0	19.8	9.9	3.4	0.2
	1965	100.0	5.8	31.7	31.8	18.7	9.2	2.6	0.2
	1969	100.0	6.7	32.9	32.1	17.7	8.1	2.3	0.2
France	1950	100.0	4.1	27.1	30.4	22.0	11.8	4.1	0.4
	1955	100.0	3.9	28.5	31.2	19.8	12.8	3.4	0.3
	1960	100.0	4.2	29.7	32.0	19.8	9.9	4.1	0.2
	1965	100.0	4.9	31.3	32.0	19.1	9.4	2.9	0.4
	1970	100.0	5.3	32.5	31.9	18.4	8.9	2.7	0.2
Germany, Federal Republic of	1951	100.0	7.9	28.8	29.9	19.3	11.0	3.1	0.2
	1955	100.0	4.0	26.5	31.0	22.0	12.6	3.5	0.3
	1960	100.0	4.9	26.7	33.1	20.8	10.4	3.8	0.2
	1965	100.0	6.4	27.7	32.5	20.9	9.5	2.8	0.3
	1970	100.0	7.3	31.9	27.9	19.8	10.1	2.8	0.2
Luxembourg	1950	100.0	3.8	23.7	35.7	22.4	11.1	3.1	0.2
	1955	100.0	4.0	28.0	33.6	21.9	9.4	3.0	0.1
	1960	100.0	5.1	31.3	32.7	19.8	8.3	2.6	0.2
	1965	100.0	6.0	32.1	34.0	17.4	8.0	2.5	0.1
	1970	100.0	7.1	33.5	31.8	16.7	8.4	2.4	0.1

Table 36 (continued)

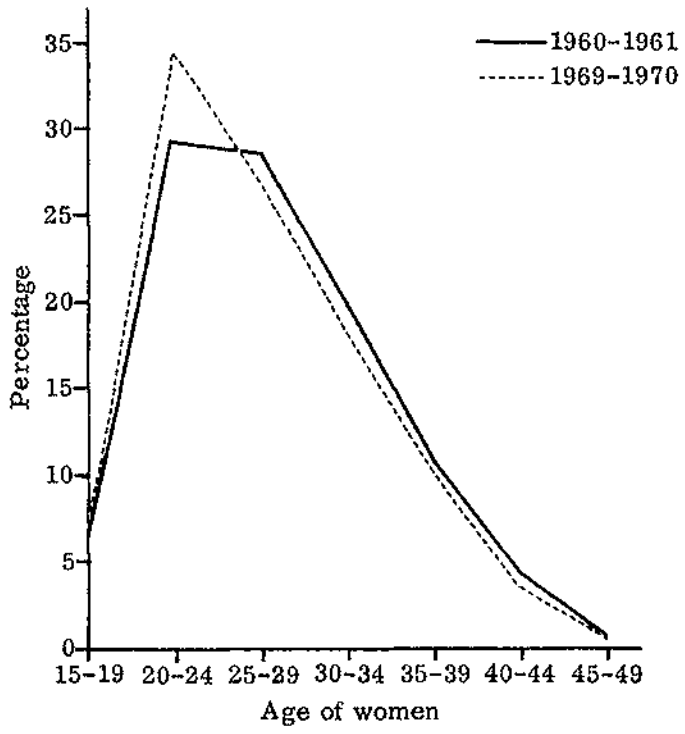
Major area, region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Western Europe (continued)									
Netherlands	1950	100.0	2.0	15.1	29.3	26.9	18.5	7.5	0.7
	1955	100.0	2.3	17.0	31.3	25.8	16.6	6.5	0.6
	1960	100.0	2.6	19.3	33.5	24.5	14.2	5.3	0.4
	1965	100.0	3.5	23.2	34.2	22.8	12.0	3.9	0.3
	1970	100.0	4.4	26.5	35.8	20.9	9.4	2.7	0.2
Switzerland	1950	100.0	2.7	21.2	32.5	24.8	14.0	4.6	0.4
	1955	100.0	3.1	24.2	32.6	23.3	12.4	4.1	0.3
	1960	100.0	3.1	25.4	34.0	22.6	11.0	3.6	0.3
	1965	100.0	4.3	26.0	34.9	21.5	10.1	3.0	0.2
	1970	100.0	5.5	29.9	32.8	20.0	9.2	2.5	0.2
Northern America									
Canada	1950	100.0	6.6	26.2	29.1	20.5	12.7	4.5	0.4
	1955	100.0	7.0	28.4	28.1	20.1	11.7	4.2	0.4
	1960	100.0	7.6	29.3	29.1	18.9	11.1	3.6	0.3
	1965	100.0	7.7	30.0	29.1	19.0	10.4	3.4	0.3
	1970	100.0	9.3	30.6	31.6	17.5	8.4	2.4	0.2
United States of America	1950	100.0	13.3	31.9	27.0	16.8	8.5	2.4	0.2
	1955	100.0	12.6	33.7	26.8	16.2	8.3	2.2	0.1
	1960	100.0	12.2	35.2	27.2	15.5	7.7	2.1	0.1
	1965	100.0	12.3	33.5	27.8	16.2	7.9	2.2	0.1
	1970	100.0	14.0	33.7	29.3	14.8	6.4	1.6	0.1
Oceania									
Australia	1950	100.0	6.0	28.3	30.3	20.4	11.2	3.5	0.3
	1955	100.0	6.4	31.3	30.4	18.8	9.8	3.1	0.2
	1960	100.0	6.4	31.9	31.3	18.4	9.1	2.6	0.2
	1965	100.0	8.0	30.1	31.8	18.5	8.9	2.5	0.2
	1970	100.0	8.9	30.1	33.2	17.8	7.9	2.1	0.1

Table 36 (continued)

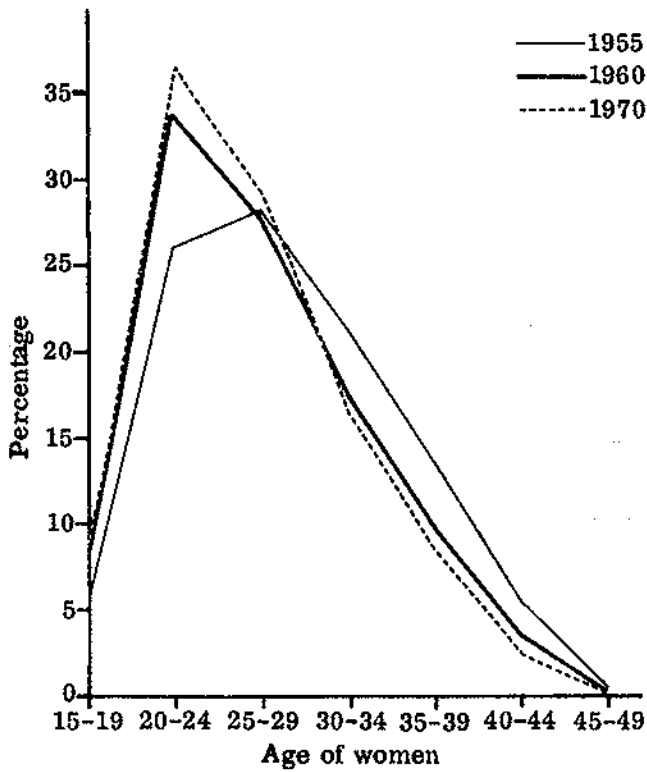
Major area, region and country	Year	Total	Age of women						
			15-19	20-24	25-29	30-34	35-39	40-44	45-49
Oceania (continued)									
Fiji	1950	100.0	10.2	25.8	24.6	18.1	12.5	6.2	2.5
	1955	100.0	10.3	26.4	25.5	17.0	13.3	5.6	1.9
	1960	100.0	8.6	27.2	26.4	18.0	13.1	4.9	1.8
	1965	100.0	6.8	28.1	26.9	18.4	12.6	4.9	2.1
	1970	100.0	6.8	30.9	27.8	16.9	11.8	4.2	1.6
New Zealand	1950	100.0	4.2	26.9	31.9	21.5	11.6	3.6	0.3
	1955	100.0	4.4	29.6	31.9	20.4	10.5	3.0	0.2
	1960	100.0	5.4	30.8	32.0	19.2	9.7	2.7	0.2
	1965	100.0	8.3	32.8	30.3	16.9	8.7	2.8	0.2
	1970	100.0	10.2	33.0	31.8	15.6	7.3	2.0	0.2
USSR	1950	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...
	1960-1961	100.0	6.3	29.4	28.7	19.7	10.8	4.2	0.9
	1966-1967	100.0	5.5	32.6	27.3	20.0	10.1	3.7	0.8
	1969-1970	100.0	6.4	34.3	26.9	18.4	10.2	3.2	0.6



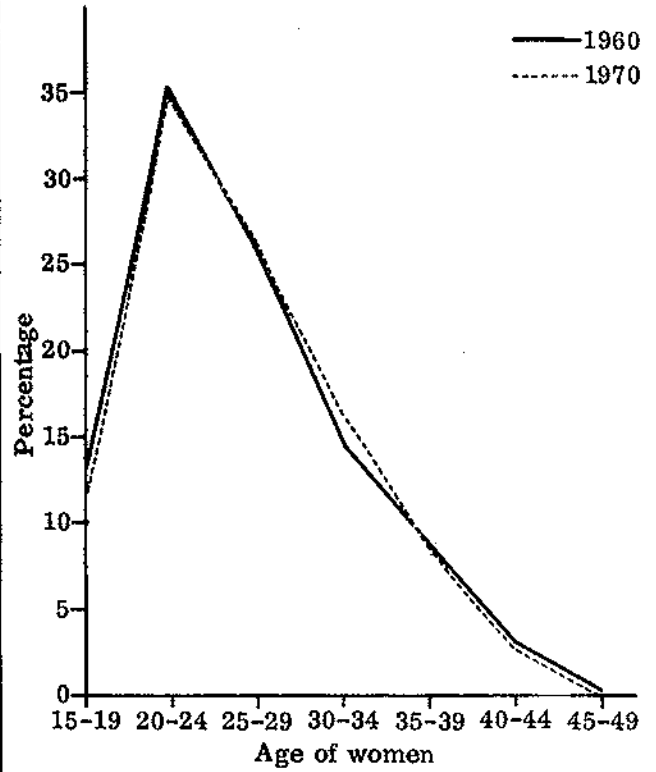
USSR



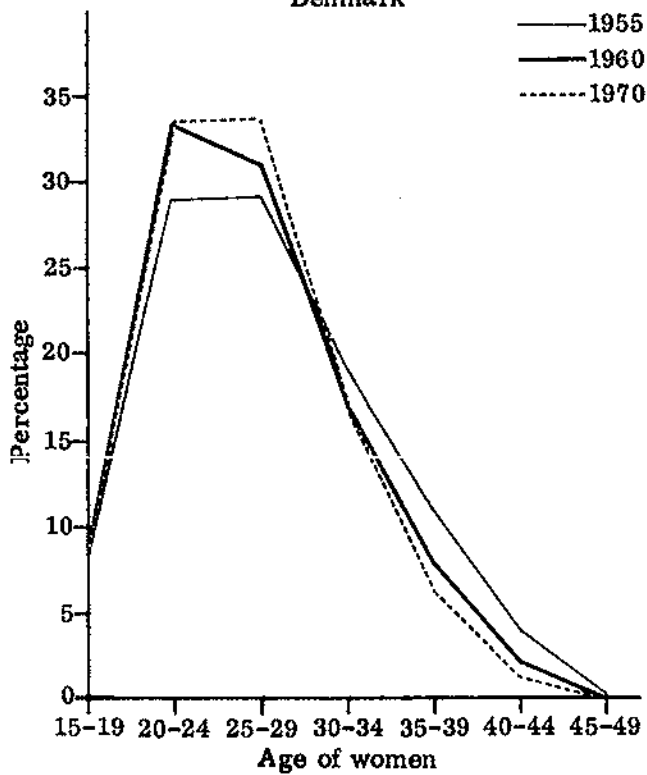
Poland



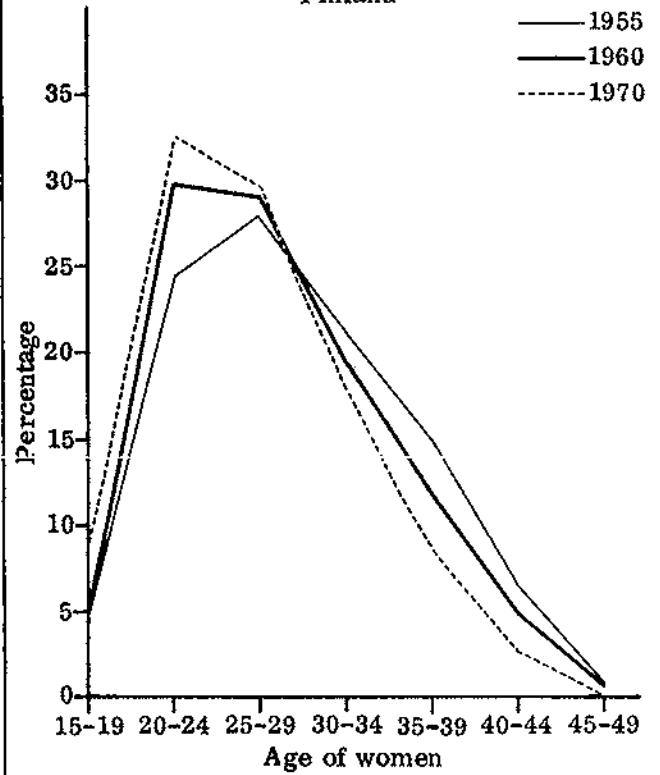
Romania

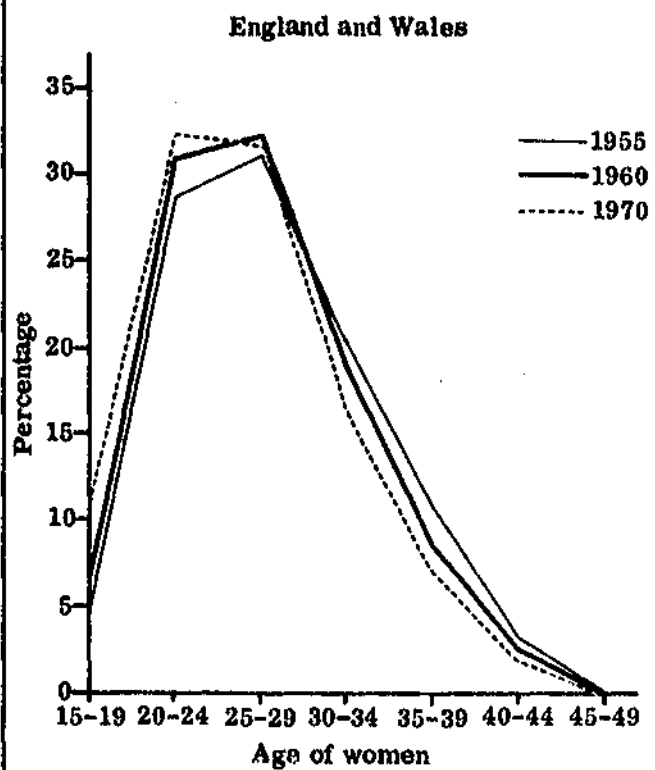
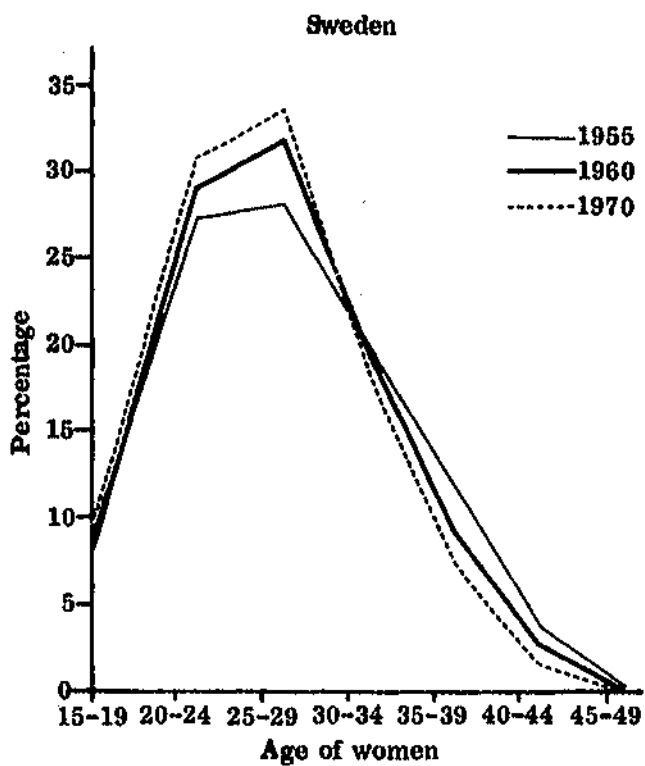
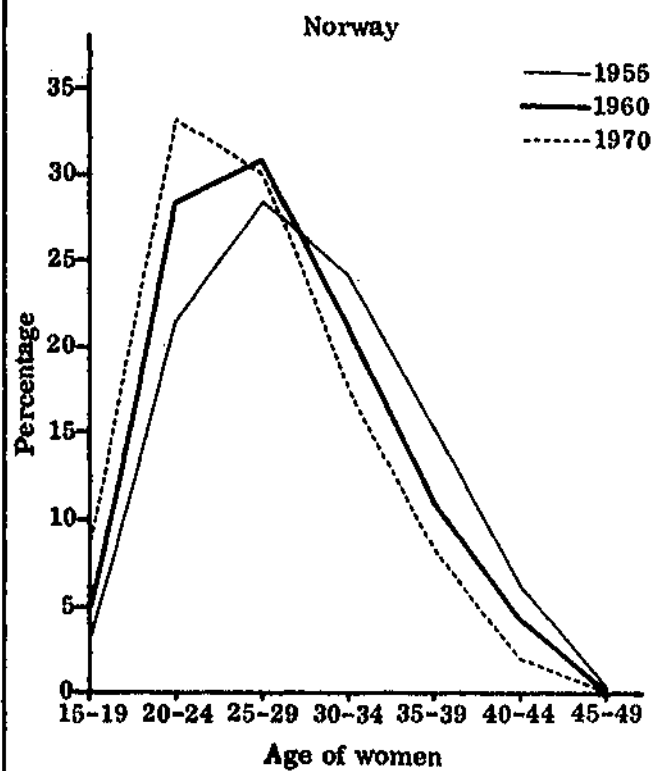
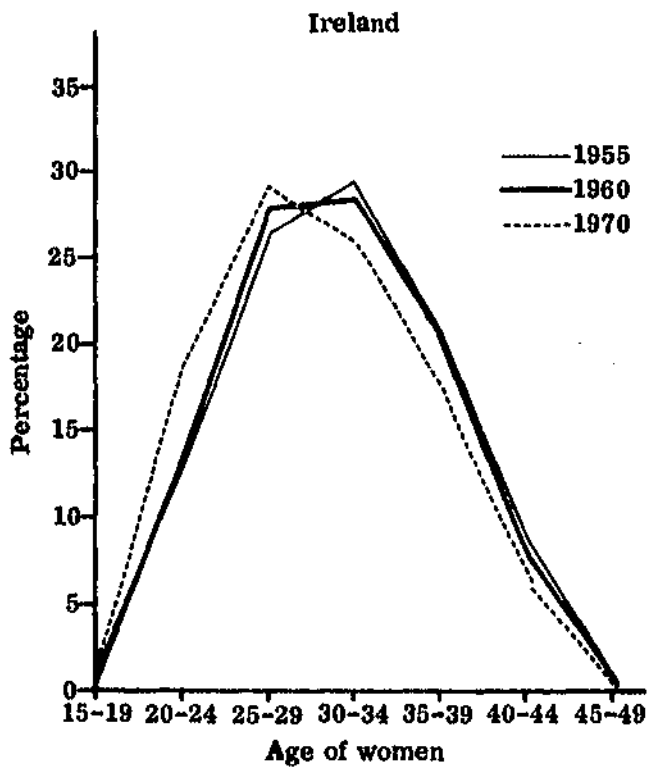


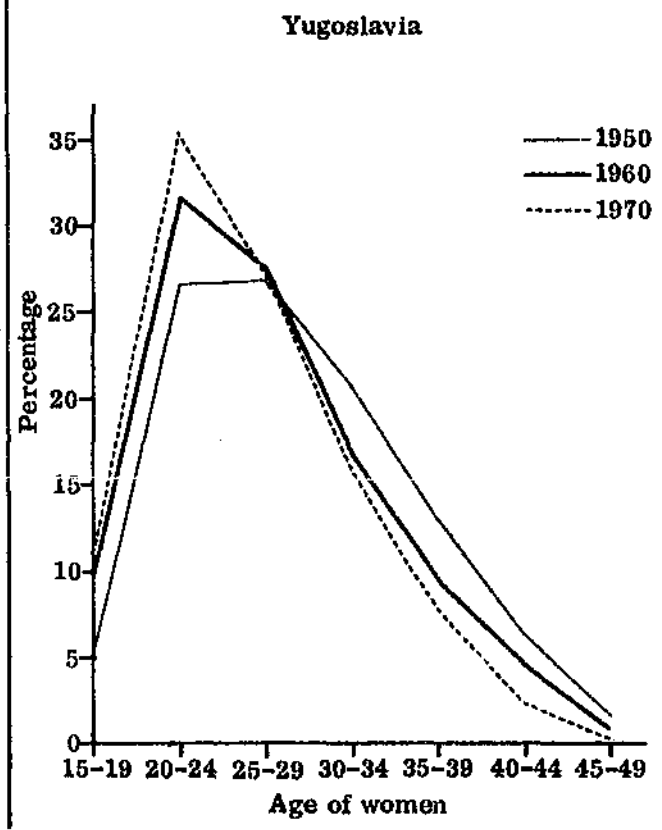
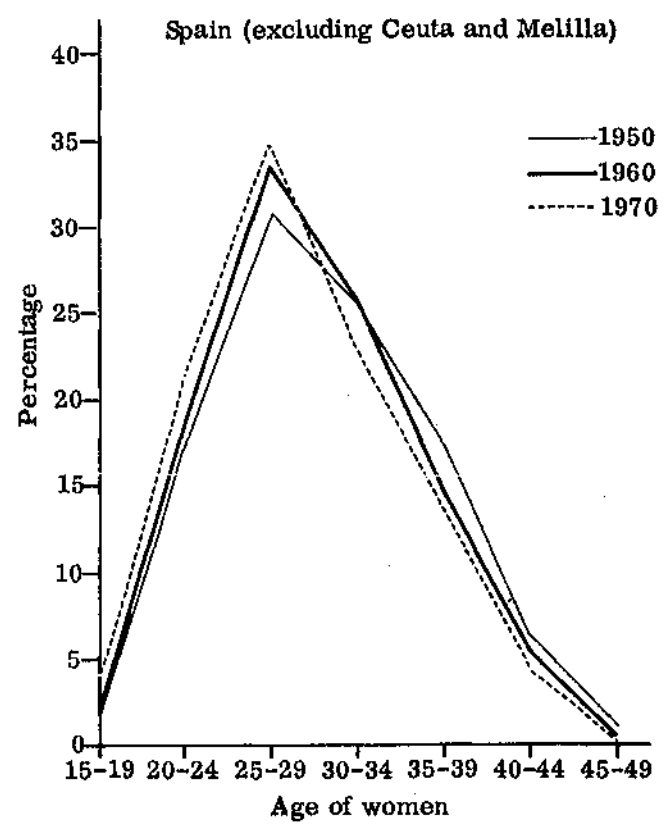
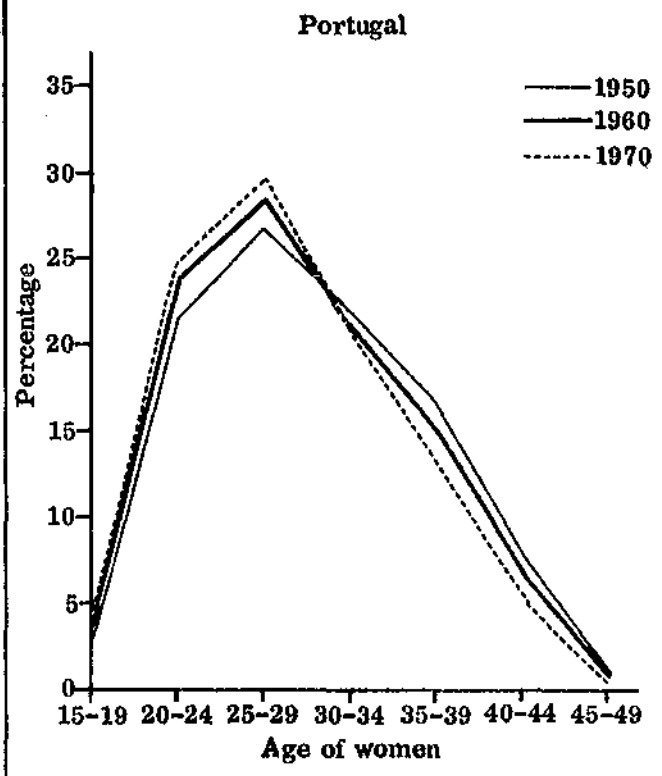
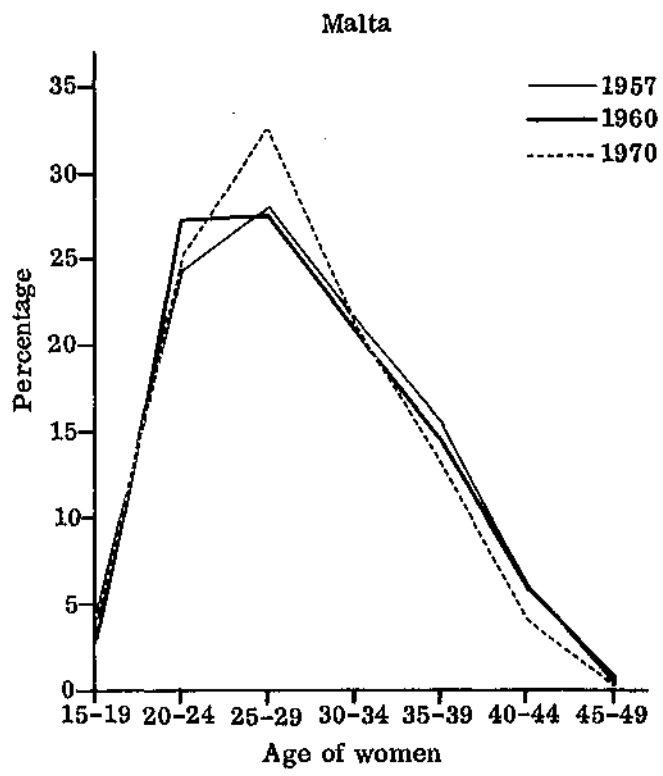
Denmark



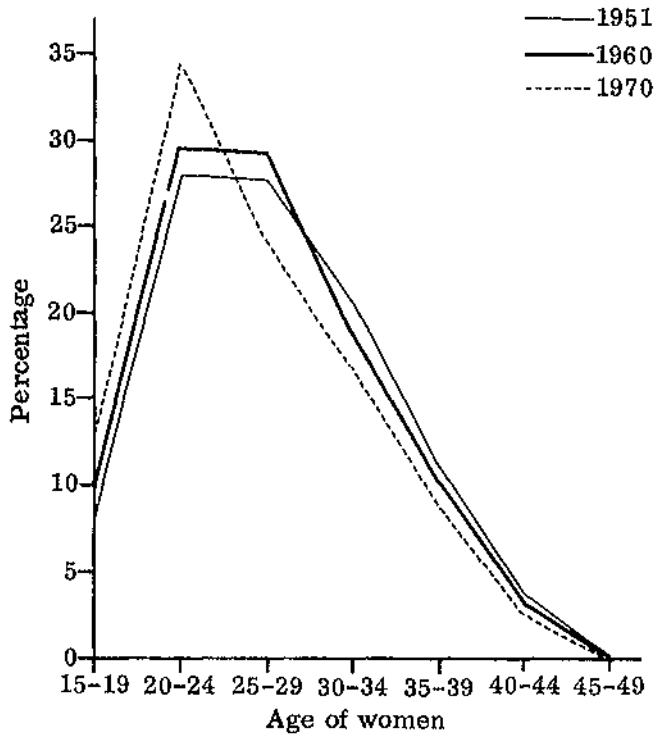
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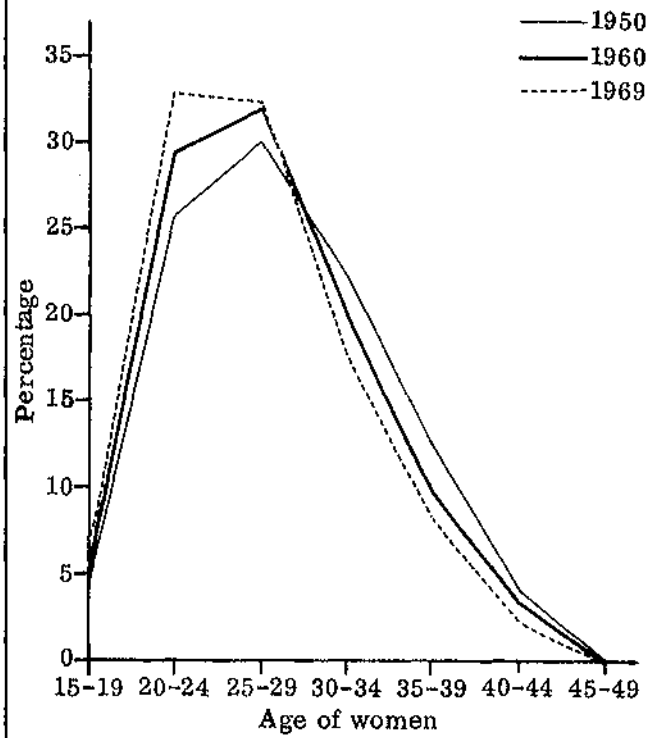




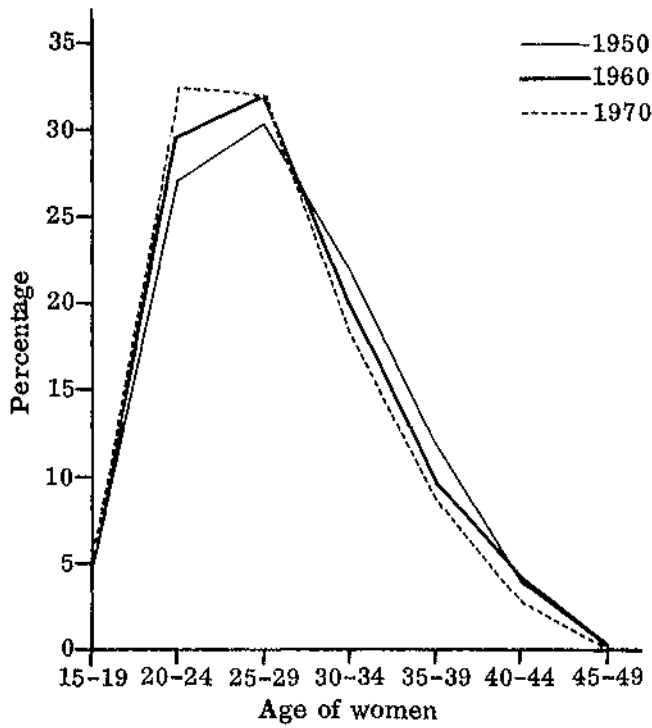
Austria



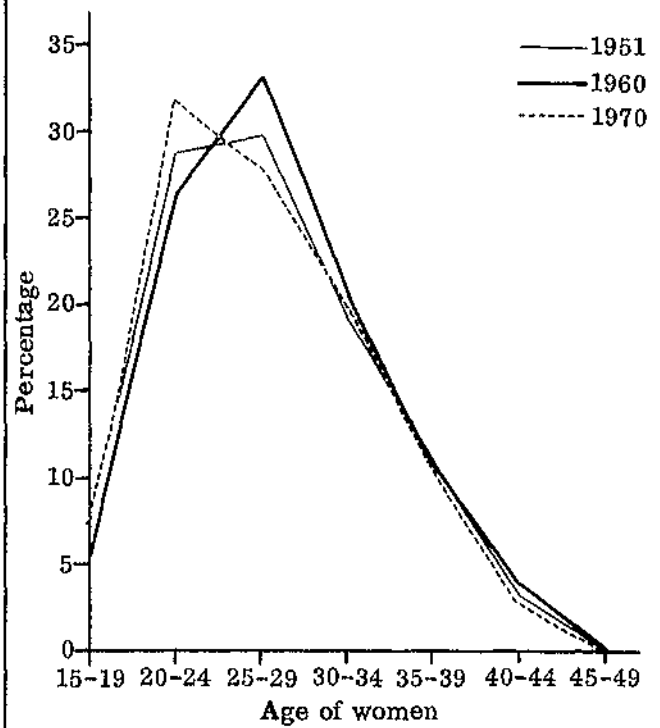
Belgium

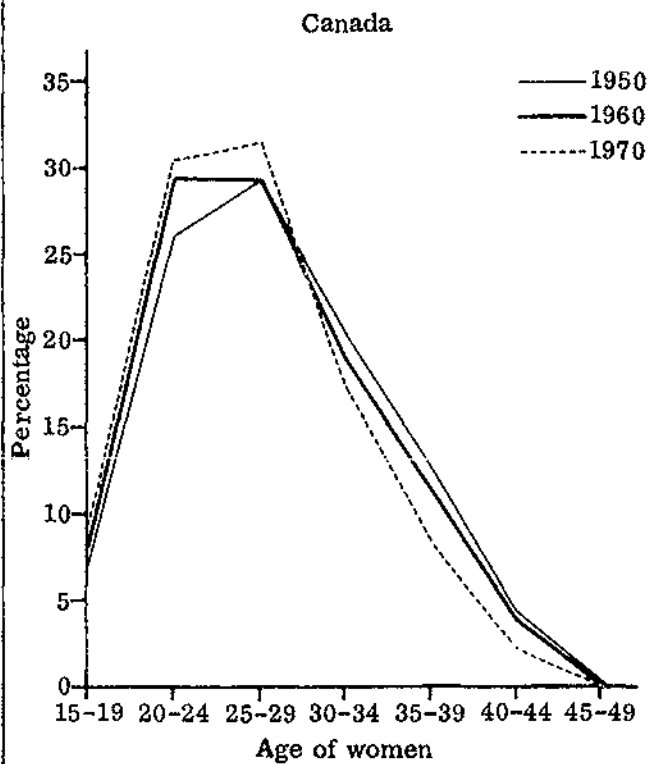
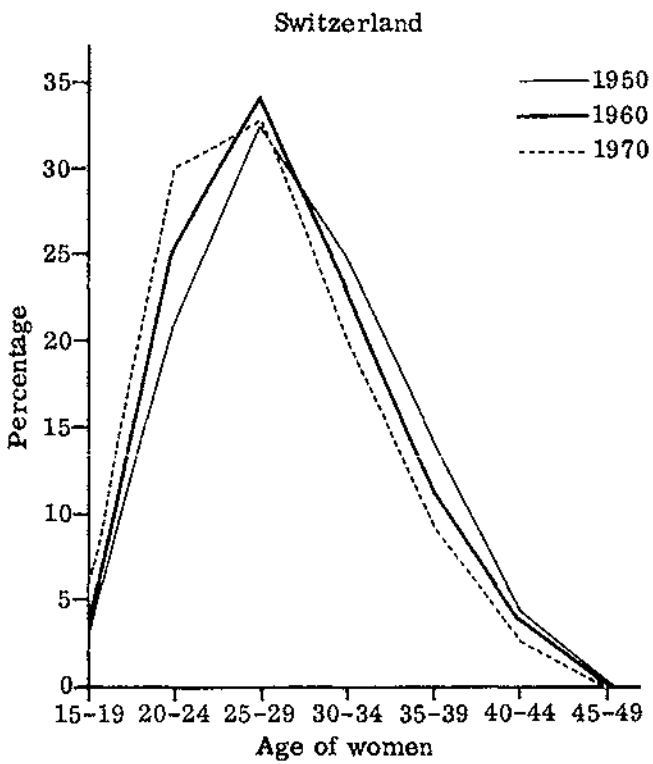
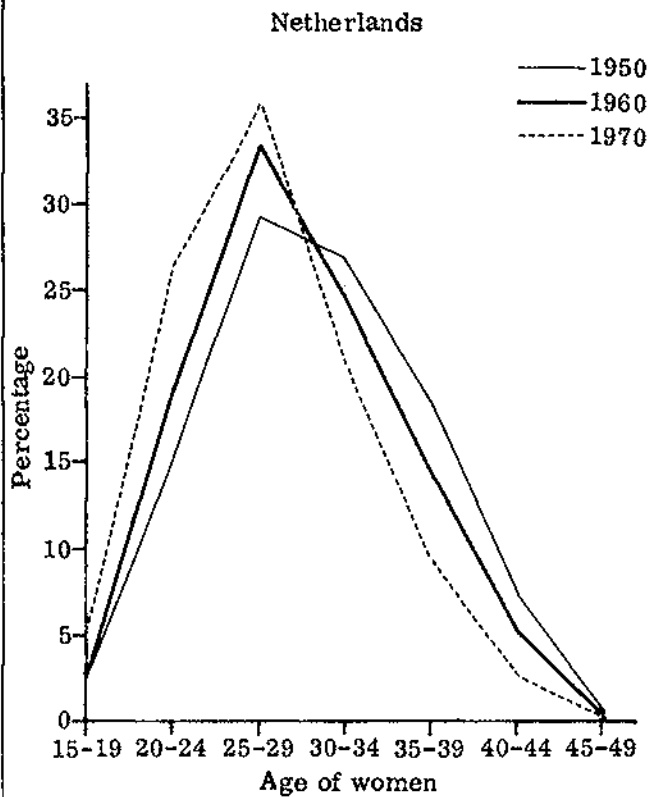
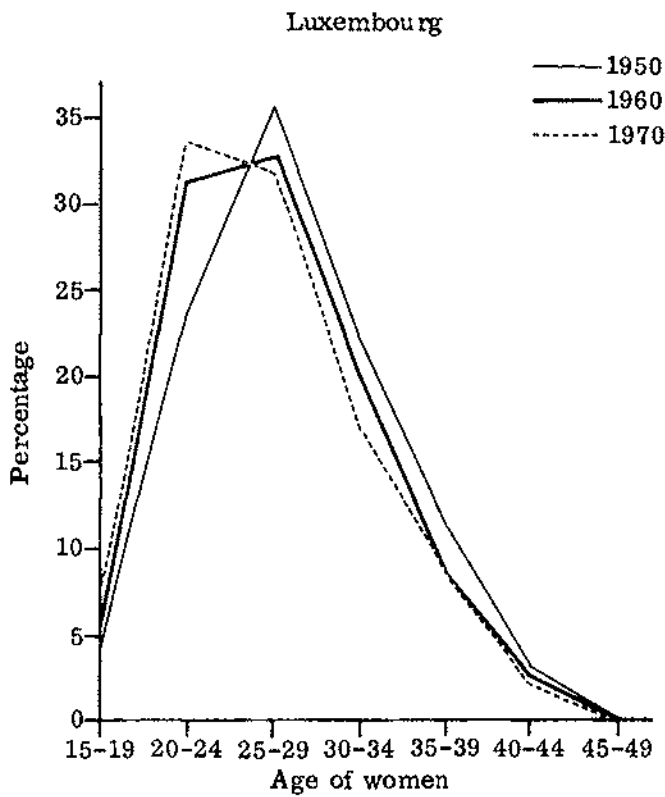


France

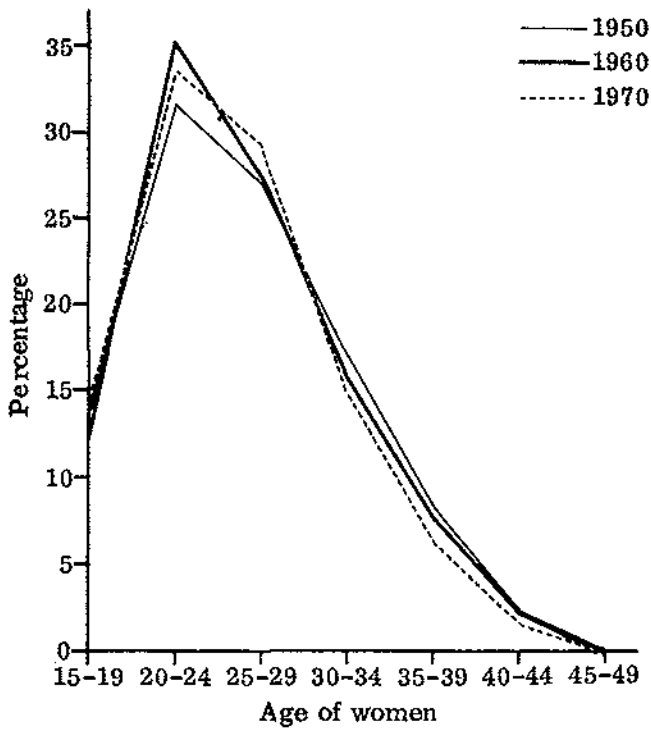


Germany, Federal Republic of

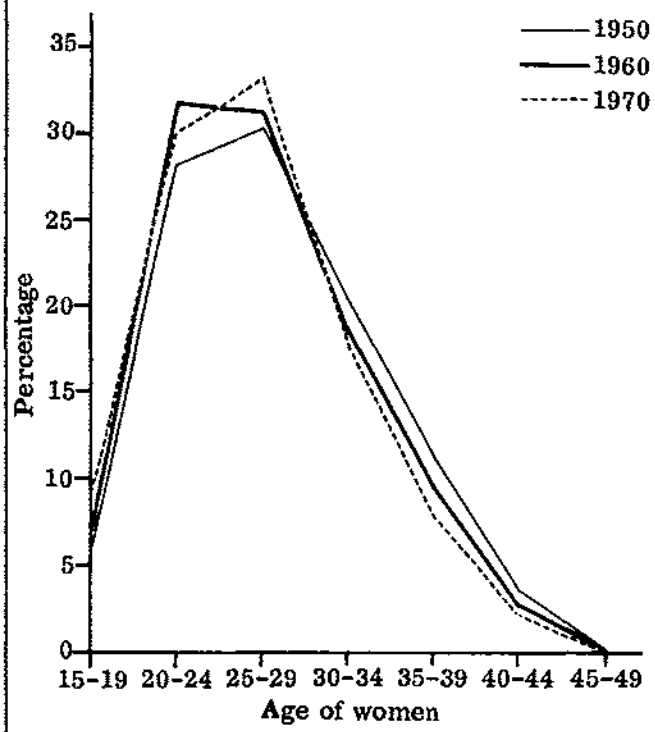




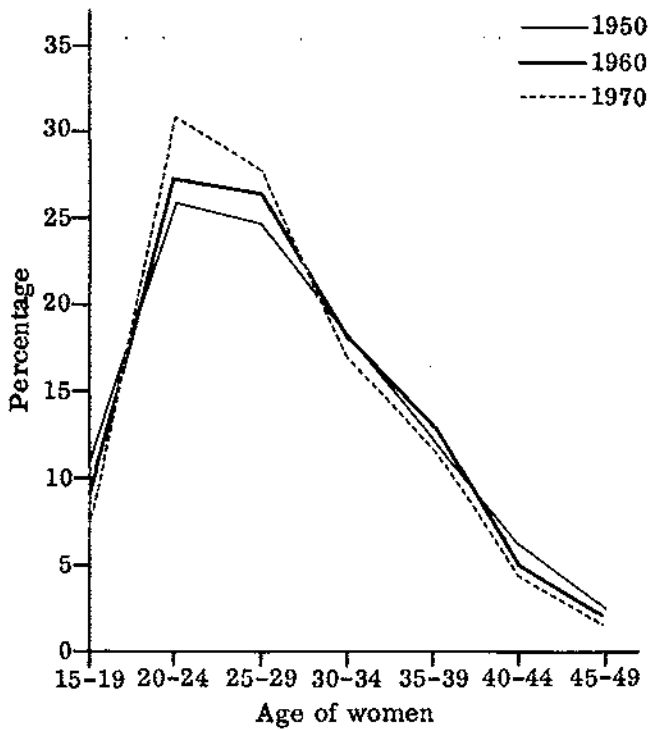
United States of America



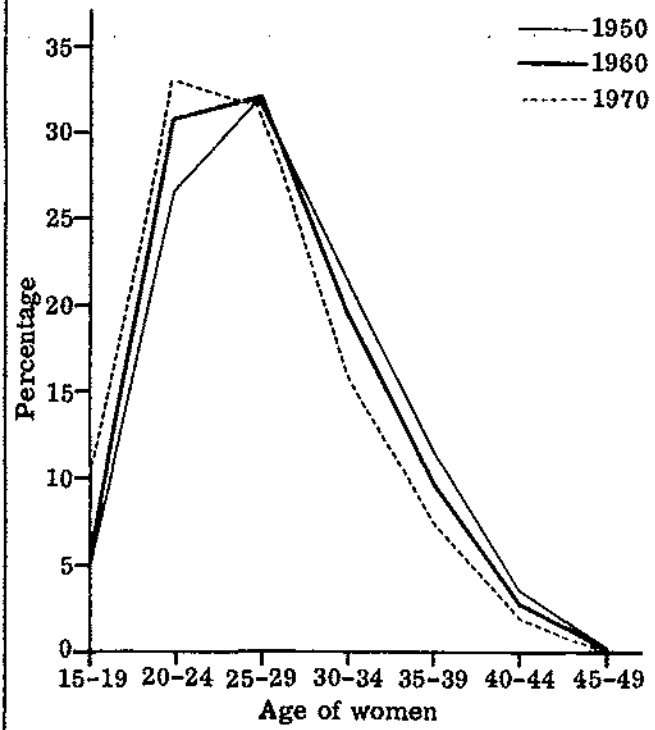
Australia

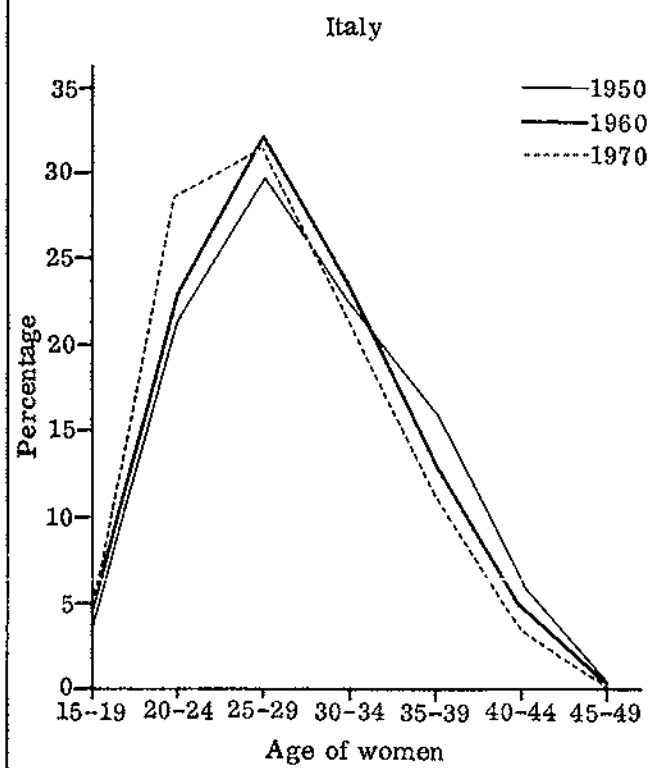
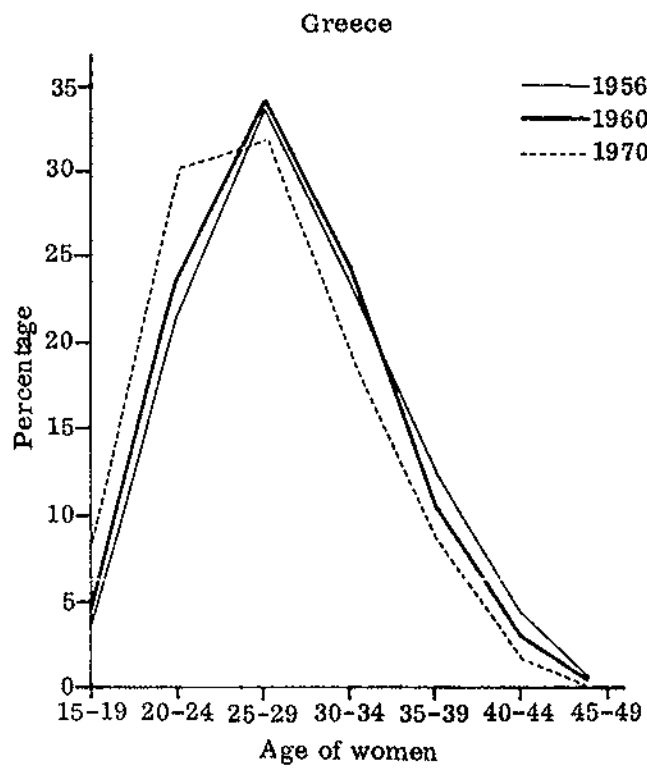
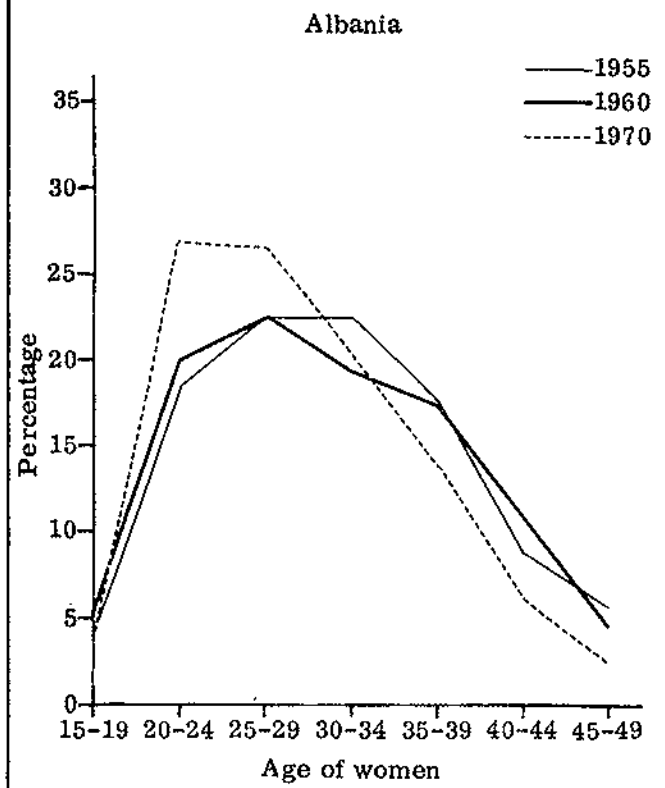
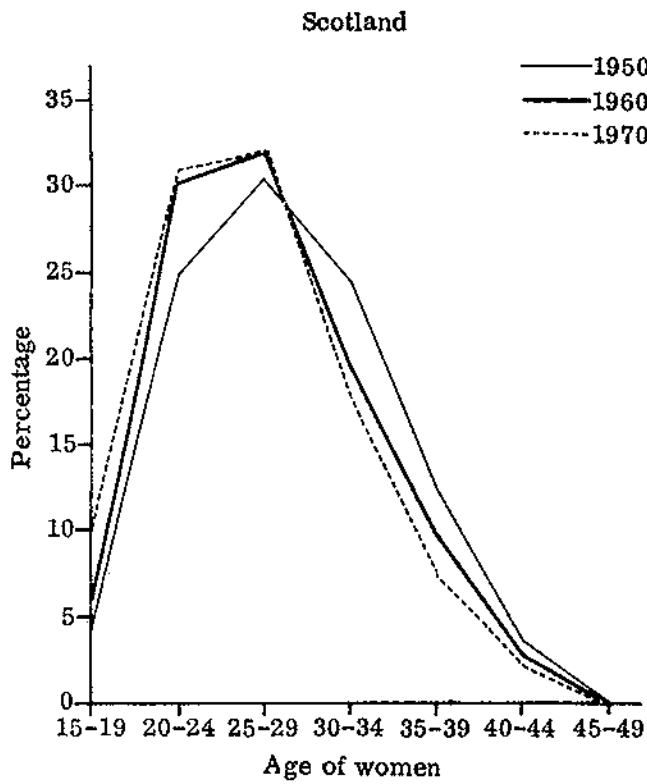


Fiji



New Zealand





this age group appear to have accounted for approximately one third of gross total fertility in Eastern Europe (except Poland) and the United States, about one fifth of that of Southern Europe; and one quarter elsewhere, except in Ireland and the Netherlands, where their share was 13-15 per cent. Twenty years later, among Eastern European women, those aged 20-24 bore, on average, approximately 40 per cent of all children, the range being from 34.9 per cent in Romania to 43.5 in Czechoslovakia. In other more developed countries, this figure had increased to about one third, excluding Ireland and Spain, where it remains considerably lower.

The contribution of women 25-29 years of age to gross total fertility has changed least in Eastern Europe and Yugoslavia: their share of total fertility is 25-30 per cent; and it varied little between 1950 and 1970. Slight rises, to about 30-33 per cent, are observed in most other more developed countries, except Albania, Denmark, Malta, the Netherlands, Spain and Sweden, where the increases amounted to 4 percentage points or more. This group's relative share of annual fertility declined in Austria, the Federal Republic of Germany, the German Democratic Republic, Greece, Italy, Luxembourg and the Soviet Union.

Although the level of fertility of women at ages 25-29 is much less sensitive to changes in economic and social conditions (they are too old to reflect changes in age at marriage and too young to be affected by changes in timing of the "last" child), the relative lack of change (see table 36) conceals important shifts in the life cycle of such women. That is, it may be expected that during the 1950s, the 25-29 age group contained many more women with second- and third-order births than previously, as their fertility pattern shifted from an early to an intermediate stage of childbearing. On the other hand, it is unclear whether recent fertility declines have resulted in reductions in the proportion of these women who have two or three children, for evidence from survey data indicates that intervals between second and higher order births have become shorter. 22/

The data suggest that the relative contribution of each age group drops off sharply after age 30. In the early 1950s, women at ages 30-34 in Eastern Europe accounted for about 15-20 per cent of total fertility. Elsewhere, their contribution was somewhat higher (20-25 per cent). In Ireland, the Netherlands and Spain, it was 25 per cent or over. During 1950-1970, relative declines at these ages generally paralleled the relative increases at ages 20-24. In only a few countries does the contribution of women aged 30-34 still rival that of younger women (most notably in Ireland but, to some extent, also in Southern Europe).

Not only have the drastic declines among older women resulted in a high concentration of fertility among women under age 30 but developed countries have become quite homogeneous in the extent to which this pattern has been adopted. In most countries of Northern and Western Europe, Northern America and Oceania, and in the USSR, the proportion of children born to women under 30 now varies between 66 and 75 per cent. These proportions are somewhat less than two thirds in most of Southern Europe (except Spain and Yugoslavia) and in Ireland, but considerably more than three quarters in most of Eastern Europe.

22/ "Post-war demographic trends in Europe and the outlook until the year 2000", chap. V.

VII. DIFFERENTIAL FERTILITY

This summary statement on differences in fertility by levels of education and status as to rural/urban residency is based on an extensive survey of the literature. The information has been drawn from studies of differential fertility in both the more developed and the less developed countries of all regions. Because the data were usually not found in the form most suited for inclusion in this report and in light of the varying quality of the statistics and the comparability of the measures, among other things, the discussions are in summary form and statistics have generally not been related in the text. For these data, reference should be made to the tables.

The study of differences in fertility that exist among various subgroups within national populations is widely recognized to be an important aspect of several types of demographic research. On the one hand, knowledge of fertility differentials aids in estimating growth rates for various segments of the population and in gauging the likely changes in population composition to be expected in the future. On the other hand and more importantly, assessing the extent of differences among various groups in a population is often the first step in identifying important determinants of fertility behaviour. Information on fertility differentials also provides a basis for projecting the changes in the over-all level of fertility which may be expected with shifting social and economic conditions. Lastly, information about fertility differentials helps to explain, at least in part, the variation in birth rates observed among countries. 1/

The aim of this discussion is to review the current evidence available concerning the variation observed within countries between rural and urban residents, and among individuals or couples with different levels of education. Limitations of time and resources precluded the examination of other significant differentials, such as the variations in fertility by the husband's occupation, household income and the woman's labour force status. A reassessment of the current state of fertility differentials for various residence and education groups appears useful at this time, however, in view of rapid urbanization and rising levels of education in many high-fertility countries and the widespread interest in the possible effects these changes may have on the general level of fertility in Africa, Asia and Latin America.

1/ Of course, the advisability of using data about differential fertility for any of these types of analysis depends upon the plausibility of the underlying assumptions and the quality of the data available. For further discussion of this subject, see Population Bulletin of the United Nations, No. 7 - 1963, with special reference to conditions and trends of fertility in the world (United Nations publication, Sales No. 64.XII.2) (hereinafter referred to as Population Bulletin, No. 7), chap. VIII. That chapter also contains a summary of findings from studies on rural-urban and educational differences covering the early post-war period.

A. Quality of the data and limitations of the analysis

Many of the past reviews of differential fertility, especially studies of birth-rates in rural and urban areas, have relied heavily on a biased measure of fertility, the child-woman ratio, which reflects differences in child and infant mortality and patterns of under-enumeration as well as variations in fertility. ^{2/} In view of the known deficiencies of the child-woman ratio as a measure of fertility, the present discussion does not include this widely available indicator and, instead, summarizes the limited data on average family size along with birth-rates and fertility measures available from recent vital statistics, censuses and surveys throughout the world.

In most countries, especially the areas of high fertility, the study of fertility differentials suffers from a serious lack of data. Vital statistics data published for many countries are defective and even for countries that have complete registration of vital events, birth statistics are often not tabulated for rural and urban populations and rarely for education groups. As a result, the average number of children ever born alive reported by women in censuses and surveys is the most common measure available for studies of differential fertility. Parity measures of fertility, though, are subject to a number of limitations. ^{3/} For example, one of the most useful measures derived from reports of past childbearing, the number of children ever born to women at the end of the reproductive period, refers to the fertility of women over a long and indefinite period and thus is not a very useful index of recent or current levels of fertility. The parity of younger women, although relating to fertility in a more recent time period, is more difficult to interpret, since these measures reflect variations in the timing of births as well as differences in ultimate family size.

The analysis of fertility differentials based on parity data is further complicated by the fact that the current characteristics of the woman and her husband are related to the woman's past childbearing. The correlation of a woman's past fertility behaviour with her current status poses much more serious problems of interpretation for a volatile characteristic like residence than for a fairly stable attribute such as education. Even for data on more recent fertility, such as the number of births in the past year or the woman's own children under five, differentials based on the woman's current residence pose conceptual problems, since both long-term urban-dwellers and women who have only recently migrated to cities are categorized as urban residents.

Excluding, for the most part, low-fertility countries for which statistics are of adequate quality, data on the number of children ever born alive found in censuses and surveys are affected by several types of measurement errors. First,

^{2/} For a recent discussion of the limitations of child-woman ratios, see Simon Kuznets, "Rural-urban differences in fertility: an international comparison", Proceedings of the American Philosophical Society, vol. 118, No. 1 (February 1974), pp. 1-29.

^{3/} For further discussion of measurement errors and methods of adjustment, see M. A. El-Badry, "Errors in parity data", in International Union for the Scientific Study of Population, International Population Conference, Ottawa, 1963 (Liège, 1964).

women often understate the total number of live births because they omit recent births, children who died shortly after birth, children who are no longer living with the mother; and in some cases, illegitimate children and children from previous marriages. Some women, especially older women, may simply have forgotten all their live births and may be unable to report accurately a total number. ^{4/} Another fairly common deficiency is the "zero error" which occurs when enumerators fail to make an entry for childless women. ^{5/} Other measures of fertility available for less developed countries, such as survey estimates of current birth-rates based on reports of births during the 12 months preceding the survey, are also often defective because of under-reporting and the inability of women to identify whether a recent birth occurred during a specific time interval.

Undoubtedly, the errors suspected in parity reports and other fertility measures affect the precise level of fertility indicated for rural and urban residents and for women with varying degrees of education. The impact of these errors on the over-all pattern of fertility differentials is generally unknown. But it appears likely that many of the errors are more common among rural women and less educated women, and that the total effect is an underestimation of the range of differences among the various residence and education groups. Because of the general uncertainty about the reliability of the data for many high-fertility countries, only the direction and general magnitude of the differentials are emphasized in this discussion.

In addition to wide variations in the quality of the data, differences in the age, marital duration and marital status of women covered by various fertility measures limits the comparisons that can be made of differentials observed in particular countries. Equally significant for comparative analysis are the international discrepancies in the definition of residence and education, which greatly reduce the comparability of the data. ^{6/} Even when formal definitions agree, variations in the over-all level of development may alter the significance of residential and educational differences for fertility behaviour and make cross-national contrasts hazardous.

B. Fertility differentials in countries of Africa

Rural/urban differentials

In North Africa, approximations of current age-specific fertility rates are available for rural and urban women in Algeria, Egypt and Morocco (table 37). The rates for Egypt, which are based on vital statistics data, and the survey estimates

^{4/} The tendency for the number of children ever born to decline with age for women past the reproductive period is observed in many censuses and very likely results from this type of memory lapse.

^{5/} The substantial proportion of very young women shown in the category for unknown parity in many census tabulations is probably due to this error; indirect enumeration may also contribute to this problem.

^{6/} For a listing of recent rural/urban definitions in national census publications, see Demographic Yearbook, 1973 (United Nations publication, Sales No. E/F.74.XIII.1).

Table 37. Recent estimates of age-specific fertility rates by rural and urban residence, selected countries of North Africa, recent years

(live births per 1,000 women)

Age of woman	Algeria, 1969		Morocco, 1973 ^{a/}		Egypt, 1966	
	Urban	Rural	Urban	Rural	Urban	Rural
15-19	84	126	55.3	84.9	37.6	33.5
20-24	318	328	304.4	343.5	199.4	209.4
25-29	350	359	365.9	390.7	316.1	359.0
30-34	330	329	292.7	342.1	248.7	305.3
35-39	242	273	211.2	248.7	211.5	258.8
40-44	125	158	88.3	132.1	82.5	125.9
45-49	20	45	15.2	38.4	38.9 ^{b/}	61.4 ^{b/}

Sources: G. Négadi and others, "Situation démographique de l'Algérie", La Population de l'Algérie, CICRED Series (Paris, Imprimerie Louis-Jean, 1974); Morocco, Direction de la statistique, Centre de recherches et d'études démographiques, La fécondité marocaine, Report No. 6 (Rabat, 1974); Ferial Abd El-Kader Ahmad, "Fertility studies in the Arab Republic of Egypt" (POP/INF/110), country statement prepared for the Economic Commission for Africa, Working Group on Fertility Levels and Differentials in Africa and the Prospects for the Future, Addis Ababa, 18-22 December 1972.

a/ Data from a regional sample; estimates adjusted by the Brass technique.

b/ Women aged 45 years or over.

for the other countries undoubtedly underestimate the level of fertility in both the rural and urban populations; but the measurement errors probably work to minimize, rather than exaggerate, the difference between the rural and urban sectors. In all the countries shown, urban fertility is lower than the rural level by a modest margin and differences are generally more pronounced among older women.

The pattern of lower urban fertility may be a recent one for countries in this region. Previous studies for Egypt, the only country with any adequate indicators of past rural/urban differentials, show little evidence of a rural/urban difference in fertility. ^{7/} For Algeria, estimates of age-specific marital fertility rates for rural and urban areas indicate that a difference in marital composition explains at least part of the differential. Among younger women, the lower levels of age-specific fertility in urban areas are solely the result of the smaller proportion of women married, since the level of age-specific marital fertility in cities exceeds the rates for rural areas. ^{8/}

In view of the great uncertainty that exists about the over-all level of fertility throughout tropical Africa, data concerning differentials must be interpreted cautiously. Most of the information concerning fertility levels comes from a series of surveys in the French-speaking countries of Western Africa undertaken in the late 1950s and early 1960s and from a number of more recent surveys and censuses in English-speaking countries of Africa. ^{9/} Almost all the available survey and census data are affected by serious problems of age misstatement, under-reporting of parity and inaccurate estimates of the number of births occurring in more recent periods. The study of differential fertility is further hampered by the fact that the techniques frequently used to adjust the data cannot easily be applied to the estimates of the fertility of various subgroups.

As a result of the uneven and generally poor quality of the fertility measures for tropical Africa, detailed data are presented for only two countries, Ghana and Sierra Leone. Even in the case of these two countries, the information concerning fertility is probably distorted by many types of errors; and none of the patterns found in either country can be thought of as typical or representative of Western Africa, let alone all of tropical Africa.

Smaller completed families appear to characterize urban women in all the major regions of Ghana, and a more pronounced differential is observed between women from the capital city of Accra and the surrounding rural area (table 38). There is some evidence that the fertility of urban women may have been somewhat lower

^{7/} M. A. El-Badry, "Trends in the components of population growth in the Arab countries of the Middle East: a survey of present information", Demography, vol. 2 (1965), pp. 140-186.

^{8/} Jacques Vallin, "Influence de divers facteurs économiques et sociaux sur la fécondité de l'Algérie", Population, vol. 28, No. 4-5 (July-October 1973), pp. 817-842.

^{9/} For a review of the individual studies, see John C. Caldwell, ed., Population Growth and Socioeconomic Change in West Africa (New York, Columbia University Press, 1975).

Table 38. Average number of children ever born alive per woman aged 45 years or over, by rural or urban residence and by region, Ghana, 1960

	Place of residence	
	Urban	Rural
Total country		
1960	5.59	6.22
1968	5.45	6.04
Regions		
Accra Capital District	5.38	6.69
Western/Central	5.80	6.51
Eastern	5.92	6.46
Volta	5.53	5.98
Ashanti	5.22	6.93
Brong-Ahafo	6.16	6.66
Northern/Upper	4.62	5.18

Source: S. K. Gaisie, "Fertility trends and differentials", in John C. Caldwell, ed., Population Growth and Socioeconomic Change in West Africa (New York, Columbia University Press, 1975), p. 342.

Table 39. Average number of children born alive per woman by age and residence, Sierra Leone, 1969-1970

Age of woman	Place of residence			Total
	Freetown	Towns	Villages	
15-19	1.0	0.9	0.8	0.8
20-24	2.0	1.7	2.0	2.0
25-29	3.2	3.0	3.7	3.5
30-34	4.5	4.5	4.8	4.7
35-39	5.1	4.8	6.6	6.1
40-44	5.8	5.2	8.3	7.4
45-49	5.3	5.1	8.8	7.5

Source: Thomas E. Dow, Jr., "Fertility and family planning in Sierra Leone", Studies in Family Planning, vol. 2, No. 8 (August 1971).

than rural fertility for at least half a century. ^{10/} This cautions against uncritically accepting the assumption that the existence of a rural/urban fertility differential indicates the beginning of the transition to lower fertility. Since the practice of contraception is rare in tropical Africa, it is most likely that the difference between rural and urban residents reflects long-standing variations in such factors as age at marriage, marital stability, the prevalence of diseases affecting fecundity and also differences in adherence to customs and taboos related to post-partum sexual behaviour and breast-feeding. In Ghana, differences in age at marriage appear to explain much of the rural/urban differential observed in recent estimates of age-specific fertility. ^{11/}

In the case of Sierra Leone, the evidence also points to lower urban fertility (table 39). The gap in the average parity of urban and rural women is evident by age 35, and the difference is substantially greater among women at the end of the childbearing period. Although contraception appears to be more prevalent in urban areas, variations in the proportions of women who are sterile and differences in marital stability may also explain some of the differentials. ^{12/}

For the other countries of tropical Africa, comparable and reliable measures of fertility differentials are generally lacking. Estimates of the general fertility rate for Central African Republic (1959-1960), Dahomey (1961), Guinea (1955), Liberia (1970), Mali (1957), Senegal (1960-1961) and Zaire (1955-1957) show lower urban fertility in all the countries except Zaire. ^{13/} Because of variations in the age and marital-status composition of the rural and urban populations, the direction and extent of the rural/urban fertility differential is difficult to discern from these measures. Differences in marital-status composition, for instance, appear to explain about half of the differential between rural and urban fertility in Zaire. ^{14/} Additional factors contributing to higher urban fertility in Zaire and possibly other countries of Africa may be better health conditions in cities and, more significantly, the relaxation of customs and taboos that formerly regulated post-partum sexual behaviour. A number of reports of higher fertility among women from major cities in Nigeria and several other Western African countries also suggests the possibility that in many countries of Africa, departures from traditional sexual taboos, improvements in health, the

^{10/} John C. Caldwell, "Fertility differentials as evidence of incipient fertility decline in a developing country: the case of Ghana", Population Studies, vol. XXI, No. 1 (July 1967).

^{11/} Hilary Page, "Fertility levels: patterns and trends", in John C. Caldwell, ed., Population Growth and Socioeconomic Change in West Africa, pp. 29-57.

^{12/} Thomas E. Dow, Jr., "Fertility and family planning in Sierra Leone", Studies in Family Planning, vol. 2, No. 8 (August 1971), pp. 153-165.

^{13/} Economic Commission for Africa, Demographic Handbook for Africa (Addis Ababa, 1975), table 18.

^{14/} H. Page, loc. cit.

decline of polygamy and the lower incidence of breast-feeding may lead to a rise in fertility during the early phases of urbanization and modernization. 15/

Education differentials

The available data on education differentials for the countries of North Africa generally show little variation between women with no education and those with only a few years of schooling. In Egypt, for example, the completed family size of urban women differs little between illiterates and literate women with little or no schooling (table 40). But fertility is noticeably lower only among women who have finished at least primary school. The pattern among rural women from Lower Egypt shows a positive relationship between literacy and fertility. Although a similar positive relationship between cumulative fertility and the lower levels of education was found in earlier studies of Egyptian fertility, 16/ the likelihood of greater deficiencies in the reporting by illiterates makes it uncertain whether real differences in fertility exist among these groups of women.

Among older Algerian women, completed family size is negatively related both to the education of the woman and to that of her spouse, but the education differential tends to be somewhat wider when women are classified by their own level of education (table 41). The data for urban women in Tunisia and rural women in Morocco also show a weak negative association between husband's education and cumulative fertility. Among urban Moroccan women, the expected pattern is found only among younger women.

The few studies of educational differentials in tropical Africa have generally shown lower fertility among more educated women, especially the small group of women who have more than a primary school education. 17/ In Ghana, little difference is observed between the unschooled and those with some primary education, but much lower fertility characterizes those with advanced education (table 42). In the case of Sierra Leone, the completed family size of women aged 40-49 who have one year or more of formal education is noticeably lower than the parity of unschooled women, 5.4 in contrast to 7.6, but the differential appears to be largely a reflection of the differences observed in the fertility of rural and urban women (table 42).

15/ For a review of the evidence concerning higher urban fertility, see J.-M. Cohen, "Fécondité: facteurs", in Institut national de la statistique et des études économiques, Afrique noire, Madagascar, Comores: démographie comparée (Paris, 1967); Robert W. Morgan and P. O. Ohadike, "Fertility levels and fertility change", in John C. Caldwell, ed., Growth and Socioeconomic Change in West Africa, part 2, "Nigeria", pp. 254-275; and Gyorgy T. Acsádi, "Traditional birth control methods in Yorubaland", in J. F. Marshall and S. Polgar, eds., Culture, Mortality and Family Planning (Chapel Hill, North Carolina, Carolina Population Center, 1976), chap. 7.

16/ See M. A. El-Badry, "Trends in the components of population growth in the Arab countries of the Middle East: a survey of present information".

17/ For an additional review of the evidence on educational differentials, see John C. Caldwell, ed., Growth and Socioeconomic Change in West Africa, chaps. 9 and 16.

Table 40. Average number of children ever born alive per ever-married woman, by duration of marriage, rural or urban residence and woman's education or literacy status, Egypt, 1965-1966

Duration of marriage (years)	Rural women, Lower Egypt, 1965		All urban, 1966			
	Illiterate	Literate	Illiterate	Able to read and write	Intermediate certificate	University degree
Under 5	0.87	0.93	1.1	0.8	0.6	0.5
5-9	2.38	2.80	2.7	2.6	2.5	1.8
10-14	3.57	4.37	)	4.9	3.2	2.6
15-19	4.68	5.42	) 5.0			
20-24	5.21	6.40	)	6.1	4.6	2.3
25-29	)	)	) 6.6			
30 and over	) 5.44	5.91	)	6.3	5.3	...

Sources: S. Hassan and others, "Factors affecting fertility in rural areas of Lower Egypt" in Cairo Demographic Centre, Fertility Trends and Differentials in Arab Countries, Research Monograph Series, No. 2 (Cairo, 1971); for urban Egypt, Ferial Abd El-Kader Ahmad, "Fertility studies in the Arab Republic of Egypt" (POP/INF/110), country statement prepared for the Economic Commission for Africa, Working Group on Fertility Levels and Differentials in Africa and the Prospects for the Future, Addis Ababa, 18-22 December 1972.

Table 41. Average number of children ever born alive per currently married woman, by age and husband's education, a/ selected countries of North Africa, recent years

Age of woman	Algeria, 1969 ^{b/}					
	Husband's education			Wife's education		
	None	Primary or middle	Secondary or higher	None	Primary or middle	Secondary or higher
15-19	0.6	0.5	0.5	0.6	0.5	0.5
20-24	2.1	2.1	2.0	2.2	2.0	1.5
25-29	4.0	4.3	3.4	4.1	4.1	2.7
30-34	5.7	5.6	4.6	5.7	4.7	3.5
35-39	7.1	7.0	6.2	7.1	6.1	...
40-44	8.0	8.2	7.1	8.1	6.3	...
45-49	8.5	8.5	...	8.6	...	...

	Morocco, 1962 ^{b/}						
	Rural			Urban			
	None or traditional	Primary	Secondary or higher	None	Traditional	Primary	Secondary or higher
15-19	0.77	0.60	0.77	1.65	0.82	0.94	0.53
20-24	2.26	2.31	1.56	3.02	2.31	2.31	2.13
25-29	3.81	3.69	3.35	4.34	3.75	4.23	3.74
30-39	5.78	5.81	5.17	5.44	5.53	5.55	6.18
40 and over	7.15	6.59		6.88	6.94	...	...

	Tunisia, 1964 - Urban women ^{c/}			
	None	Traditional	Primary	Secondary or higher
Under 30	3.0	2.9	2.4	2.2
30-39	5.9	5.9	6.1	5.6

(Sources and foot-notes to table 41 on following page)

(Sources and foot-notes to table 41)

Sources: Jacques Vallin, "Influence de divers facteurs économiques et sociaux sur la fécondité de l'Algérie", Population, vol. 28, No. 4-5 (July-October 1973); G. Sabagh, "Analyse de l'influence du niveau d'instruction sur la fécondité au Maroc", Revue tunisienne de sciences sociales, vol. 6, Nos. 17-18 (June-September 1969); Jean Morsa, "The Tunisia survey: a preliminary analysis", in Bernard Berelson and others, eds., Family Planning and Population Programs (Chicago, University of Chicago Press, 1965).

a/ For Algeria, including data on number of children ever born by level of wife's education.

b/ Women married only once.

c/ Excluding Tunis.

Table 42. Average number of children ever born alive per woman at the end of childbearing, by residence and level of education, Ghana and Sierra Leone, recent years

Level of education	Ghana, 1960 ^{a/}		Sierra Leone, 1969-1970 ^{b/}		
	Rural	Urban	Freetown	Town	Village
None	5.7	6.2	5.9	5.1	8.4
Primary	5.2	5.9	) 5.2	5.3	...
Secondary	2.5	1.0			

Sources: For Ghana, S. K. Gaisie, "Fertility trends and differentials", in John C. Caldwell, ed., Population Growth and Socioeconomic Change in West Africa (New York, Columbia University Press, 1975), p. 343; Thomas E. Dow, Jr., "Fertility and family planning in Sierra Leone", Studies in Family Planning, vol. 2, No. 8 (August 1971).

a/ Women aged 45 years or over.

b/ Women aged 40-49 years.

Table 43. Average number of children ever born alive per ever-married woman, by age and rural or urban residence, Japan and Republic of Korea, 1970

Age of woman	Japan ^{a/}		Republic of Korea ^{b/}	
	Rural	Urban	Rural	Urban
15-19	0.72	0.57	0.53	0.45
20-24	0.80	0.63	1.13	0.91
25-29	1.48	1.24	2.44	1.84
30-34	2.08	1.79	3.91	3.07
35-39	2.34	1.95	4.98	3.94
40-44	2.67	2.11	5.71	4.63
45-49	3.07	2.46	5.98	5.02

Sources: Japan, 1970 Census of Japan, vol. 5; for Republic of Korea, Demographic Yearbook, 1973 (United Nations publication, Sales No. E/F.74.XIII.1).

a/ Based on a 25 per cent sample tabulation; excluding negligible proportion of women not reporting parity.

b/ Based on a 10 per cent sample of census returns; including negligible proportion of women not reporting parity.

C. Fertility differentials in countries of Asia

Rural/urban differentials

Because there is little consistency in the type of fertility measures available and wide variations in the quality of the data, the situations with respect to rural/urban and educational differences in fertility are reviewed separately for each of the major areas of Asia: East Asia; and South Asia (comprising the regions of Eastern South Asia, Middle South Asia and Western South Asia).

East Asia

In contrast with the rest of Asia, the data available for East Asia cover countries known to have relatively complete and accurate censuses (Japan, Hong Kong and the Republic of Korea). Unfortunately, these countries represent only a fraction of the total population of this major area and cannot be considered representative of the other countries of East Asia in view of the higher level of economic development and lower fertility which characterize Hong Kong, Japan and the Republic of Korea.

In both Japan and the Republic of Korea, the cumulative fertility of rural women exceeds urban levels, especially at the older ages (table 43). As in the more developed, low-fertility countries in the west, the current differential in the completed family size of rural and urban Japanese women is relatively small; and data from censuses and vital statistics covering earlier periods reveal a larger differential during the transition to lower fertility and a convergence in the levels of rural and urban fertility in the post-war period. The data for the Republic of Korea also show a pattern of fertility first declining among urban women. During the early 1960s, the birth-rate fell at a faster rate in urban areas, but from 1966-1970, the rate of decline was more rapid in rural areas. ^{18/}

South Asia

The evidence for Eastern South Asia generally indicates lower fertility among urban women (table 44). In Thailand, the completed family size of Bangkok residents is about 1.5 children below the level reported by rural women, with the fertility of provincial urban residents falling between these extremes. The average number of children ever born to currently married Malaysian women in rural areas, small towns and large cities follows a similar pattern.

The somewhat less reliable estimates of age-specific fertility rates derived from the 1962 census of Democratic Kampuchea show a total fertility rate of about five for Phnom Penh and seven for the entire country. ^{19/} The rural/urban total

^{18/} Lee-Jay Cho, The Demographic Situation in the Republic of Korea, Papers of the East-West Population Institute, No. 29 (Honolulu, Hawaii, East-West Center, 1973).

^{19/} George S. Siampos, "The population of Cambodia, 1945-1980", The Milbank Memorial Fund Quarterly, vol. XLVIII, No. 3 (July 1970), pp. 317-353.

fertility rates calculated from data on own children under 5 years of age from the 1971 Indonesian census also indicates slightly lower fertility in urban areas. 20/

Exceptions to this general pattern are evident in the results of the Demographic Survey in the Philippines in 1968, which found somewhat higher rural fertility among ever-married women aged 35-44, but no difference among women aged 45-54. Moreover, the lower over-all level of current fertility in Philippine cities appears to be almost entirely the result of the later age at marriage among urban women. 21/

In Middle South Asia, only in Bangladesh and Sri Lanka does the parity reported by older rural and urban women differ much (table 45). Neither completed family size nor estimates of recent fertility levels in India and Pakistan indicate a substantial difference in the fertility of the rural and urban women. 22/ Moreover, an analysis of the estimated age-specific general and marital fertility rates for India in 1964-1965 found that the major portion of the rural/urban differential in the over-all birth rate was due to differences in the age-sex-marital status composition of the rural and urban population. 23/ One important factor affecting the difference in birth rates appears to be the later age at marriage among urban women.

Only fragmentary evidence is available for the other countries of Middle South Asia. For Iran, national estimates of rural and urban fertility are not available, but a survey in 1965-1966, of women at Teheran and in four rural areas estimated the average number of children born to currently married women aged 45-49 to be 6.0 at Teheran and 7.6 in the rural districts. 24/ It is probable, however, that the difference in the fertility of metropolitan and rural women overstates the gap in the completed family size of women from all urban areas and rural women.

Caution is also called for in interpreting the results of a recent demographic

20/ Geoffrey McNicoll and Si Gde Made Mamas, The Demographic Situation in Indonesia, papers of the East-West Population Institute, No. 28 (Honolulu, Hawaii, East-West Center, 1973).

21/ Thomas W. Pullum, "Differentials in marital fertility", in Wilhelm Fleiger and Peter C. Smith, A Demographic Path to Modernity: Patterns of Early Transition in the Philippines (Quezon City, University of the Philippines Press, 1975).

22/ For India, see J. R. Rele, "Trends in fertility and family planning", in Ashish Bose and others, Population in India's Development 1947-2000 (Delhi, Vikas Publishing, 1974), pp. 346-349; for Pakistan, Ministry of Finance, Planning and Development, Statistical Division, Population Growth Survey, 1971 (Karachi, 1974).

23/ J. R. Rele, loc. cit.

24/ J.-C. Chasteland, "Essai d'évaluation du niveau de la natalité et de la fécondité en Iran", in International Union for the Scientific Study of Population, Contributed Papers, Sydney Conference, Australia, 21-25 August 1967 (Liège, n.d.), pp. 348-354.

Table 44 Average number of children ever born alive per ever-married woman, Thailand and the Philippines, and per currently married woman, Malaysia, a/ by age and rural or urban residence, recent years

Age of woman	Thailand, 1969-1970 <u>b/</u>			Philippines, 1968		Malaysia, <u>a/</u> 1970		
	Rural	Provincial urban	Bangkok-Thonburi	Rural	Urban	Rural	Provincial urban	Metropolitan areas
15 - 19	0.69	0.64	0.65	...	...	1.6	1.5	1.4
20 - 24	1.41	1.41	1.42	...	...	
25 - 29	2.82	2.61	2.20	...	...	4.4	3.7	3.4
30 - 34	4.22	3.78	3.39	...	...	
35 - 39	5.80	4.66	4.29	6.2 <u>c/</u>	5.6 <u>c/</u>	6.2	6.0	5.3
40 - 44	6.89	5.82	5.32					
45 - 49	6.69	5.72	5.26	6.0 <u>d/</u>	6.2 <u>d/</u>	...	...	...

Sources: National Economic and Social Development Board, National Statistical Office and Institute of Population Studies of Chulalongkorn University, The Population of Thailand, CICRED Series (Bangkok, 1974); Elvira M. Pascual, "Differential fertility in the Philippines", Philippine Sociological Review, vol. 19, Nos. 3 and 4 (July-October 1971); J. Y. Peng and Elizabeth Preble, Malaysia, Country Profile (New York, The Population Council, 1975).

a/ Data only for Peninsular Malaysia, formerly referred to as West Malaysia.

b/ Excluding women with an unknown number of children ever born.

c/ Women aged 35-44 years.

d/ Women aged 45-54 years.

Table 45. Average number of children ever born alive per currently married woman, by age and rural or urban residence, selected countries of Middle South Asia, recent years

Age of Women	India, 1964-1965 <u>a/</u>								
	Bangladesh, 1961		Pakistan, 1968-1969		Sri Lanka, 1969-1970		Duration of marriage (years)	Rural	Urban
	Rural	Urban	Rural	Urban	Rural <u>b/</u>	Urban			
15 - 19	0.76	0.89	0.6	0.6	0.65	0.66	...	...	...
20 - 24	2.23	2.33	1.9	2.0	1.45	1.50	5 - 9	2.02	2.11
25 - 29	3.49	3.99	3.2	3.4	2.90	2.83	10 - 14	3.55	3.53
30 - 34	4.64	4.53	4.4	4.5	3.97	3.75	15 - 19	4.89	4.68
35 - 39	5.24	5.22	4.9	5.2	5.34	4.92	20 - 29	5.65	5.43
40 - 44	5.51	5.17	5.4	5.6	6.12	5.36	30+	5.83	5.76
45 - 49	5.77 <u>c/</u>	5.14 <u>c/</u>	5.4	5.5	5.87	5.27	...	...	...

Sources: Bangladesh: Mohammed Afzal, "The fertility of East Pakistan married women", in Warren C. Robinson, Studies in the Demography of Pakistan (Karachi, 1967);

Pakistan: Mahtab S. Karim, "Fertility differentials by family type", Pakistan Development Review, vol. XIII, No. 2 (Summer 1974);

Sri Lanka: Socio-economic Surveys of Sri Lanka, 1969-1970, Rounds 1-4 Statistical Tables. Volume I. Population, Labour Force, Housing (1973);

India: The Cabinet Secretariat, Age Pattern of Marriage and Fertility of Couples, The National Sample Survey, Nineteenth Round: July 1964-June 1965, No. 185 (New Delhi, 1971).

a/ Including estate sectors.

b/ Excluding the very small proportion of women married at age 25 or older, and the negligible proportion of women not reporting parity.

c/ Women aged 45 years or over.

survey (1972-1973) of the settled population of Afghanistan. ^{25/} The unadjusted estimates of the rural and urban total fertility rates (7.1 and 5.9) indicate slightly lower urban fertility, but a comparison of total fertility rates adjusted by the Brass technique reveal little difference between the rural and urban areas in the levels of current fertility. While significantly lower urban fertility would not be expected in a less developed, high-fertility country such as Afghanistan, both the unadjusted and adjusted rates must be considered very tentative estimates in view of the problems of under-reporting and age misstatement in this survey.

Relatively little is known about the over-all level of fertility for most of the countries in Western South Asia, and the meagre data that exist on fertility differentials come from a variety of sources. Although the differing measures of fertility make comparisons difficult, the pattern of rural/urban differences appears to vary considerably. In Jordan, for example, the age-standardized number of children ever born reported in the National Fertility Survey in 1972 was 5.0 for ever-married urban women, 5.3 for residents of semi-urban areas and 5.2 for rural women. ^{26/} Similarly, a detailed analysis of the 1961 Israeli census showed little systematic variation in the cumulative fertility of currently married, non-Jewish women in different types of settlements. ^{27/} A weak pattern of rural/urban differentiation is found in the completed family size reported by Syrian women. The average number of children born to ever-married women aged 45-49 years reported in the 1970 census was 7.7 for urban residents and only slightly higher, 8.1, for the rural population.

For Lebanon and Turkey, the evidence points to substantially lower fertility in urban areas, especially in the major cities. The 1970 survey of the economically active population in Lebanon reported a lower level of current fertility at Beirut than in the rest of the country. ^{28/} An earlier study, however, found that the rural/urban difference in completed family size differed for Christians and Moslems. ^{29/} Among Christians, the average family size ranged from 4.7 for urban residents to 6.8 for rural women, in contrast to levels of 7.2 and 7.5 for Moslems. A significant difference exists in the number of children born to Turkish women in rural and in urban areas (table 46). The differential, which is especially systematic and pronounced between rural women and women

^{25/} National Demographic and Family Guidance Survey of the Settled Population of Afghanistan, Volume I. Demography, sponsored by the Government of Afghanistan and Agency for International Development of the United States of America (Kabul, 1975).

^{26/} Hanna Rizk, "National fertility sample surveys for Jordan, 1972: the study and some findings", Population Bulletin of the United Nations Economic and Social Office in Beirut, No. 5 (July 1973), pp. 14-31.

^{27/} J. Matras, Families in Israel. Part II, Population and Housing Census, 1961, Publication No. 39 (Jerusalem, Central Bureau of Statistics, 1968).

^{28/} Youssef Courbage and Philippe Fargues, La situation démographique au Liban. I et II (Beirut, Université Libanaise, 1973).

^{29/} David Yaukey, Fertility Differences in a Modernizing Country, a Survey of Lebanese Couples (Princeton, New Jersey, Princeton University Press, 1961).

Table 46. Average number of children ever born alive per currently married woman aged 14-44 years, by duration of marriage and rural or urban residence, Turkey, 1968

Duration of marriage (years)	Place of residence	
	Rural	Urban
0-4	0.77	0.80
5-9	2.55	2.31
10-14	4.43	3.62
15-19	5.61	4.02
20+	6.38	4.66

Source: Fertility and Family Planning in Europe Around 1970: A Comparative Study of Twelve National Surveys (United Nations publication, Sales No. E.76.XIII.2) (in press).

from metropolitan centres, is illustrated by the following results on the average number of live births (standardized for marital duration) reported in the 1968 Population Survey: 4.2 for communities with under 2,000 residents; 3.8 for places with 2,000-14,999 inhabitants; 3.4 for cities of 15,000 and over; and 2.7 for metropolitan centres. 30/

Educational differentials

Much less information is available on educational differentials, and the pattern exhibited by various fertility measures is generally one of negative association between education and fertility. In each of the East Asian countries shown in table 47, education is a very important factor influencing the fertility of ever-married women. As would be expected with the over-all low level of fertility and the wide use of contraception in all sectors of the Japanese population, the difference in completed family size between the least and most educated women is noticeably smaller in Japan than the variation observed among women in Hong Kong and in the Republic of Korea.

For the countries representing Eastern South Asia (Malaysia, the Philippines, Singapore and Thailand), education appears to have a very significant impact on the number of children a woman bears (table 48). Among older, currently married women in both Peninsular Malaysia and Singapore, completed fertility is significantly lower for those older women with more than a primary education.

30/ Serim Timur, "Components of growth. Section A - Fertility", in Haluk Cillov and others, The Population of Turkey, CICRED Series (Ankara, Hacettepe University, Institute of Population Studies, 1974), p. 30.

In Thailand and the Philippines, the average parity of ever-married women is inversely related to education in both rural and urban areas. In both of these countries, as in Malaysia, the completed fertility of women with a few years of primary education tends to exceed the number reported by women with no schooling. This pattern, which is found in several other high-fertility countries, may be the result of measurement error or of differences in fecundity and miscarriage rates. Another facet of interest here in the data for Thailand and the Philippines is the divergent pattern of rural/urban differences, which exists after education is controlled. Within education categories, rural fertility is consistently higher in Thailand, whereas in the Philippines, it is lower in most cases.

The data for Middle South Asia further confirm the pattern of a weak negative or positive effect of the low levels of education on fertility, with a strong negative effect apparent only at the higher levels. In both Sri Lanka and the urban areas of India, a substantial drop in fertility is first noticed among women going beyond primary school (table 49). Moreover, the Indian data show that both the education of the husband and the wife are negatively associated with family size, but that advanced education for the wife appears to have a greater impact. The scant evidence covering the other countries in this region includes the finding of a weak negative relationship between fertility and husband's education for a sample of rural couples in Bangladesh, 31/ and almost no difference in the current marital fertility of rural Iranian women with literate husbands and those with illiterate spouses. 32/

The surveys of women in Western South Asia also illustrate the depressing effect of education on fertility (table 50). Among older, currently married non-Jewish Israeli women, lower fertility is observed for women with at least a primary education; and a large drop in family size is observed for ever-married Jordanian women with more than a primary education. After standardizing for marital duration, the average parity reported by currently married Turkish women shows a steady decline at each successive level of education.

D. Fertility differentials in countries of Latin America

The number of live births reported in censuses and national survey is the major source of information about differential fertility in the major area of Latin America, which comprises the following regions: Caribbean, Middle America, Temperate South America and Tropical South America. One advantage associated with this data source is the uniformity in the questions used by countries in Latin America to elicit data about parity and other population characteristics. However, most of the measurement errors previously discussed in the introduction can be identified in the reports of parity by Latin American women. A problem of considerable importance is the sizable proportion of women, particularly at the younger ages, shown in many censuses as not reporting their parity.

31/ John Stocckel and Moqbul A. Choudhury, "Differential fertility in a rural area of East Pakistan", The Milbank Memorial Fund Quarterly, vol. XLVII, No. 2 (April 1969).

32/ J.-C. Chasteland and others, Etude sur la fécondité et quelques caractéristiques démographiques des femmes mariées dans quatre zones rurales d'Iran (Teheran, Université de Teheran, Institut d'études et recherches sociales, 1968).

Table 47. Average number of children ever born alive per ever-married woman, by age and education, Japan, Hong Kong and Republic of Korea, recent years

Age of woman	Other East Asia													
	Japan, 1970 <u>a/</u>					Hong Kong, 1971					Republic of Korea, 1970 <u>b/</u>			
	None	Primary	Secondary	Junior college	University	None	Primary	Lower secondary	Higher secondary	Post-secondary	None	Primary	Secondary	University
15-19	0.93	0.62	0.39	...	...	...	...	...	...	...	0.68	0.51	0.39	...
20-24	1.66	0.87	0.57	0.44	0.28	...	...	...	...	...	1.51	1.10	0.82	0.66
25-29	2.27	1.50	1.25	1.10	0.91	2.75	2.17	1.87	1.40	1.15	2.80	2.32	1.70	1.35
30-34	2.66	2.01	1.83	1.76	1.67	...	...	...	...	...	4.14	3.65	2.91	2.38
35-39	2.20	2.25	1.99	1.88	1.85	4.35	3.77	3.36	2.67	2.38	5.09	4.56	3.72	2.99
40-44	2.47	2.57	2.14	1.92	1.79	...	...	...	...	...	5.72	5.12	4.33	3.61
45-49	2.88	2.95	2.42	2.16	1.97	...	...	...	...	...	5.89	5.37	4.74	4.11

Sources: Japan and Republic of Korea, official census publications; Hong Kong, "The population of Hong Kong", Economic and Social Commission for Asia and the Pacific Country Monograph Series, No. 1 (E/CN.11/1120).

a/ Based on 25 per cent sample tabulations; excluding negligible proportion of women not reporting parity.

b/ Based on a 10 per cent sample of census returns; including negligible proportion of women not reporting parity.

Table 48. Average number of children ever born alive, by age and education of woman, selected countries of Eastern South Asia, recent years

Age of woman	Malaysia, 1966-1967 <u>a/ b/</u>			Singapore, 1973 <u>a/</u>		
	None	Primary (1-5 years)	Secondary or higher (6+ years)	None	Primary	Secondary or higher
15-24	2.1	1.9	1.5	1.94	1.40	1.16
25-34	4.6	4.2	3.2	3.49	2.78	1.96
35-44	5.8	6.2	4.8	5.57	4.76	2.82

	Thailand, 1969-1970 <u>c/</u>				Philippines, 1968 <u>c/ d/</u>					
	None	Less than primary	Primary	Lower secondary	Upper secondary or higher	None	Lower primary	Upper primary	Secondary	University
	<u>Rural</u>				<u>Rural</u>					
15-29	2.62	2.77	1.89	1.54	...	...	...	...	...
30-44	5.97	5.65	5.61	3.69	...	...	...	...	...
45+	6.65	6.80	6.58	...	5.36	6.42	6.54	5.27	4.00	
	<u>Urban</u>				<u>Urban</u>					
15-29	2.46	1.89	1.97	1.62	1.35	...	...	...	...
30-44	5.43	4.96	4.41	4.04	2.66	...	...	...	...
45+	5.65	5.75	5.27	4.78	3.90	6.58	6.77	6.13	5.95	4.96

Sources: Malaysia, National Family Planning Board, Report on the West Malaysian Family Survey, 1966-1967 (Kuala Lumpur, n.d.); Wan Fook Kee and Saw Swee-Hock, Report of the First National Survey on Family Planning in Singapore 1973 (Singapore Family Planning and Population Board and National Statistical Commission, 1974); John Knodel and Visid Prachuabmoh, The Fertility of Thai Women: Results of the First Rural and Urban Rounds of the Longitudinal Study of Social, Economic and Demographic Change in Thailand, Institute of Population Studies Research Report No. 10 (Bangkok, Chulalongkorn University, 1973); Elvira M. Pascual, "Differential fertility in the Philippines", Philippine Sociological Review, vol. 19, Nos. 3-4 (July-October 1971).

a/ Currently married women.

b/ Data only for Peninsular Malaysia, formerly referred to as West Malaysia.

c/ Ever-married women.

d/ Women aged 45-54 years.

Table 49. Average number of children ever born alive per woman at the end of childbearing, a/ by level of education, India and Sri Lanka, recent years

Level of education	India, urban population, 1960-1961		Sri Lanka, 1971 <u>b/</u>
	Education of husband	Education of wife	Education of wife <u>c/</u>
Illiterate	7.04	6.65	6.0
Less than primary	6.19	6.90)	5.7
Primary	6.50	6.57)	
Middle	6.63	5.04	5.1
Matriculate	6.56	4.58	3.6
Post-secondary	5.54	2.01 <u>d/</u>	3.1

Sources: Government of India, Ministry of Home Affairs, Office of the Registrar General and Census Commissioner, The Population of India, CICRED Series (New Delhi, 1974); Sri Lanka, Department of Census and Statistics, The Population of Sri Lanka, CICRED Series (Colombo, 1974), pp. and , respectively.

a/ For India, currently married women 47 years of age or over; for Sri Lanka, ever-married women aged 40-44 years.

b/ Based on a 10 per cent sample of 1971 census; adjustments made for women who had not stated the live births for each level of educational attainment.

c/ Educational categories are the following: no schooling, grades 1-4, grades 5-9, passed General Certificate of Education (GCE), Ordinary Level; passed GCE, Advanced Level and over.

d/ Average based on a small number of women.

Table 50. Average number of children ever born alive per woman, by woman's level of education, selected countries of Western South Asia, recent years

Level of Education	Israel 1961 <u>a/</u>	Jordan 1972 <u>b/</u>	Turkey 1968 <u>c/</u>
Illiterate	8.1	8.6	4.2
Less than primary	7.4)		3.2
Primary	4.4)	7.0	2.8
Lower secondary	)		2.1
Upper secondary	)	4.4	2.0
University	)	4.1	1.4

Sources: For Israel, official census publication; Hanna Rizk, "National fertility sample survey for Jordan, 1972: the study and some findings", Population Bulletin of the United Nations Economic and Social Office in Beirut, No. 5 (July 1973); for Turkey, Fertility and Family Planning in Europe Around 1970: A Comparative Study of Twelve National Surveys (United Nations publications, Sales No. E.76.XIII.2) (in press).

a/ Non-Jewish women currently married for the first time, aged 45-49 years.

b/ Ever-married women at the end of childbearing.

c/ Currently married women aged 14-44 years; standardized by duration of marriage.

Rural/urban differentials

Despite variations in the definition of rural and urban places in various countries, the number of live births reported by rural women are almost uniformly higher than the level recorded for urban women, with the differences being most pronounced among older women (tables 51 and 52). The pattern of sharp residential differentials coincides with the findings of previous studies covering the early post-war period which reported generally lower child-woman ratios and lower levels of average parity among urban women in Latin America. 33/

The trend in the rural/urban differential is unknown for most countries. Information from earlier censuses in Argentina and Uruguay suggest a pattern of increasing differentials during the period of declining fertility and then a contraction during the phase of relatively low fertility. 34/ For Mexico, on the other hand, there is some indication that the over-all level of fertility in urban areas recently may have risen somewhat, although still remaining lower than rural fertility. 35/ Since most of the measures of current and past differentials are based on either the average parity of all women, or on child-woman ratios, differences in the incidence of marriage and in age at first marriage, as well as variations in marital stability, may account for rural/urban differences.

Because of the discrepancies in the marital status of the women covered by the measures in tables 51 and 52, and differences in the level of non-response in various censuses, it is hazardous to compare either the levels of fertility in urban and rural areas or the size of the differentials of particular countries. Another factor that may influence the contrast between rural and urban fertility in various areas of Latin America is the proportion of the urban populations in different countries who are rural migrants. A wide variety of surveys throughout this area have found the parity of rural migrants to be generally higher than the level reported by other urban residents. As the data from Bogotá, San José and Panamá illustrate (table 53), for women near the end of childbearing, the parity of rural migrants is clearly higher than the fertility of other urban dwellers. A similar pattern is observed in most of the other cities included in the programme of comparative fertility surveys conducted by the Centro Latinoamericano de Demografía (CELADE). 36/ A more detailed analysis of the

33/ Robert O. Carleton, "Fertility trends and differentials in Latin America", The Milbank Memorial Fund Quarterly, vol. XLIII, No. 4 (October 1965), part 2, pp. 15-35.

34/ A. M. Rothman, "Evaluation of fertility in Argentina and Uruguay", in International Union for the Scientific Study of Population, International Population Conference, London, 1969 (Liège, 1971), vol. I, pp. 712-731.

35/ A. O. Zarate, "Fertility in urban areas of Mexico - Implications for the theory of the demographic transition", Demography, vol. 4, No. 1 (1967), pp. 363-373.

36/ For a description of the surveys and a summary of the main findings, see Centro Latinoamericano de Demografía and Community and Family Study Center of the University of Chicago, Fertility and Family Planning in Metropolitan Latin America (Chicago, University of Chicago Press, 1972).

Table 51. Average number of children ever born alive per woman, a/ by age and rural or urban residence, selected Caribbean countries, recent years

Age of woman	Puerto Rico, 1970		Trinidad and Tobago, 1970		Dominican Republic, 1969-1971 <u>b/</u>	
	Rural	Urban	Rural	Urban	Rural	Urban
15-19	0.88	0.84	0.11	0.14	1.18	1.10
20-24	1.92	1.50	1.49	1.05	2.74	2.30
25-29	3.01	2.30	3.12	2.44	4.59	3.52
30-34	4.08	3.02	4.77	3.90	6.28	4.60
35-39	4.92	3.44	6.10	4.96	7.69	5.64
40-44	5.46	3.56			8.18	6.03
45-49	6.07	3.71	...	...	8.48	5.64

Sources: For Puerto Rico, Demographic Yearbook, 1973 (United Nations publication, Sales No. E/F.74.XIII.1); Jack Harewood, The Population of Trinidad and Tobago, CICRED Series (1975); Dominican Republic, Encuesta Demográfica Nacional: Informe sobre los resultados obtenidos en la submuestra: fecundidad y planificación familiar (Santo Domingo, 1973).

a/ Puerto Rico, ever-married women; Trinidad and Tobago, all women; Dominican Republic, currently mated women.

b/ Including women not reporting parity.

Table 52. Average number of children ever born alive per woman, by age and rural or urban residence, selected countries of Latin America, recent years

Age of woman	Middle America						Temperate South America			
	El Salvador 1971 a/		Guatemala 1973 a/b/		Mexico 1970		Argentina 1961 c/		Chile 1970 a/	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural d/	Urban d/	Rural	Urban
15-19	0.28	0.20	0.38	0.19	0.31	0.20	0.86	0.61	0.16	0.10
20-24	1.70	1.12	1.81	1.20	1.70	1.20	1.34	0.96	1.90	1.27
25-29	3.51	2.46	3.46	2.50	3.52	2.77	2.02	1.39		
30-34	5.06	3.63	4.90	3.79	5.04	4.26	2.54	1.77	4.86	3.33
35-39	6.22	4.65	6.00	4.80	6.31	5.36	2.97	1.92		
40-44	7.05	5.24	6.81	5.53	6.95	5.88	3.38	2.04	6.31	4.08
45-49	7.29	5.19	7.17	5.54	7.13	5.87	3.42	2.05		

Table 52 (continued)

Age of woman	Tropical South America											
	Brazil 1970 e/		Colombia 1969		Ecuador 1974 a/		Paraguay 1972 a/ f/		Peru 1961 a/		Venezuela 1961 c/	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
15-19	0.16	0.10	0.2	0.2	0.20	0.13	0.17	0.09	0.20	0.13	0.99	0.87
20-24	1.26	0.80	1.5	1.1	1.45	0.98	1.33	0.70	1.36	1.03	2.43	1.78
25-29	2.88	2.05	2.2	2.5	3.12	2.27	3.08	1.79	2.89	2.35	4.01	2.78
30-34	4.56	3.29	5.1	3.6	4.61	3.56	4.73	2.97	4.26	3.55	5.36	3.69
35-39	5.81	4.13	6.6	4.8	5.88	4.78	6.11	4.05	5.29	4.55	6.79	4.41
40-44	6.39	4.53	7.3	5.7	6.69	5.54	7.08	4.68	6.12	5.10	7.10	4.69
45-49	6.69	4.75	6.8	5.6	6.88	5.70	7.18	4.79	6.43	5.26	7.11	4.77

Sources: Alfredo E. Lattes, "La fecundidad efectiva en la República Argentina, según algunas características de la madre", in Centro Latinoamericano de Demografía, Argentina (Santiago, Chile, 1970), pp. 130-131; Asociación Colombiana para el Estudio de la Población, La Población de Colombia, CICRED Series (Bogotá, 1974); Maria Davidson, "Some demographic and social correlates of fertility in Venezuela, Estadística, vol. XXVII, No. 105 (December 1969). Data for other countries taken from Demographic Yearbook, 1973 (United Nations publication, Sales No. E/F.74.XIII.1) and from official census publications of the countries concerned.

a/ Including women not reporting parity.

b/ Based on a 5 per cent sample of census results.

c/ Ever-married women.

d/ Urban including only Buenos Aires; rural including the rest of the country.

e/ Excluding Indians.

f/ Based on a 10 per cent sample of census results.

Table 53. Average number of children born alive per woman aged 40-44 and 45-49 years at Bogotá, San José and Panamá, by husband's place of birth, 1963-1964

Husband's place of birth	Current residence and age of woman					
	Bogotá, Colombia		San José, Costa Rica		Panamá, Panama	
	40-44	45-49	40-44	45-49	40-44	45-49
Capital	4.83	4.96	4.62	5.17	3.39	3.15
Other city	4.57	3.00	5.41	4.86	3.91	3.79
Rural area	6.31	5.59	5.60	5.57	4.68	4.67

Source: Alejandro Angulo Novoa, Familia, educación y anticoncepción: Análisis comparativo de tres encuestas de fecundidad en Bogotá, Panamá y San José (Bogotá, 1974).

results from all the cities shows a general pattern, more pronounced among older women, of much higher fertility when both the husband and wife are from rural areas and above-average fertility if either member of the couple was born in a rural place.

Educational differentials

A factor that accounts for at least part of the variation in the fertility of rural and urban women in Latin America is the substantial differences in fertility associated with various levels of schooling. As in the case of residence, there is wide uniformity in the over-all pattern of the differentials. The cumulative fertility of women, regardless of whether all women, ever-married women or just currently married women are included, is negatively related to their level of education; but comparisons of the range of differentials and the differences among women in various education categories are greatly complicated by variations in the fertility measures and in the classification of education. The absence of controls for age, in many cases, also obscures the underlying pattern of fertility differences due to the large differences in both the schooling and fertility of younger and older women.

The classification of parity data by age and level of education for women in Argentina, Paraguay and Panama reveals a strong inverse relationship between education and fertility for women of all ages (table 54). Considering only women near the end of childbearing, the levels of education that have a large depressing effect on fertility vary among countries; but education at the secondary level, especially completion of secondary school, is associated with much lower fertility (tables 54 and 55). In several countries (Argentina, Jamaica, Panama, Puerto Rico and Trinidad and Tobago), there is also a substantial difference in ultimate family size between the women who have completed primary school and the group with little or no education.

The data on education differentials available for several other countries of Latin America (table 56) are much less useful since no information is available concerning the age composition of women in the various education and residence categories. Limited as they are, these parity reports do show that education differentiates the cumulative fertility of both urban and rural women. Additional information concerning education differentials among urban women is provided by the metropolitan surveys sponsored by CELADE. Among currently married women aged 45-49, completed family size is negatively related to the level of school last attended by the wife and the level of education completed by her husband. Further, there is a significant difference between the average family size of women with some secondary schooling and women whose husbands have completed primary school, and the completed fertility of their less educated counterparts (table 57).

Table 54. Average number of children ever born alive per woman, by age and level of education, selected countries of Latin America, recent census years

Age of women	Country and level of education			
	Argentina, 1960 a/			
	None	Primary	Secondary	University
15-19	1.17	0.80	0.46	...
20-24	1.90	1.30	0.61	0.67
25-29	3.02	1.81	1.30	1.05
30-34	3.23	2.24	1.87	1.65
35-39	3.92	2.49	2.12	1.98
40-44	4.39	2.75	1.95	1.32
45-49	4.50	2.77	1.79	1.37

Table 54 (continued)

Country and level of education (continued)					
<u>Paraguay, 1962</u>					
Age of women	None	Primary	Secondary	University	
15-19	0.33	0.16	0.04	...	
20-24	1.42	0.97	0.40	0.18	
25-29	2.81	2.48	1.29	0.50	
30-34	3.88	3.59	1.91	1.89	
35-39	4.88	4.41	2.99	1.42	
40-44	5.26	4.84	2.53	2.00	
45-49	5.28	4.82	1.63	...	

<u>Panama, 1970</u>					
	Less than 4 years primary	Primary: 4-6 years	Secondary: 7-9 years	Secondary: 10-12 years	University
15-19	0.58	0.28	0.10	0.04	...
20-29	2.84	2.26	1.64	0.89	0.59
30-39	5.47	4.60	3.66	2.66	2.07
40-49	6.26	4.98	3.67	2.94	2.43

Sources: Alfredo E. Lattes, "La fecundidad efectiva en la República Argentina, según algunas características de la madre", in Centro Latinoamericano de Demografía, Argentina (Santiago, Chile, 1970); Elsa Cerisola, "Fecundidad diferencial en la República del Paraguay, según condición de ruralidad y nivel de instrucción de la mujer", in D. M. Rivarola and G. Heisecke, eds., Población, urbanización y recursos humanos en el Paraguay (Asunción, 1970); for Panama, official census publications.

a/ Ever-married women.

Table 55. Average number of children ever born alive per woman near the end of childbearing, by level of education, selected Caribbean countries, recent census years

Country	Level of education					
	None	Incomplete primary	Primary	Incomplete secondary	Secondary	University
Barbados, 1960 a/	5.94	5.75-5.49 ^{b/}	5.02		3.43	
Guadeloupe, 1970 c/		4.96	4.28	3.24		3.42
Martinique, 1970 c/		5.00	4.04	2.47		2.54
Jamaica, 1970 d/		4.55	4.76-4.42 ^{b/}	2.57		2.39
Puerto Rico, 1960 e/						
Wife	7.70	7.32	5.98	3.33	2.30	1.85
Husband	7.57	7.37-6.75 ^{b/}	4.81	3.62	2.85	2.33
Trinidad and Tobago, 1970 f/		6.78	5.17		2.75	

Sources: For Barbados, G. W. Roberts, "Fertility in some Caribbean countries", in International Union for the Scientific Study of Population, *International Population Conference, London, 1969* (Liège, 1971), vol. I, p. 710; for Guadeloupe and Martinique, official census publications; Sonja A. Sinclair, "Fertility", in G. W. Roberts and others, *Recent Population Movements in Jamaica*, CICRED Series (Kingston, the Herald Limited, 1974), p. 155; Leon F. Bouvier and John J. Macisco, "Education of husband and wife and fertility in Puerto Rico, 1960", *Social and Economic Studies*, vol. 17, No. 1 (March 1968); Jack Harewood, *The Population of Trinidad and Tobago*, CICRED Series (1975).

a/ Data for women over 45 years of age in legal or common-law marital unions of 20 years or more.

b/ Range of values for women with lower and higher levels of incomplete primary schooling.

c/ All women aged 45-49 years.

d/ All women aged 45-54 years.

e/ Data for legally married women aged 45-49 years with spouse present.

f/ Data for all women aged 35-44 years.

Table 56. Average number of children born alive per women, by woman's level of education and by rural or urban residence, selected countries of Latin America, recent years

Country and urban/rural area	Level of education					
	None	Incomplete primary	Primary	Incomplete secondary	Secondary	University
Brazil, 1970 <u>a/</u>						
Urban	5.95	4.80	3.80	2.99	2.82	2.47
Rural	6.09	5.16	4.34	3.58	3.16	2.81
Colombia, 1969						
Urban	3.9	2.9	2.2	1.6		1.2
Rural	4.9	3.8	2.7		1.8	
Peru, 1961 <u>a/</u>						
Urban	5.90		4.67		3.33	2.94
Rural	5.38		4.69		3.44	3.25
Venezuela, 1961 <u>a/</u>						
Urban	4.92 <u>b/</u>		3.94		2.69	2.42
Rural	5.69 <u>b/</u>		4.42		3.10	1.43

Sources: For Brazil, official census publication; Asociación Colombiana para el Estudio de la Población, La Población de Colombia, CICRED Series (Bogotá, 1974); Maria Davidson, "Some demographic and social correlates of fertility in Venezuela", Estadística, vol. XXVII, No. 105 (December 1969); Peru, Oficina nacional de Estadística y Censos, La Población de Peru, CICRED Series (Lima, 1974).

a/ Women with at least one live birth.

b/ Including women who did not state type of schooling received.

Table 57. Average number of children ever born alive per woman aged 45-49 years, by education of wife and husband, selected Latin American cities, 1963-1964 ^{a/}

City and country	Education of wife				Education of husband		
	None	Primary	Secondary	University	None	Completed primary	Completed secondary
Buenos Aires, Argentina	3.3	2.3	1.9	...	3.7	1.7	1.3
Río de Janeiro, Brazil	5.4	3.8	2.4	2.0	5.6	3.3	2.3
Bogotá, Colombia	7.9	5.1	4.2	3.8 ^{b/}	8.7 ^{c/}	5.0	4.4
San José, Costa Rica	6.0 ^{b/}	6.3	3.9	3.7	...	...	...
Mexico City, Mexico	6.3	5.4	3.3	3.9	6.2 ^{c/}	4.9	4.4
Caracas, Venezuela	5.6	5.0	3.2	1.0	6.7	3.4	3.5
Santiago, Chile ^{d/}	...	...	...	...	5.1	3.6	3.1

Sources: For Chile, Leon Tabah and Raul Samuel, "Preliminary findings of a survey on fertility and attitudes toward family formation in Santiago, Chile", in Clyde V. Kiser, ed., Research in Family Planning (Princeton, New Jersey, Princeton University Press, 1962). Other data taken from Angel Fucaraccio and Carmen Arretx, "Relaciones entre variables económicas y demográficas", in Centro Latinoamericano de Demografía, Los Estudios demográficos en la planificación del desarrollo (Santiago, Chile, 1975).

^{a/} Data for Chile are from a survey in 1959 and cover ever married women aged 35-50 years; data for other cities include women aged 45-49 years.

^{b/} Women aged 35-39 years.

^{c/} Women aged 40-44 years.

^{d/} Education of the head of the family.

E. Fertility differentials in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics

Rural/urban differentials

For Northern and Western Europe and for the more developed countries of Northern America and Oceania, the available evidence suggests that during the transition to lower fertility, rural fertility was almost always higher than urban fertility; and, in most cases, the rural/urban differential widened due to more rapid declines in urban birth rates. 37/ During the post-war period, though, the trend appears to have been one of a narrowing of rural/urban differences in many developed countries overseas and in Western Europe. In Australia and the United States of America, for example, the over-all contraction of the rural/urban differential since the Second World War has primarily been due to the more rapid rise of urban fertility during the baby boom period. 38/ For several countries of Western Europe, more rapid declines in rural fertility appear to have been the factor behind the post-war trend towards greater similarity in rural and urban fertility. 39/ In Southern and Eastern Europe, changes in the rural/urban differential since the Second World War have generally followed a different pattern. For the Soviet Union and several of the countries of Eastern Europe, rural/urban differences in fertility appear to have increased throughout most of the post-war period because of more rapid declines in urban fertility. 40/

Recent urban and rural crude birth rates provide a rough indication of the current situation (table 58). In general, these measures show little difference in rural and urban birth rates in Northern and Western Europe, and a pattern of somewhat lower urban fertility for most of Southern and Eastern Europe and the

37/ For reviews of differential fertility in Europe before and after the Second World War, see Gwendolyn Z. Johnson, "Differential fertility in European countries", in Ansley J. Coale, ed., Demographic and Economic Change in Developed Countries (Princeton, New Jersey, Princeton University Press for the National Bureau of Economic Research, 1960), pp. 36-76; D. V. Glass, "Fertility trends in Europe since the Second World War", Population Studies, vol. XXII, No. 1 (March 1968), pp. 103-146.

38/ For the United States of America, see Ronald A. Rindfuss and James A. Sweet, "Rural fertility trends and differentials", Family Planning Perspectives, vol. 7, No. 6 (November/December 1975), pp. 264-277; for Australia, see Population and Australia: A Demographic Analysis and Projection, First Report of the National Population Inquiry, vol. I (Canberra, 1975).

39/ See Population Bulletin, No. 7, chap. VIII; and H. Gille, "Summary review of fertility differentials in developed countries, in International Union for the Scientific Study of Population, International Population Conference, London, 1969, vol. III, pp. 2011-2025.

40/ A detailed analysis is included in Jerzy Berent, "Causes of fertility decline in Eastern Europe and the Soviet Union. Part II. Economic and social factors; Part III. Family planning and population policies", Population Studies, vol. XXIV, No. 2 (July 1970), pp. 247-292.

more developed countries outside of Europe. In many countries, however, the actual differences in fertility are masked by significant variations in the age structure and marital composition of rural and urban populations.

The lower rural birth rates for Greece and Bulgaria, for instance, are mainly the result of distortions in the age structure due to the heavy out-migration of young adults from rural communities. For most of the other countries in Southern and Eastern Europe, the gap between the crude birth rates of rural and urban areas tends to underestimate the difference in the current level of fertility, which is illustrated by the more pronounced differential in rural and urban age-specific fertility rates (table 59). The age-specific birth rates of rural and urban women in Bulgaria, Poland, Romania and the Soviet Union indicate higher rural birth rates at all ages and relatively much greater fertility at the older ages.

Another indicator of generally higher rural fertility is the differences in the average number of children ever born reported by currently married rural and urban women in a number of recent surveys undertaken in Europe and the United States ^{41/} (table 60). At most durations of marriage, the parity of rural women is higher, with the differences in rural and urban childbearing in several cases being more pronounced for women near the end of the reproductive period. The generally larger rural/urban differential among women married in earlier periods may reflect the fact that in the early stages of marriage, rural and urban women bear children at a similar rate, but urban women end childbearing sooner than rural women. The smaller differential among more recently married women probably also indicates that over time the completed family size of rural and urban women is becoming more similar.

In addition to current residence, a woman's place of birth also appears to affect her fertility, as is shown by the slightly higher fertility among rural migrants in cities than other urban-dwellers in Belgium, France and Poland (table 61). In the United States of America, studies of the fertility of the native urban population and of migrants from rural areas also generally report higher parity among rural migrants, although there is some indication that the differences in the fertility of these two groups were greater in the past.

Educational differentials

Traditionally, a pronounced negative relationship has existed between education and the number of children ever born to married women in Europe and in the other low-fertility countries. Recent studies, however, indicate that the

^{41/} The survey results are taken from Fertility and Family Planning in Europe Around 1970: A Comparative Study of Twelve National Surveys (United Nations publication, Sales No. E.76.XIII.2) (in press); for detailed description of the surveys, see chaps. I-II.

Table 58. Crude birth rates for rural and urban populations,
selected more developed countries, recent years

(Births per 1,000 population per annum)

Region and country	Year	Births per 1,000 population	
		Urban	Rural
Northern and Western Europe			
Denmark	1969	13.7	15.3
Finland	1972	14.1	11.0
Netherlands	1970	16.8 <u>a/</u>	20.6
Norway	1972	16.4	16.3
United Kingdom <u>b/</u>			
England and Wales	1971	16.1	16.0
Northern Ireland	1968	21.9	22.3
Scotland	1970	16.8	16.9
Southern and Eastern Europe			
Albania	1971	24.2	37.9
Bulgaria	1972	17.0	13.3
German Democratic Republic	1972	11.6	12.1
Greece	1971	16.7 <u>c/</u>	15.4
Poland	1972	15.5	19.5
Romania	1972	16.8	20.3
Hungary	1972	13.8	15.6
Other more developed countries			
Canada	1966	16.9	26.2
Israel	1969	23.3	36.2
New Zealand <u>d/</u>	1966	19.7	28.4
USSR	1972	16.9	19.0

Sources: Demographic Yearbook, 1969, 1973 (United Nations publications, Sales Nos. E/F.70.XIII.1 and E/F.74.XIII.1), tables 13 and 8, respectively.

a/ Excluding a separate "semi-urban" category for which the rate was 19.4 in 1970.

b/ Data tabulated by year of occurrence for England and Wales, and by year of registration for Northern Ireland and Scotland.

c/ Excluding a separate "semi-urban" category for which the rate was 15.7 in 1971.

d/ Data tabulated by year of registration rather than year of occurrence.

Table 59. Age-specific fertility rates by rural or urban residence, Union of Soviet Socialist Republics and selected Eastern European countries, recent years
(Live births per 1,000 women)

Age of women	USSR, 1971-1972		Bulgaria, 1965-1966		Poland, 1965		Romania, 1965	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
15-19 <u>a/</u>	30.2	36.1	47.3	99.0	29	34	46.4	54.5
20-24	150.5	231.5	152.9	205.2	148	231	110.1	158.6
25-29	116.7	179.2	94.0	113.5	112	186	75.2	116.8
30-34	66.0	118.6	38.8	48.9	59	115	37.4	64.1
35-39	31.8	76.8	12.9	19.0	26	64	14.8	31.7
40-44	6.8	26.3	2.9	5.2	8	22	4.3	11.8
45-49 <u>b/</u>	0.7	4.1	0.5	1.2	1	3	0.3	1.1

Sources: For Union of Soviet Socialist Republics, Economic Survey of Europe in 1974, Part II. Post-war Demographic Trends and the Outlook Until the Year 2000 (United Nations publication, Sales No. E.75.II.E.16); data for other countries taken from Jerzy Berent, "Causes of fertility decline in Eastern Europe and the Soviet Union. Part II. Economic and social factors; Part III. Family planning and population policies", Population Studies, vol. XXIV, No. 2 (July 1970), pp. 247-292.

a/ For USSR, women under 20 years of age.

b/ For Bulgaria, women aged 45 years or over.

Table 60. Average number of children ever born alive per woman married currently and only once, and under 45 years of age, by duration of marriage and rural or urban residence, selected more developed countries, recent years

Duration of marriage (years)	Belgium 1966 <u>a/</u> <u>b/</u>		Czechoslovakia, 1970		Denmark, 1970 <u>c/</u>		France, 1971		Hungary, 1965-1966		Poland, 1972 <u>b/</u> <u>d/</u>		United States of America, 1970-1971		Yugoslavia, 1970	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
0-4	1.12	1.02	1.04	0.96	1.00	0.86	1.02	0.92	0.89	0.75	1.41	1.11	1.19	0.79	1.09	0.89
5-9	2.16	1.77	1.96	1.73	2.13	1.89	2.36	1.99	1.77	1.39	2.24	1.64	2.32	2.04	2.15	1.66
10-14	2.47	2.20	2.57	2.16	2.67	2.37	2.34	2.39	2.19	1.78	2.96	2.04	2.95	2.90	2.64	1.93
15-19	2.85	2.54	2.69	2.28	2.87	2.57	2.97	2.82	2.40	2.01	3.40	2.38	3.83	3.26	3.16	2.34
20+	3.38 ^{e/}	3.44	3.52	2.60	3.24	2.70	3.26	2.83	2.86	2.45	3.98	2.81	3.58	3.43	3.55	2.57
All marriages	2.22	1.97	2.06	1.77	2.29	1.91	2.36	2.06	1.99	1.56	2.97	2.07	2.91	2.27	2.48	1.78
All marriages standardized for marital duration	2.25	2.03	2.20	1.84	2.23	1.95	2.25	2.05	1.89	1.56	2.61	1.87	2.58	2.29	2.34	1.76

Source: Fertility and Family Planning in Europe Around 1970: A Comparative Study of Twelve National Surveys (United Nations publication, Sales No. E.76.XIII.2) (in press).

a/ Including only women under 40 years of age.

b/ Excluding women married less than 18 months.

c/ Excluding women from the central municipalities of Copenhagen.

d/ Including women up to age 50.

e/ Average based on fewer than 10 currently married women.

Table 61. Average number of children born alive per woman married currently and once only, and under 45 years of age, by rural or urban place of origin and current residence, selected European countries, recent years

(Averages standardized by duration of marriage)

Place of origin and current residence	Belgium, 1966 <u>a/</u>	Finland, 1971	France, 1971	Hungary, 1965-1966	Poland, 1972 <u>b/</u>
Born in rural place, lives in rural place	2.18	2.28	2.29	1.87	2.98
Born in urban place, lives in rural place	2.27	2.20	2.72	1.91	2.79
Born in rural place, lives in urban place	2.15	1.84	2.11	1.51	2.21
Born in urban place, lives in urban place	1.92	1.82	1.99	1.56	1.93

Source: Fertility and Family Planning in Europe around 1970: A Comparative Study of Twelve National Surveys (United Nations publication, Sales No. E.76.XIII.2).

a/ Including women under 40 years of age.

b/ Including women up to age 50; not standardized by duration of marriage.

differences among education groups are contracting. ^{42/} The results of the Economic Commission of Europe Comparative Fertility Study (see table 62) generally illustrate that within a fairly narrow range the education of both the woman and her spouse is inversely related to achieved fertility (which in this case is measured by the average number of children born to currently married women standardized by marital duration).

Because of the relatively small size of a number of the samples and variations in the categorization of education, the data from the surveys given in table 62 provide only an approximate measure of the differentials. Differences between the least educated women and other women tend to be large, but only a small fraction of women fall in the lowest education class. At the other extreme, differences among the two highest educational categories are often small and, in many cases, not significant.

Studies of differential fertility based on other surveys or census data generally confirm the fairly sharp inverse relationship between schooling and parity in Southern and Eastern Europe and in the low-fertility countries in Northern America. The 1961 population census in Israel, for example, found average parity of European- and American-born women at the end of childbearing (45-49 years of age) to range from 4.0 for the least educated to 1.9 for women with post-secondary education. On the other hand, additional evidence from censuses and other surveys in Western Europe shows the emergence of a U-shaped pattern of fertility differences, with the highest fertility found among the least and the most educated women (table 63). A recent analysis of data from the 1966 Australian census also indicates that the average number of children ever born to women near the end of childbearing is lower among women who have completed secondary school than among women whose educational attainment was above or below that level. ^{43/}

A final aspect of educational differentials in fertility, which is of particular interest in countries characterized by substantial rural/urban differences in fertility, is the variation in educational differentials among rural and urban women (table 63). In Hungary, Poland and Yugoslavia, the average number of children varies inversely with education among rural and urban women, revealing that the over-all educational differences are not merely a reflection of rural/urban differences. Findings from the 1961 Canadian census follow the same pattern and also show that, especially at the lower levels of education, rural women have considerably higher levels of fertility than urban women. ^{44/}

^{42/} See Economic Survey of Europe in 1974. Part II. Post-war Demographic Trends in Europe and the Outlook Until the Year 2000 (United Nations publication, Sales No. E.75.II.E.16), chap. V; and Léon Tabah, "Rapport sur les relations entre la fécondité et la condition sociale et économique de la famille en Europe" (CDE (71)), Council of Europe Official Documents, Second European Demographic Conference, Strasbourg, 31 August-7 September 1971, vol. III, chap. 4.

^{43/} See Population and Australia: A Demographic Analysis and Projection, vol. I.

^{44/} Jacques Henripin, Trends and Factors of Fertility in Canada, 1961 Census Monograph (Ottawa, 1972).

Table 62. Average number of children born alive per woman married currently and once only, and under 45 years of age, a/ by education of wife and husband, selected more developed countries, recent years

(Averages standardized by duration of marriage)

Country and place of residence	Year	Education of wife					Education of husband				
		Less than primary	Primary	Lower secondary	Upper secondary	Post-secondary	Less than primary	Primary	Lower secondary	Upper secondary	Post-secondary
Belgium <u>a/</u>	1966	3.12 <u>b/</u>	2.09	2.00	1.95	2.07 <u>b/</u>	2.73 <u>b/</u>	2.07	1.94	2.17	2.07
Czechoslovakia	1970		2.27		1.64	1.64	2.21		1.71		1.64
Denmark <u>c/</u>	1970		2.12	1.80	1.83	1.89	2.11	1.85	1.87		1.79
England and Wales	1967		1.86		1.73	1.69	1.85		1.70		1.72
Finland	1971	2.68 <u>b/</u>	2.13		1.60	1.86	2.33	2.07	1.92		1.80
France	1971	4.25 <u>b/</u>	2.28	1.92	1.92	1.89	3.91	2.28	1.97	1.92	2.06
Hungary	1965-1966										
All		3.24	2.19	1.72	1.46	1.34	3.07	2.17	1.75	1.43	1.50
Rural		3.42	2.28	1.81	1.49	.90 <u>b/</u>	3.27	2.21	1.83	1.60	1.24
Urban		2.91 <u>b/</u>	2.01	1.55	1.43	1.30	2.38 <u>b/</u>	2.11	1.59	1.35	1.48
Poland <u>d/</u>	1972										
All		2.89	2.85	2.33	1.82	1.60	2.82	2.84	2.40	1.94	1.60
Rural		3.08	2.98	2.61	2.26	2.02	2.94	2.93	2.64	2.33	2.10
Urban		2.03	2.39	2.06	1.71	1.53	2.72	2.38	2.06	1.82	1.55
United States of America	1970-1971		2.94	2.67	2.24	2.05	2.87		2.50	2.27	2.12
Yugoslavia	1970										
All		2.78	2.03	1.82	1.43	1.34	3.09	2.28	2.01	1.69	1.55
Rural		2.78	2.08	2.02	1.30	1.14 <u>b/</u>	3.03	2.30	2.20	2.01	1.61
Urban		2.77	1.82	1.61	1.41	1.31	4.09 <u>b/</u>	2.08	1.74	1.57	1.54

Source: Fertility and Family Planning in Europe around 1970: A Comparative Study of Twelve National Surveys (United Nations publication, Sales No. E.76.XIII.2) (in press).

a/ Including women under 40 years of age.

b/ Averages based on 10-50 currently married women.

c/ Excluding women from the central municipalities of Copenhagen.

d/ Including women up to age 50.

Table 63. Average number of children ever born alive per woman married currently and only once, by woman's level of education after a specified duration of marriage, France, 1962

Level of education	Duration of marriage				
	5 years	10 years	15 years	20 years	30 years
Less than primary	1.22	1.85	2.26	2.49	2.60
Primary	1.10	1.64	1.96	2.08	2.10
Lower secondary	1.02	1.53	1.82	1.89	2.02
Upper secondary	1.13	1.68	1.93	1.96	2.25
Post-secondary	1.21	1.89	2.23	2.29	1.87 <u>a/</u>

Source: Léon Tabah, "Rapport sur les relations entre la fécondité et la condition sociale et économique de la famille en Europe" (CDE (71)), Council Europe, Official Documents, Second European Demographic Conference, Strasbourg, 31 August-7 September 1971, vol. III.

a/ Average based on a small number of currently married women.

Annex

STATISTICAL DATA: TABLES 64-69

Table 64. Changes in supply and quality of data on fertility in countries of Latin America

Region and country	Most recent available year			Around 1960: most recent revision			Estimates given in Population Bulletin, No. 7 for most recent year around 1960							
	Method of estimation	Year or period	Crude birth-rate (live births per 1,000 population)	Year or period	Gross reproduction rate	Method of estimation	Year or period	Crude birth-rate (live births per 1,000 population)	Year or period	Gross reproduction rate	Method of estimation	Year or period	Crude birth-rate (live births per 1,000 population)	Gross reproduction rate
Caribbean														
Cuba	A	1973	25.3	1969-1971 ^{a/}	1.88	C (6) ^{b/}	1960	30	...	...	C (1)	1945-1948	34	2.1
Dominican Republic	C (2) ^{d/}	1970	46	1970	3.5	C (1) ^{d/}	1960	48	1960	3.5	C (1) ^{e/}	1950-1955	44	3.2
Guadeloupe	A	1973	28.0	1967	2.66	A	1960	38.1	1960	2.79	A	1960	38.8	2.8
Haiti	B, C (4) ^{f/}	1973	36	1973	2.4	C (6) ^{g/}	1960	44	...	...	C (1) ^{e/}	1935-1940	45	2.8
Jamaica	A	1973	31.3	1969-1971 ^{b/}	2.71	A	1960	42.0	1960	2.78	A	1960	42.7	2.7
Martinique	A	1973	22.4	1970	2.28	A	1960	38.3	1960	2.83	A	1960	38.5	2.8
Puerto Rico	A	1973	24.1	1972	1.49	A	1960	32.2	1960	2.27	A	1960	32.2	2.3
Trinidad and Tobago	A	1971	35.3	1970	1.68	A	1960	39.5	1960	2.72	A	1960	39.5	2.7
Middle America														
Costa Rica	A	1972	31.3	1972	2.13	A	1960	47.0	1960	3.48	A	1960	50.2	3.5
El Salvador	A	1972	40.7	1970	2.94	A	1960	49.5	1960	3.46	A	1961	49.6	3.5
Guatemala	A	1973	41.6	1970	2.80	A	1960	46.7	1960	3.23	A	1960	49.5	3.4
Honduras	A ^{i/}	1970-1972	49	1970-1972	3.6	C (1) ^{d/}	1961	51	1961	3.5	C (1)	1951-1956	54	3.6
Mexico	A	1972	44.7	1970	3.31	A	1960	46.0	1960	3.31	A	1960	46.0	3.1
Nicaragua	C (5) ^{k/}	1965-1970 ^{l/}	49	1970 ^{m/}	3.5	C (4) ^{n/}	1963	46	1963	3.3	C (1)	1940-1945	49	3.1
Panama	A	1973	33.2	1973	2.19	A	1960	39.2	1960	2.75	A	1960	41.0	2.7
Temperate South America														
Argentina	A	1968	21.9	1965	1.48	A	1960	23.7	1960	1.51	A	1961	22.3	1.4
Chile	A	1970	27.4	1970	1.78	A	1960	38.3	1960	2.51	A	1960	35.5	2.2
Uruguay	A	1971	22.6	1963 ^{o/}	1.42	A	1963	23.8	1963	1.42	D	1957	22.1	1.3
Tropical South America														
Bolivia	C (5) ^{k/}	1965-1970 ^{l/}	44	1960 ^{p/}	3.0	C (6) ^{q/}	1960	44	1960	3.0	C (1)	1940-1945	43	2.9
Brazil	C (5)	1970 ^{r/}	36	1970 ^{r/}	2.4	C (6) ^{s/}	1960	40	1960	3.0	C (1)	1940-1945	43	3.0
Colombia	B ^{t/}	1967-1968	41	1967-1968	2.9	C (5) ^{u/}	1955-1960	46	...	...	C (1)	1941-1946	44	2.9
Ecuador	C (5) ^{k/}	1965-1970 ^{l/}	45	1965 ^{h/}	3.3	A ^{u/}	1960	46.0	1960	3.35	C (1)	1940-1945	47	3.2
Guyana ^{v/}	A	1968	38.2	...	...	A	1960	42.2	1960	3.0	A	1960	42.9	3.0
Paraguay	C (1)	1965-1970 ^{l/}	44	1960 ^{w/}	3.2	C (4) ^{x/}	1960-1965	44	1960 ^{y/}	3.2	C (1)	1940-1945	43	2.9
Peru	B ^{t/}	1969	43	1969	3.0	C (3)	1961	45	1961	3.1	C (1)	1930-1935	46	3.1
Surinam ^{y/}	A	1970	36.5	1970	2.69	A	1960	46.1	...	...	A	1961	44.5	...
Venezuela	A ^{aa/}	1971	38.3	1971	2.61	A	1960	46.0	1961	3.25	A	1960	45.1	3.1

(Source and foot-notes on following page)

Source: Unless otherwise noted, rates have been compiled from data available from the Statistical Office of the United Nations or from official records of the country concerned.

Note: Methods of estimation:

A: "complete" birth registration statistics;

B: birth data from sample survey;

C: other estimates, including estimates whose basis cannot be clearly determined from available information;

(1) "reverse-survival" method;

(2) on the number of children reported as having been born to each woman during her lifetime;

(3) on the reported births occurring during the 12 months prior to a survey or census and the number of children ever born, both by age of mother;

(4) on the analysis of the age composition of the population, supplemented by indications of the rate of natural increase or of an approximate level of mortality;

(5) on the number of reported births by age of mother in the year preceding the census, adjusted by graphic techniques;

(6) basis either unknown or cannot be clearly determined from available information;

D: either no data available or statistics so deficient as to be useless for describing order of magnitude.

a/ Estimated by applying the 1968 distribution of live births reported by age of mother to the average number of births reported for 1969-1971.

b/ Cuba, Ministerio de Salud Pública, Cuba: Organización de los servicios y nivel de salud (La Habana, 1974), p. 69.

c/ A gross reproduction rate of 2.06 for 1953 has been calculated by Rodolfo Mezquita, cited in M. H. Henriques, "Niveles de la fecundidad in América Latina", CELADE report S.444/38, Santiago, Chile, 1970.

d/ Augustín García L., República Dominicana: Estudio de la evolución demográfica en el período 1950-1970 y proyecciones de la población total, período 1970-2000, CELADE Series A, No. 19 (San José, Costa Rica, 1974), pp. 85 and 88.

e/ "Reverse-survival" estimates based on age data of relatively poor or uncertain reliability.

f/ Estimated by the United Nations Secretariat.

g/ César Peláez and George Martine, "Population trends in the 1960s: some implications for development", Economic Bulletin for Latin America, vol. XVIII, Nos. 1/2 (United Nations publication, Sales No. E.73.II.G.3), p. 98. Estimates based on census and vital statistics information and on projections by Centro Latinoamericano de Demografía.

(foot-notes continued on following page)

h/ World Bank and International Development Association, Current Economic Position and Prospects, Report No. 257a-JM (Washington, DC, 1974), vol. II, annex I, "Population, labour force and employment in Jamaica", p. 3.

i/ Antonio Ortega, "Estimaciones demográficas en países con estadísticas incompletas: la Encuesta Demográfica Nacional de Honduras (EDENH)", Notas de Población (Centro Latinoamericano de Demografía), Año 1, vol. 2 (August 1973), pp. 37-43. Gross reproduction rate calculated from data on age-specific fertility using official data on ratio of male to female births.

j/ Carmen Arretx, "Proyecciones de la población de Honduras, por sexo y grupos de edad, 1961-1981", CELADE Series A, No. 70; Santiago, Chile, 1967 (mimeographed).

k/ Provisional projections by the United Nations Latin American Demographic Centre (CELADE) using 1950 as the base year and taking into account all available information that would reflect possible changes in fertility.

l/ Boletín Demográfico (Centro Latinoamericano de Demografía), vol. VII, No. 13 (January 1974), table 3.

m/ Data on United Nations Latin American Demographic Centre (CELADE).

n/ Guillermo A. Macció, "Nicaragua: proyecciones de la población por sexo y grupos de edad, 1950-1978", CELADE Series A, No. 71; Santiago, Chile, 1967, p. 17 (mimeographed).

o/ Agustín García L., Uruguay: Proyección de la población por sexo y grupos de edades, 1963-2003, CELADE Series A, No. 101 (Santiago, Chile, 1970), p. 12.

p/ Jorge Somoza, cited in Guillermo A. Macció, Ajuste e interpolación de tasas de fecundidad por edad (Aplicación a los países de América Latina), CELADE SUESEDE Series AS, No. 7 (San José, Costa Rica, 1969), p. 2. Gross reproduction rate calculated from data on age-specific fertility assuming a sex ratio of 105.

q/ J. Somoza, cited in G. A. Macció, Ajuste e interpolación de tasas de fecundidad por edad ..., p. 2.

r/ Richard Irwin and Evelyn Spielman, "Estimativas y projeções preliminares das taxas de fecundidade: Brasil, 1970 a 2000", Revista Brasileira de Estatística, vol. 34, No. 134 (April/June 1973), pp. 253 and 261. Gross reproduction rate calculated from data on age-specific fertility assuming a sex ratio of 105.

s/ Henry G. Elkins, "Cambio de fecundidad", in Rodolfo Heredia B. and Elena Prada S., eds., La Fecundidad en Colombia, Encuesta nacional de fecundidad (Bogotá, Asociación Colombiana de Facultades de Medicina, 1973), pp. 31 and 34. Gross reproduction rate calculated from data on age-specific fertility assuming a sex ratio of 105.

t/ A gross reproduction rate of 3.20 for 1965 has been calculated by J. Arévalo, cited in G. A. Macció, Ajuste e interpolación de tasas de fecundidad por edad ..., p. 4.

(foot-notes to table 64 continued on following page)

u/ Pedro M. Merlo, Ecuador: Evaluación y ajuste de los censos de población de 1950 y 1962 y proyecciones de la población total del año 1960 al año 2000, CELADE Series C, No. 113 (Santiago, Chile, 1969), p. 23. Gross reproduction rate based on registration statistics regarded as complete as of 1965. Method of estimation A was used. Crude birth-rate calculated from data given on total births and estimated population.

y/ Excluding Amerindian population.

w/ Jorge Vidal L., Paraguay: Proyección de la población por sexo y grupos de edades, 1960-2000, CELADE Series A, No. 95 (Santiago, Chile, 1969), pp. 7, 10 and 25. Method of estimation C (4) used for 1960 gross reproduction rate.

x/ Centro de Estudios de Población y Desarrollo, cited in Arthur M. Conning, "Latin American fertility trends and influencing factors", CELADE report S.91.12, Santiago, Chile, 1972.

y/ Excluding Indian and Negro population living in tribes.

z/ A gross reproduction rate of 3.2 was calculated for 1964 from data presented in H. E. Lamur, The Demographic Evolution of Surinam, trans. by Dirk H. van der Elst (The Hague, Martinus Nijhoff, 1973), p. 56.

aa/ Taken from Universidad del Zulia, Facultad de Ciencias Económicas y Sociales, Centro de Investigaciones Económicas; and Comité Internacional de Coordinación de la Investigación Nacional en Demografía (CICRED), Venezuela: Aspectos demográficos de la población, Año Mundial de la Población (Maracaibo, Venezuela, 1974), pp. 12 and 14.

Table 65. Comparison of crude and standardized birth rates in specified countries of Latin America having relatively good statistics, selected years, 1950-1970

	Caribbean				
	Guadeloupe	Jamaica	Martinique	Puerto Rico	Trinidad and Tobago
Crude birth rate					
1950	37.3	33.1	38.0	38.5	...
1955	40.1	36.2	39.8	35.2	41.9
1960	38.1	42.0	38.3	32.2	39.5
1965	35.3	39.3 ^{a/}	35.0	30.8	32.8
1970	32.4 ^{b/}	34.4	27.5	24.8	24.5
Percentage change					
1950-1955	7.5	9.2	4.9	- 8.6	...
1955-1960	- 5.1	16.2	- 3.8	- 8.5	- 5.7
1960-1965	- 7.3	- 6.4 ^{c/}	- 8.7	- 4.3	-17.0
1965-1970	- 8.1 ^{d/}	-12.5 ^{e/}	-21.4	-19.4	-25.3
1950-1960	2.0	26.8	0.9	-16.4	...
1960-1970	-15.0 ^{f/}	-18.1	-28.2	-22.9	-38.0
Age-standardized birth rate ^{g/}					
1950	37.3	33.1	38.0	38.5	...
1955	43.3	39.1	43.8	36.7	41.9 ^{h/}
1960	42.4	47.3	43.7	35.1	39.9 ^{h/}
1965	41.1	48.4 ^{a/}	43.0	31.3	32.4 ^{h/}
1970	39.9 ^{b/}	46.9	35.7	24.5	24.5 ^{h/}
Percentage change					
1950-1955	16.0	18.1	15.5	- 4.7	...
1955-1960	- 2.0	20.9	- 0.4	- 4.5	- 4.8
1960-1965	- 3.1	2.4 ^{c/}	- 1.6	-10.7	-18.8
1965-1970	- 3.1 ^{d/}	- 3.1 ^{e/}	-17.0	-21.9	-24.3
1950-1960	13.7	42.7	15.0	- 9.0	...
1960-1970	- 6.1 ^{f/}	- 0.8	-18.3	-30.2	-38.5

Table 65 (continued)

	Middle America				
	Costa Rica	El Salvador	Guatemala	Mexico	Panama
Crude birth rate					
1950	...	48.7	47.2	...	31.3
1955	...	49.2	46.2	45.1	37.7
1960	47.0	49.5	46.7	46.0	39.1
1965	42.1	46.9	43.9	45.7	38.4
1970	33.3	40.0	40.0	43.6	37.2
Percentage change					
1950-1955	...	1.0	- 2.1	...	20.4
1955-1960	...	0.6	1.1	1.9	3.7
1960-1965	-10.5	- 5.3	- 6.1	- 0.5	- 1.8
1965-1970	-21.0	-14.7	- 8.7	- 4.7	- 3.1
1950-1960	...	1.6	- 1.0	...	24.9
1960-1970	-29.3	-19.2	-14.3	- 5.2	- 4.9
Age-standardized birth rate ^{g/}					
1950	...	48.7	47.2	...	31.3
1955	...	50.1	46.5	45.1 ^{h/}	33.6
1960	47.0 ^{i/}	51.9	48.7	46.7 ^{h/}	41.0
1965	42.5 ^{i/}	50.8	46.0	47.7 ^{h/}	40.6
1970	32.0 ^{i/}	43.7	41.9	45.4 ^{h/}	38.7
Percentage change					
1950-1955	...	3.0	- 1.5	...	23.2
1955-1960	...	3.5	4.7	3.5	6.3
1960-1965	- 9.6	2.2	- 5.4	2.2	- 1.0
1965-1970	-24.7	-13.9	- 9.0	- 4.8	- 4.7
1950-1960	...	6.6	3.1	...	30.9
1960-1970	-31.9	-15.7	-13.9	- 2.7	- 5.7

Table 65 (continued)

	Temperate South America	Tropical South America
	Argentina	Venezuela
Crude birth rate		
1950	25.7	43.3
1955	...	...
1960	23.7	45.3 ^{j/}
1965	22.4	...
1970	...	38.3 ^{k/}
Percentage change		
1950-1955	...	...
1955-1960	...	...
1960-1965	- 5.5	...
1965-1970	...	...
1950-1960	- 7.8	4.6
1960-1970	...	-15.5
Age-standardized birth rate ^{g/}		
1950	25.7	43.3
1955	...	...
1960	25.2	51.2 ^{j/}
1965	24.8	...
1970	...	40.6 ^{k/}
Percentage change		
1950-1955	...	...
1955-1960	...	...
1960-1965	- 1.4	...
1965-1970	...	...
1950-1960	- 1.9	18.2
1960-1970	...	-20.7

(Foot-notes on following page)

(Foot-notes to table 65)

a/ For 1964.

b/ For 1967.

c/ For 1960-1964.

d/ For 1965-1967.

e/ For 1964-1970.

f/ For 1960-1967.

g/ Unless otherwise indicated, standardized on the basis of the 1950 age distribution.

h/ Standardized on the basis of the 1955 age distribution.

i/ Standardized on the basis of the 1960 age distribution.

j/ For 1961.

k/ For 1971.

Table 66. Percentage change in crude birth rates, gross reproduction rates and age-specific fertility rates in countries of Latin America having relatively good statistics, selected periods, 1950-1970

Region and country	Period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Caribbean											
Cuba	1953-1965	...	7.7	7.5	40.5	59.5	32.6	4.8	-15.3	-66.8	-88.4
	1965-1970	-17.3	-15.3	-15.4	-26.1	-18.8	-11.8	-13.3	-14.2	20.6	11.1
	1953-1970	...	-8.7	-9.0	3.8	29.5	16.9	-9.2	-27.4	-60.0	-87.1
Guadeloupe	1950-1955	7.5	16.0	18.0	-5.2	6.0	10.3	30.6	31.0	52.2	35.0
	1955-1960	-5.1	-2.4	-1.0	-16.2	-6.7	-5.0	2.5	8.9	8.3	0.3
	1960-1965	-7.3	-2.5	-3.4	-4.3	-0.6	4.2	-6.4	-11.4	-9.8	34.2
	1965-1967	-8.4	-2.4	-3.5	-9.3	1.8	0.2	-3.9	-9.9	-4.4	-34.4
	1950-1960	2.0	13.2	16.7	-20.5	-1.1	4.8	33.8	42.6	64.7	35.3
	1960-1967	-15.0	-4.9	-6.8	-13.3	1.1	4.4	-10.1	-20.1	-13.7	-12.0
	1955-1965	-12.0	-4.9	-4.4	-19.8	-7.2	-1.0	-4.0	-3.5	-2.3	34.6
	1950-1965	-5.4	10.3	12.7	-23.9	-1.7	9.2	25.3	26.4	48.7	81.6
	1955-1967	-19.4	-7.2	-7.8	-27.3	-5.6	-0.9	-7.8	-13.0	-6.6	-11.8
	1950-1967	-13.3	7.7	8.8	-31.0	0.0	9.4	20.3	13.9	42.2	19.1
Jamaica	1950-1955	9.2	18.2	17.6	19.5	17.2	25.6	15.8	7.7	10.5	-6.9
	1955-1960	16.2	22.7	21.4	26.2	15.5	11.3	34.6	27.4	35.8	40.2
	1960-1964	-6.4	2.5	3.2	-4.6	-1.8	2.6	5.8	19.9	5.4	1.7
	1964-1970	-12.7	-4.9	-3.7	2.4	-0.1	-2.2	-4.9	-15.7	-8.4	-4.8
	1950-1960	26.9	45.0	42.8	50.8	35.4	39.8	55.8	37.3	50.0	30.4
	1960-1970	-18.1	-2.5	-0.7	-2.2	-1.9	-0.3	0.7	1.1	-3.5	-2.5
	1955-1964	8.7	25.7	25.3	20.4	13.4	14.2	42.4	52.8	43.2	42.6
	1950-1964	18.7	48.6	47.4	43.9	32.9	43.4	64.9	64.6	58.2	32.7
1950-1970	3.9	41.1	41.9	47.5	32.9	40.2	56.8	38.9	45.0	27.0	
Martinique	1950-1955	4.9	17.1	16.1	2.5	5.9	17.6	34.4	9.9	19.4	-0.4
	1955-1960	-3.8	-1.1	0.8	-23.2	-0.8	-4.9	2.7	12.7	8.6	23.2
	1960-1965	-8.7	0.9	-1.5	-5.9	-3.3	3.8	-4.6	-2.6	1.1	-2.5
	1965-1970	-21.4	-20.0	-19.2	3.2	-1.0	-8.7	-28.9	-34.8	-39.6	-37.0
	1950-1960	0.9	15.8	17.1	-21.3	5.1	11.8	38.0	23.9	29.6	22.7
	1960-1970	-28.2	-19.4	-20.4	-2.7	-4.3	-11.7	-32.2	-36.5	-39.0	-38.5
	1955-1965	-12.2	-0.2	-0.7	-27.7	-4.0	-1.4	-2.1	9.8	9.7	20.1
	1950-1965	-7.9	16.9	15.3	-25.9	1.6	16.0	31.6	20.6	31.0	19.6
	1955-1970	-30.9	-20.3	-19.8	-25.3	-11.3	-16.1	-30.4	-28.5	-33.8	-24.5
	1950-1970	-27.6	-6.6	-6.8	-23.4	0.7	5.9	-6.5	-21.4	-20.9	-24.5

Table 66 (continued)

Region and country	Period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Caribbean (continued)											
Puerto Rico	1950-1955	- 8.6	- 5.1	- 5.0	1.1	- 1.1	- 8.8	-11.1	- 8.1	12.2	- 3.2
	1955-1960	- 8.5	- 6.2	- 6.0	- 3.9	1.4	- 0.8	-12.6	-18.1	-15.6	-20.0
	1960-1965	- 4.3	-13.9	-13.4	14.4	- 6.5	-16.3	-25.1	-22.0	-34.8	-27.3
	1965-1970	-19.4	-21.1	-21.3	-33.5	-25.4	- 7.0	-10.6	-32.5	-35.9	-50.4
	1950-1960	-16.4	-11.0	-10.7	- 2.8	0.3	- 9.5	-22.3	-24.7	- 5.2	-22.6
	1960-1970	-22.9	-32.0	-31.8	-24.0	-30.3	-22.1	-33.0	-47.4	-58.2	-63.9
	1955-1965	-12.5	-19.2	-18.6	9.9	- 5.2	-17.0	-34.5	-36.2	-44.9	-41.8
	1950-1965	-20.0	-23.4	-22.7	11.1	- 6.2	-24.3	-41.8	-41.3	-38.2	-43.7
	1955-1970	-29.5	-36.2	-35.9	-26.9	-29.3	-22.8	-41.4	-56.9	-64.7	-71.1
	1950-1970	-35.5	-39.5	-39.1	-26.2	-30.1	-29.6	-48.0	-60.4	-60.4	-72.0
	1950-1955	11.7	11.7	21.7	...	...	...	...	...	...	...
Trinidad and Tobago	1955-1960	- 5.7	- 3.6	- 4.1	-26.7	- 2.9	2.1	5.0	- 1.6	- 8.1	-11.7
	1960-1965	-17.0	-18.6	-18.6	-19.6	-21.1	-17.2	-22.3	-10.5	-12.6	-16.7
	1965-1970	-25.3	-24.1	-24.5	-22.0	-16.8	-28.4	-29.4	-31.3	-15.2	-16.2
	1960-1970	-38.0	-38.2	-38.6	-37.3	-34.4	-40.7	-45.2	-38.5	-25.9	-30.2
	1955-1965	-21.7	-21.6	-22.0	-41.0	-23.4	-15.4	-18.4	-11.9	-19.6	-26.5
	1955-1970	-41.6	-40.5	-41.1	-54.0	-36.3	-39.4	-42.4	-39.5	-31.9	-38.4
Middle America											
Costa Rica	1960-1965	-10.5	- 9.3	- 8.8	- 6.2	-15.7	-10.3	- 8.2	- 1.6	- 0.6	7.0
	1965-1970	-21.0	-25.3	-25.8	- 6.3	-21.6	-30.7	-29.2	-30.9	-23.0	-24.6
	1950-1960	...	10.1	10.4	14.2	13.9	7.3	12.7	7.7	6.9	1.3
	1960-1970	-29.3	-32.2	-32.3	-12.1	-33.9	-37.8	-35.1	-32.1	-23.5	-19.4
	1950-1970	...	-25.3	-25.2	0.2	-24.7	-33.3	-26.8	-26.8	-18.3	-18.5
El Salvador	1950-1955	1.0	3.9	2.9	8.3	- 0.3	5.3	- 3.5	10.2	4.6	- 6.3
	1955-1960	0.6	4.5	4.5	1.0	- 1.0	- 0.3	16.7	8.8	9.0	16.9
	1960-1965	- 5.1	- 0.8	- 1.7	1.1	- 1.0	- 8.4	- 6.4	9.2	5.2	9.6
	1965-1970	-14.7	-14.2	-13.8	-10.6	-15.0	-14.4	-16.5	-14.8	- 0.8	-10.5
	1950-1960	1.6	8.6	7.6	9.4	- 1.3	5.0	12.5	19.9	14.1	9.6
	1960-1970	-19.1	-14.9	-15.2	- 9.6	-15.8	-21.6	-21.8	- 6.9	4.3	- 1.8
	1955-1965	- 4.6	3.7	2.7	2.2	- 2.0	- 8.7	9.2	18.8	14.7	28.2
	1950-1965	- 3.6	7.8	5.8	10.7	- 2.3	- 3.8	5.3	31.0	20.0	20.1
	1955-1970	-18.6	-11.0	-11.4	- 8.7	-16.7	-21.8	- 8.8	1.3	13.7	14.8
1950-1970	-17.8	- 7.6	- 8.8	- 1.1	-16.9	-17.7	-12.0	11.6	19.0	7.6	

Table 66 (continued)

Region and country	Period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Middle America (continued)											
Guatemala	1950-1955	- 2.1	- 3.3	- 2.6	0.6	2.0	- 1.1	- 2.2	-12.7	- 0.6	-16.6
	1955-1960	1.1	4.6	4.7	- 2.6	8.7	4.6	8.5	5.8	- 3.4	- 7.3
	1960-1965	- 6.1	- 5.0	- 4.9	- 9.5	- 7.6	- 1.4	- 4.2	- 1.3	- 6.4	-12.4
	1965-1970	- 8.7	- 8.7	- 9.2	- 6.2	- 7.5	-12.6	- 7.1	-11.5	- 9.7	- 8.2
	1950-1960	- 1.0	1.2	1.9	- 2.0	10.8	3.4	6.1	- 7.6	- 4.1	-22.7
	1960-1970	-14.3	-13.2	-13.7	-15.1	-14.6	-13.9	-11.0	-12.7	-15.5	-19.6
	1955-1965	- 5.0	- 0.6	- 0.5	-11.8	0.4	3.0	4.0	4.4	- 9.6	-18.9
	1950-1965	- 7.0	- 3.9	- 3.1	-11.3	2.4	1.9	1.6	- 8.9	-10.2	-32.3
	1955-1970	-13.3	- 9.3	- 9.7	-17.3	- 7.2	-10.0	- 3.4	- 7.6	-18.4	-25.5
	1950-1970	-15.1	-12.2	-12.0	-16.8	- 5.3	-10.9	- 5.5	-19.3	-18.9	-37.8
Mexico	1955-1960	1.9	5.1	5.0	- 7.8	0.4	1.0	17.0	6.3	20.7 ^{a/}	
	1960-1965	- 0.5	4.2	4.2	- 3.1	- 1.8	1.7	- 2.1	5.6	56.1 ^{a/}	
	1965-1970	- 4.7	- 4.1	- 4.1	-14.1	- 4.8	- 4.4	- 3.2	- 4.1	3.3 ^{a/}	
	1960-1970	- 5.2	0.0	- 0.1	-16.8	- 6.6	- 2.8	- 5.3	1.3	61.3 ^{a/}	
	1955-1965	1.4	9.5	9.4	-10.7	- 1.4	2.6	14.5	12.2	88.5 ^{a/}	
1955-1970	- 3.3	4.2	4.9	-23.3	- 6.2	- 1.9	10.8	7.6	94.8 ^{a/}		
Panama	1950-1955	20.2	24.9	23.5	24.3	16.2	27.5	25.3	32.0	39.7	-29.9
	1955-1960	3.9	8.2	7.1	0.9	8.3	- 0.5	14.3	14.4	20.8	42.2
	1960-1965	- 1.9	- 1.7	- 0.9	- 2.3	- 2.4	1.9	- 3.0	1.5	1.8	-11.2
	1965-1970	- 3.2	- 4.2	- 4.2	- 5.1	- 5.0	- 8.7	- 0.4	- 3.1	9.9	18.1
	1950-1960	24.9	35.2	32.4	25.4	25.8	26.9	43.3	51.1	68.8	- 0.3
	1960-1970	- 5.1	- 5.8	- 5.1	- 7.2	- 7.2	- 7.0	- 3.5	- 1.6	11.8	4.9
	1955-1965	1.9	6.4	6.2	- 1.4	5.0	1.4	10.8	16.2	22.9	26.3
	1950-1965	22.5	32.9	31.2	22.6	22.8	29.3	38.9	53.4	71.8	-11.5
	1955-1970	- 1.3	1.9	1.7	- 6.4	0.5	- 7.5	10.4	12.6	35.1	49.2
	1950-1970	18.6	27.3	25.6	16.4	16.7	18.0	38.3	48.7	88.7	4.6
Temperate South America											
Argentina	1950-1960	- 7.8	- 2.6	- 2.9	4.3	10.9	- 5.1	- 8.6	-12.2	- 8.2	-39.4
	1960-1965	- 5.6	- 1.6	- 1.6	1.0	- 3.4	0.0	0.1	-15.1	-14.4	- 1.6

Table 66 (continued)

Region and country	Period	Crude birth rate	Gross reproduction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Temperate South America (continued)											
Chile	1952-1956	8.6	8.2	8.2	6.5	1.0	19.2	8.9	2.1	9.9	- 0.6
	1956-1960	4.1	5.5	5.4	7.9	6.5	0.6	16.5	5.8	-10.6	-13.0
	1960-1965	- 8.6	- 7.2	- 7.1	0.6	- 0.4	-11.4	-15.9	2.1	- 7.3	-29.2
	1965-1970	-21.7	-23.6	-23.6	- 8.7	-16.2	-19.1	-31.4	-40.0	-23.8	-27.5
	1952-1960	13.0	14.1	14.0	15.0	7.6	20.0	26.8	8.0	- 1.8	-13.5
	1960-1970	-28.5	-29.1	-29.0	- 8.2	-16.6	-28.4	-42.3	-38.8	-29.4	-48.7
	1956-1965	- 4.9	- 2.1	- 2.1	8.6	6.1	-10.9	- 2.0	8.0	-17.1	-38.4
	1952-1965	3.2	5.9	5.9	15.7	7.2	6.3	6.7	10.2	- 9.0	-38.8
	1956-1970	-25.5	-25.2	-25.2	- 0.9	-11.1	-27.9	-32.8	-35.3	-36.9	-55.4
	1952-1970	-19.2	-19.1	-19.1	5.6	-10.2	-14.0	-26.8	-33.9	-30.6	-55.6
Tropical South America											
Guyana	1950-1960	...	15.4	...	...	...	...	...	...	...	...
Surinam	1965-1970	-13.7	-13.2	-12.5	-27.7	-12.4	-10.5	-14.4	- 8.0	5.5	...
Venezuela	1950-1961	4.6	18.2	19.4	18.8	19.0	21.1	13.6	30.3	23.5	-20.2
	1961-1971	-15.5	-19.7	-19.6	-25.8	-23.5	-22.1	-12.8	-18.2	- 2.2	-24.7
	1950-1971	-11.5	- 5.1	- 4.0	-11.9	- 9.0	- 5.7	- 0.1	- 6.7	-20.8	-39.9

Note: Percentages were calculated using rates carried to three decimal places.

a/ For ages 40-49.

Table 67. Percentage change in crude and standardized birth rates in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, 1950-1970

	Eastern Europe					
	Bulgaria	Czechoslovakia	German Democratic Republic	Hungary	Poland	Romania
Crude birth rate						
1950	...	23.3	...	20.9	30.8	...
1955	20.1	20.3	16.3	21.4	29.2	...
1960	17.8	15.9	17.0	14.7	22.6	19.1
1965	15.3	16.4	16.5	13.1	17.5	14.6
1970	16.3	15.9	13.9	14.7	16.8	21.1
Percentage change						
1950-1955	...	-12.9	...	2.3	-5.1	...
1955-1960	-11.6	-21.4	4.0	-31.5	-22.5	...
1960-1965	-13.9	2.8	-2.8	-10.7	-22.8	-23.6
1965-1970	6.6	-2.6	-15.9	12.1	-4.0	44.1
1950-1960	...	-31.6	...	-30.0	-26.5	...
1960-1970	-8.2	0.2	-18.3	0.1	-25.8	10.2
Age-standardized birth rate <u>a/</u>						
1950	...	23.3	...	20.9	30.8	...
1955	20.1 ^{b/}	21.8	16.3 ^{b/}	22.6	30.4	...
1960	19.5 ^{b/}	18.5	16.3 ^{b/}	16.5	26.0	19.1 ^{c/}
1965	17.6 ^{b/}	18.3	16.5 ^{b/}	14.8	21.8	15.6 ^{c/}
1970	18.5 ^{b/}	16.0	14.8 ^{b/}	16.2	19.2	23.6 ^{c/}
Percentage change						
1950-1955	...	-6.3	...	8.1	-1.2	...
1955-1960	-3.0	-15.2	0.0	-27.1	-14.6	...
1960-1965	-9.8	-1.2	0.8	-10.3	-16.0	-18.5
1965-1970	5.3	-12.1	-10.1	9.2	-11.7	51.4
1950-1960	...	-20.6	...	-21.2	-15.5	...
1960-1970	-5.1	-13.1	-9.4	-2.1	-25.9	23.4

Table 67 (continued)

	Northern Europe						
	Denmark	Finland	Ireland	Norway	Sweden	United Kingdom	
						England and Wales	Scotland
Crude birth rate							
1950	18.6	24.5	...	19.1	16.5	15.9	18.1
1955	17.3	21.2	21.1	18.5	14.8	15.0	18.1
1960	16.6	18.5	21.4	17.3	13.7	17.1	19.6
1965	18.0	17.1	22.1	17.8	15.9	18.1	19.3
1970	14.4	14.0	21.7	16.6	13.7	16.1	16.8
Percentage change							
1950-1955	-7.1	-13.4	...	-3.0	-10.2	-5.5	0.1
1955-1960	-4.1	-12.5	1.6	-6.8	-7.5	14.1	8.1
1960-1965	8.6	-8.0	3.1	3.0	16.2	5.8	-1.2
1965-1970	-20.3	-17.9	-1.6	-6.5	-13.8	-11.2	-13.3
1950-1960	-10.8	-24.2	...	-9.6	-17.0	7.8	8.1
1960-1970	-13.5	-24.4	1.5	-3.7	0.2	-6.0	-14.4
Age-standardized birth rate <u>a/</u>							
1950	18.6	24.5	...	19.1	16.5	15.9	18.1
1955	18.4	22.6	21.1 ^{b/}	20.6	15.9	16.1	18.0
1960	18.2	20.8	23.5 ^{b/}	21.5	15.5	19.3	20.7
1965	19.0	18.8	25.0 ^{b/}	21.7	17.1	20.4	21.2
1970	14.1	14.2	23.6 ^{b/}	18.5	13.7	17.2	17.8
Percentage change							
1950-1955	-1.2	-7.8	...	7.6	-3.1	1.3	-0.8
1955-1960	-1.1	-8.0	11.6	4.3	-2.8	19.8	15.1
1960-1965	4.4	-9.6	6.1	1.1	10.1	6.0	2.4
1965-1970	-25.9	-24.4	-5.4	-14.9	-19.6	-15.7	-15.7
1950-1960	-2.3	-15.1	...	12.3	-5.8	21.4	14.2
1960-1970	-22.6	-31.7	0.5	-13.9	-11.5	-10.9	-13.7

Table 67 (continued)

	Southern Europe						
	Albania	Greece	Italy	Malta	Portugal	Spain ^{d/}	Yugoslavia
Crude birth rate							
1950	...	...	19.5	...	24.4	20.2	30.2
1955	44.5	19.7 ^{e/}	18.0	27.6 ^{f/}	24.4	20.5	26.9
1960	43.4	18.9	18.3	26.1	24.0	21.8	23.5
1965	35.2	17.7	19.2	17.7	24.1	21.1	21.0
1970	32.5	16.5	16.8	16.5	20.4	19.6	17.8
Percentage change							
1950-1955	...	...	-7.5	...	-0.2	1.6	-11.0
1955-1960	-2.5	-4.1	1.7	-5.4	-1.4	6.2	-12.6
1960-1965	-18.8	-6.2	4.5	-32.3	0.2	-3.1	-10.7
1965-1970	-7.6	-6.9	-12.2	6.7	-15.3	-6.9	-15.1
1950-1960	...	...	-6.0	...	-1.6	7.9	-22.2
1960-1970	-24.9	-12.7	-8.2	-36.8	-15.1	-9.8	-24.1
Age standardized birth rate <u>a/</u>							
1950	...	...	19.5	...	24.4	20.2	30.2
1955	44.5 ^{b/}	19.7 ^{g/}	18.3	27.6 ^{h/}	24.0	20.5	26.3
1960	43.5 ^{b/}	19.0 ^{g/}	18.5	26.4 ^{h/}	24.7	22.6	23.8
1965	35.9 ^{b/}	19.4 ^{g/}	20.5	17.9 ^{h/}	25.2	23.0	23.2
1970	33.9 ^{b/}	21.2 ^{g/}	18.6	15.0 ^{h/}	23.1	23.4	19.8
Percentage change							
1950-1955	...	...	-6.0	...	-1.6	1.8	-12.9
1955-1960	-2.3	-3.5	0.8	-4.4	2.9	10.1	-9.5
1960-1965	-17.4	2.1	10.8	-32.0	2.0	1.8	-2.7
1965-1970	-5.7	9.3	-9.3	-16.5	-8.3	1.7	-14.4
1950-1960	...	...	-5.2	...	1.2	12.0	-21.2
1960-1970	-22.1	11.6	0.5	-43.2	-6.5	3.5	-16.8

Table 67 (continued)

	Western Europe						
	Austria	Belgium	France	Germany, Federal Republic of <u>i/</u>	Luxem- bourg	Nether- lands	Switzer- land
Crude birth rate							
1950	14.8 ^{j/}	16.9	20.7	15.7 ^{j/}	13.9	22.7	18.1
1955	15.6	16.9	18.6	15.7	15.3	21.3	17.1
1960	17.9	17.0	17.9	17.5	16.0	20.8	17.6
1965	17.9	16.5	17.8	17.7	16.0	19.9	18.8
1970	15.1	14.8 ^{k/}	16.8	13.4	13.0	18.3	15.8
Percentage change							
1950-1955	5.5	-0.2	-10.2	-0.5	9.9	-6.1	-5.1
1955-1960	14.3	0.8	-3.3	11.6	4.5	-2.3	2.7
1960-1965	0.4	-2.7	-1.1	1.2	-0.0	-4.2	6.9
1965-1970	-15.8	-10.6	-5.7	-24.5	-18.6	-8.1	-15.9
1950-1960	20.6	0.6	-13.1	11.0	14.8	-8.3	-2.6
1960-1970	-15.5	-13.0	-6.7	-23.6	-18.6	-12.0	-10.1
Age-standardized birth rate <u>a/</u>							
1950	14.8 ^{j/}	16.9	20.7	15.7 ^{j/}	13.9	22.7	18.1
1955	16.3 ^{j/}	17.2	19.1	16.2 ^{j/}	15.7	22.4	17.5
1960	19.5 ^{j/}	18.3	19.4	18.2 ^{j/}	17.4	23.1	18.5
1965	19.6 ^{j/}	18.8	20.2	18.8 ^{j/}	18.5	22.6	19.0
1970	16.5 ^{j/}	16.4 ^{k/}	17.8	15.1 ^{j/}	14.9	19.5	15.8
Percentage change							
1950-1955	10.3	2.0	-7.4	2.8	13.1	-1.5	-3.2
1955-1960	19.3	6.3	1.2	12.4	10.3	3.2	5.8
1960-1965	0.5	2.4	4.1	3.5	6.4	-1.9	2.9
1965-1970	-15.6	-12.4	-11.5	-20.1	-19.4	-13.9	-16.9
1950-1960	31.6	8.5	-6.3	15.5	24.7	1.7	2.4
1960-1970	-15.2	-10.3	-7.9	-17.2	-14.2	-15.6	-14.6

Table 67 (continued)

	Northern America	
	Canada	United States of America
Crude birth rate		
1950	27.1	23.9
1955	28.1	24.9
1960	26.7	23.7
1965	21.3	19.4
1970	17.4	18.3
Percentage change		
1950-1955	3.9	4.0
1955-1960	-5.1	-4.8
1960-1965	-20.4	-17.9
1965-1970	-18.0	-5.8
1950-1960	-1.3	-1.1
1960-1970	-34.7	-22.6
Age-standardized birth rate <u>a/</u>		
1950	27.1	23.9
1955	30.1	27.9
1960	30.6	28.5
1965	25.1	22.8
1970	18.4	19.3
Percentage change		
1950-1955	11.0	16.7
1955-1960	1.7	2.2
1960-1965	-17.9	-20.2
1965-1970	-26.5	-15.4
1950-1960	12.8	19.2
1960-1970	-39.6	-32.4

Table 67 (continued)

	Oceania			
	Australia	Fiji	New Zealand	USSR
Crude birth rate				
1950	23.3	39.8	25.9	26.7
1955	22.6	38.5	26.1	25.7
1960	22.4	39.9	26.5	24.7 ^{m/}
1965	19.6	36.1	22.9	18.0 ^{n/}
1970	20.6	29.9	22.1	17.3 ^{o/}
Percentage change				
1950-1955	-3.1	-3.3	0.7	-3.7
1955-1960	-0.7	3.7	1.7	-3.9
1960-1965	-12.7	-9.7	-13.6	-27.1
1965-1970	5.2	-17.1	-3.3	-3.9
1950-1960	-3.8	0.3	2.3	-7.5
1960-1970	-8.2	-25.2	-16.5	-30.0
Age-standardized birth rate <u>a/</u>				
1950	23.3	39.8	25.9	...
1955	24.9	37.0	28.2	...
1960	26.3	39.0	30.5	24.8 ^{m/} p/
1965	22.5	34.3	25.7	21.7 ^{n/} p/
1970	21.8	26.9	22.9	21.4 ^{o/} p/
Percentage change				
1950-1955	6.8	-7.2	9.0	...
1955-1960	5.8	5.4	8.2	...
1960-1965	-14.4	-11.9	-15.8	-12.5
1965-1970	-3.1	-21.6	-11.1	-1.4
1950-1960	12.9	-2.1	17.9	...
1960-1970	-17.0	-30.9	-25.1	-13.7

(foot-notes on following page)

Foot-notes to table 67

a/ Unless otherwise indicated, standardized on the basis of the 1950 age distribution.

b/ Standardized on the basis of the 1955 age distribution.

c/ Standardized on the basis of the 1960 age distribution.

d/ Excluding Ceuta and Melilla.

e/ For 1956.

f/ For 1957.

g/ Standardized on the basis of the 1956 age distribution.

h/ Standardized on the basis of the 1957 age distribution.

i/ Including Berlin. Designations and data for Berlin were supplied by the competent authorities pursuant to the relevant agreements of the Four Powers.

j/ For 1951.

k/ For 1969.

l/ Standardized on the basis of the 1951 age distribution.

m/ For 1960-1961.

n/ For 1966-1967.

o/ For 1969-1970.

p/ Standardized on the basis of the 1959 age distribution.

Table 68. Percentage change in crude birth rates, gross reproduction rates and age-specific fertility rates in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, selected periods

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Europe											
Eastern Europe											
Bulgaria	1950-1955	...	...	...	...	...	...	...	...	...	...
	1955-1960	-11.6	-4.5	-3.7	24.9	4.1	-7.5	-20.0	-40.5	-31.8	-46.2
	1960-1965	-13.9	-9.9	-10.0	-8.8	-6.2	-13.3	-11.5	-15.6	-37.8	-17.6
	1965-1970	6.6	4.3	4.9	4.4	7.8	7.3	-1.1	-10.9	-28.6	-55.7
	1950-1960	...	...	...	...	...	...	...	...	...	...
	1960-1970	-8.2	-6.0	-5.6	-4.7	1.1	-7.0	-12.4	-24.8	-55.6	-63.5
	1955-1965	-23.8	-13.7	-13.3	14.0	-2.4	-19.8	-29.1	-49.7	-57.6	-55.6
	1950-1965	...	...	...	...	...	...	...	...	...	...
	1955-1970	-18.8	-9.9	-9.1	19.0	5.2	-14.0	-29.9	-55.2	-69.7	-80.3
	1950-1970	...	...	...	...	...	...	...	...	...	...
Czechoslovakia	1950-1955	-12.9	-6.3	-6.8	-12.4	1.7	-5.9	-12.0	-16.5	-22.1	-26.4
	1955-1960	-21.4	-16.2	-16.2	3.8	-0.9	-18.1	-33.3	-43.8	-47.6	-57.9
	1960-1965	2.8	-0.7	-1.0	-1.8	-2.7	2.3	3.1	-6.5	-21.3	-10.6
	1965-1970	-2.6	-12.2	-12.4	0.9	-6.6	-15.5	-21.8	-31.5	-34.9	-51.5
	1950-1960	-31.6	-21.5	-21.9	-9.1	0.7	-22.9	-41.4	-53.1	-59.2	-69.0
	1960-1970	0.2	-12.8	-13.4	-0.9	-9.2	-13.6	-19.3	-36.0	-48.7	-56.7
	1955-1965	-19.2	-16.8	-17.1	1.9	-3.6	-16.1	-31.2	-47.5	-58.8	-62.3
	1950-1965	-29.6	-22.1	-22.7	-10.7	-2.0	-21.1	-39.5	-56.1	-67.9	-72.3
	1955-1970	-21.3	-26.9	-27.4	2.8	-10.0	-29.2	-46.2	-64.0	-73.2	-81.7
	1950-1970	-31.4	-31.6	-32.3	-10.0	-8.5	-33.4	-52.7	-69.9	-79.1	-86.6
German Democratic Republic	1950-1955	...	...	...	...	...	...	...	...	...	...
	1955-1960	4.0	-4.5	-5.2	72.8	-20.4	-3.0	-12.6	-3.6	-30.0	19.9
	1960-1965	-2.8	2.5	2.9	-12.6	15.0	0.7	1.4	-6.1	-6.8	-18.3
	1965-1970	-15.9	-11.0	-11.7	9.7	-10.1	-14.6	-22.8	-25.8	-51.4	-55.8
	1950-1960	...	...	...	...	...	...	...	...	...	...
	1960-1970	-18.3	-8.8	-9.1	-4.2	3.5	-14.0	-21.7	-30.3	-54.7	-63.9
	1955-1965	1.0	-2.2	-2.4	51.0	-8.4	-2.3	-11.4	-9.5	-34.8	-2.0
	1950-1965	...	...	...	...	...	...	...	...	...	...
	1955-1970	-15.0	-13.0	-13.8	65.6	-17.6	-16.5	-31.6	-32.8	-68.3	-56.7
	1950-1970	...	...	...	...	...	...	...	...	...	...
Hungary	1950-1955	2.3	8.2	8.0	5.8	12.4	8.0	7.4	4.0	-11.9	-22.7
	1955-1960	-31.5	-28.1	-28.1	-2.8	-16.5	-30.2	-44.5	-52.3	-51.3	-60.1
	1960-1965	-10.7	-10.2	-10.5	-19.9	-7.4	-4.6	-9.8	-27.1	-40.7	-15.1
	1965-1970	12.1	9.0	9.1	19.5	7.9	9.7	7.6	1.2	-9.6	-35.7
	1950-1960	-30.0	-22.2	-22.4	2.8	-6.1	-24.6	-40.3	-50.4	-57.1	-69.2
	1960-1970	0.1	-2.1	-2.4	-4.3	-0.1	4.6	-2.9	-26.3	-46.4	-45.4

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Hungary (continued)	1955-1965	-38.8	-35.4	-35.6	-22.1	-22.7	-33.4	-49.9	-65.2	-71.1	-66.1
	1950-1965	-37.4	-30.1	-30.5	-17.6	-13.1	-28.1	-46.2	-63.9	-74.6	-73.8
	1955-1970	-31.4	-29.6	-29.8	-7.0	-16.6	-27.0	-46.1	-64.8	-73.9	-78.2
	1950-1970	-29.9	-23.8	-24.2	-1.6	-6.2	-21.1	-42.1	-63.4	-77.0	-83.2
Poland	1950-1955	-5.1	-2.3	-2.2	8.0	7.8	-2.7	-8.1	-10.0	-14.5	-12.3
	1955-1960	-22.5	-15.5	-16.4	9.0	-1.9	-17.9	-28.4	-33.7	-30.8	-33.6
	1960-1965	-22.8	-17.2	-16.5	-30.9	-9.7	-13.6	-18.6	-26.5	-33.7	-28.5
	1965-1970	-4.0	-12.0	-11.9	-6.4	-12.4	-9.1	-13.0	-15.7	-24.4	-44.9
	1950-1960	-26.5	-17.4	-18.2	17.7	5.8	-20.1	-34.2	-40.3	-40.9	-41.8
	1960-1970	-25.8	-27.1	-26.5	-35.3	-21.0	-21.5	-29.2	-38.0	-49.8	-60.6
	1955-1965	-40.2	-30.0	-30.2	-24.7	-11.4	-29.0	-41.7	-51.3	-54.1	-52.5
	1950-1965	-43.2	-31.6	-31.8	-18.7	-4.5	-31.0	-46.5	-56.2	-60.8	-58.4
	1955-1970	-42.5	-38.4	-38.6	-29.5	-22.4	-35.5	-49.3	-58.9	-65.3	-73.8
	1950-1970	-45.4	-39.8	-39.9	-23.9	-16.4	-37.3	-53.4	-63.0	-70.3	-77.1
Romania	1950-1955	...	...	...	...	...	...	...	...	...	...
	1955-1960	...	...	...	...	...	...	...	...	...	...
	1960-1965	-23.6	-18.4	-18.8	-11.0	-15.1	-18.2	-21.1	-36.9	-34.6	-45.1
	1965-1970	44.1	51.4	51.4	25.4	43.1	51.9	77.3	94.7	54.7	14.8
	1950-1960	...	...	...	...	...	...	...	...	...	...
	1960-1970	10.2	23.6	22.9	11.6	21.5	24.3	39.9	22.8	1.2	-37.0
	1955-1965	...	...	...	...	...	...	...	...	...	...
	1950-1965	...	...	...	...	...	...	...	...	...	...
	1955-1970	...	...	...	...	...	...	...	...	...	...
	1950-1970	...	...	...	...	...	...	...	...	...	...
Northern Europe											
Denmark	1950-1955	-7.1	-2.1	-1.1	3.6	10.2	0.4	-6.2	-20.2	-26.5	-21.0
	1955-1960	-4.1	-0.1	-1.1	0.6	2.3	3.2	-5.2	-14.7	-20.9	-31.0
	1960-1965	8.6	3.9	4.5	18.1	2.4	3.6	-0.6	18.1	-10.2	7.9
	1965-1970	-20.3	-25.9	-26.0	-34.2	-24.6	-18.9	-24.0	-46.2	-47.3	-63.1
	1950-1960	-10.8	-2.2	-2.2	4.3	12.8	3.7	-11.1	-31.9	-41.9	-45.5
	1960-1970	-13.5	-23.0	-22.7	-22.3	-22.9	-16.0	-24.5	-36.4	-52.7	-60.2
	1955-1965	4.2	3.8	3.3	18.9	4.7	6.9	-5.8	0.7	-29.0	-25.5
	1950-1965	-3.2	1.6	2.2	23.2	15.4	7.4	-11.7	-19.6	-47.8	-41.1
	1955-1970	-17.0	-23.1	-23.6	-21.8	-21.1	-13.3	-28.4	-45.8	-62.6	-72.5
1950-1970	-22.9	-24.7	-24.4	-19.0	-13.0	-12.9	-32.9	-56.7	-72.5	-78.3	
Finland	1950-1955	-13.4	-8.0	-8.0	3.4	2.8	-7.2	-13.3	-18.1	-17.3	-30.8
	1955-1960	-12.5	-7.9	-8.2	0.1	0.2	-5.5	-12.2	-20.6	-24.6	-25.1
	1960-1965	-8.0	-9.6	-9.6	19.7	-12.4	-7.2	-11.3	-14.5	-22.4	-3.7
	1965-1970	-17.9	-24.6	-24.7	-5.6	-15.2	-24.9	-29.4	-41.8	-52.2	-65.9
	1950-1960	-24.2	-15.3	-15.6	3.5	3.0	-12.3	-23.9	-35.0	-37.7	-48.2
	1960-1970	-24.4	-31.9	-31.9	13.0	-25.7	-30.2	-37.4	-50.2	-62.9	-67.2

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates							
					Age of women							
					15-19	20-24	25-29	30-34	35-39	40-44	45-49	
Finland (continued)	1955-1965	-19.5	-16.8	-17.1	19.8	-12.3	-12.3	-22.2	-32.1	-41.5	-27.9	
	1950-1965	-30.2	-23.5	-23.7	23.9	-9.8	-18.5	-32.5	-44.4	-51.7	-50.1	
	1955-1970	-33.9	-37.3	-37.5	13.1	-25.6	-34.1	-45.0	-60.5	-72.1	-75.4	
	1950-1970	-42.7	-42.3	-42.5	16.9	-23.5	-38.8	-52.4	-67.6	-76.9	-83.0	
Ireland	1950-1955	...	...	...	...	...	...	...	...	...	...
	1955-1960	1.6	11.3	11.7	-15.5	15.3	17.0	8.0	14.0	1.7	7.5	
	1960-1965	3.1	6.6	6.2	56.8	15.8	10.8	1.9	-2.7	3.9	0.2	
	1965-1970	-1.6	-6.1	-5.3	22.3	19.0	-5.0	-9.9	14.0	-23.1	-11.5	
	1950-1960	...	...	...	...	...	...	...	...	...	...
	1960-1970	1.5	0.2	0.5	91.9	37.8	5.3	-8.2	-16.3	-20.1	-11.3	
	1955-1965	4.7	18.7	18.6	32.5	33.6	29.7	10.0	11.0	5.7	7.7	
	1950-1965	...	...	...	...	...	...	...	...	...	...
	1955-1970	3.1	11.5	12.3	62.0	58.9	23.2	-0.8	-4.6	-18.7	-4.7	
1950-1970	...	...	...	...	...	...	...	...	...	...
Norway	1950-1955	-3.0	8.5	8.4	45.9	31.9	12.2	-5.0	-7.9	-16.7	-15.1	
	1955-1960	-6.8	4.8	4.4	0.7	11.8	8.8	2.7	-10.1	-10.6	-23.1	
	1960-1965	3.0	1.1	1.9	59.3	10.6	0.3	-6.6	-11.0	-25.1	-37.1	
	1965-1970	-6.5	-14.0	-14.3	8.9	-7.3	-14.8	-20.7	-29.8	-41.4	-51.4	
	1950-1960	-9.6	13.8	13.2	46.8	47.5	22.1	-2.4	-17.1	-25.5	-34.8	
	1960-1970	-3.7	-13.0	-12.7	73.4	2.5	-14.5	-25.7	-37.5	-56.1	-69.4	
	1955-1965	-4.0	6.0	6.4	60.4	23.6	-9.0	-4.1	-20.0	-33.1	-51.6	
	1950-1965	-6.9	15.0	15.3	133.9	63.0	22.4	-8.9	-26.3	-44.2	-59.0	
	1955-1970	-10.2	-8.8	-8.9	74.5	14.5	-7.1	-23.9	-43.8	-60.8	-16.5	
1950-1970	-12.9	-1.0	-1.2	154.6	51.1	4.3	-27.7	-48.2	-67.3	-80.1		
Sweden	1950-1955	-10.2	-2.3	-2.7	-2.7	5.6	1.1	-7.0	-17.2	-21.2	-16.9	
	1955-1960	-7.5	-2.6	-3.0	-11.5	-4.4	5.1	-1.7	-12.4	-16.4	-32.3	
	1960-1965	16.2	10.4	10.7	45.9	9.6	11.2	7.2	-1.1	-16.4	-16.5	
	1965-1970	-13.8	-19.4	-19.6	-30.5	-13.9	-15.9	-21.8	-30.4	-38.9	-45.2	
	1950-1960	-17.0	-4.8	-5.6	-13.9	0.9	6.2	-8.6	-27.5	-34.2	-43.8	
	1960-1970	0.2	-11.1	-11.0	1.3	-5.6	-6.5	-16.2	-31.1	-48.9	-54.2	
	1955-1965	7.5	-7.5	7.4	29.1	4.8	16.8	5.4	-13.3	-30.1	-43.5	
	1950-1965	-3.5	5.0	4.5	25.6	10.6	18.1	-2.1	-28.3	-44.9	-53.0	
	1955-1970	-7.3	-13.4	-13.7	-10.3	-9.8	-1.7	-17.6	-39.7	-57.3	-69.0	
1950-1970	-16.8	-15.4	-16.0	-12.7	-4.7	-0.6	-23.4	-50.1	-66.4	-74.3		
United Kingdom	England and Wales	1950-1955	-5.5	1.4	1.4	6.2	8.5	4.1	-5.7	-8.4	-13.0	-25.2
		1955-1960	14.1	20.1	20.1	44.6	20.8	21.3	19.6	5.0	11.4	4.6
		1960-1965	5.8	6.1	5.9	32.0	6.8	3.9	1.0	5.4	-8.6	9.8
		1965-1970	-11.2	-15.4	-15.3	11.0	-12.9	-15.0	-22.4	-29.6	-30.6	-39.9
		1950-1960	7.8	21.8	21.9	53.5	31.1	26.2	12.8	-3.9	-3.1	-21.8

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
England and Wales (continued)	1960-1970	-6.0	-10.2	-10.3	46.6	-7.0	-11.7	-21.7	-25.9	-36.6	-34.0
	1955-1965	-20.8	27.4	27.2	90.8	29.0	26.1	20.8	10.6	1.8	14.7
	1950-1965	14.1	29.3	29.0	102.6	40.0	31.4	13.9	1.3	-11.4	-14.2
	1955-1970	7.2	7.8	7.8	111.9	12.4	7.1	-6.3	-22.2	-29.4	-31.1
	1950-1970	1.3	9.4	8.7	125.0	21.9	11.5	-11.6	-28.7	-38.6	-48.4
Scotland	1950-1955	0.1	-1.0	-1.7	8.4	15.2	2.1	-17.6	-12.7	-13.8	-23.8
	1955-1960	8.1	15.0	14.8	43.4	20.4	15.8	9.2	0.3	0.4	-4.8
	1960-1965	-1.2	1.3	2.2	26.0	2.2	2.4	-1.3	-1.2	-11.0	14.1
	1965-1970	-13.3	-15.8	-16.0	15.4	-14.2	-16.8	-20.3	-29.4	-29.1	-40.3
	1950-1960	8.1	13.8	12.8	55.5	38.6	18.2	-10.0	-12.5	-13.4	-27.4
	1960-1970	-14.4	-14.6	-14.1	45.4	-12.3	-14.8	-21.3	-30.2	-36.9	-32.0
	1955-1965	6.7	16.5	17.3	80.8	22.9	18.6	7.8	-1.0	-10.6	8.5
	1950-1965	6.8	15.3	15.3	95.9	41.6	21.1	-11.2	-13.5	-22.9	-17.2
	1955-1970	-7.5	-1.8	-1.4	108.5	5.5	-1.4	-14.1	-30.1	-36.6	-35.2
	1950-1970	-7.4	-2.9	-3.1	126.0	21.5	0.7	-29.2	-38.9	-45.4	-50.6
Southern Europe											
Albania	1950-1955	...	...	...	...	...	...	...	...	...	...
	1955-1960	-2.5	-4.3	-3.5	10.0	6.6	-3.8	-16.7	-5.8	17.7	-19.6
	1960-1965	-18.8	-18.7	-19.1	-30.8	-6.0	-11.7	-16.2	-34.5	-33.4	-20.3
	1965-1970	-7.6	-8.4	-8.2	-13.5	5.3	-1.1	-8.7	-10.5	-33.8	-50.0
	1950-1960	...	...	...	...	...	...	...	...	...	...
	1960-1970	-24.9	-25.5	-25.7	-40.2	-1.1	-12.6	-23.5	-41.3	-55.9	-60.2
	1955-1965	-20.8	-22.2	-22.0	-23.9	0.2	-15.0	-30.2	-38.3	-21.6	-35.9
	1950-1965	...	...	...	...	...	...	...	...	...	...
	1955-1970	-26.8	-28.8	-28.4	-34.2	5.5	-16.0	-36.2	-44.8	-48.1	-68.0
	1950-1970	...	...	...	...	...	...	...	...	...	...
Greece	1950-1956	...	...	...	...	...	...	...	...	...	...
	1956-1960	-4.1	-4.1	-4.6	21.9	4.6	-4.4	-1.3	-21.8	-32.6	-44.1
	1960-1965	-6.2	1.1	1.9	46.6	13.5	-2.2	-8.3	-4.5	-17.1	-20.5
	1965-1970	-6.9	8.1	8.2	43.9	21.5	4.8	-4.3	-2.6	-14.7	-27.3
	1950-1960	...	...	...	...	...	...	...	...	...	...
	1960-1970	-12.7	9.3	9.4	110.9	37.8	2.5	-12.2	-7.1	-29.3	-42.2
	1956-1965	-10.1	-3.1	-3.5	78.7	18.7	-6.5	-9.5	-25.3	-44.1	-55.6
	1950-1965	...	...	...	...	...	...	...	...	...	...
	1956-1970	-16.3	4.8	4.4	157.1	44.1	-2.0	-13.4	-27.3	-52.3	-67.7
	1950-1970	...	...	...	...	...	...	...	...	...	...
Italy	1950-1955	-7.5	-6.0	-6.2	-8.3	0.1	-3.2	-0.7	-21.6	-17.4	-31.1
	1955-1960	1.7	0.4	0.5	19.6	-0.0	4.7	-1.1	-3.8	-13.8	-10.2
	1960-1965	4.5	10.2	10.2	-11.3	29.6	9.2	6.9	0.6	-14.5	5.5
	1965-1970	-12.2	-10.0	-9.9	15.1	-3.1	-10.4	-16.2	-15.3	-17.6	-40.6
	1950-1960	-6.0	-5.6	-5.7	9.6	0.0	1.4	-1.7	-24.6	-28.8	-38.2

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Italy (continued)	1960-1970	-8.2	-0.8	-0.7	2.0	25.6	-2.1	-10.4	-14.8	-29.6	-37.4
	1955-1965	6.2	10.7	10.8	6.1	29.5	14.3	5.7	-3.2	-26.3	-5.3
	1950-1965	-1.7	4.0	3.9	-2.8	29.6	10.7	5.0	-24.1	-39.1	-34.8
	1955-1970	-6.7	-0.4	-0.2	22.0	25.5	2.4	-11.4	-18.0	-39.3	-43.8
	1950-1970	-13.7	-6.4	-6.3	11.9	25.6	-0.8	-12.0	-35.7	-49.8	-61.3
Malta	1950-1957	...	...	...	...	...	...	...	...	...	...
	1957-1960	-5.4	-5.5	-5.1	-29.6	6.9	-5.9	-9.0	-11.4	-5.0	31.7
	1960-1965	-32.3	-31.6	-31.7	-40.4	-37.0	-21.4	-43.7	-20.3	-33.7	-61.3
	1965-1970	-6.7	-18.1	-17.4	0.7	-17.6	-16.0	5.3	-37.7	-39.5	-31.4
	1950-1960	...	...	...	...	...	...	...	...	...	...
	1960-1970	-36.8	-44.0	-43.6	-40.0	-48.1	-34.0	-40.7	-50.3	-59.9	-73.5
	1957-1965	-36.0	-35.4	-35.2	-58.0	-32.6	-26.0	-48.8	-29.3	-37.0	-49.0
	1950-1965	...	...	...	...	...	...	...	...	...	...
	1957-1970	-40.2	-47.1	-46.4	-57.7	-44.5	-37.8	-46.0	-56.0	-61.9	-65.1
	1950-1970	...	...	...	...	...	...	...	...	...	...
Portugal	1950-1955	-0.2	-1.4	-2.0	14.3	0.1	-3.0	-4.7	-1.3	-4.2	-7.2
	1955-1960	-1.4	1.3	1.8	2.1	9.2	9.4	-0.5	-9.6	-9.3	-39.3
	1960-1965	0.2	2.1	2.1	13.6	-1.8	2.8	-0.5	1.7	-15.9	-13.8
	1965-1970	-15.3	9.0	-9.1	0.0	-1.6	-6.0	-6.9	-18.6	-35.5	-8.0
	1950-1960	-1.6	-0.2	-0.2	16.7	9.3	6.1	-5.2	-10.7	-13.1	-43.6
	1960-1970	-15.1	-7.1	-7.2	13.7	-3.4	-3.4	-7.3	-17.2	-25.2	-20.9
	1955-1965	-1.3	3.4	3.9	16.1	7.2	12.5	-1.0	-8.0	5.2	-47.7
	1950-1965	-1.4	2.0	1.9	32.7	7.3	9.1	-5.7	-9.2	0.8	-51.4
	1955-1970	-16.4	-5.9	-5.5	16.1	5.5	5.7	-7.8	-25.2	-32.1	-51.9
	1950-1970	-16.5	-7.2	-7.4	32.7	5.6	2.5	-12.1	-26.1	-34.9	-55.3
Spain a/	1950-1955	1.7	1.1	1.1	15.7	4.6	8.1	-2.5	-6.6	-7.8	-16.1
	1955-1960	6.2	9.2	9.6	1.4	16.5	11.9	14.3	-1.5	-5.4	-27.3
	1960-1965	-3.1	2.3	1.9	19.6	-1.6	1.7	1.5	6.1	-1.0	14.7
	1965-1970	-6.9	0.2	0.5	26.5	16.3	4.8	-10.1	-9.1	-10.1	-23.8
	1950-1960	7.9	10.4	10.7	17.4	21.8	21.0	11.4	-8.1	-12.8	-39.0
	1960-1970	-9.8	2.6	2.4	51.3	14.4	6.6	-8.7	-3.5	-11.0	-12.5
	1955-1965	2.9	11.8	11.7	21.2	14.6	13.9	16.0	4.5	-6.3	-16.6
	1950-1965	4.6	12.9	12.8	40.3	19.8	23.1	13.1	-2.4	-13.6	-30.0
	1955-1970	-4.2	12.0	12.2	53.4	33.3	19.3	4.3	-5.0	-15.8	-36.5
	1950-1970	-2.6	13.2	13.4	77.6	39.4	29.0	1.7	-11.3	-22.4	-46.7
Yugoslavia	1950-1955	-11.0	-20.0	-15.2	7.0	-7.4	-12.3	-27.2	-13.7	-36.6	-34.4
	1955-1960	-12.6	-11.3	-11.8	23.9	-3.8	-11.8	-17.7	-37.3	-10.0	-39.7
	1960-1965	-10.7	-4.5	-4.2	-6.3	6.0	-2.1	-8.6	-17.2	-43.4	12.1
	1965-1970	-15.1	-15.3	-15.3	6.4	-14.5	-18.0	-16.3	-20.4	-27.7	-67.7
	1950-1960	-22.2	-29.0	-25.2	32.6	-10.9	-22.6	-40.0	-45.9	-42.9	-60.5

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Yugoslavia (continued)	1960-1970	-24.1	-19.1	-18.9	-0.3	-9.4	-19.8	-23.4	-34.1	-59.0	-63.8
	1955-1965	-21.9	-15.3	-15.5	16.1	2.0	-13.7	-24.7	-48.1	-49.0	-32.4
	1950-1965	-30.5	-32.2	-28.3	24.3	-5.5	-24.2	-45.2	-55.2	-67.7	-55.7
	1955-1970	-33.7	-28.3	-28.4	23.6	-12.8	-29.2	-36.9	-58.7	-63.1	-78.2
	1950-1970	-41.0	-42.6	-39.3	32.2	-19.3	-37.9	-54.1	-64.3	-76.6	-85.7
Western Europe											
Austria	1951-1955	5.5	9.8	9.9	-9.9	14.8	14.7	6.8	11.7	-3.8	-13.2
	1955-1960	14.3	19.3	19.5	58.2	20.0	21.6	11.2	7.3	9.9	-9.1
	1960-1965	0.4	1.4	0.8	17.1	0.9	-1.1	0.7	-5.9	-8.0	16.4
	1965-1970	-15.8	-15.2	14.6	7.4	-0.8	-28.5	-22.7	-19.8	-26.5	-41.6
	1951-1960	20.6	30.9	31.3	42.6	37.8	39.5	18.7	19.9	5.7	-21.1
	1960-1970	-15.5	-14.0	-13.9	25.8	0.1	-29.2	-22.2	-24.5	-32.4	-32.1
	1955-1965	14.8	20.9	20.5	85.3	21.1	20.3	11.9	1.0	1.1	5.8
	1951-1965	21.1	32.7	32.4	67.0	39.0	38.0	19.5	12.9	-2.7	-8.1
	1955-1970	-3.4	2.5	2.9	99.1	20.1	-13.9	-13.5	-19.0	-25.7	-38.3
Belgium	1951-1970	1.9	12.5	13.1	79.4	38.0	-1.3	-7.6	-9.5	-28.5	-46.4
	1950-1955	-0.2	1.6	1.5	-4.3	9.6	4.1	-5.7	-4.0	-5.7	-17.2
	1955-1960	0.8	5.7	6.0	21.6	12.7	8.8	2.3	-12.1	-6.1	-14.7
	1960-1965	-2.7	2.0	2.1	18.3	9.0	1.5	-3.6	-5.3	-21.8	-9.3
	1965-1969	-10.6	-12.6	-12.7	0.8	-9.4	-11.7	-17.3	-22.9	-24.5	-25.2
	1950-1960	0.6	7.4	7.6	16.3	23.6	13.3	-3.4	-15.6	-11.5	-29.4
	1960-1969	-13.0	-10.9	-10.8	19.2	-1.3	-10.3	-20.2	-26.9	-41.0	-32.2
	1955-1965	-1.9	7.8	8.2	43.8	22.8	10.5	-1.3	-16.7	-26.6	-22.7
	1950-1965	-2.1	9.6	9.8	37.5	34.7	15.0	-6.9	-20.0	-30.8	-36.0
France	1955-1969	-12.3	-5.9	-5.5	44.9	11.3	-2.4	-18.3	-35.7	-44.6	-42.2
	1950-1969	-12.5	-4.3	-4.1	38.6	22.0	1.6	-23.0	-38.3	-47.8	-52.1
	1950-1955	-10.2	-8.0	-8.1	-13.2	-3.3	-5.6	-17.4	-0.8	-23.4	-20.3
	1955-1960	-3.3	0.7	0.8	8.1	5.0	3.3	0.5	-21.4	21.1	-26.4
	1960-1965	-1.1	3.7	3.8	22.5	9.3	3.6	0.3	-1.8	-27.1	57.1
	1965-1970	-5.7	-11.8	-11.8	-6.0	-8.5	-11.9	-14.8	-16.6	-16.9	-41.7
	1950-1960	-13.1	-7.3	-7.4	-6.2	1.6	-2.4	-16.9	-22.0	-7.2	-41.4
	1960-1970	-6.7	-8.5	-8.5	15.1	0.0	-8.7	-14.5	-18.1	-39.4	-8.4
	1955-1965	-4.3	4.4	4.6	32.4	14.8	7.1	0.8	-22.8	-11.7	15.6
Germany, Federal Republic of <u>b/</u>	1950-1965	-14.1	-3.9	-3.9	14.9	11.0	1.1	-16.7	-23.4	-32.3	-7.9
	1955-1970	-9.7	-7.9	-7.7	24.5	5.1	-5.7	-14.1	-35.6	-26.6	-32.6
	1950-1970	-18.9	-15.2	-15.2	8.0	1.6	-10.9	-29.0	-36.1	-43.7	-46.3
	1951-1955	-0.5	2.7	2.7	-47.3	-5.4	6.7	17.3	17.9	16.5	75.2
	1955-1960	11.6	12.5	12.1	37.1	13.2	19.6	5.9	-7.1	21.0	-23.9
1960-1965	1.2	4.0	3.9	34.8	7.6	2.0	4.4	-5.3	-23.7	35.5	
1965-1970	-24.5	-19.6	-19.8	-7.7	-7.6	-31.1	-23.9	-14.5	-19.5	-42.2	

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates							
					Age of women							
					15-19	20-24	24-29	30-34	35-39	40-44	45-49	
Germany, Federal Republic of (continued)	1951-1960	11.0	15.6	15.1	-27.8	-7.0	27.6	24.2	9.6	41.0	33.3	
	1960-1970	-23.6	-16.5	-16.6	24.4	-0.6	-29.8	-20.6	-19.1	-38.5	-21.6	
	1955-1965	12.9	17.0	16.5	84.7	21.8	21.9	10.6	-12.0	-7.6	3.1	
	1951-1965	12.3	20.1	19.7	-2.7	15.2	30.1	29.6	3.7	7.6	80.6	
	1955-1970	-14.7	-6.0	-6.5	70.5	12.5	-16.1	-15.9	-24.8	-25.6	-40.4	
	1951-1970	-15.2	-3.5	-3.98	-10.2	6.4	-10.4	-1.4	-11.3	-13.3	4.5	
Luxembourg	1950-1955	9.9	11.9	12.8	20.0	33.3	6.2	10.2	-4.5	6.7	-28.7	
	1955-1960	4.5	12.3	9.9	40.2	22.6	7.2	-0.7	-3.0	-3.7	66.9	
	1960-1965	-0.0	4.8	6.2	23.9	8.9	10.4	-6.8	1.9	1.5	-50.8	
	1965-1970	-18.6	-18.4	-19.6	-3.8	-16.1	-24.8	-22.7	-15.5	-21.8	7.8	
	1950-1960	14.8	25.7	24.0	68.2	63.5	13.5	9.5	-7.4	2.7	19.0	
	1960-1970	-18.6	-14.5	-14.6	19.3	-8.6	-17.0	-28.0	-13.9	-20.6	-46.9	
	1955-1965	4.4	17.7	16.7	73.7	33.6	18.4	-7.4	-1.2	-2.2	-17.8	
	1950-1965	14.8	31.8	31.6	108.4	78.1	25.7	2.0	-5.6	4.3	-41.4	
Netherlands	1955-1970	-15.0	-3.9	-6.1	67.2	12.1	-11.0	-28.5	-16.5	-23.6	-11.4	
	1950-1970	-6.6	7.6	5.9	100.6	49.4	-5.6	-21.2	-20.3	-18.5	-36.9	
	1950-1955	-6.1	-1.5	-2.1	9.6	10.0	4.5	-6.0	-12.2	-15.7	-15.6	
	1955-1960	-2.3	2.4	2.5	19.5	16.6	9.7	-2.6	-12.2	-15.4	-18.9	
	1960-1965	-4.2	-2.8	-2.7	28.3	16.6	-0.6	-9.5	-17.7	-28.0	-24.8	
	1965-1970	-8.1	-14.3	-14.6	7.8	-2.5	-10.7	-21.6	-33.0	-41.0	-45.1	
	1950-1960	-8.3	0.8	0.3	31.0	28.2	14.7	-8.5	-22.9	-28.7	-31.5	
	1960-1970	-12.0	-16.7	-16.9	38.3	13.7	-11.2	-29.0	-44.9	-57.5	-58.8	
Switzerland	1955-1965	-6.4	-0.5	-0.2	53.3	35.9	9.1	-11.9	-27.7	-39.1	-39.0	
	1950-1965	-12.2	-2.0	-2.4	68.1	49.5	14.1	-17.2	-36.5	-48.6	-48.5	
	1955-1970	-14.0	-14.7	-14.8	65.3	32.6	-2.5	-30.9	-51.6	-64.0	-66.5	
	1950-1970	-19.3	-16.0	-16.7	81.1	45.8	1.9	-35.1	-57.5	-69.7	-71.8	
	1950-1955	-5.1	-3.1	-3.4	10.9	10.5	-3.1	-9.3	-13.9	-13.5	-8.2	
	1955-1960	2.7	6.2	5.6	8.5	10.6	10.3	2.6	-6.4	-7.2	-14.6	
	1960-1965	6.9	1.8	2.8	40.4	5.4	5.4	-2.2	-5.8	-12.9	-7.5	
	1965-1970	-15.9	-17.1	-17.0	5.6	-4.6	-21.9	-22.8	-24.4	-31.4	-29.4	
Northern America	1950-1960	-2.5	3.0	2.1	20.4	22.2	6.9	-6.9	-19.5	-19.7	-21.6	
	1960-1970	-10.0	-15.6	-14.6	48.3	0.5	-17.7	-24.5	-28.8	-40.3	-34.6	
	1955-1965	9.8	8.2	8.7	52.4	16.5	16.3	0.3	-11.8	-19.2	-21.0	
	1950-1965	4.2	4.9	5.0	69.0	28.7	12.7	-9.0	-24.1	-30.1	-27.4	
	1955-1970	-7.6	-10.4	-9.8	61.0	11.0	-9.2	-22.5	-33.4	-44.6	-44.2	
	1950-1970	-12.3	-13.1	-12.8	78.6	22.8	-12.0	-29.7	-42.7	-52.0	-48.7	
	Canada	1950-1955	3.9	11.0	10.7	17.4	20.2	7.0	8.8	1.9	4.5	-3.9
		1955-1960	-5.1	1.2	1.3	9.9	4.4	5.0	-4.9	-4.0	-13.1	-16.6
1960-1965		-20.4	-17.9	-18.0	-17.0	-16.0	-18.2	-17.4	-23.0	-21.9	-15.5	

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
Canada (continued)	1965-1970	-18.0	-27.1	-27.0	-11.7	-25.5	-20.8	-32.9	-41.4	-49.1	-55.1
	1950-1960	-1.3	12.2	12.2	29.0	25.5	12.4	3.6	-2.2	-9.2	-19.9
	1960-1970	-34.7	-40.2	-40.1	-26.7	-37.4	-35.2	-44.6	-54.9	-60.3	-62.1
	1955-1965	-24.4	-17.0	-16.9	-8.8	-12.3	-14.0	-21.4	-26.1	-32.1	-29.6
	1950-1965	-21.4	-7.9	-8.0	7.1	5.4	-8.0	-14.5	-24.7	-29.1	-32.4
	1955-1970	-38.0	-39.5	-39.4	-19.5	-34.6	-31.9	-47.3	-56.7	-65.5	-68.4
	1950-1970	-35.6	-32.9	-32.9	-5.4	-21.5	-27.2	-42.6	-55.9	-63.9	-69.6
United States of America	1950-1955	4.0	17.3	16.6	11.2	23.3	15.7	12.6	14.0	5.2	-5.7
	1955-1960	-4.8	2.2	2.1	-1.2	6.5	3.5	-2.5	-5.2	-1.1	-8.0
	1960-1965	-17.9	-20.3	-20.2	-20.0	-23.9	-18.4	-16.6	-17.7	-16.8	-15.5
	1965-1970	-5.8	-15.4	-15.4	-3.3	-14.9	-10.7	-22.7	-31.5	-36.5	-36.6
	1950-1960	-1.1	19.9	19.0	9.9	31.2	19.8	9.8	8.1	4.0	-13.2
	1960-1970	-22.6	-32.5	-32.5	-22.7	-35.3	-27.2	-35.5	-43.7	-47.2	-46.4
	1955-1965	-21.8	-18.5	-18.5	-21.0	-19.0	-15.5	-18.7	-22.0	-17.7	-22.2
	1950-1965	-18.8	-4.4	-5.0	-12.1	-0.2	-2.3	-8.4	-11.1	-13.4	-26.7
	1955-1970	-26.4	-31.0	-31.0	-23.6	-31.1	-24.6	-37.1	-46.6	-47.8	-50.7
1950-1970	-23.4	-19.1	-19.6	-15.0	-15.0	-12.8	-29.2	-39.1	-45.1	-53.5	
Oceania											
Australia	1950-1955	-3.1	6.8	6.7	13.7	18.0	6.9	-1.6	-7.2	-5.4	-11.4
	1955-1960	-0.7	5.2	5.6	5.5	7.7	8.8	3.6	-1.7	-10.2	-7.3
	1960-1965	-12.7	-14.2	-14.2	6.9	-19.1	-13.0	-13.8	-16.0	-18.4	-16.1
	1965-1970	5.2	-2.9	-3.2	8.1	-3.3	1.1	-6.9	-14.7	-21.0	-29.6
	1950-1960	-3.8	12.4	12.6	20.0	27.0	16.3	1.9	-8.8	-15.1	-17.9
	1960-1970	-8.2	-16.7	-16.9	15.6	-21.7	-12.0	-19.7	-28.3	-35.6	-40.9
	1955-1965	-13.3	-9.6	-9.4	12.8	-12.8	-5.4	-10.7	-17.4	-26.7	-22.3
	1950-1965	-16.0	-3.5	-3.4	28.3	2.8	1.1	-12.1	-23.3	-30.7	-31.2
	1955-1970	-8.8	-12.3	-12.3	21.9	-15.7	-4.3	-16.9	-29.5	-42.1	-45.3
1950-1970	-11.6	-6.3	-6.5	38.7	-0.6	2.3	-18.2	-34.6	-45.3	-51.5	
Fiji	1950-1955	-3.3	-8.2	-7.9	-7.0	-5.8	-4.4	-13.6	-2.1	-16.5	-32.6
	1955-1960	3.7	6.8	5.8	-11.6	8.8	9.3	12.2	4.4	-7.5	3.4
	1960-1965	-9.7	-12.7	-11.2	-30.0	-8.2	-9.2	-9.0	-14.4	-10.1	4.8
	1965-1970	-17.1	-21.6	-22.8	-23.3	-15.1	-20.4	-29.4	-27.9	-33.6	-43.2
	1950-1960	0.3	-2.0	-2.5	-17.8	2.5	4.5	-3.1	2.2	-22.7	-30.3
	1960-1970	-25.2	-31.5	-31.4	-46.3	-22.0	-27.7	-35.7	-38.3	-40.3	-40.5
	1955-1965	-6.4	-6.8	-6.0	-38.1	-0.1	-0.7	2.1	-10.6	-16.9	8.4
	1950-1965	-9.4	-14.4	-13.4	-42.5	-5.8	-5.1	-11.8	-12.5	-30.6	-26.9
	1955-1970	-22.4	-26.9	-27.5	-52.5	-15.1	-21.0	-27.9	-35.5	-44.8	-38.4
1950-1970	-24.9	-32.8	-33.2	-55.9	-20.0	-24.4	-37.7	-36.9	-53.9	-58.5	

Table 68 (continued)

Major area, region and country	Period	Crude birth rate	Gross repro- duction rate	Gross total fertility (sum of age-specific rates)	Age-specific fertility rates						
					Age of women						
					15-19	20-24	25-29	30-34	35-39	40-44	45-49
New Zealand	1950-1955	0.7	8.2	8.9	13.5	19.8	9.0	3.2	-1.7	-8.8	-12.9
	1955-1960	1.7	8.6	8.2	33.0	12.9	8.5	1.8	0.4	-4.9	-6.6
	1960-1965	-13.6	-16.2	-15.6	29.9	-10.3	-19.9	-25.5	-24.2	-13.0	-20.7
	1965-1970	-3.3	-10.5	-11.2	8.9	-10.6	-6.9	-18.0	-25.3	-35.9	-31.4
	1950-1960	2.3	17.5	17.8	50.9	35.2	18.2	5.1	-1.3	-13.3	-18.7
	1960-1970	-16.5	-25.0	-25.0	41.5	-19.9	-25.4	-39.0	-43.4	-44.2	-45.6
	1955-1965	-12.2	-9.1	-8.6	72.8	1.2	-13.1	-24.2	-23.9	-17.2	-25.9
	1950-1965	-11.6	-1.6	-0.5	96.1	21.2	-5.3	-21.8	-25.2	-24.5	-35.5
	1955-1970	-15.1	-18.6	-18.8	88.3	-9.6	-19.1	-37.8	-43.2	-46.9	-49.2
	1950-1970	-14.5	-11.9	-11.6	11.36	8.3	-11.8	-35.9	-44.1	-51.6	-55.8
USSR	1960-1961- 1966-1967	-27.1	-13.1	-13.1	-23.6	-3.8	-17.4	-11.8	-18.9	-24.7	-16.7
	1966-1967- 1969-1970	-3.9	-1.7	-1.7	13.0	3.3	-3.0	-9.2	-1.4	-13.6	-27.5
	1960-1961- 1969-1970	-30.0	-14.6	-14.6	-13.6	-0.5	-19.9	-19.9	-20.1	-34.9	-39.6

Note: Percentages calculated using rates carried to three decimal places.

a/ Excluding Ceuta and Melilla.

b/ Including Berlin. Designations and data for Berlin were supplied by the competent authorities pursuant to the relevant agreements of the Four Powers.

Table 69. Women aged 15-49 years distributed by five-year age groups as percentage of all females and as percentage of the total population in countries of Europe, Northern America and Oceania, and in the Union of Soviet Socialist Republics, 1950-1970

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years							Total	Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49			
Europe											
Eastern Europe											
Bulgaria	1950	...	...	...	...	...	...	...	...	...	...
	1955	14.5	16.6	16.8	16.7	10.2	12.9	12.3	100.0	26.5	53.0
	1960	14.5	14.4	16.3	16.4	16.2	9.8	12.4	100.0	25.5	51.0
	1965	16.4	13.8	13.8	15.5	15.7	15.4	9.4	100.0	25.4	50.9
	1970	15.1	15.4	13.0	12.9	14.6	14.6	14.4	100.0	26.0	52.0
Czechoslovakia	1950	14.2	15.3	16.4	9.6	15.0	15.3	14.1	100.0	26.2	50.9
	1955	13.4	14.4	15.6	16.6	9.7	15.0	15.2	100.0	24.2	47.2
	1960	16.1	13.2	14.3	15.6	16.6	9.6	14.7	100.0	23.3	45.6
	1965	18.7	15.4	12.8	13.7	14.7	15.7	9.1	100.0	23.5	45.9
	1970	17.5	17.0	14.0	11.6	12.4	13.4	14.1	100.0	25.1	49.0
German Democratic Republic	1950	...	...	...	...	...	...	...	...	...	...
	1955	20.0	10.5	13.0	13.5	10.3	15.1	17.6	100.0	25.9	46.8
	1960	14.1	17.1	13.9	13.8	14.3	10.8	16.0	100.0	23.7	43.1
	1965	12.2	15.6	17.6	14.2	14.5	15.3	10.6	100.0	21.9	40.3
	1970	16.1	11.5	14.7	16.6	13.4	13.6	14.2	100.0	23.2	42.9
Hungary	1950	15.0	15.7	16.3	10.4	15.2	14.5	13.0	100.0	27.3	52.5
	1955	14.3	14.8	15.5	16.1	10.2	14.9	14.1	100.0	25.9	50.0
	1960	15.0	14.1	14.7	15.4	15.9	10.2	14.6	100.0	24.9	48.1
	1965	15.8	14.9	14.0	14.5	15.3	15.7	9.9	100.0	24.6	47.7
	1970	16.9	14.6	13.7	13.0	13.4	14.1	14.4	100.0	25.9	50.3

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years							Total	Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49			
Poland	1950	17.3	17.3	15.9	10.5	13.7	13.5	11.9	100.0	28.1	53.8
	1955	15.8	16.6	16.6	15.2	10.0	13.0	12.8	100.0	26.4	50.8
	1960	13.6	15.4	16.4	16.7	15.2	9.9	12.8	100.0	24.0	46.5
	1965	18.6	12.6	14.5	15.3	15.6	14.1	9.3	100.0	24.2	47.1
	1970	20.0	17.1	11.0	12.6	13.2	13.6	12.6	100.0	26.3	51.1
Romania	1950	...	...	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...	...	...
	1960	14.0	16.7	16.5	16.0	14.3	10.0	12.4	100.0	25.8	50.4
	1965	15.7	13.5	16.3	16.0	15.5	14.0	9.0	100.0	25.5	50.0
	1970	16.8	14.0	12.1	15.0	14.7	14.2	13.1	100.0	26.0	51.0
Northern Europe											
Denmark	1950	13.9	14.3	15.4	15.1	15.0	13.7	12.6	100.0	24.2	48.0
	1955	14.4	13.4	13.8	15.0	14.4	14.7	14.3	100.0	24.0	47.6
	1960	17.2	13.8	12.9	13.4	14.5	14.1	14.2	100.0	23.7	47.8
	1965	18.8	17.1	13.9	13.0	11.2	12.9	13.1	100.0	22.6	44.8
	1970	15.7	17.5	15.8	12.9	12.1	12.4	13.5	100.0	23.4	46.4
Finland	1950	14.6	15.3	15.2	13.6	14.5	14.5	12.4	100.0	26.2	50.2
	1955	15.1	14.2	14.8	14.8	13.1	14.1	13.8	100.0	25.2	48.4
	1960	16.3	14.6	13.6	14.4	14.4	12.8	13.8	100.0	24.2	46.7
	1965	20.9	15.2	13.3	12.3	13.2	13.4	11.8	100.0	24.9	48.1
	1970	17.9	18.8	13.4	12.4	11.8	12.8	12.8	100.0	25.2	48.7

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years								Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total		
Ireland	1950	...	...	...	...	...	...	...	...	...	...
	1955	17.3	13.6	13.4	13.9	14.5	14.2	13.1	100.0	22.2	44.8
	1960	18.9	13.0	12.3	13.0	14.3	14.3	14.3	100.0	21.2	42.7
	1965	20.8	14.9	12.2	12.0	12.9	13.5	13.7	100.0	21.1	42.4
	1970	20.3	16.4	13.6	12.0	12.0	12.6	13.1	100.0	20.9	42.1
Norway	1950	12.2	13.6	15.6	15.9	15.1	14.2	13.4	100.0	25.2	49.9
	1955	12.7	12.4	13.8	16.1	15.7	15.1	14.2	100.0	23.7	47.2
	1960	15.8	12.6	12.0	13.4	15.6	15.8	14.9	100.0	22.8	45.4
	1965	18.3	14.8	12.0	11.7	13.1	15.2	14.9	100.0	22.6	45.0
	1970	17.2	17.8	14.3	11.7	11.4	12.8	14.8	100.0	22.1	44.0
Sweden	1950	11.7	13.1	15.1	15.3	15.4	15.3	14.1	100.0	24.9	49.5
	1955	12.7	12.4	13.6	15.6	15.1	15.5	15.2	100.0	23.9	47.7
	1960	16.5	13.0	12.2	13.2	15.0	15.0	15.0	100.0	23.6	47.0
	1965	16.8	16.1	12.8	12.0	13.0	14.7	14.5	100.0	23.4	46.7
	1970	14.6	17.5	16.0	12.7	11.9	12.8	14.5	100.0	23.0	45.9
United Kingdom											
England and Wales	1950	12.5	13.5	15.1	13.8	15.4	15.3	14.4	100.0	25.5	49.2
	1955	12.9	13.0	13.8	15.5	13.9	15.6	15.4	100.0	24.4	47.0
	1960	14.2	13.5	13.2	14.0	15.6	14.0	15.5	100.0	23.4	45.2
	1965	16.7	14.5	13.5	13.0	13.6	15.2	13.5	100.0	22.9	44.6
	1970	14.7	17.0	14.2	13.1	12.8	13.3	14.8	100.0	22.6	43.9

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years								Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total		
Scotland	1950	14.9	15.1	14.5	11.7	14.4	15.0	14.4	100.0	25.0	48.5
	1955	14.7	14.3	14.3	14.7	13.1	14.7	14.3	100.0	25.0	47.9
	1960	15.1	14.5	13.9	14.1	14.6	13.1	14.8	100.0	23.6	45.9
	1965	17.5	14.5	13.5	13.2	13.6	14.5	13.1	100.0	23.0	44.3
	1970	16.2	17.2	13.8	12.7	12.6	13.2	14.2	100.0	22.6	43.5
Southern Europe											
Albania	1950	...	...	...	...	...	...	...	...	...	...
	1955	22.4	18.7	16.6	12.0	11.3	10.4	8.6	100.0	23.1	46.4
	1960	20.8	19.7	16.4	14.3	10.2	9.7	8.9	100.0	22.6	45.5
	1965	20.1	18.2	17.2	14.4	12.7	9.1	8.4	100.0	22.0	44.3
	1970	22.1	17.1	15.5	14.7	12.2	10.7	7.6	100.0	22.3	45.1
Greece	1950	...	...	...	...	...	...	...	...	...	...
	1956	16.6	17.6	16.7	14.1	11.8	11.8	11.4	100.0	27.4	53.6
	1960	13.9	16.6	17.1	16.0	13.3	11.5	11.6	100.0	26.6	52.0
	1965	16.1	13.3	16.0	16.5	15.8	11.9	10.4	100.0	25.9	50.4
	1970	15.0	14.2	12.0	14.8	15.7	15.9	12.5	100.0	24.5	47.9
Italy	1950	16.0	16.2	16.2	11.8	14.1	13.8	11.9	100.0	26.4	51.4
	1955	16.0	15.0	15.4	15.5	11.3	13.6	13.2	100.0	26.0	50.9
	1960	14.4	15.7	15.4	15.3	15.3	10.2	13.7	100.0	25.5	50.1
	1965	16.1	14.3	15.3	14.7	14.8	14.9	10.0	100.0	24.7	48.5
	1970	14.3	15.1	13.6	14.7	14.1	14.1	14.1	100.0	24.9	48.6

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years							Total	Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49			
Malta	1950	...	...	...	...	...	...	...	...	...	...
	1955	16.5	18.3	15.8	14.8	12.8	10.8	11.0	100.0	23.4	44.9
	1960	18.8	16.5	16.2	14.2	13.2	10.7	10.2	100.0	23.7	45.4
	1965	22.8	15.0	13.8	14.2	12.8	11.8	9.7	100.0	25.3	48.5
	1970	19.4	19.8	14.0	12.7	12.1	11.2	10.7	100.0	26.8	51.5
Portugal	1950	18.2	17.1	15.5	12.4	13.2	12.4	11.2	100.0	26.5	51.0
	1955	16.8	17.2	16.0	14.4	11.7	12.4	11.5	100.0	26.4	50.8
	1960	16.8	16.3	15.4	14.7	13.5	11.5	11.8	100.0	25.5	48.8
	1965	16.2	15.9	15.3	15.7	13.7	11.1	12.1	100.0	24.9	47.9
	1970	17.7	15.6	13.1	13.4	13.8	13.7	12.8	100.0	24.6	46.9
Spain a/	1950	17.5	16.7	16.0	13.4	13.0	12.4	11.1	100.0	26.9	52.1
	1955	14.7	16.8	15.9	15.4	12.9	12.5	11.9	100.0	26.2	50.8
	1960	15.7	14.1	16.0	15.1	14.8	12.3	11.9	100.0	25.6	49.8
	1965	16.0	15.0	13.4	15.3	14.5	14.1	11.7	100.0	25.4	49.3
	1970	16.0	15.4	13.5	13.0	14.7	14.3	13.1	100.0	24.1	47.1
Yugoslavia	1950	19.9	18.6	16.4	9.1	12.7	12.5	10.9	100.0	27.0	52.2
	1955	17.9	18.7	17.3	14.7	8.1	12.2	11.1	100.0	26.6	51.8
	1960	14.8	17.1	17.9	16.7	14.2	8.1	11.2	100.0	25.6	50.0
	1965	17.0	14.2	15.9	16.6	15.6	13.4	7.4	100.0	25.4	49.7
	1970	17.6	15.2	12.6	14.2	14.8	13.9	11.9	100.0	26.8	52.7

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years							Total	Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49			
Western Europe											
Austria	1951	12.0	13.4	16.2	11.8	14.4	16.3	15.9	100.0	26.1	48.7
	1955	13.9	12.5	14.0	16.7	10.9	15.6	16.4	100.0	25.3	47.3
	1960	15.8	14.0	12.4	14.2	16.7	11.4	15.6	100.0	24.1	45.1
	1965	14.7	16.3	14.1	12.5	14.3	17.1	11.1	100.0	22.8	42.9
	1970	13.8	14.3	15.9	13.7	12.1	13.8	16.4	100.0	23.0	43.2
Belgium	1950	14.3	14.9	15.6	10.7	14.4	15.0	15.1	100.0	25.2	49.6
	1955	13.4	14.6	15.2	16.0	10.9	14.6	15.2	100.0	23.9	47.0
	1960	13.0	13.8	15.1	15.7	16.4	11.2	14.9	100.0	22.6	44.3
	1965	16.3	13.0	13.8	15.0	15.4	15.9	10.7	100.0	22.4	44.0
	1969	15.7	15.3	12.2	13.3	14.4	14.5	14.5	100.0	23.3	45.6
France	1950	14.8	15.6	15.8	10.3	13.6	15.0	14.9	100.0	24.7	47.5
	1955	13.9	15.3	15.6	16.1	9.7	14.3	15.1	100.0	23.2	44.9
	1960	13.6	14.0	15.6	16.0	16.4	9.9	14.4	100.0	21.9	42.6
	1965	19.0	13.1	13.1	14.5	15.1	15.2	9.9	100.0	22.5	44.0
	1970	17.1	17.2	12.0	12.4	13.6	13.8	13.9	100.0	23.6	46.0
Germany, Fed. Rep. of b/	1951	13.3	13.4	15.0	12.0	14.7	16.4	15.2	100.0	27.2	51.0
	1955	16.0	12.9	13.6	15.3	10.7	15.5	16.0	100.0	26.8	50.5
	1960	14.3	16.7	13.1	13.9	15.7	10.6	15.9	100.0	25.1	47.4
	1965	13.0	14.8	17.0	13.6	14.4	16.1	11.1	100.0	23.4	44.5
	1970	13.7	12.9	14.4	16.6	13.2	13.9	15.4	100.0	23.5	44.9

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years								Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total		
Luxembourg	1950	13.9	15.2	13.9	12.7	15.2	15.2	13.9	100.0	26.7	53.4
	1955	13.0	14.3	15.6	14.3	13.0	14.3	15.6	100.0	25.2	50.7
	1960	13.0	13.8	14.6	16.1	15.3	12.4	15.0	100.0	24.0	47.4
	1965	13.7	13.9	13.9	15.5	15.5	13.7	13.7	100.0	23.0	45.9
	1970	14.7	14.1	13.5	13.8	14.4	15.2	14.3	100.0	23.8	46.9
Netherlands	1950	15.7	15.7	15.9	13.8	13.8	13.2	12.0	100.0	25.0	49.8
	1955	15.6	15.1	14.9	15.2	13.3	13.3	12.7	100.0	24.0	47.8
	1960	16.7	14.8	14.3	14.2	14.6	12.7	12.7	100.0	23.3	46.4
	1965	20.0	15.3	13.5	13.1	13.1	13.4	11.7	100.0	23.5	47.0
	1970	17.5	18.7	14.2	12.6	12.2	12.2	12.5	100.0	23.7	47.3
Switzerland	1950	13.3	14.8	15.0	13.2	14.4	15.1	14.3	100.0	26.1	50.4
	1955	12.8	14.4	15.4	15.2	13.0	14.5	14.8	100.0	25.1	48.5
	1960	15.8	14.9	14.9	14.5	14.3	12.3	13.2	100.0	24.4	47.9
	1965	16.4	17.9	14.4	13.8	13.4	12.8	11.3	100.0	24.6	48.3
	1970	14.5	16.6	16.5	14.2	13.3	12.6	12.3	100.0	24.2	48.2
Northern America											
Canada	1950	15.6	16.3	16.5	15.2	14.0	12.0	10.3	100.0	24.9	50.5
	1955	15.0	14.9	15.8	15.9	14.6	13.0	10.9	100.0	24.0	48.6
	1960	16.3	14.5	14.2	15.1	14.8	13.4	11.7	100.0	23.3	47.2
	1965	19.2	15.0	13.1	13.2	13.9	13.8	11.8	100.0	23.2	46.8
	1970	19.4	17.7	14.5	12.3	12.0	12.3	11.9	100.0	24.4	48.9

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years							Total	Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49			
United States of America	1950	13.7	15.2	16.2	15.2	14.8	13.2	11.7	100.0	25.7	51.1
	1955	13.8	13.5	14.9	15.9	14.8	14.3	12.8	100.0	24.1	47.9
	1960	15.9	13.3	13.2	14.6	15.4	14.3	13.3	100.0	23.2	45.6
	1965	18.7	15.3	12.7	12.5	13.6	14.2	13.0	100.0	23.2	45.5
	1970	19.4	17.5	14.1	12.0	11.6	12.6	12.8	100.0	24.0	46.7
Oceania											
Australia	1950	13.4	15.4	16.4	14.9	15.1	13.1	11.6	100.0	24.7	49.9
	1955	13.8	13.1	15.4	16.2	14.7	14.5	12.4	100.0	23.6	47.8
	1960	15.8	13.6	13.1	14.9	15.4	13.7	13.4	100.0	23.2	46.8
	1965	18.7	15.1	13.2	12.6	13.9	14.3	12.3	100.0	23.3	47.0
	1970	18.3	17.6	14.3	12.6	11.8	12.7	12.7	100.0	23.7	47.8
Fiji	1950	24.2	19.4	16.1	14.5	11.3	8.1	6.5	100.0	21.5	44.9
	1955	22.4	19.4	16.3	14.2	11.6	9.1	7.0	100.0	22.5	47.0
	1960	23.5	19.7	16.1	13.2	11.2	9.2	7.1	100.0	22.2	45.8
	1965	23.0	19.5	16.3	13.4	11.1	9.2	7.5	100.0	22.7	46.6
	1970	23.8	19.9	16.5	13.3	10.7	8.6	7.1	100.0	23.8	48.3
New Zealand	1950	14.2	15.0	15.7	15.0	14.8	13.6	11.7	100.0	23.9	48.1
	1955	15.0	13.7	14.9	15.3	14.4	14.2	12.6	100.0	23.0	46.3
	1960	16.9	14.2	13.4	14.3	14.4	13.7	13.0	100.0	22.3	44.8
	1965	20.0	15.3	13.4	12.6	13.2	13.4	12.1	100.0	22.3	44.8
	1970	19.9	17.6	14.2	12.7	11.4	12.2	12.0	100.0	22.7	45.4

Table 69 (continued)

Major area, region and country	Year	Women of childbearing age as percentage of the female population aged 15-49 years								Women aged 15-49 as percentage of total population	Women aged 15-49 as percentage of total females
		15-19	20-24	25-29	30-34	35-39	40-44	45-49	Total		
USSR	1950	...	...	...	...	...	...	...	...	...	...
	1955	...	...	...	...	...	...	...	...	...	...
	1959	11.6	17.8	16.1	18.0	12.2	11.1	13.1	100.0	27.6	50.3
	1965	...	...	...	...	...	...	...	...	...	...
	1970	17.1	13.4	11.0	17.0	13.4	16.2	11.9	100.0	26.2	48.5

a/ Excluding Ceuta and Melilla.

b/ Including Berlin. Designations and data for Berlin were supplied by the competent authorities pursuant to the relevant agreements of the four Powers.

Future population estimates

World Population Prospects As Assessed in 1968. Population projections to 2000 for world regions and to 1985 for each country. English, French, Russian, Spanish. 167 pp., \$4.00. ST/SOA/Series A/53. Sales No. 72.XIII.4.

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Multilingual Demographic Dictionary. English, French Russian, Spanish. 77 pp., \$1.00. ST/SOA/Series A/29. Sales No. 58.XIII.4.

Proceedings of World Population Conferences

Rome, 1954 (31 August-10 September)

*Summary report. English, French, Spanish. 207 pp., \$1.00.
E/CONF.13/412, Sales No. 55.XIII.8.

*Papers. Six volumes; papers in original languages. \$1.50 per volume.
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World Population: Challenge to Development. A non-technical summary of highlights of the 1965 Conference. English, French, Russian, Spanish. 48 pp., \$0.75. E/CONF.41/1. Sales No. 66.X.II.4.

Volume I: Summary Report. English, French, Russian, Spanish. 349 pp., \$5.50. E/CONF.41/2. Sales No. 66.XIII.5.

Papers. Three volumes. English, French, Spanish. E/CONF.41/3-5
Sales No. 66.XIII.6-8.

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The Population Debate: Dimensions and Perspectives.

Papers. Two volumes; papers in original languages. \$30.00 per volume.
ST/ESA/Series A/57 and ST/ESA/Series A/57/Add.1.
Sales No. E/F/S.75.XIII.4-5.

Report of the United Nations World Population Conference, 1974. Chinese, English, French, Russian and Spanish. 147 pp., \$7.00. E/CONF.60/19.
Sales No. 75.XIII.3.

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Report of the Interregional Workshop on Programmes of Training in the Field of Population (Elsinore, Denmark, 19-30 June 1967). English, French, Russian, Spanish. 38 pp. E/CN.9/207-E/CN.9/CONF.4/1-ST/TAO/SER.C/98 (non-sales item, 1967).

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CORRIGENDUM
Ref.: Sales No. E.77.XIII.2
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October 1977
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LEVELS AND TRENDS OF FERTILITY THROUGHOUT THE WORLD, 1950-1970

Corrigendum

Attached hereto are the charts, with titles and page numbers added to correspond with respective references in the text.

Figure I. Live births per 1,000 population in countries of Africa having reliable data, from 1950 to most recent available date

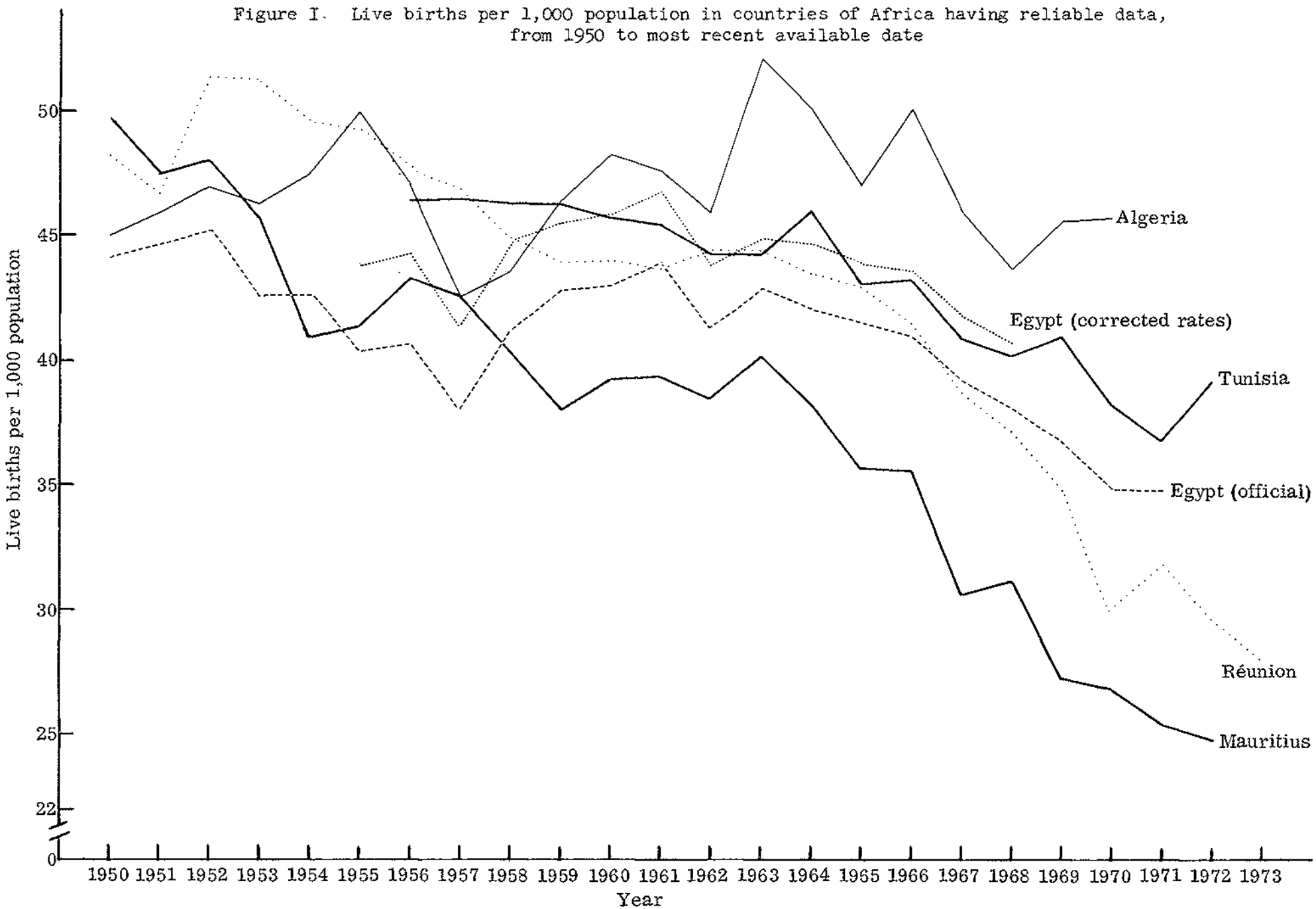


Figure II. Percentage of total fertility contributed by women in each age group, selected countries of Africa

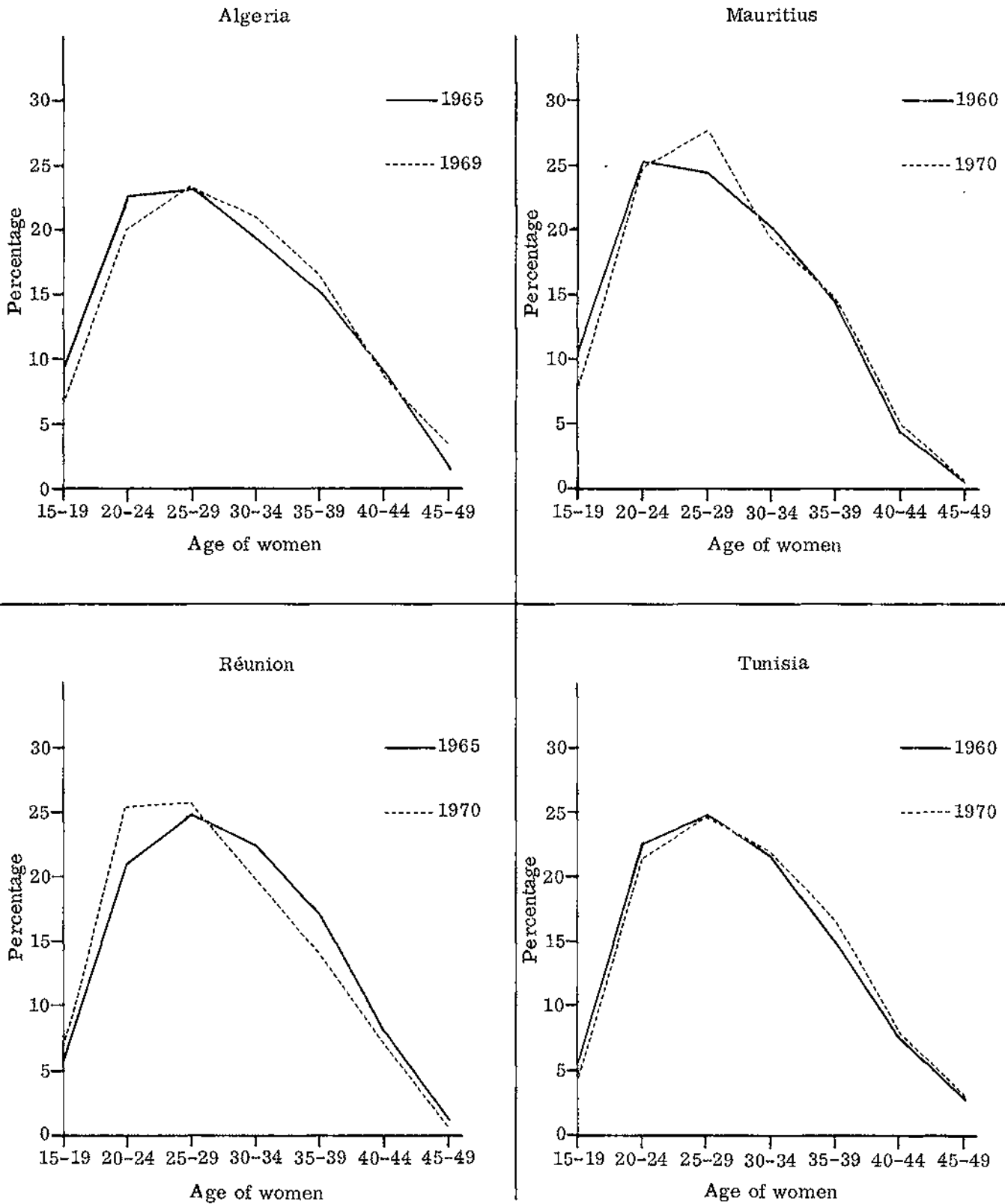


Figure IV. Percentage distribution of age-specific fertility rates by age of mother, selected countries of Latin America, 1950 and 1970

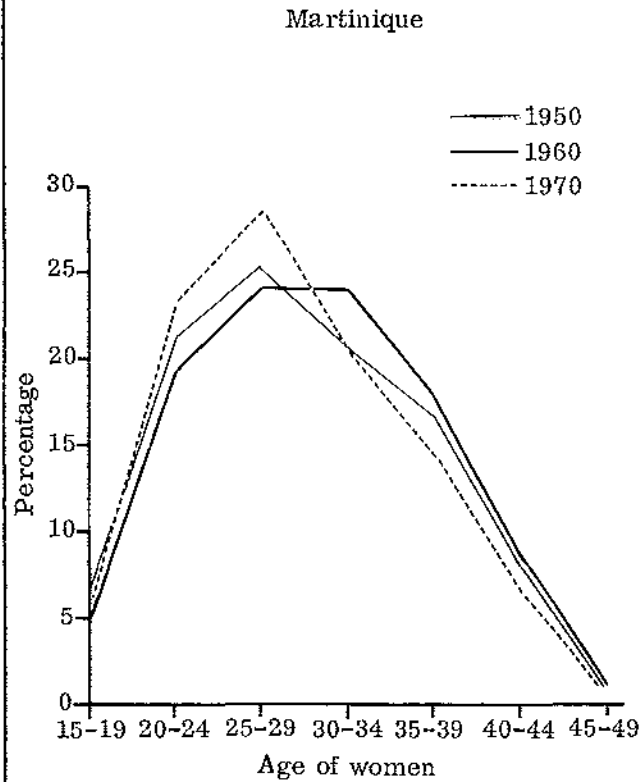
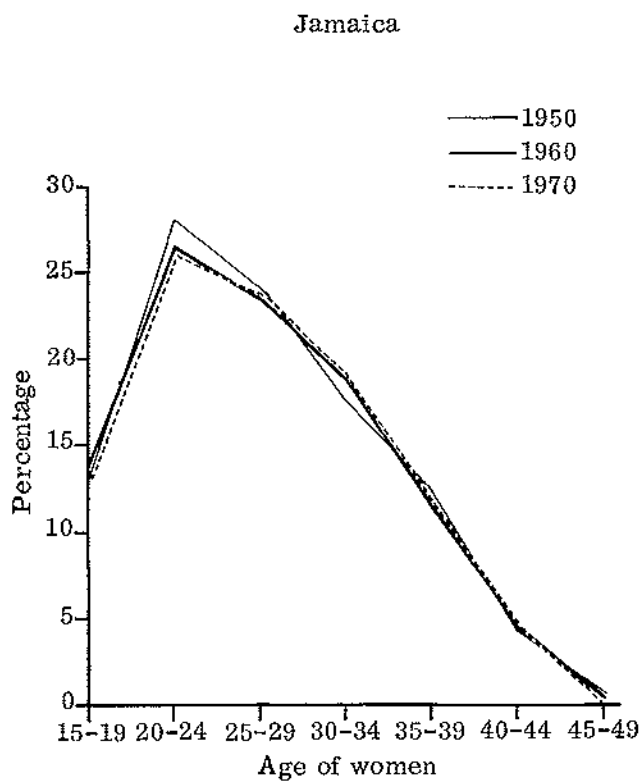
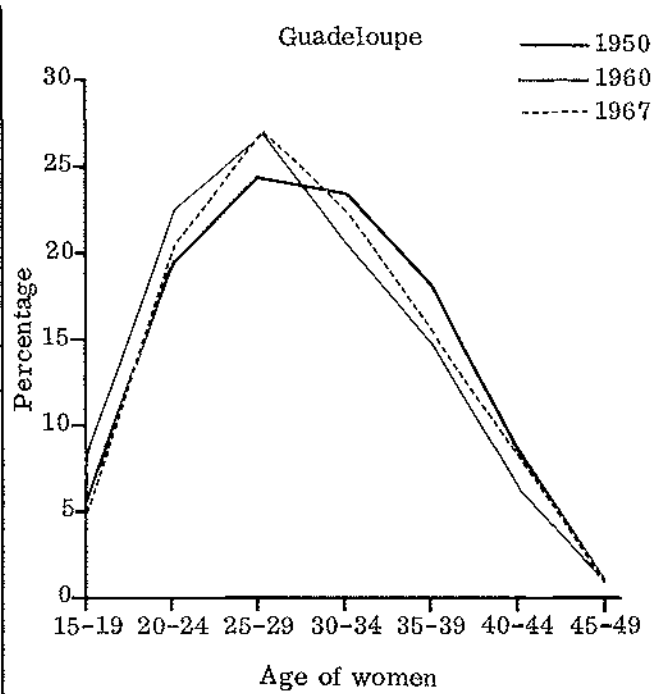
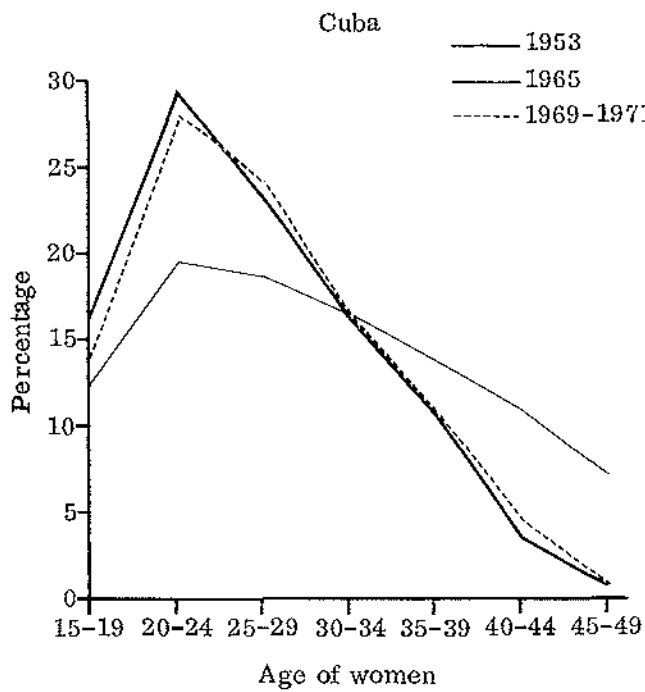


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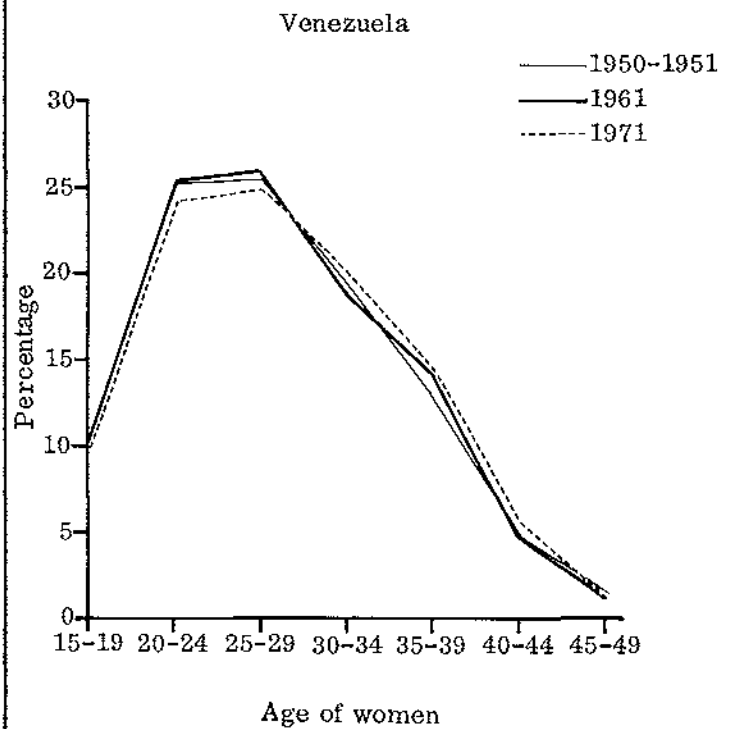
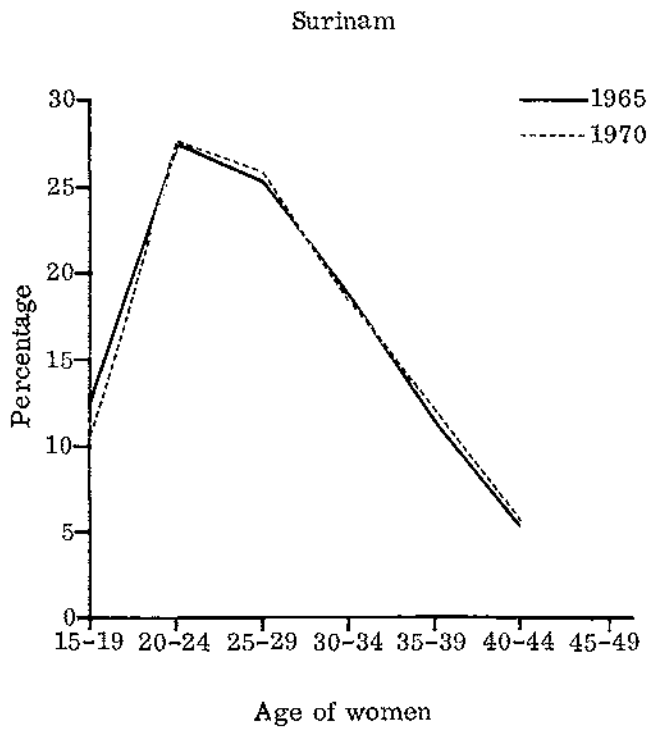
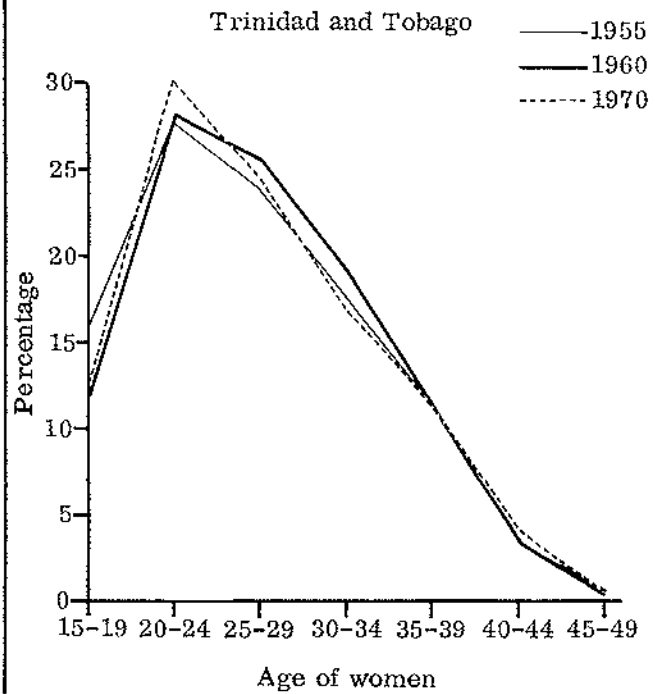
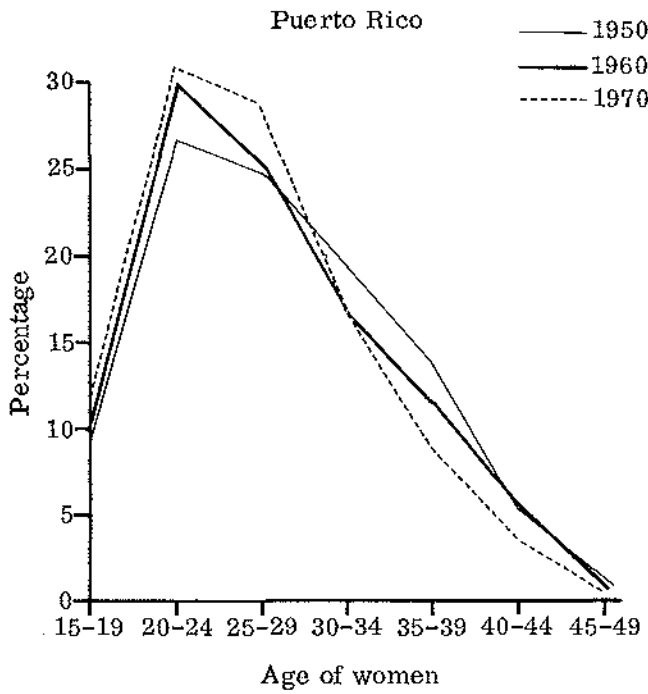


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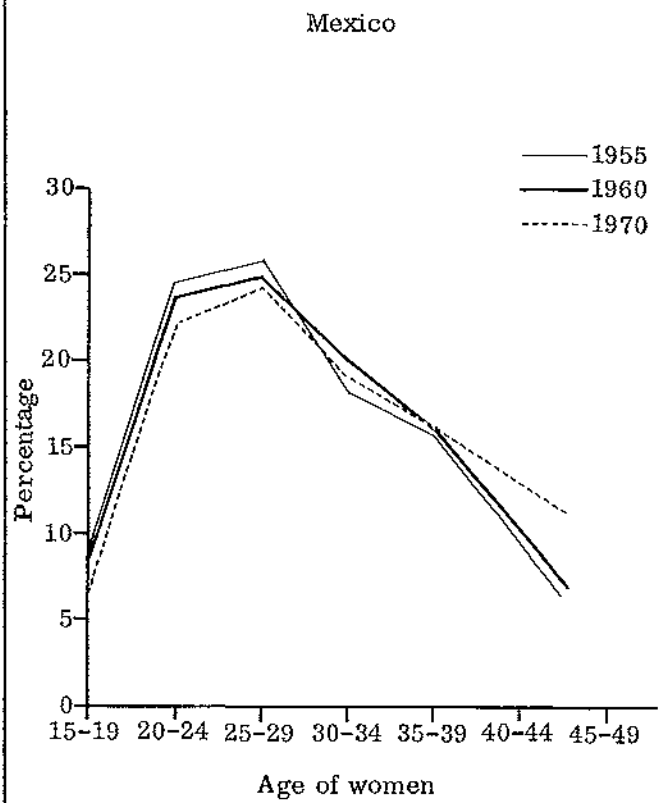
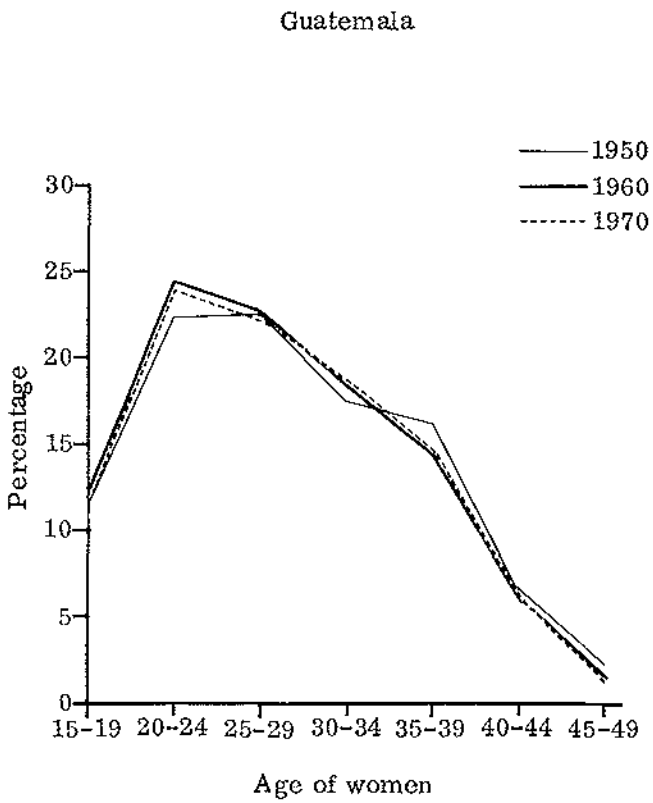
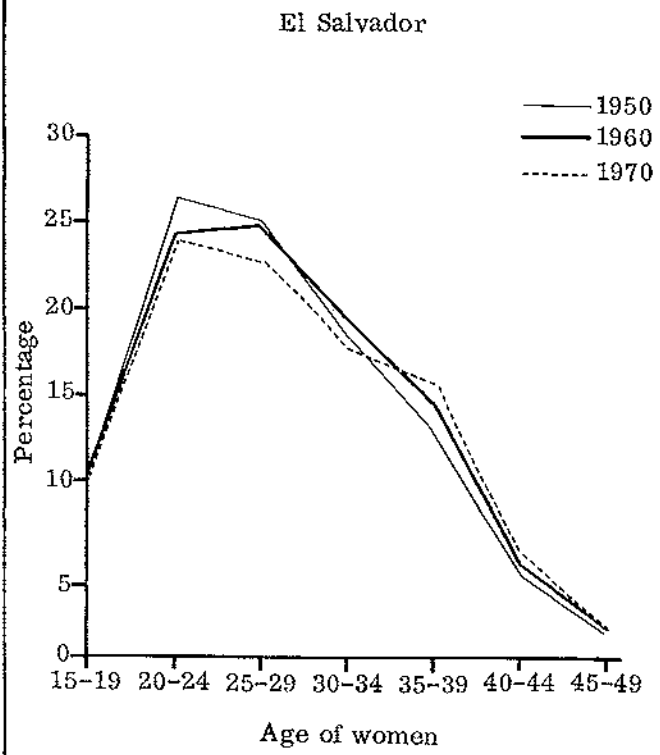
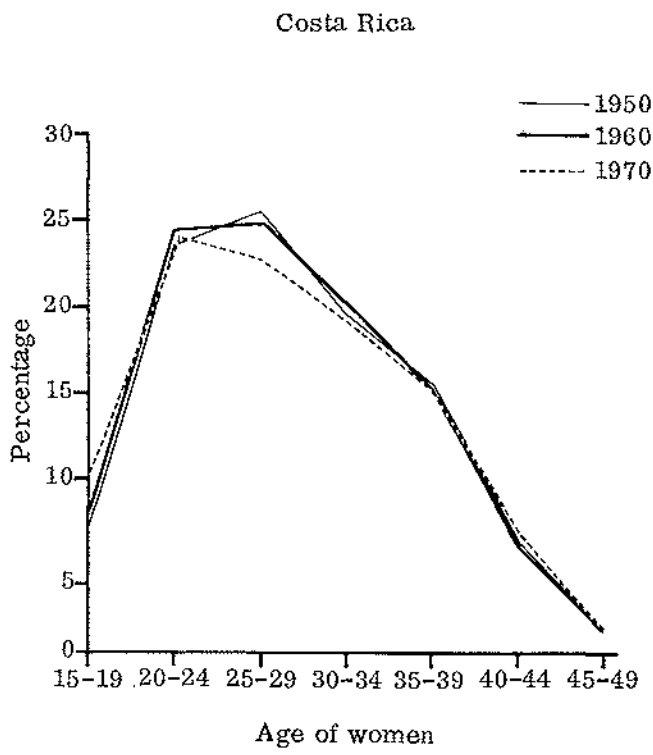


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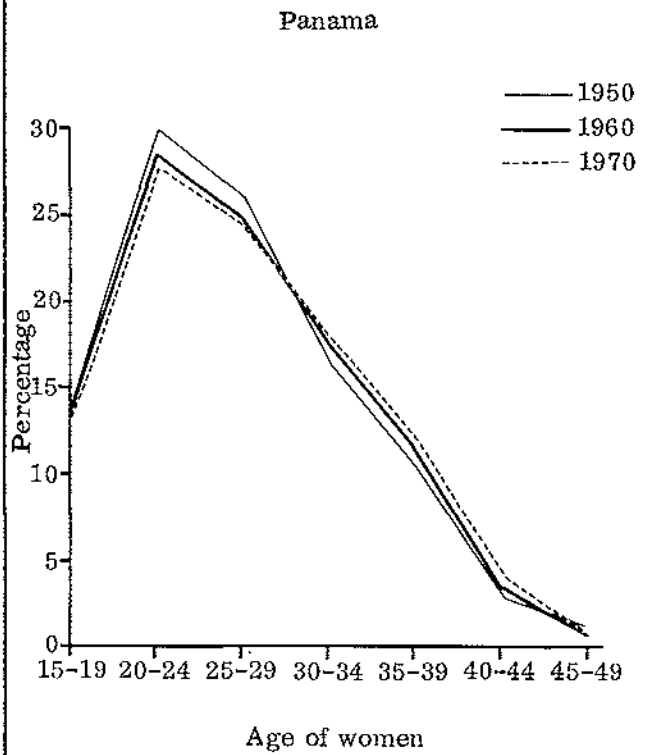
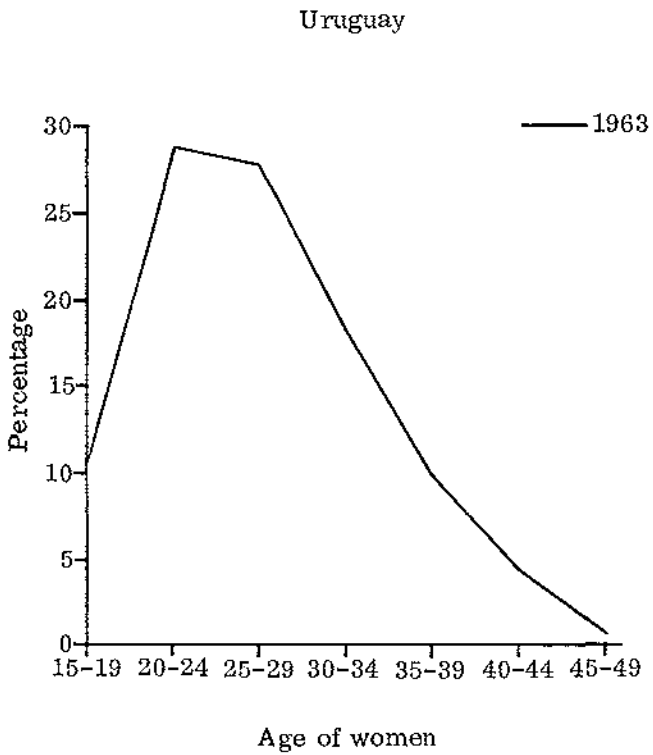
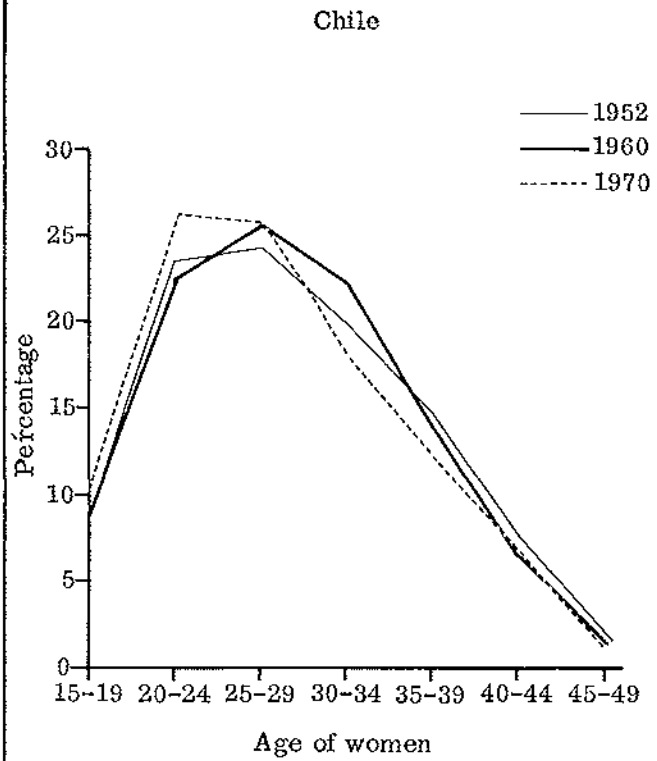
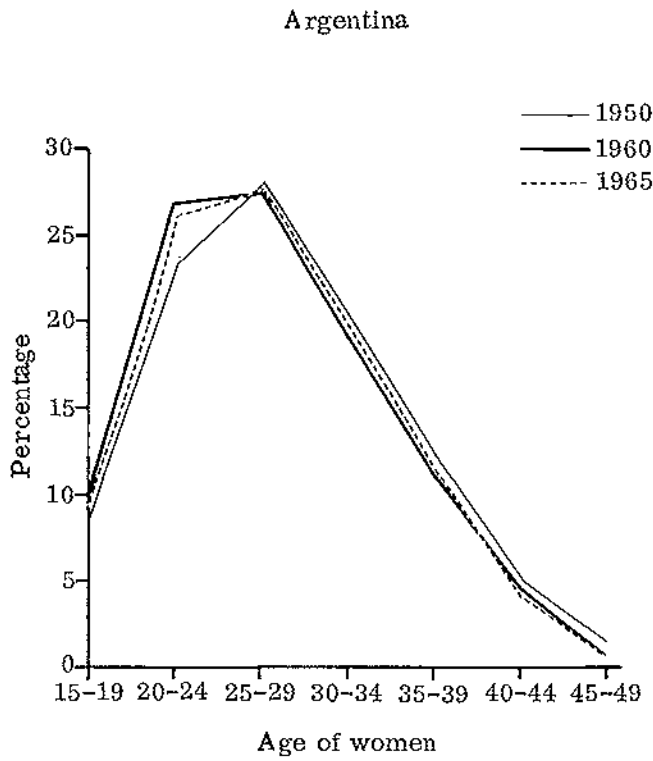


Figure V. Live births per 1,000 population, selected countries of Asia, from 1950 to most recent available date

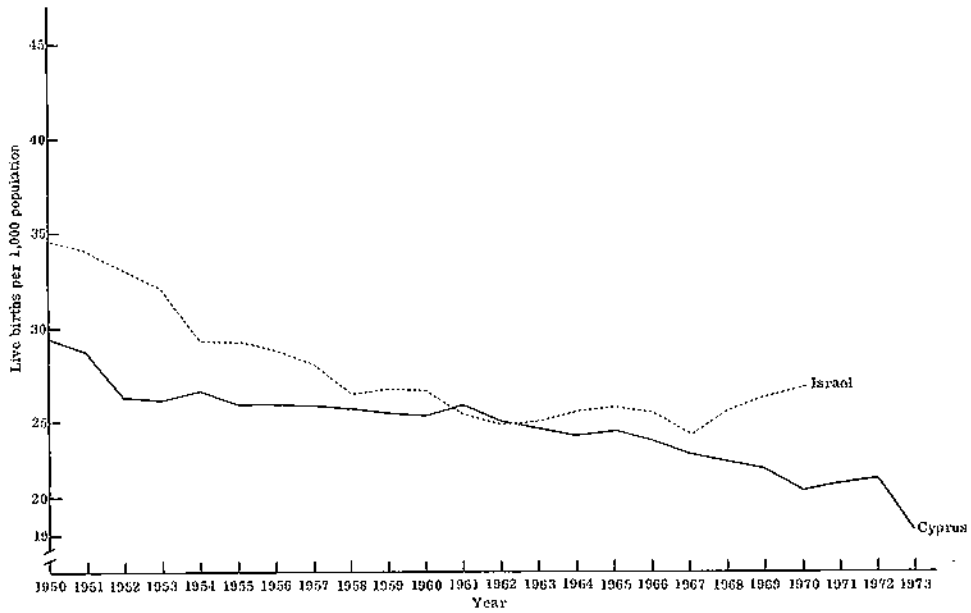


Figure VI. Percentage distribution of age-specific fertility rates by age of mother, selected countries of Asia, 1960 and 1970

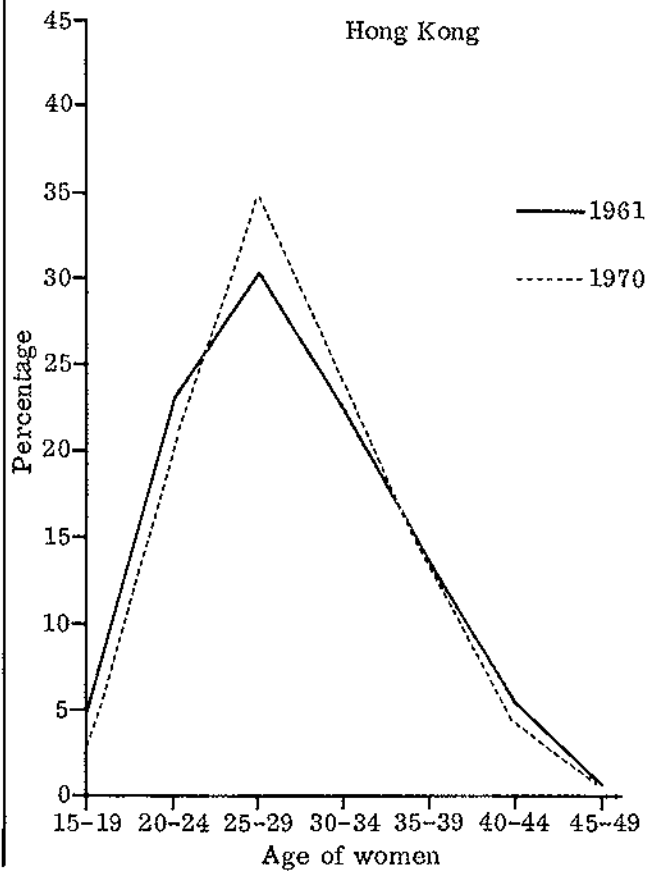
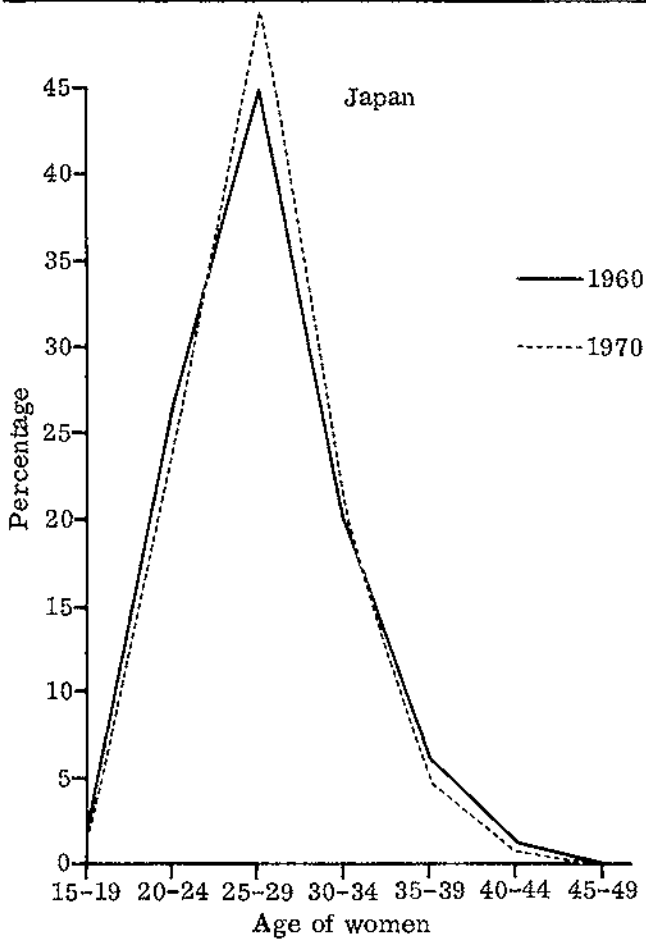
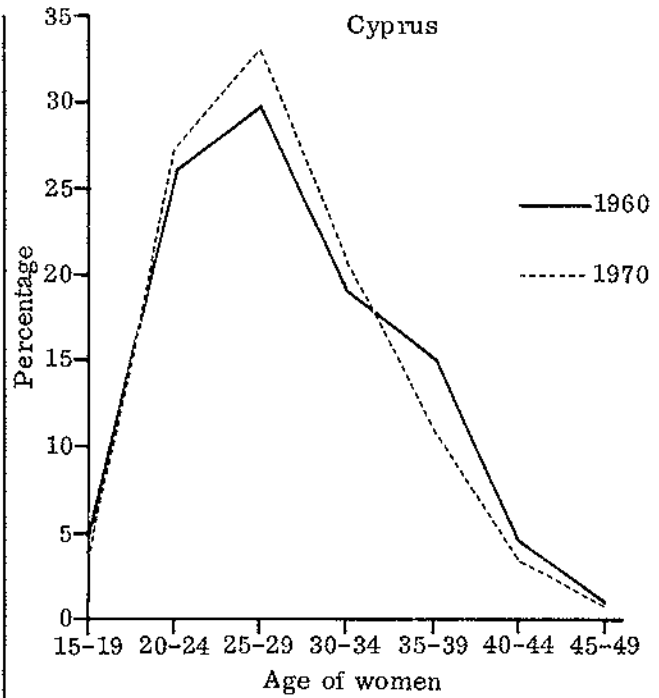
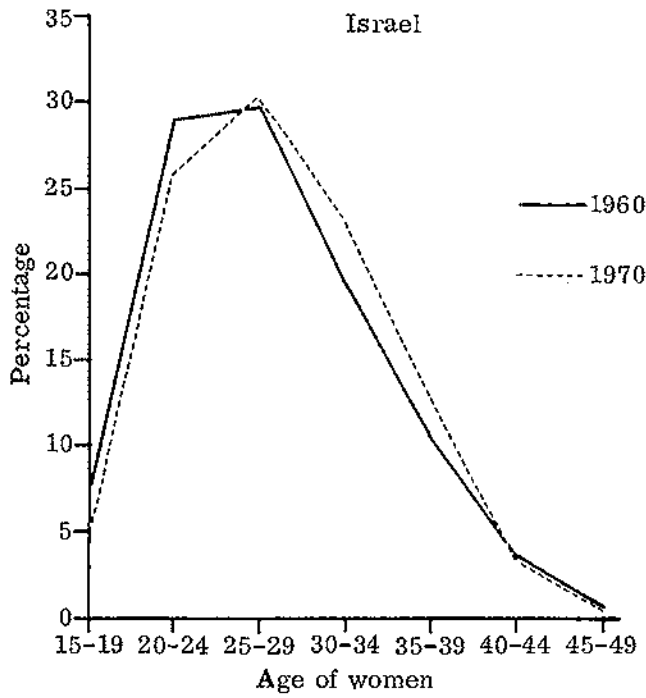


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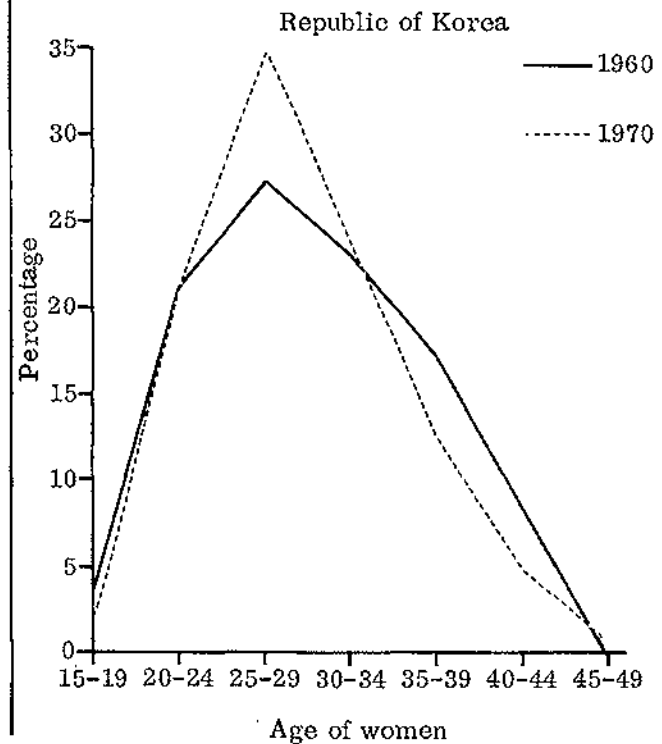
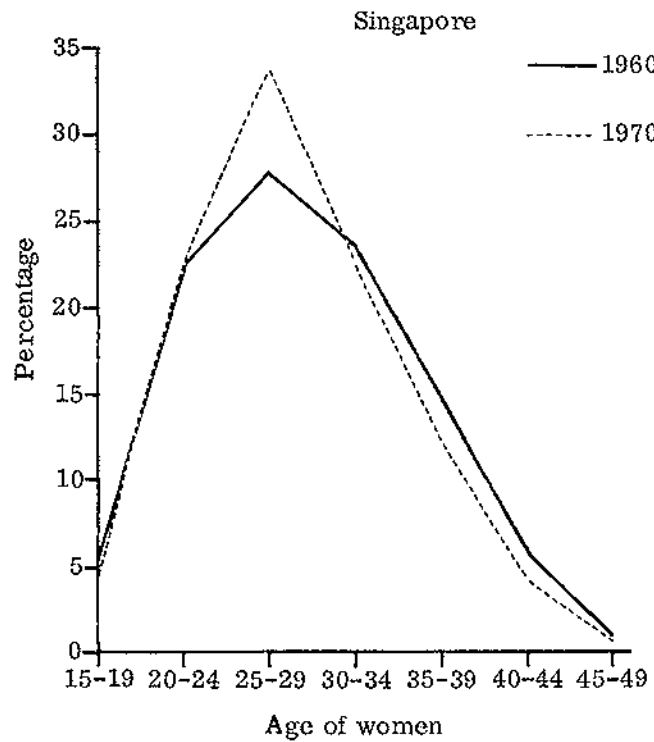
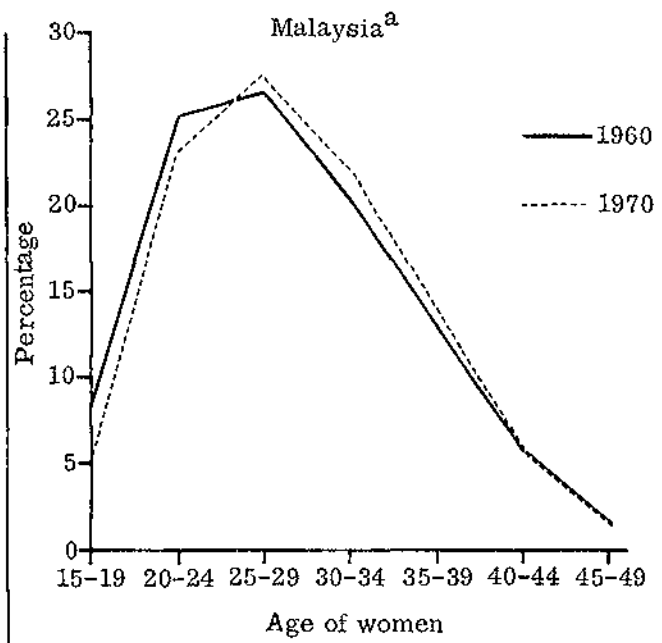
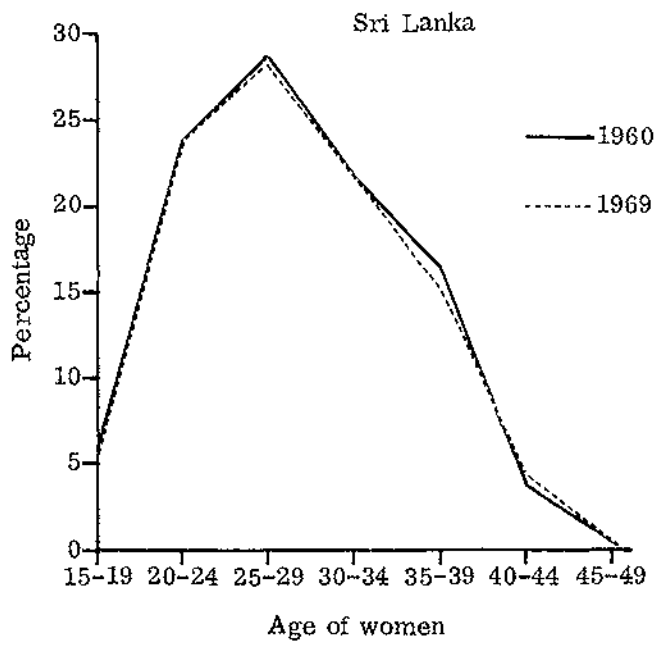


Figure VII. Percentage distribution of age-specific fertility rates in selected countries of Asia with inadequate data, most recent available year

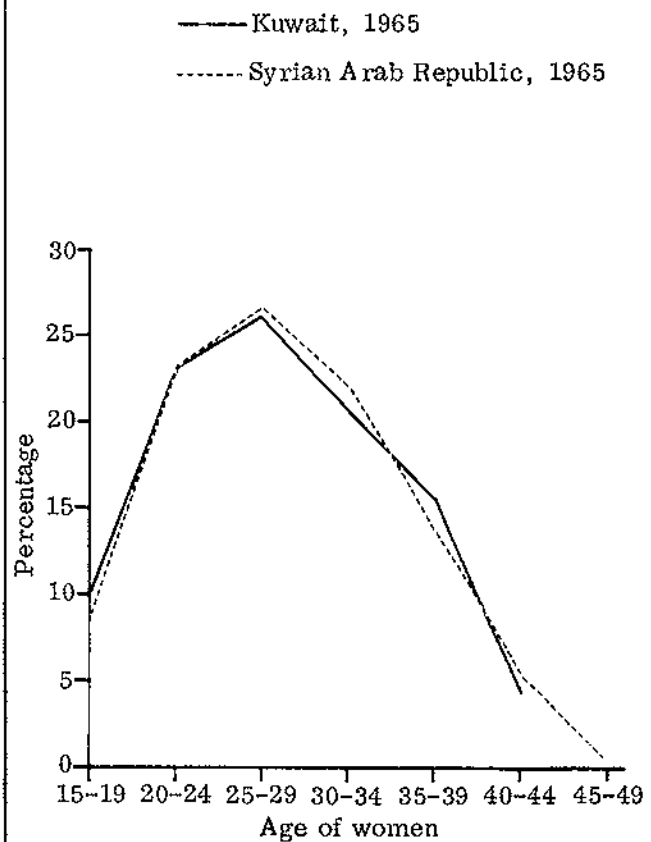
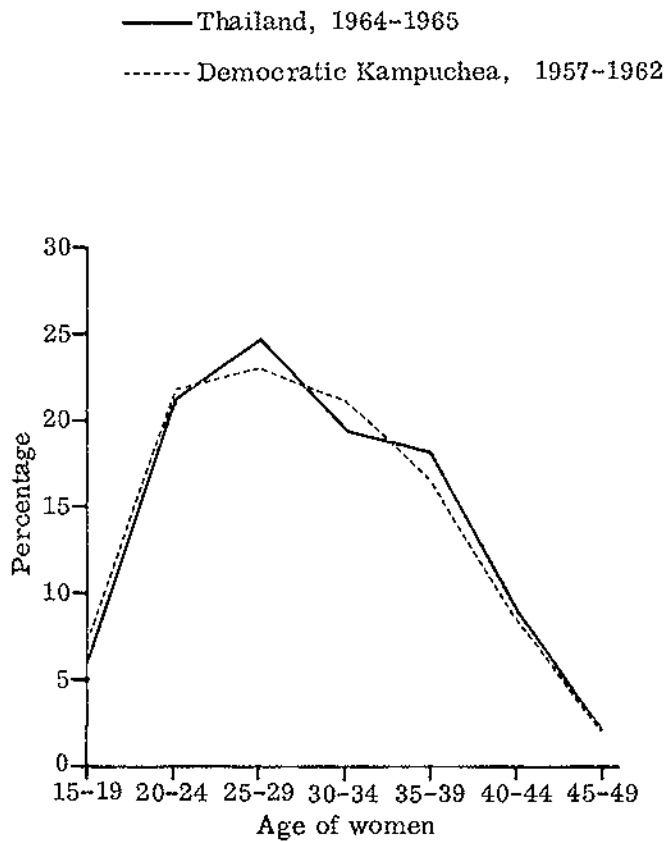
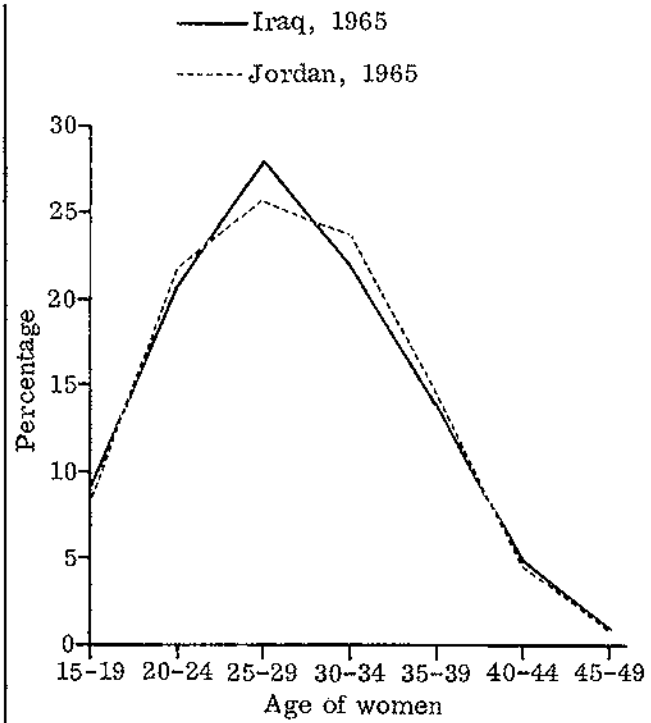
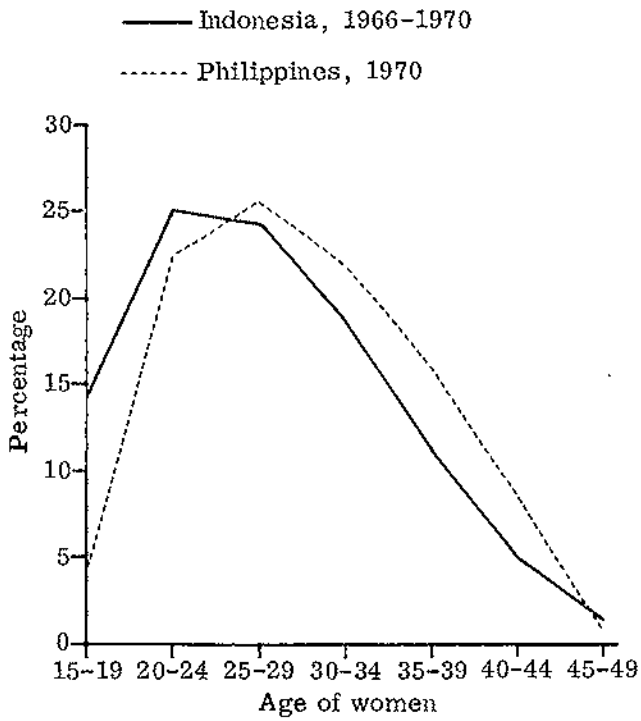


Figure VIII. Live births per 1,000 population in more developed regions, 1950-1973

(a) Eastern Europe

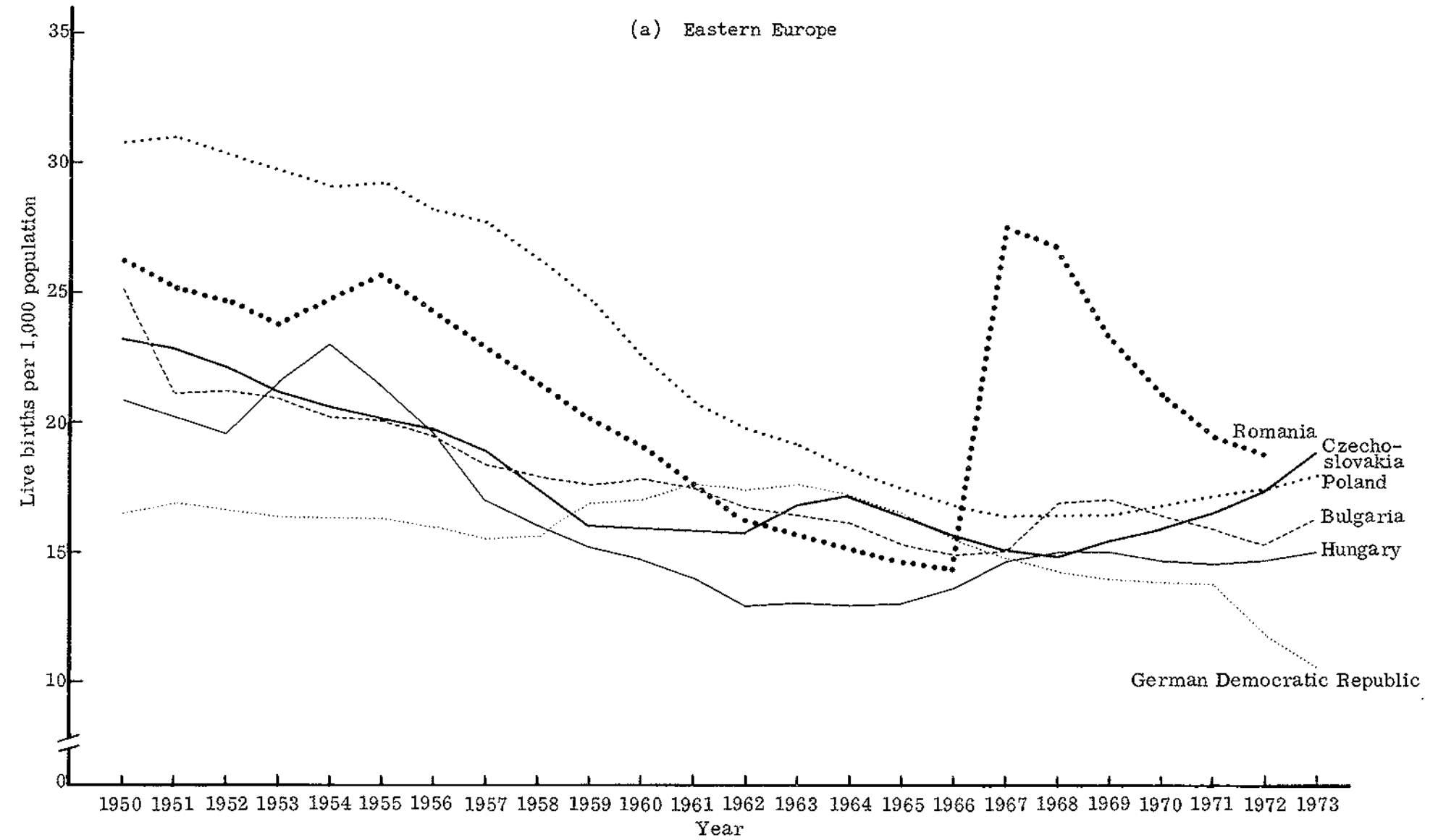


Figure VIII. (continued)

(b) Northern Europe

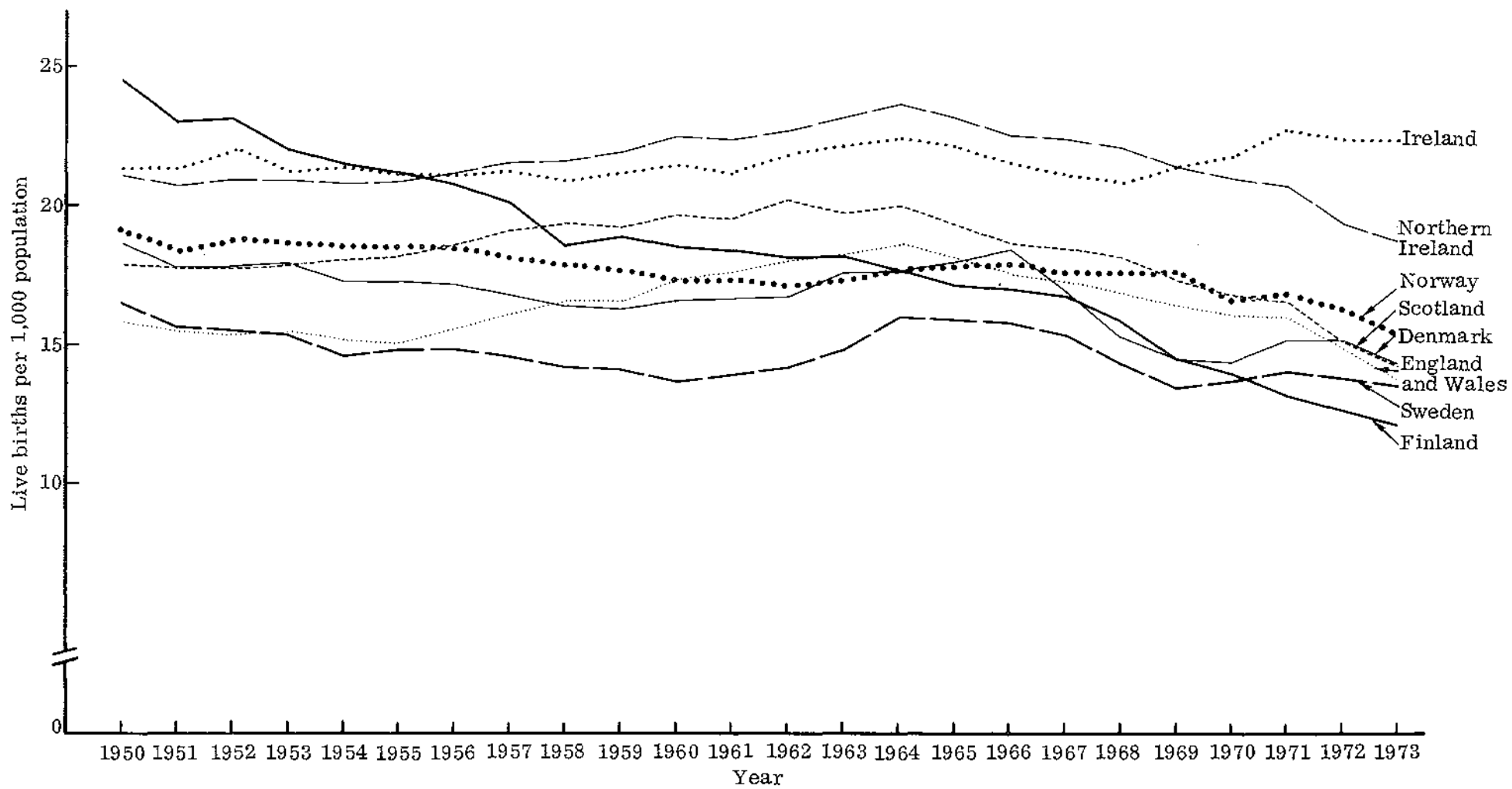


Figure VIII. (continued)

(c) Southern Europe

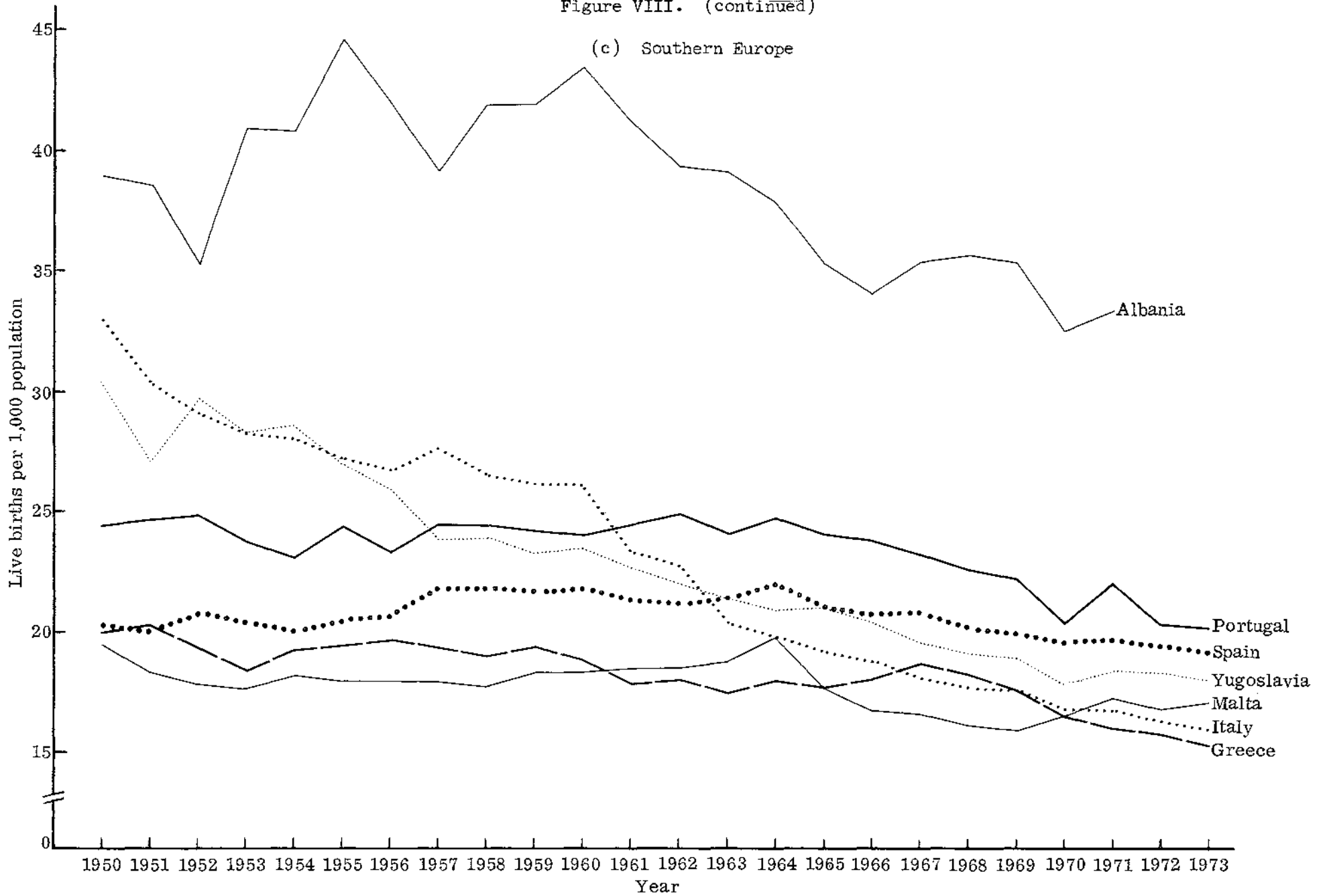


Figure VIII. (continued)

(d) Western Europe

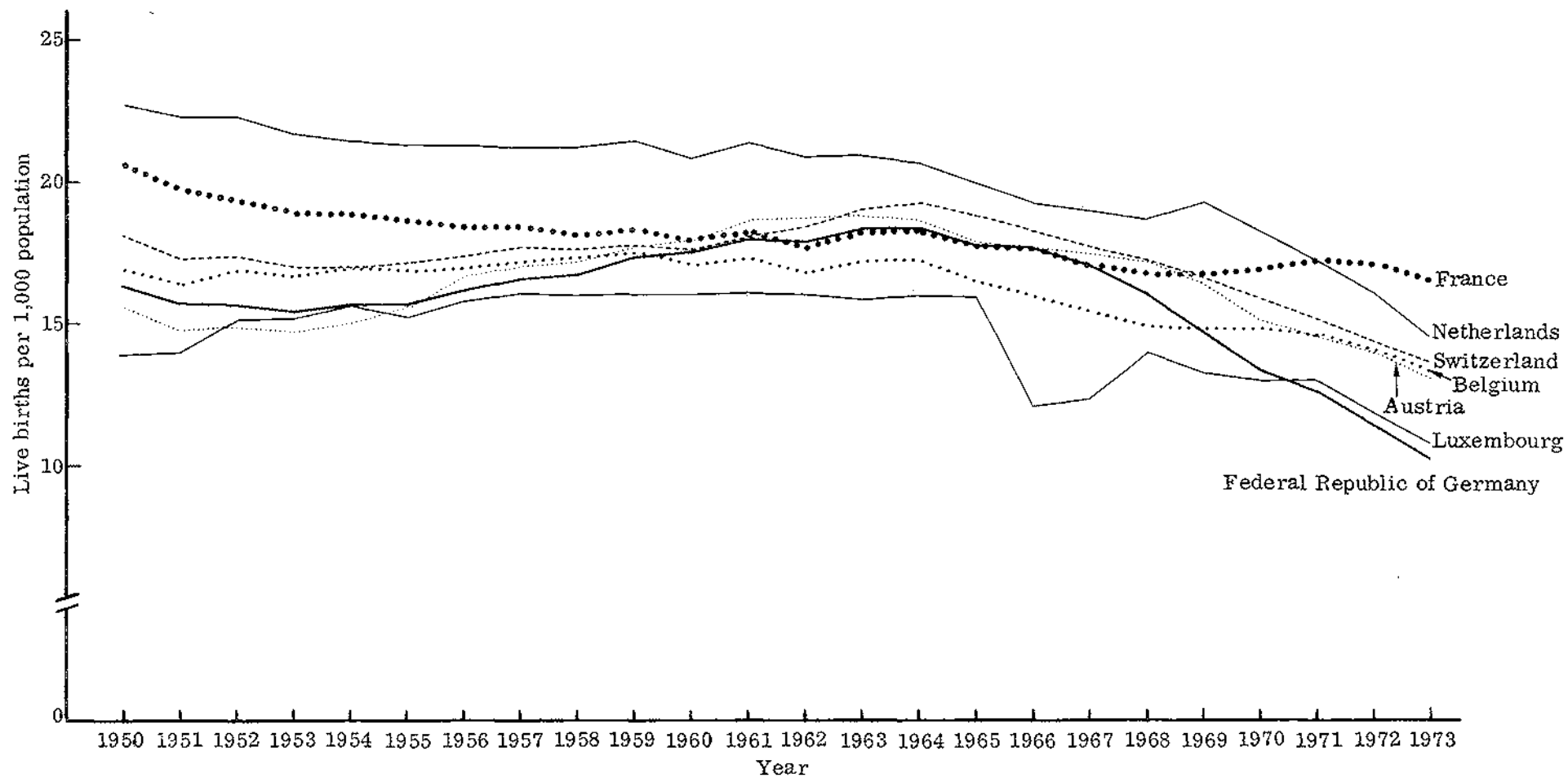


Figure VIII. (continued)

(e) Northern America, USSR and Oceania

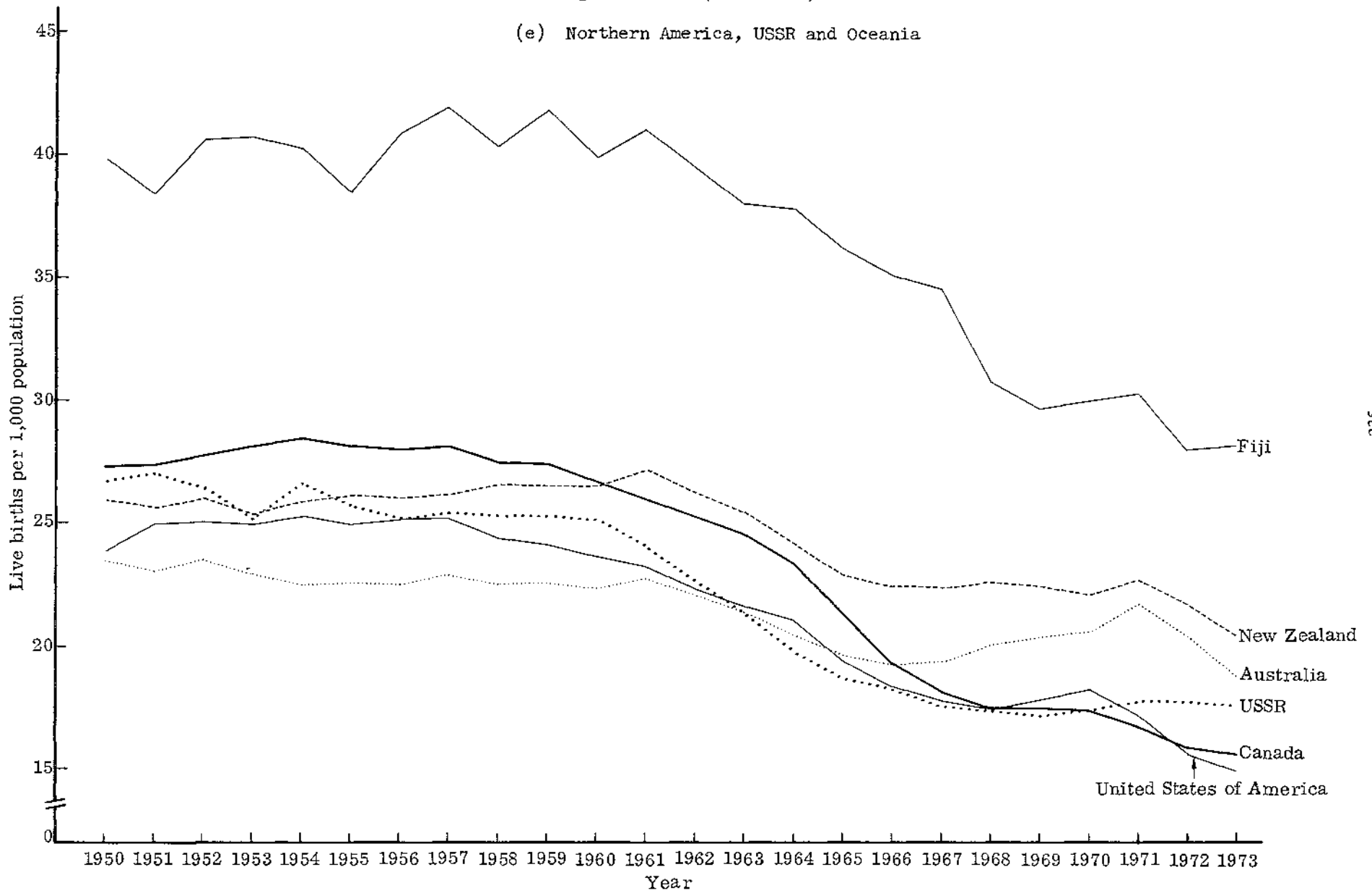


Figure IX. Percentage distribution of age-specific fertility rates by age of mother, selected countries of more developed regions, 1950 and 1970

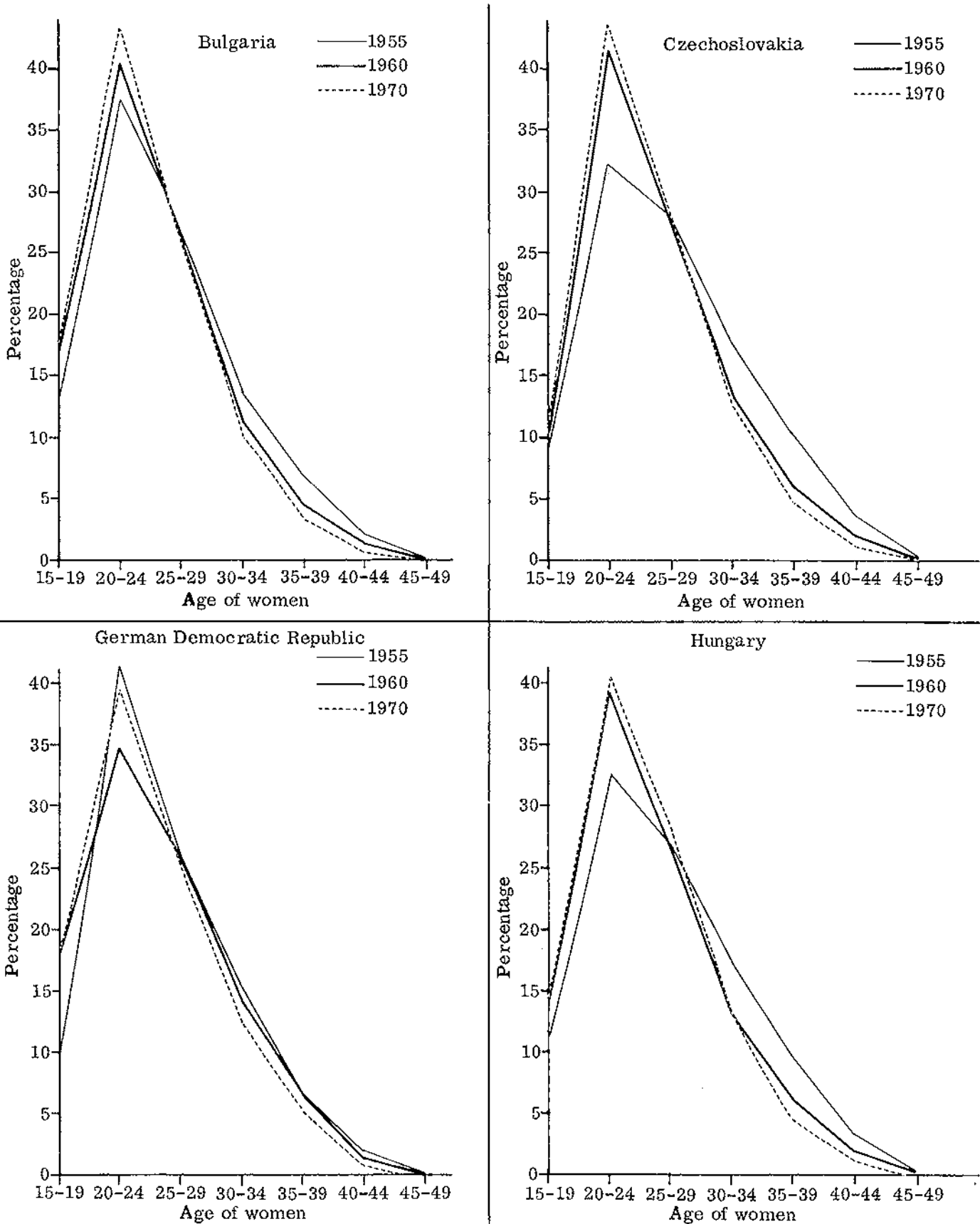
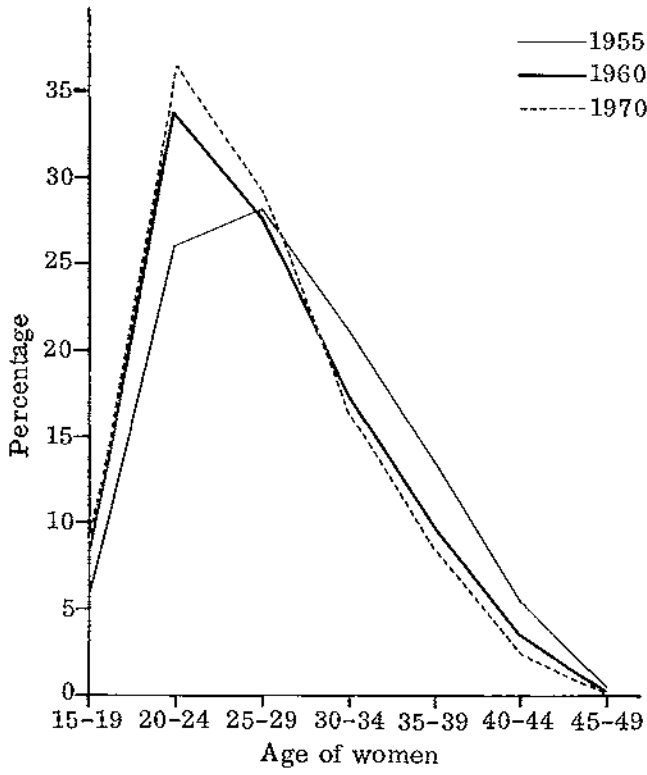
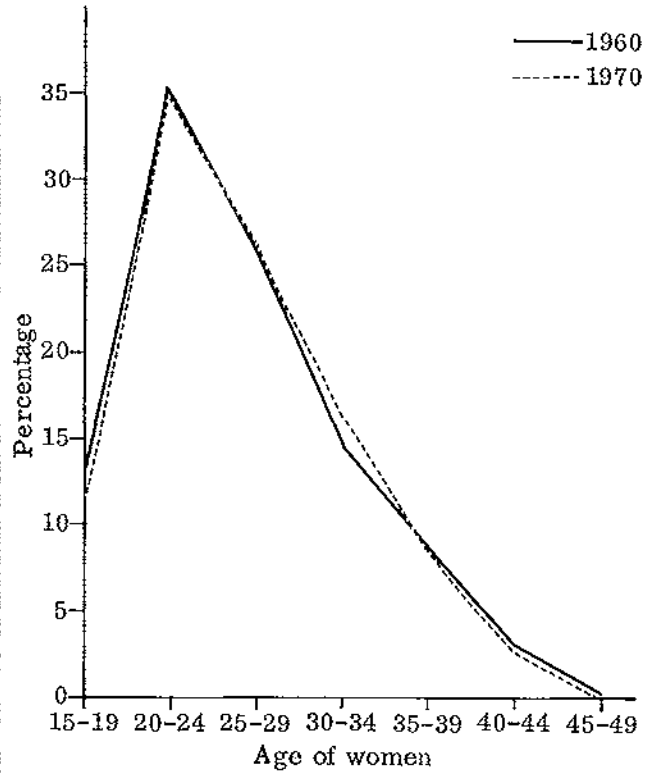


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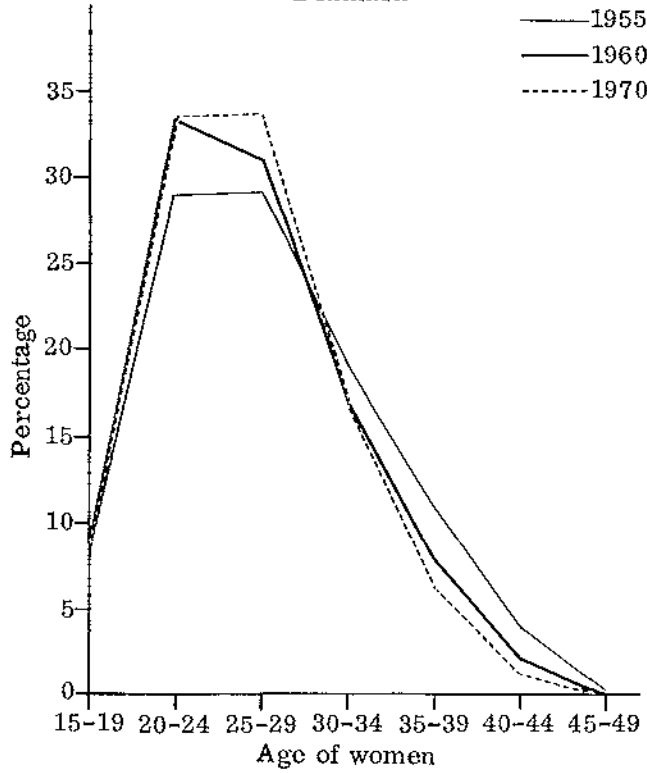
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Romania



Denmark



Finland

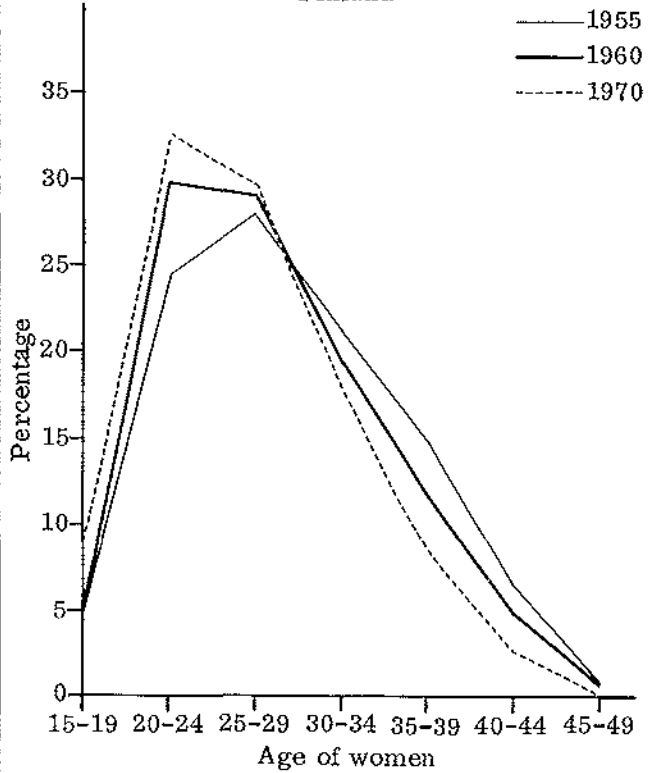


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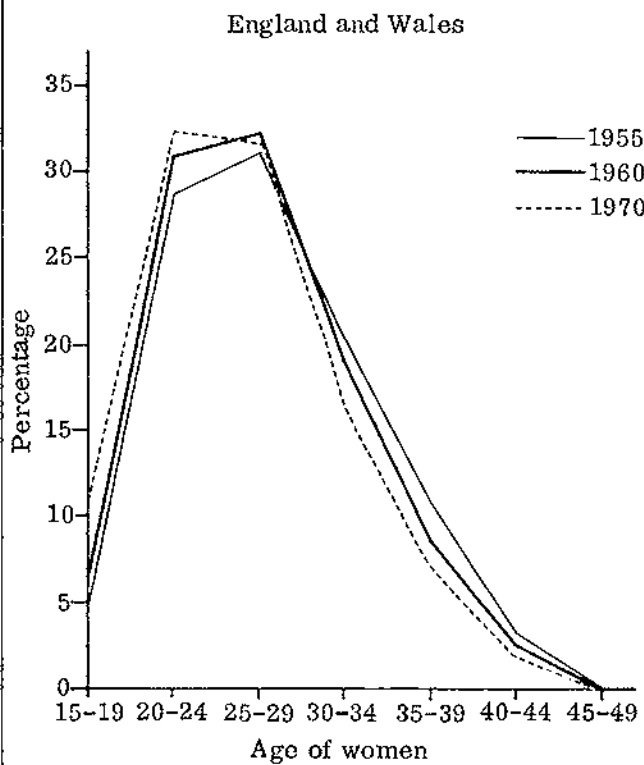
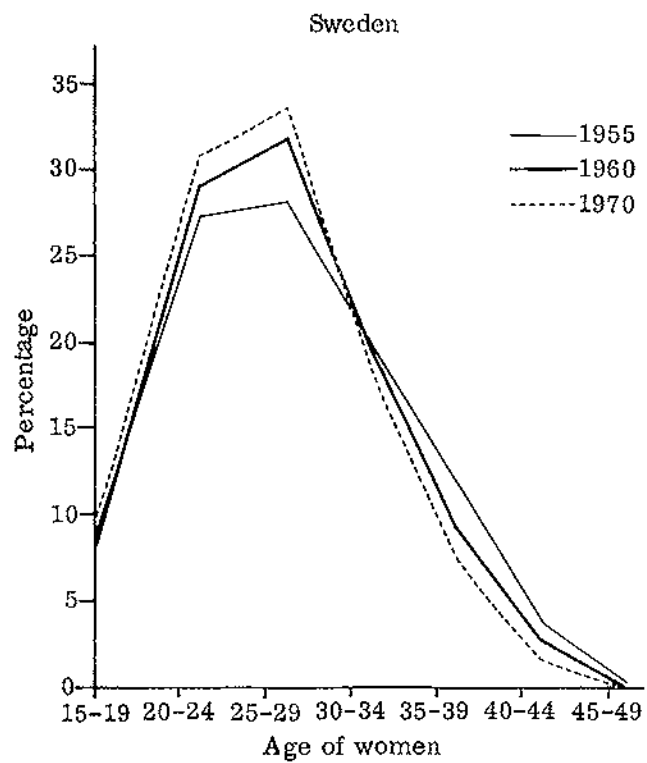
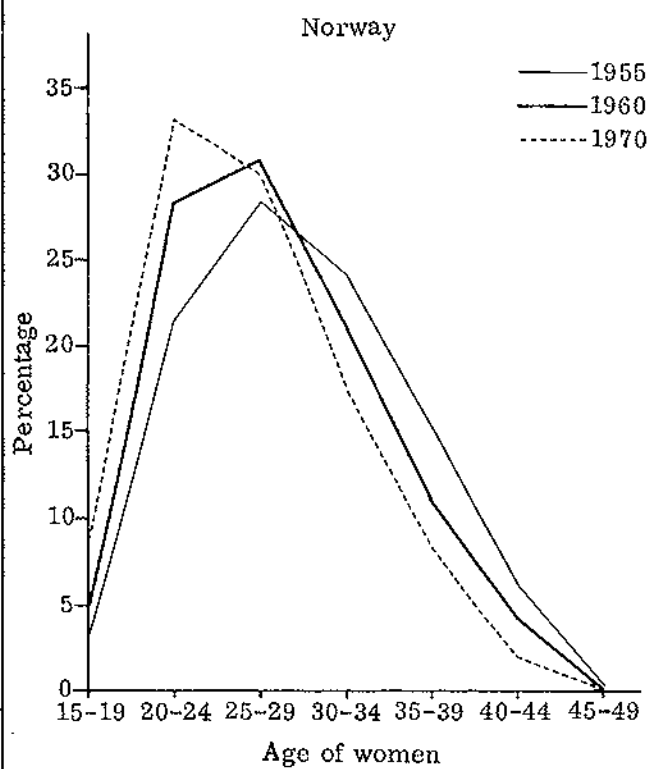
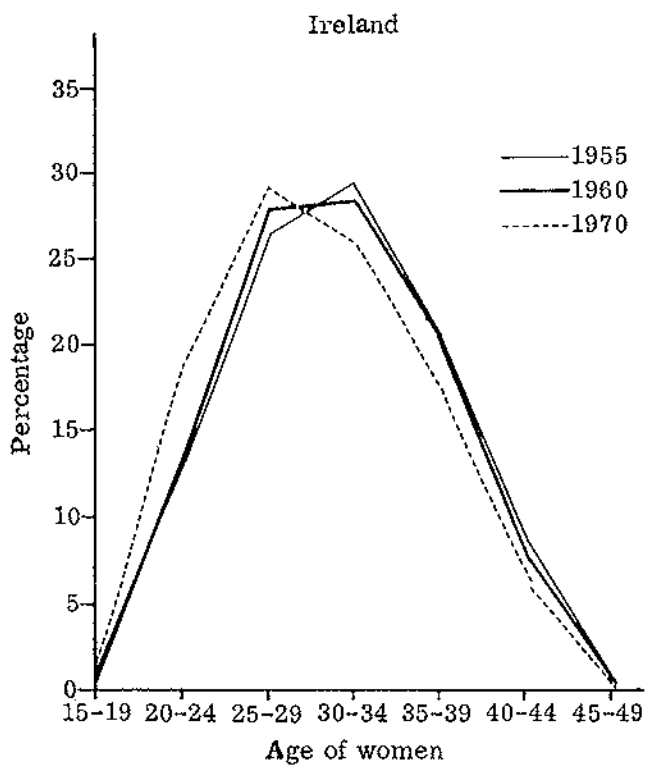


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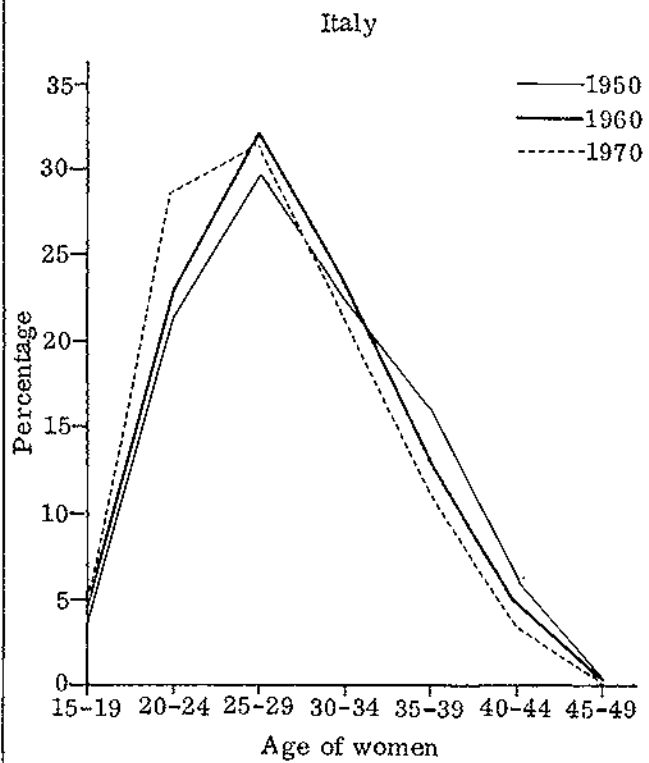
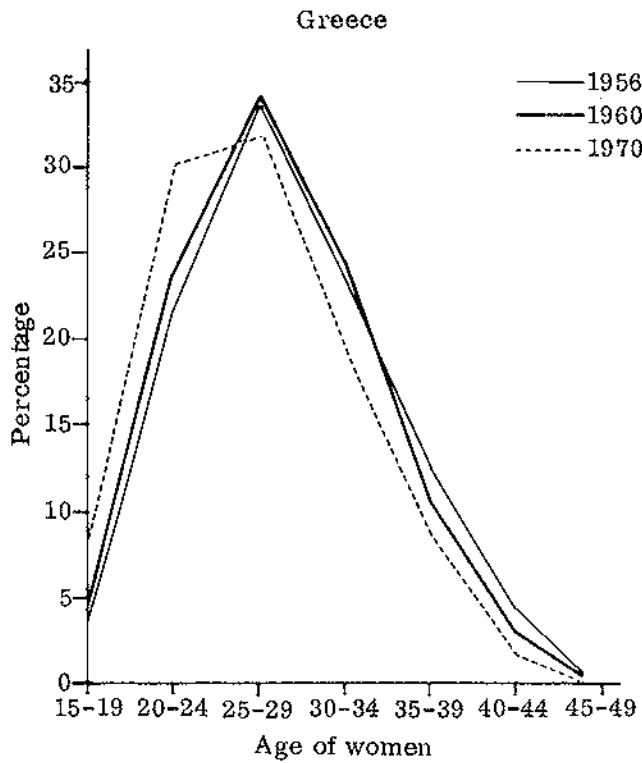
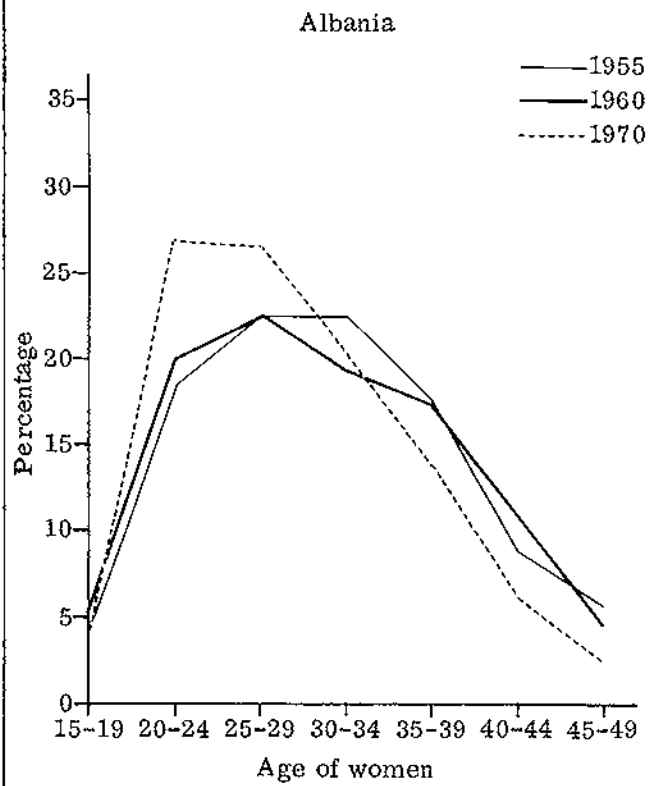
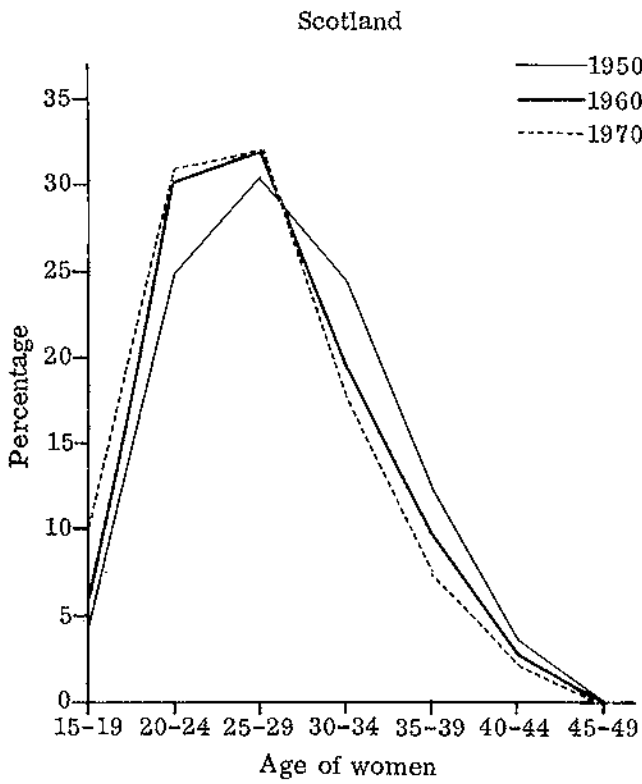


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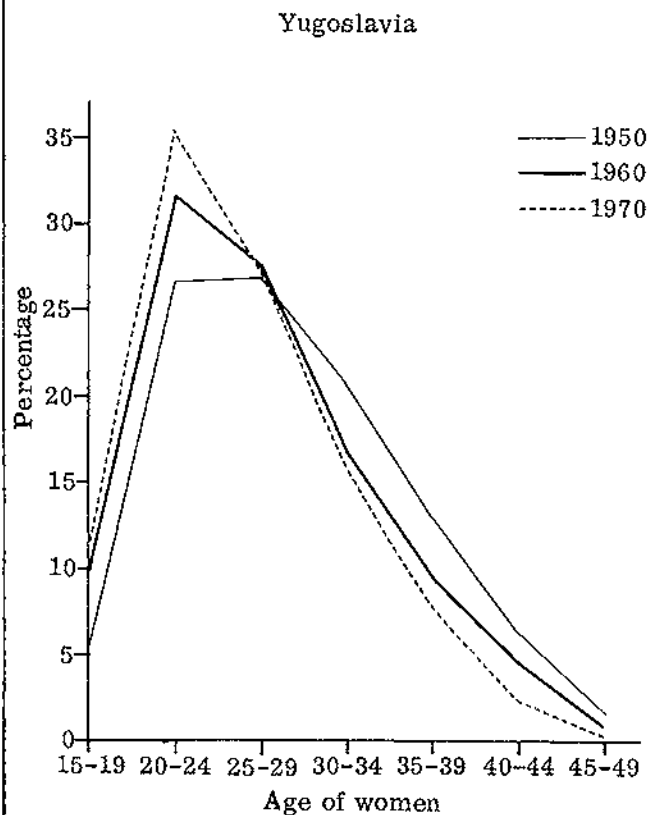
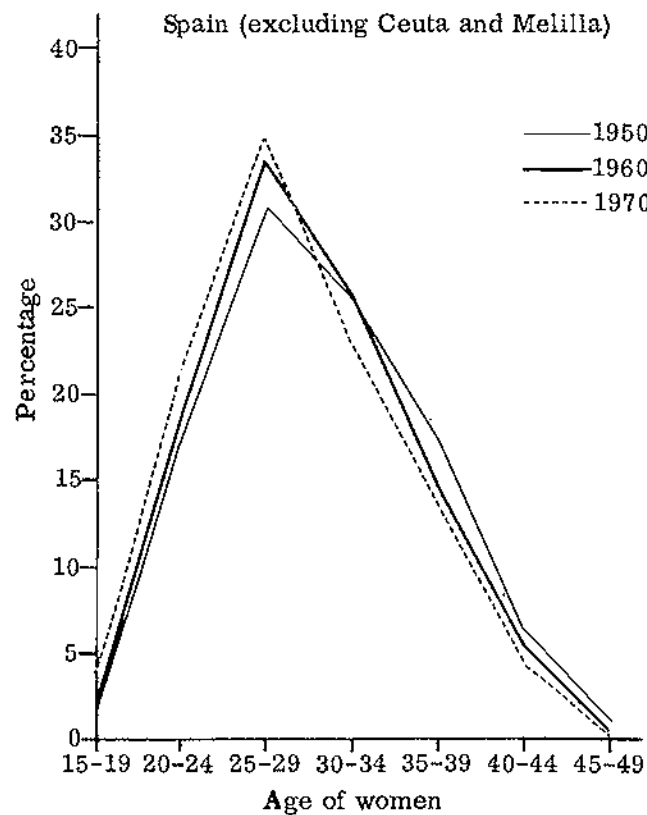
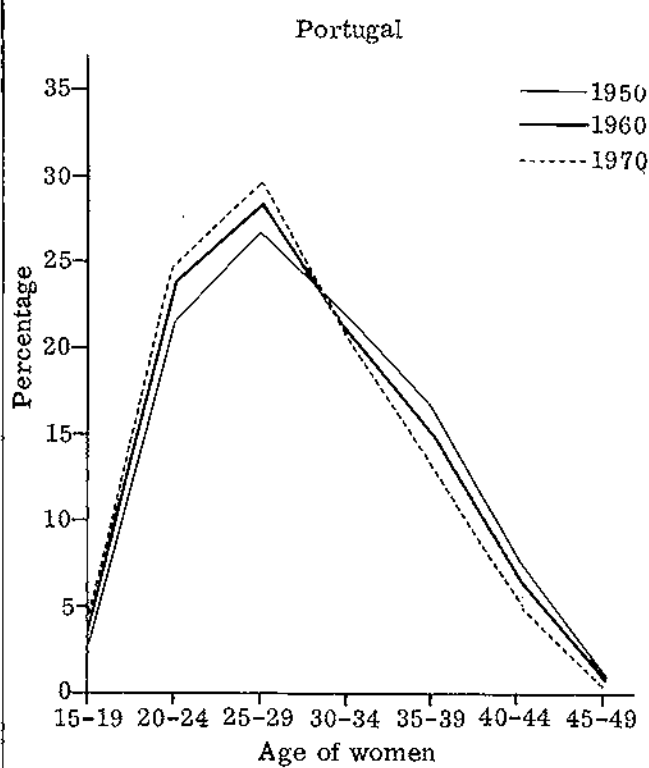
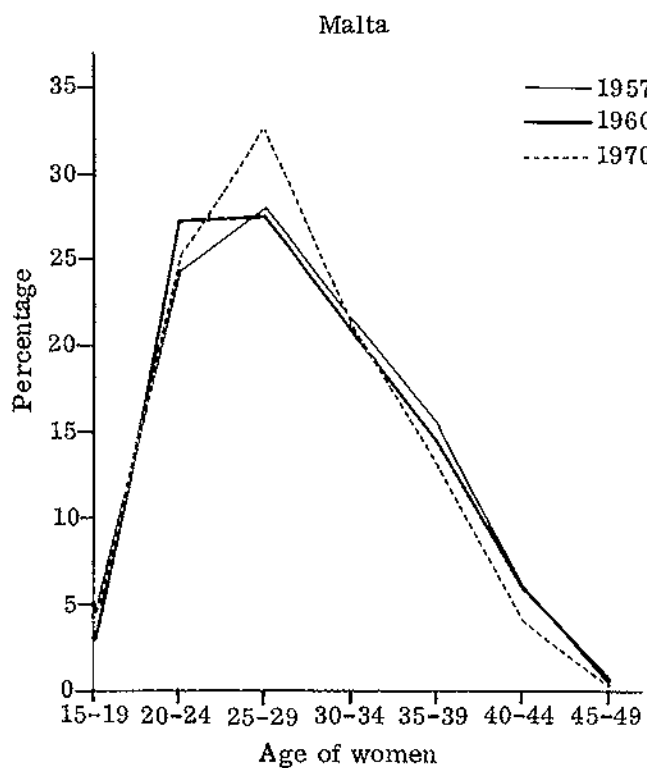


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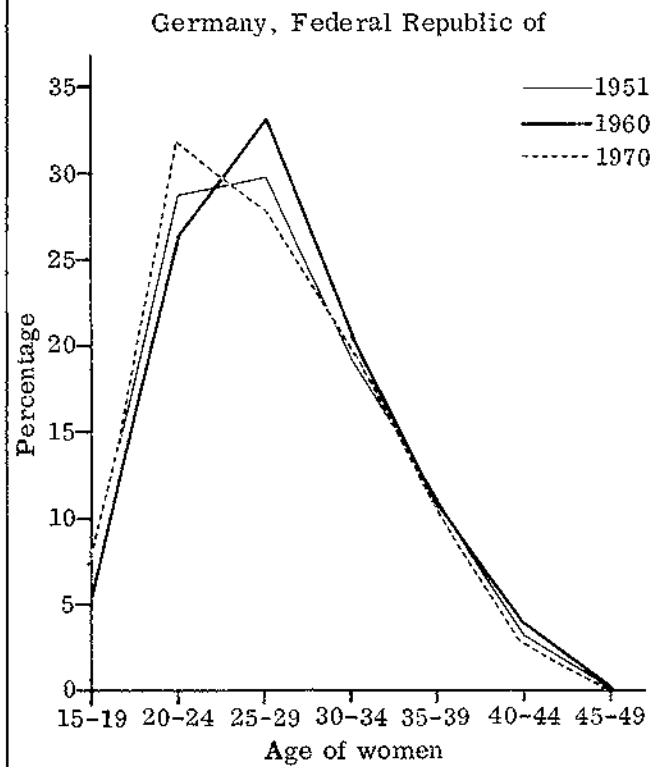
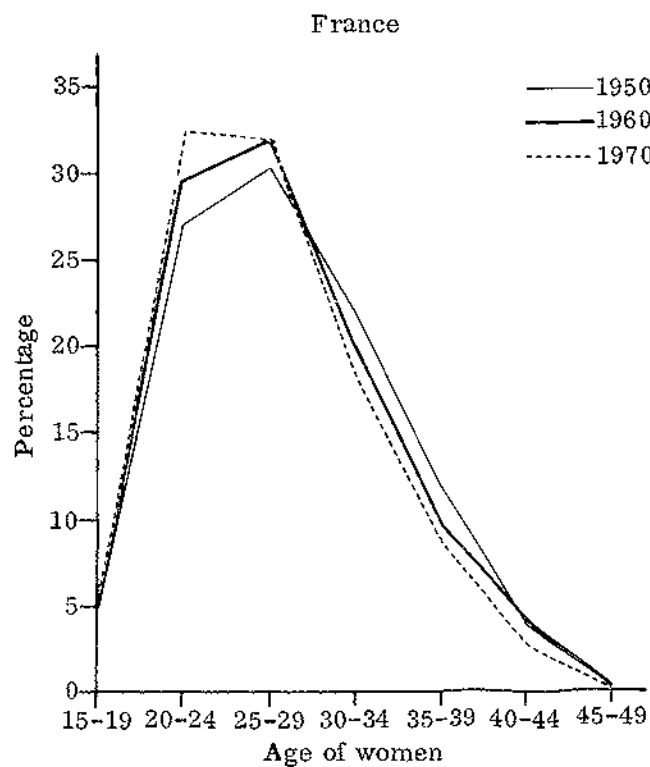
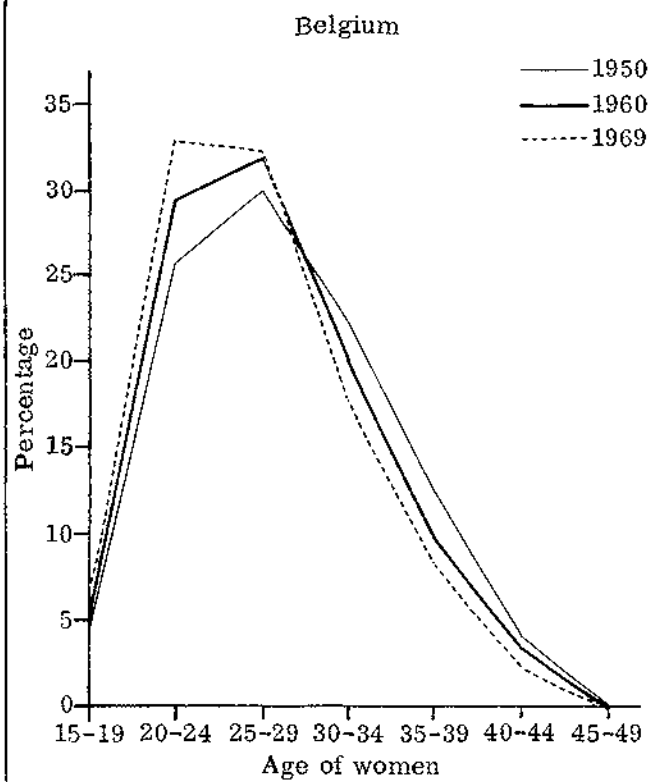
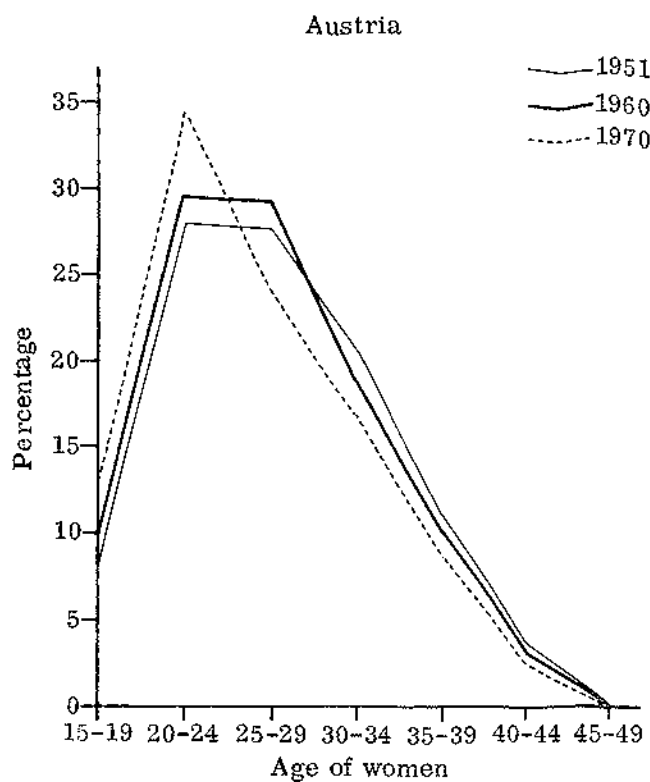


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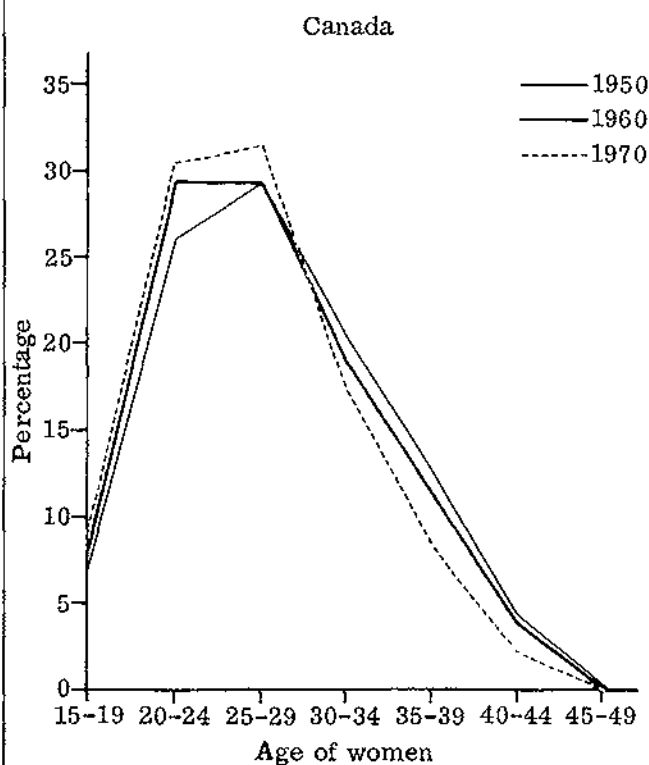
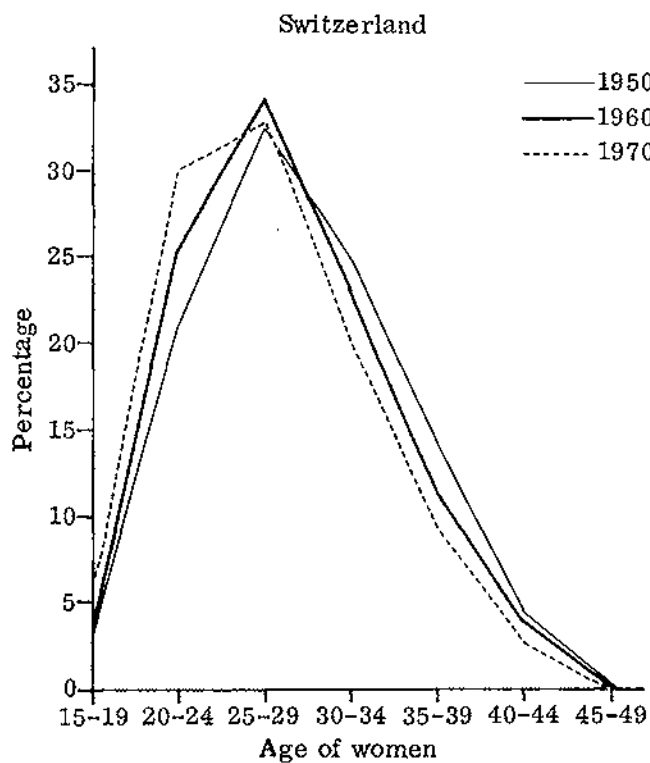
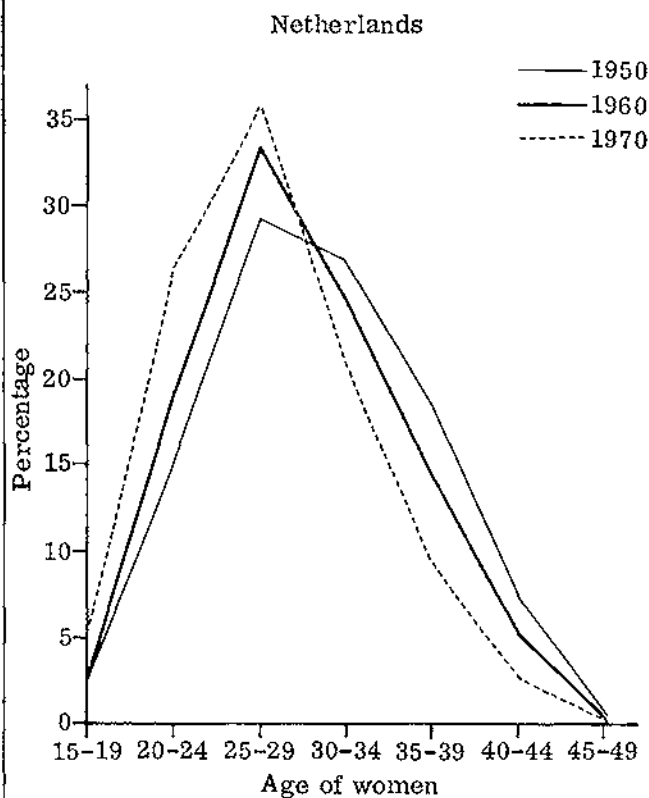
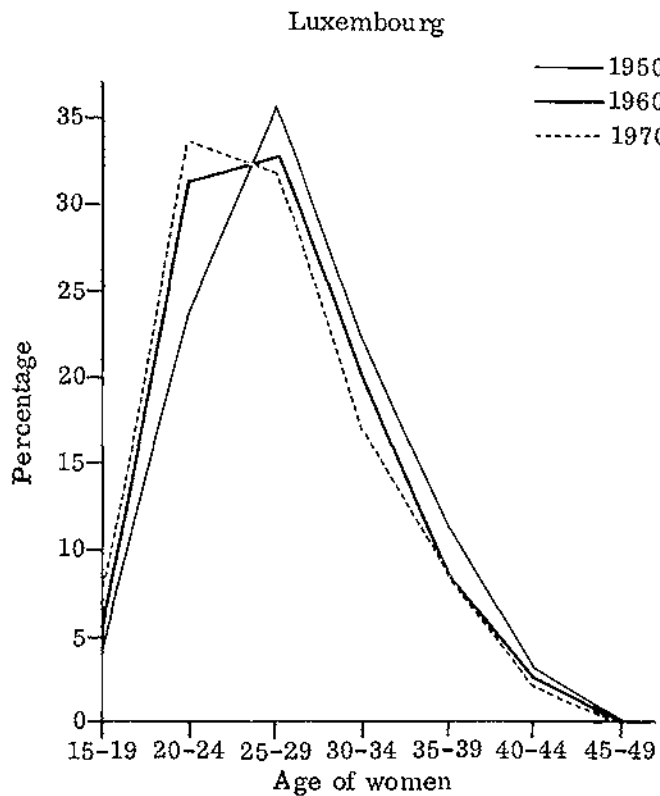


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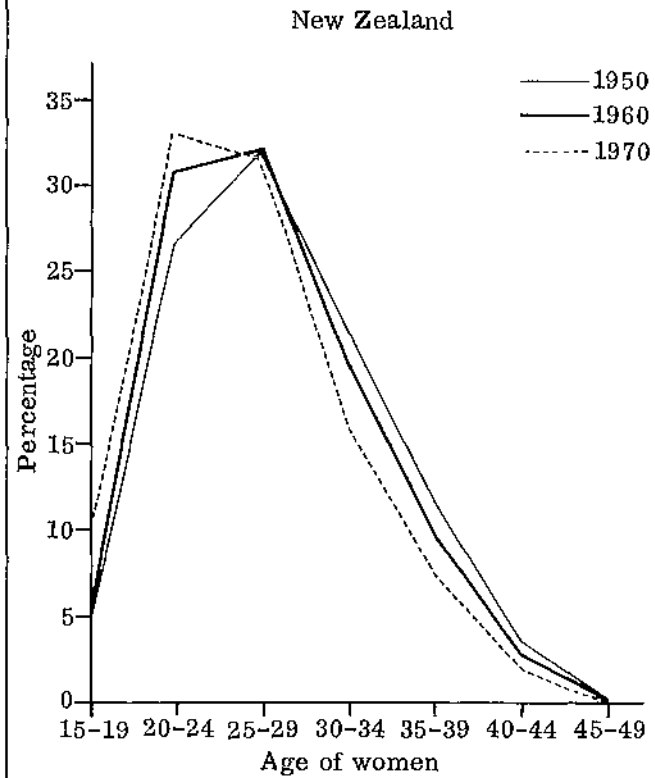
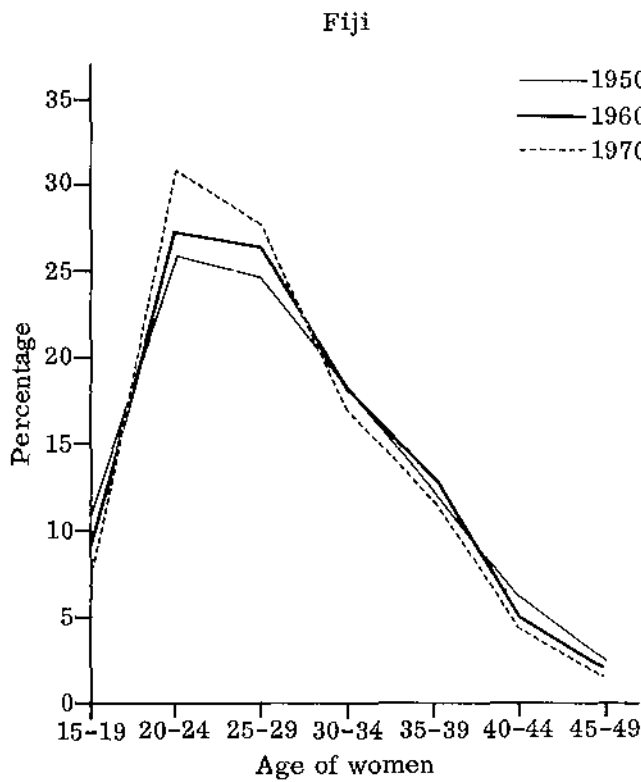
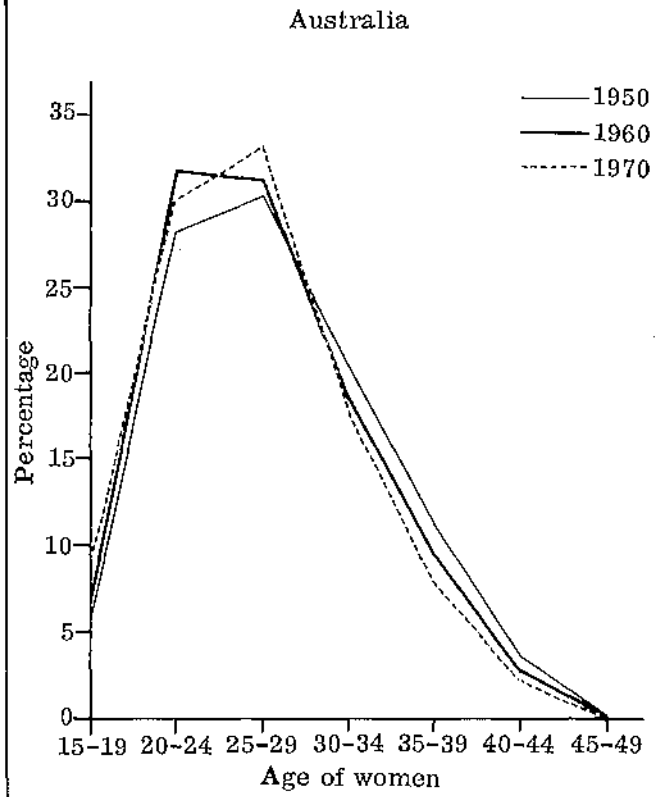
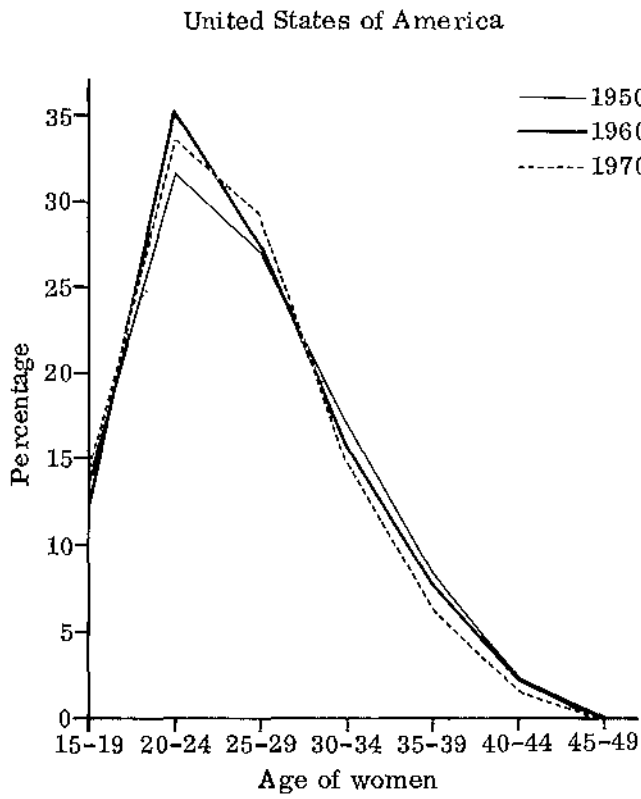
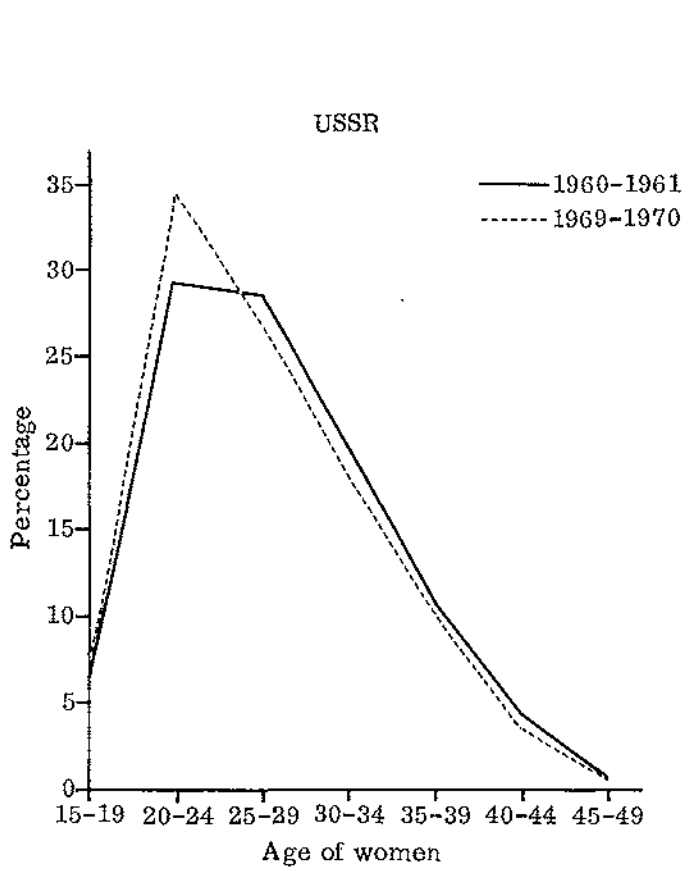


Figure IX. (continued)



(Continued from p. 2 of the cover)

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- Rome, 1954 (31 Aug.-10 Sept.)
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