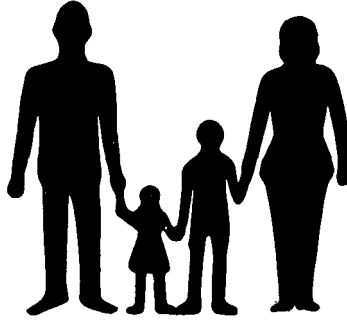


ERRATA - BEGINNING POPULATION STUDIES

<u>Page</u>	<u>Line/s</u>	<u>To Correct</u>	<u>Should Read</u>
28	10	than population	than resources
42	17	expecially	especially
43	28	first week of life	fourth week of life
44 (Figure 3A)		perinatal deaths are from 28 weeks before birth to four weeks after	
70	25	extent	extend
74	16	De Provera	Depo Provera
82	21	Delete "in Asia"	
139		The vertical axis in Figure 7A refers to Persons ('00,000)	
163	14-15	Delete "can be seen from Figure 8.1"	
192	32	agricultural	agriculture
196	12	Delete "or policies" 362	632
205	7	material	maternal

Beginning population studies



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2

Beginning population studies

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Elspeth Young and
Christabel Young

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PREFACE

This book has been written for those readers with no knowledge of demography who want to learn a little about the non-mathematical aspects of the subject. More specifically, it was designed for graduate students who need a rapid and fairly intensive overview of the subject. It may also give students who are thinking of specializing in demography a basic introduction to the discipline. Readers who are interested in the methods of calculation used by demographers would also benefit from reading *Demographic Techniques* by Pollard, Yusuf and Pollard (1974).* Both books use many examples from Australia and from Asia.

The authors must acknowledge the influence of Wrong's *Population and Society* (1977)*, Heer's *Society and Population* (1975)* and Thomlinson's *Population Dynamics* (1976)*. During recent years, there have been substantial advances in demographic knowledge, especially in the developing countries in Africa, Asia and the Pacific. The authors have drawn on their experiences of these areas to give a different regional emphasis to *Beginning Population Studies*. Each chapter is designed to be self-contained so that it is possible to produce off-prints of the more popular sections.

In *Population*, an excellent introduction to demography, Pressat (1973:vii)* thought that it was 'essential to avoid a dry catalogue of terms', otherwise demography would seem very dull indeed. Yet students who intend to become professional demographers do need to know these terms, so many are introduced in *Beginning Population Studies*. Since many readers will not have English as their first language the authors have tried to make the vocabulary reasonably simple and to include synonyms for the less common words.

Help in completing this book came from many parts of the Australian National University, especially the Demography Department, the Development Studies Centre, and the Communication and Study Skills Unit. Financial support was provided by the Ford Foundation, and moral support by our students in the M.A. in Demography Program.

* The full references for these basic textbooks are given in the Appendix on Sources:

CHAPTER 1

THE LIMITS OF DEMOGRAPHY

DAVID LUCAS

Chapter 1

THE LIMITS OF DEMOGRAPHY

WHAT IS DEMOGRAPHY?

Some definitions of demography are given in Table 1.1. Demography is about human populations, and especially about births, marriages, deaths, and migration. It involves the scientific study of the size, geographical (or spatial) distribution, and composition of these populations, and how these change over time.

Demographers are particularly interested in the statistics of *fertility* (births), *mortality* (deaths), and *migration* (territorial movements) because these three variables are the 'components' which affect population change. These components are measured by birth, death and migration rates which determine the numbers in the population, its age composition, and how fast it is growing or declining. If a demographer is studying a country he will ask such basic questions as: 'How many males and females are there now? Where are they? What are their ages? How many births have occurred, and to whom? What are the characteristics of those who die or migrate? How and why will these change?'

John Graunt, who lived from 1620 to 1674, answered some questions of this kind for London in the 17th century. For example he estimated that London's population was 199,000 males and 185,000 females, and also that slightly more males than females were born between 1628 and 1662 (Graunt, 1975:57). Graunt was a cloth seller, and his knowledge of 'shop arithmetic' was the basis for his 1662 study of births and deaths. Because of his calculation of demographic rates and other statistics, Graunt is often called 'the father of demography'.

Table 1.1

Some Definitions of Demography

- (a) *Demography is the scientific study of human populations, primarily with respect to their size, their structure, and their development (United Nations, 1958:3).*
- (b) *Populations are the product of birth, migration and death rates. Demography is the name conventionally given to the study of the nature and interactions of these rates in human populations, and the effects of changes on the composition and growth of such populations (Hawthorn, 1970:3).*
- (c) *Demography is the statistical and mathematical study of the size, composition, and spatial distribution of human populations, and of changes over time in these aspects through the operation of the five processes of fertility, mortality, marriage, migration and social mobility. Although it maintains a continuous descriptive and comparative analysis of trends, in each of these processes and in their net result, its long-run goal is to develop a body of theory to explain the events that it charts and compares (Bogue, 1969:1-2).*
- (d) *Demography is the study of the size, territorial distribution, and the composition of population, changes therein, and the components of such changes, which may be identified as natality, mortality, territorial movement (migration), and social mobility (change of status) (Hauser and Duncan, 1959:2).*

Notes

In this last definition Hauser and Duncan (1959:2) explain that the omission of population 'quality' is deliberate. Population composition refers not only to characteristics such as age, sex, and marital status but also to health and occupation. 'Social mobility' involves changes in status e.g. through marriage and migration.

The inclusion of social mobility as a part of demography can be disputed. Bogue (1969:28) includes it because 'there is a very strong demographic component in this line of research'.

RATES

Because demographers are working with rates, they are concerned with aggregates, not with individuals. This point will become clearer when the calculation of some rates is described. When demographers talk about rates they usually mean a special sort of ratio which expresses what happens in a unit of time (usually one year). The *crude rates* are the simplest and least informative, and they show the relationship between vital events (such as births and deaths) and the total population.

The Crude Birth Rate (CBR) is the annual number of births (B) divided by the total mid-year population (P). For convenience, the births are expressed per thousand persons. $(CBR = \frac{B}{P} \times 1000)$.

The Crude Death Rate (CDR) is the annual number of deaths (D) per thousand persons. $(CDR = \frac{D}{P} \times 1000)$.

The Crude Rate of Natural Increase is the difference between the Crude Birth Rate and the Crude Death Rate. Since births normally exceed deaths, natural increase is usually positive. The third component of population growth, migration, must be taken into account before a *growth rate* can be calculated.

Overall the less developed countries have higher birth and deaths rates than the developed countries, as is shown from the following estimates for the period 1975-80:-

	<u>Crude Birth</u> <u>Rate</u>	<u>Crude Death</u> <u>Rate</u>	<u>Rate of</u> <u>Increase</u>
Developed Countries	17.4	9.4	8.0
Less Developed Countries	36.4	12.8	23.6
World	31.1	11.9	19.2

Source: Nortman and Hofstatter, 1978:3.

Although the above rates are shown per thousand of the population, the rate of natural increase is usually expressed as a percentage, so 19.2 per thousand is 1.92%. It can be seen that the rate of increase in the less developed countries is about three times larger than in the developed countries. The causes and effects of these differences between 'high' and 'low' rates are discussed in later Chapters of this book.

DEMOGRAPHY AND OTHER DISCIPLINES

Demography can be regarded as interdisciplinary because it is related to many other academic disciplines such as mathematics, statistics, biology, medicine, geography, sociology, and economics. Many demographers have received training in another discipline before they specialize in demography.

As an example of how demography is related to other disciplines, consider the study of the family. Obviously demographers are interested in the family because demographic events affect its size and composition. The historian, and especially the historical demographer, may be concerned with the family in the past: in aspects such as the age of marriage and the composition and size of households in earlier times. Since the family is the basic unit of social activity, the sociologists and anthropologists are also interested: in the status, roles and decision-making of family members, for example. 'Why do people want children?' is one question that concerns the psychologist. For instance, in some societies, having many children gives prestige to the mother and to the family. Economists look at the family as an economic unit, and their studies cover such items as the financial costs of children which are relevant to the demographer's work.

A more specific example is the link between demography and *epidemiology*. Both words are derived from 'demos' the Greek word for 'people'. An *epidemic* occurs when a disease attacks a large number of people at the same time. However, epidemiology is more than the study of epidemics, and it now covers *morbidity* (the investigation of illnesses and disease) and also one of its consequences, mortality.

An important distinction within demography is between *formal demography* (also known as mathematical demography or demographic analysis) and *population studies*. Formal demographers are usually mathematicians because formal demography deals only with demographic variables, in a mathematical way. For example, if the number of women of child-bearing age is changing, what are the possible effects on the birth rate in the future?

Many demographers prefer to look more widely, and in population studies the relationship between demographic and non-demographic variables is considered. They are interested in the effect of a non-demographic variable on a demographic variable: for example how changes in income or education can affect fertility or mortality. Some demographers are interested in the reverse process, where a demographic variable 'causes' a change in a non-demographic variable. However, this is more the concern of people in other disciplines. For instance, if a population has an increasing proportion of old people, voting patterns may change, perhaps because older people prefer the more traditional political party. This is a topic to be studied by the political scientist, not by the demographer.

DEMOGRAPHIC DATA

There are three main sources of demographic data:

1. Population censuses.
2. Demographic sample surveys.

3. Registration systems:-

- (a) Vital Registration (of *vital events* such as births, deaths and marriages).
- (b) Population registers.
- (c) International migration statistics.

Early census counts or *enumerations* were often related to taxation and the word 'census' comes from the Latin 'censere' which means to value or tax. Another reason was military service: so the Ancient Greeks counted the numbers of adult males in times of war and of the general population when food was in short supply. Today census information is confidential and used for statistical analysis only: data on individuals is not published. People are less concerned that the census is connected with taxation, but in some countries they are still worried about maintaining their privacy.

A significant advance was made under the new Constitution of 1797 which required the United States of America to have a census every ten years. This feature of a modern census - that it is taken at regular intervals, usually every ten or five years - makes comparisons over time much easier. Other important features of a modern census are that it covers everybody within the scope of the census (*universality*) and that it refers to a well-defined moment or period of time (*simultaneity*).

In the nineteenth century most European countries began to hold modern-type censuses. In Asia, the Indian sub-continent was covered by a census in 1872, and India has now celebrated one hundred years of regular census-taking. The first simultaneous census of the whole of Australia was in 1881, although individual Colonies had held censuses before then. However, many countries only began census-taking in the 20th century. Between 1955 and 1964 an estimated 68% of the world's population were covered by censuses. The coverage was almost complete in Europe (97%) but

was 62% in Africa and 53% in Asia (Shryock and Siegel, 1975:17). More recently, apart from an overall improvement in statistical standards throughout the world, better census data have been demanded by planners in the fields of economics, education, health and other fields. Also, in newly independent countries, accurate details of the distribution of the population were necessary before electoral areas could be determined. In Nigeria in 1962 and 1973 the census results aroused such political controversy that they were never released, but fortunately this seems to be exceptional.

Until recently some countries practised 'census by assembly' (gathering together all the residents of an area for enumeration) and only collected group data from households. This meant that the analysis of the data was simple but limited. The modern practice is to visit each house and record information for each individual separately. Because a census covers everyone it is very expensive and only a few basic questions (such as age, sex, marital status, birthplace, education, and occupation) are asked. This is particularly true in places where many people cannot read or write and the census form has to be completed by an enumerator.

Sample Surveys

A sample survey is cheaper because it involves the selection of people who represent the whole population, or a particular section of it. However, this process of selection creates *sampling errors*, which do not occur when the whole population is covered. Another problem is that because a national sample contains relatively few people, it is often impossible to make judgements about small areas of the country.

A sample can get more detailed and higher quality information than a census because more time and effort can be spent over each interview. For example, one census question may show

how many children each woman has. To discover details of each birth and pregnancy will require several questions and more skilful interviewing.

Demographic surveys can be used to test the accuracy of census and registration data, or to collect vital statistics if registration is inadequate. Another example of a demographic survey is the *KAP* study where questions are asked about the knowledge, attitudes, and practice of family planning.

The World Fertility Survey (WFS) research programme deserves special mention. The WFS has been described as the largest single social science research project ever attempted (*People*, 1978: 30). Its purpose is 'to assist a large number of interested countries, particularly the developing countries, in carrying out nationally representative, internationally comparable, and scientifically designed and conducted surveys of human fertility behaviour' (World Fertility Survey, 1977:7).

Vital Registration

Censuses and surveys describe the state of the population at a fixed point in time. Vital statistics are a major source for the study of population change because they are collected on a continuous basis in various registers, which usually cover deaths, births, and marriages. Local records or parish registers were kept by some churches in Europe from the 14th century onwards, but civil or state registration systems developed in the 19th and 20th century. If the registration is effective and compulsory, as it is in Australia and similar developed countries, the numbers of births and deaths, used together with the most recent census and migration statistics, enable the calculation of birth and death rates and of up-to-date estimates of the population. Because public health administrators are putting considerable emphasis on

preventing disease and reducing mortality, the analysis of certain items of registration data (causes of death, age at death, and the dead person's occupation) is increasingly needed. Yet in most developing countries the difficulties and costs of establishing a complete registration system are so enormous that registration is unlikely to provide reliable demographic data within the next few decades.

Nigeria is an example of a country where, although a legal framework exists, vital registration is virtually confined to the area of the capital administered by the Lagos City Council. Sri Lanka and Thailand are amongst the few developing countries in Asia that have compulsory and comprehensive registration systems.

Population Registers

With a vital registration system each register is kept separately so it would be difficult to get a complete picture about individuals in the population. A universal population register does give such a picture because a personal record is kept for everyone in the population showing vital events and migrations. According to the United Nations, the ideal population register today provides for the continuous recording of the characteristics of each individual and of information on the vital events that occur to him or her.

Population registers were first kept in ancient China, and were later adapted by the Japanese. Today universal population registers, which cover the whole population, are less common than censuses or vital statistics. Keeping the register often means that everyone has to carry an identity card, and in some countries this is thought to infringe the freedom of the individual. Only 18 countries have registers with almost complete coverage used for

demographic purposes. Of these countries the only ones outside Europe are Taiwan, Israel, Korea, and Thailand. (Shryock and Siegel, 1975:34).

International Migration Statistics

These statistics are derived from the records of arrivals at international boundaries. Persons crossing international boundaries usually have to produce their passport, and to complete various forms on arrival and departure. Not all international movements are recorded: for example, millions of Mexicans have illegally crossed the border to live in the U.S.A.

Comparing Demographic Data

In looking at the world's demographic statistics, the range in the quality of the data from the various countries must be remembered. Very often the developed countries can organize better data collection because they have a more efficient statistical organization, good communications, and greater resources. Also their populations are literate, so that more accurate answers can be given to the questions asked. Age is a good example of this: in Australia almost everyone has a birth certificate and knows his or her exact age. Yet in many developing countries there are people, particularly amongst the very old and the illiterate, who do not know their age and can only guess. Some guesses are more popular than others and the result is 'heaping', often on numbers ending in '0'. In the 1963 Nigerian census 2,524,406 persons said they were 20 years old while only 615,710 said they were 19 years. When people have problems in giving their correct ages or the right data for vital events, the data are defective and demographers attempt to correct the errors using special techniques.

Other difficulties arise because definitions can change over time, and because different countries use different definitions. In the 1971 censuses, Australian urban centres had to have 1,000 or more people, while India preferred to use a minimum of 5,000.

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* Recommended for further reading. Students of geography, economics, politics, psychology, history, law, and anthropology should also select the title above which relates to their discipline.

CHAPTER 2

WORLD POPULATION GROWTH AND THEORIES

DAVID LUCAS

Chapter 2

WORLD POPULATION GROWTH AND THEORIES

WORLD GROWTH

Today the world's population exceeds four billion (4,000,000,000) but an exact figure cannot be given because recent and accurate information is not available for all countries. For example, estimates of China's population cited by Frejka (1976:5) range from 839 to 930 million. Although estimates of the world's population before the 20th century are even less reliable, Table 2.1 indicates how quickly growth has taken place since about 1650.

Up to the 17th century, population growth was very slow and unsteady. In some years the population actually decreased because of wars, epidemics, malnutrition and famine. The *plague*, a fever which affects rats but can spread to humans, was an example of a major killer. A series of *pandemics* (epidemics spreading over a wide area), the Black Death, killed perhaps one third of Europe's population between 1347 and 1349. Yet apart from local outbreaks, the plague had mysteriously disappeared from Europe by the 18th century (Gale, 1959 Chapter 2). According to Omran (1977:4) Europe was then entering the Age of Receding Pandemics, as epidemics (of plague, typhoid, cholera etc.) became less severe.

The Black Death killed perhaps 35 million persons in Europe alone. However the world's population is now much larger and more widely spread between the different continents (see Table 2.1). Thus even the 20 million deaths throughout the world during the 1918 influenza epidemic and the 9 million European military deaths between 1914 and 1918 were comparatively insignificant by world standards (United Nations, 1973:144-145).

Since the middle of the 17th century, the rate of world growth has speeded up, largely because of falling death rates (so that on average people live longer). However, many experts now believe that the world's growth rate and Crude Birth Rate are both declining. In the early 1970's, the United Nations estimated world growth at about 2% per year, the fastest rate in human history. After consideration of recent census results, this rate was revised downwards to 1.9% (United Nations, 1974:4-5). Between 1975 and 1976 the world's population increased by about 80 million. This is a massive number, more than the population of the largest country in Africa.

One simple and useful rule used by demographers is that if seventy is divided into the annual rate of growth this gives the number of years a population takes to double itself (Haupt and Kane, 1978:46). If the world's population growth rate is 2%, the population will double in 35 years. If the rate is 1.9%, the doubling time will be about 37 years. Compare this with the growth before 1850 in Table 2.1, when the rates implied doubling times of over one hundred years. The world's population has been estimated at 250 million in A.D.1. but it took over 1500 years to reach 500 million.

Today the world can roughly be divided, according to the level of per capita income or economic development, into 'developed' and 'developing' countries. The developed countries mostly lie in Europe; others include the U.S.A., Canada, Japan, Australia and New Zealand. In 1950, about 34% of the world's population lived in the developed countries, but by 1976 this proportion had fallen to 28% (Nortman and Hofstatter, 1978, Table 1).

Table 2.1 shows that Europe and North America have relatively slow growth rates whereas in Africa, Asia, and Latin America, growth was getting faster. This is because in the developed countries, fertility began to decline around the end of

Table 2.1
Estimates of (a) the population and (b) growth rates^x
of the World's Continents 1650-1985

(a) Estimated Population (in millions)

<u>Continent</u>	<u>1650</u>	<u>1750</u>	<u>1850</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1976</u>
Africa	100	95	95	219	273	352	412
Asia	330	479	749	1367	1644	2027	2304
Latin America	12	11.1	33	164	216	283	333
North America	1	1.3	26	166	199	226	239
Europe*	100	140	266	572	639	702	734
Oceania	2	2	2	12.6	15.8	19.4	21.7
<i>The World</i>	545	728	1171	2501	2986	3610	4044

(b) Approximate Annual Growth Rate (%)

	<u>1650- 1750</u>	<u>1750- 1850</u>	<u>1850- 1950</u>	<u>1950- 1960</u>	<u>1960- 1970</u>	<u>1970- 1976</u>
Africa	-.1	.0	.8	2.2	2.5	2.7
Asia	.4	.5	.6	1.8	2.1	2.2
Latin America	-.1	1.1	1.6	2.8	2.7	2.8
North America	.3	3.0	1.9	1.8	1.3	.9
Europe*	.3	.6	.8	1.1	.9	.6
Oceania	.0	.0	1.8	2.3	2.1	2.0
<i>The World</i>	.3	.5	.8	1.8	1.9	1.9

* includes U.S.S.R.

x growth rates take account of births, deaths and migration.

Sources :- 1650-1850 Carr-Saunders, 1936:42, Figure 8.

1950-1976 United Nations, 1977:115, Table 1.

the 19th century, while in developing countries it remained high. Recent trends suggest that some developed countries are approaching *Zero Population Growth* (ZPG). Day (1977) has listed four European countries (Austria, East Germany, West Germany and Luxembourg) which were experiencing numerical declines in population because of falling fertility, and almost all European countries show annual increases of less than 1% (United Nations, 1977). In the developing countries in the period 1965-75 'there was substantial fertility decline in Asia, some in North Africa, and almost none in black Africa' (Mauldin and Berelson, 1978:89).

Declining Mortality

The early reductions in mortality came in Europe and North America because of a combination of the factors in Table 2.2, but the relative importance of these causes of the mortality decline in Europe is the subject of much debate. Razzell (1974) stresses the importance of inoculation against smallpox in the 18th century and improved hygiene, including the greater use of soap and washable cotton clothes in the first 40 years of the 19th century. McKeown (1976; McKeown et al, 1972) emphasizes the improvements in diet because of increased food production, and rejects the argument that advances in medical science accounted for much of this population growth. Beaver (1973) suggests that in the second half of the 18th century infant mortality fell when supplies of cheap cow's milk became generally available throughout the year in urban and rural areas of England and Wales.

Preston and Van de Walle (1978) found that mortality in 19th century France was relatively high in the three largest urban areas. However, at some point after 1850 the mortality for these areas was reduced, apparently because of improvements in the water supply and sewerage. Medical improvements did not become important until diphtheria immunization in the 1890's.

Table 2.2

Causes of the Decline in Mortality in the 18th and 19th Centuries

1. Improved Agriculture led to increased food production and better nutrition (e.g. Agricultural Revolution in England included better fertilizers, crop rotation and winter crops).
2. Industrialization. The development of the factory system meant a greater variety of manufactured goods. Factory production (e.g. of the iron plough, steam engine etc.) also contributed to improved agriculture and transport.
3. Improved Transport made the distribution of food and other goods easier, e.g. in Europe, the railways enabled food supplies to be sent rapidly from rural to urban areas.
4. Social Reforms e.g. laws regulating child labour in factories.
5. Greater Control of Temperature and Humidity in the home and at work may have contributed to the decline of some diseases.
6. Public Sanitation including improved water supplies and sewerage disposal, and water purification (e.g. filters eliminate cholera and typhoid from the water).
7. Improved Personal Hygiene was possible because of 2 and 6 above, e.g. cheap cotton clothing (easy to wash) and soap became generally available.
8. Asepsis and Antisepsis (the exclusion and killing of disease-causing organisms) was developed by Joseph Lister in the later 19th century, e.g. the sterilization of surgical instruments.
9. Immunology (the study of the body's resistance to disease) e.g. Jenner's paper of 1798 on inoculation against smallpox, and the discovery by Koch (1876) and Pasteur (1877) that inoculation with a mild case of the disease will prevent a serious case.
10. Biological Factors. People become more resistant to some diseases, and some diseases such as scarlet fever become more *benign* (i.e. less dangerous).

Source: Thomlinson, 1976:97-102

Australia provides an interesting contrast with Europe and falls in mortality have been well documented since 1856 when death registration became compulsory throughout the country. Australia's geographical isolation and low population density served to prevent the introduction and spread of some diseases. *Immunology* (the study of the body's resistance to disease) has played little part in the decline of mortality in Australia because such diseases as smallpox and cholera were almost unknown. Also, the standard of nutrition has been high over the past 100 years (Lancaster, 1967). Improved drainage and sewerage, and more effective health legislation seem to have contributed to declining mortality in the late 19th century. (Young, 1976:30).

Omran (1971, and 1977:10) has defined three models of *epidemiological transition* from high to low mortality.

1. The *Classic* or *Western Model* involves the gradual fall in Western mortality over the past 200 years, from high death rates of about 30 to low rates of less than 10. In the early stages this decline was a response to the process of modernization and owed little to medical measures.
2. The *Accelerated Model* describes Japan and Eastern Europe. The mortality decline took place much faster than in the Classic Model, and benefitted from the medical revolution as well as from social, economic and environmental improvements.
3. The *Delayed Model* applies to developing countries whose death rates have fallen rapidly since World War II but have not yet reached the low levels of the developed countries. In the developing countries modern medical

technology and mass medicine have had an important effect. New drugs, such as antibiotics, became available and mass campaigns were organized to eradicate malaria, smallpox, and other diseases. (Smallpox has now virtually disappeared from the world).

European Emigration

Some developed countries, including the U.S.A., Canada, Australia and New Zealand have achieved high rates of growth partly because of migration from Europe. Borrie (1970:85) estimates that since the 16th century over 60 million Europeans moved overseas, especially in the fifty years after 1875. In Australia between 1788 and 1861, 75% of the population growth was due to immigration, and it was not until 1891 that the majority were Australia-born (National Population Inquiry, 1975:93-4).

After their first contact with Europeans, the local population often declined because of armed conflicts and the introduction of new diseases. This is what happened to the American Indian, the Australian Aboriginal, and the New Zealand Maori. The number of Aboriginals was estimated at around 300,000 in 1778, but by the early 20th century there were only about 75,000 (National Population Inquiry 1975, Chapter 12). Similarly Pool (1977:190) believes that the Maori population declined during the hundred years after the arrival of the British in 1769.

Africa

African population growth up to the 20th century was checked by high mortality and by the American and Indian Ocean slave trade. Between 1442 and 1880, an estimated 20 million slaves were captured and perhaps six million survived to be sold in the Americas (United Nations, 1973:19). However, these losses could easily have

been made up by a modest rate of natural increase (Fage,1975; Durand, 1977:280). European and Asian immigration to South and East Africa in the 19th and 20th centuries has made only a minor contribution to the continent's growth.

Between 1965 and 1976, Africa had higher fertility and mortality than any other continent, with a Crude Birth Rate of 46 and a Crude Death Rate of 20. Africa, the largest continent with 22% of the world's land area, has only 10% of the world's population. However, Africa's share of the world's population is rising because of its current high rate of natural increase.

Although African fertility is generally high, there are belts of high and low fertility, and the reasons for these differences have not been fully explored. Similarly although Africa appears sparsely populated (14 per square kilometre compared with a world average of 30), some rural areas are extremely densely populated with up to 200 persons per square kilometre. (Hill, 1975).

Asia

Table 2.1 shows that 57% of the world's population lives in Asia. However, the continent's growth has been interrupted by periods of political instability. For example, China experienced sustained growth in the 18th century, but this was halted by enormous loss of life in the Tai-Ping rebellion, which began in 1851, and by other political upheavals and natural disasters (Durand,1977:263).

Between 1965 and 1976, Asia had a Crude Birth Rate of 36, and a Crude Death Rate of 20. Asia contains the world's two largest countries: China, with about one fifth of the world's population, and India, with about one sixth. According to Dyson (1978), the Indian Crude Birth Rate may have declined from 40 in 1971 to about 38 in 1978. East Asia, which is dominated by China and Japan, has much lower natural increase, with a Crude Birth Rate

of 21 and a Crude Death Rate of 14 between 1965 and 1975. (United Nations,1977:115). Hong Kong and Singapore now have Crude Birth Rates of about 18, a decline of over one third since 1965 (Mauldin and Berelson, 1978:89).

Asia is relatively densely populated, with 84 persons per square kilometre. Japan's density is 302, double that of another major industrial region, Western Europe. In both Hong Kong and Singapore, the density exceeds 4,000 persons per square kilometre.

Oceania

In numerical terms, Oceania is dominated by two developed countries, Australia (with a population of about 14 million in 1978) and New Zealand (about 3 million). By 1978, the Crude Birth Rate in these countries was below 20, whereas in the rest of Oceania it was about 40.

Australia, with a density of 2 persons per square kilometre, has 90% of Oceania's land area of 8,510,000 square kilometres. However, some island nations of Oceania are very densely populated : Tonga's density, for example, is 129. In the past, Australia and New Zealand have depended a great deal on immigration from Europe, while countries such as Western Samoa and Tonga have relied on migration to other parts of Oceania and to the United States to reduce their population pressure.

EARLY WRITINGS ON POPULATION

Table 2.3 shows the main ideas of some of the early writers on population. It can be seen that early writers in India, China, and Greece were concerned with the 'optimum' or best population. In general the early Roman, Christian, and Islamic writers were *pro-natalist*, that is in favour of large families and

Table 2.3

Some Population Theories

	<u>Rough Dates</u>	<u>Emphasis on:-</u>
Ancient Chinese (e.g. Confucius)	500 B.C.	- Excessive population growth depressing living standards of masses. - An optimum relationship between population and the land.
Ancient Greeks (e.g. Plato, Aristotle)	300 B.C.	- The optimum size of the City State (to be achieved by restricting, or by encouraging births with rewards etc.)
India (e.g. Kautilya)	300 B.C.	- Optimum village size, with too few people as a great evil.
Roman Empire (e.g. Cicero)	50 B.C.	- Stimulating population growth e.g. by giving privileges to those with children. (More men would mean more military conquests).
Judaism (the Jewish religion)	B.C.	- Population growth ('Go forth, and multiply').
Early Christianity (e.g. Augustine, Aquinas)	400 A.D.	- Celibacy morally good (but high births needed to counter high mortality). - Moral disapproval of abortion, infanticide and divorce.
Mercantilists	17th & 18th centuries	- State intervention in economic activity to maximize national wealth. - Increased population would mean larger armies, lower hourly wages and increased wealth.

Table 2.3 (cont.)

	<u>Rough Dates</u>	<u>Emphasis on:-</u>
	17th and 18th centuries	(This period saw the beginnings of the sustained growth of world populations, and also of scientific analysis of population data by Graunt and others).
Physiocrats (e.g. Quesnay)	18th century	- In favour of 'Rule by nature' or 'laissez-faire' (i.e. no government intervention). - Population dependent on subsistence, and agriculture the only source of wealth. - Benefits from social reform would be cancelled by population increase.
Malthus (1766-1834)	19th century	- Unless checked, population will tend to increase faster than subsistence.
Classical Economists (e.g. Adam Smith and Ricardo)	19th century	- Diminishing returns to labour. (Later writers such as Marshall emphasized increasing returns).
Anti-Malthusians (e.g. Hazlitt)	19th century	- Preventive checks would become more effective.
Socialist and Marxist writers (e.g. Marx)	19th century	- Population or surplus labour problems the result of the capitalist economic system, and would be solved by the reorganization of society.
Neo-Malthusians	19th & 20th century	- Restricting population growth by the use of birth control. (Malthus himself was against birth control).

Source: United Nations, 1973, Chapter 3.

rapid population growth, which is very understandable in view of the high mortality of those times.

Writings on population were very speculative until John Graunt and others began the numerical study of population in the 17th century. Yet even in the 18th century there was much debate about whether the population of England had increased or not, and only regular census-taking could check this sort of speculation.

MALTHUS

Thomlinson (1976:12) has written that 'If Graunt can be called the father of demography, Malthus was certainly its first professional.' Malthus lived from 1766 to 1834 and the publication of his 55,000-word *Essay on the Principle of Population* in 1798 and the revised 200,000-word *Essay* in 1803 were landmarks in population studies, partly because of his organized use of available data. In his first *Essay* he argued against Godwin's forecast of a perfect, future world where everyone's needs would be satisfied. According to the Malthusian 'principle' this was impossible because there was a universal tendency for population to outrun the means of subsistence.

Malthus felt that there was a conflict between two basic human needs: for 'subsistence' (or food), and for 'passion between the sexes' (or sexual intercourse). If subsistence increased, then population, unless checked, would increase up to the limits of subsistence.

Malthus was very concerned about the time in which a population could double itself, and he estimated that the doubling time in the U.S.A. was under 25 years. He assumed that while population can increase in geometric progression (1,2,4,8,16.....), in practice agricultural production could not increase faster than arithmetical progression (1,2,3,4,5.....). So if a country of

11 million people was doubling itself every 25 years and had enough food for 11 million, after 25 years it would have 22 million people and enough food for 22 million. After 50 years the population would have grown to 44 million but the food supplies would only be enough for 33 million. His arithmetic has been much criticized, but according to Parsons (1977), Malthus was only trying to show that population can increase faster than subsistence, and that at some future time population growth would be checked by insufficient food production.

If population tends to grow faster than population, how is a balance achieved? In his 1798 Essay, Malthus described two categories of checks on populations:-

- (i) *Positive checks* related to causes of death and an increased death rate. These include poverty, disease, epidemics, famine and war.
- (ii) *Preventive checks* on the birth rate. These include 'improper arts' such as abortion.

In the 1798 Essay, the positive and preventive checks were all regarded as 'misery or vice' but in 1803 Malthus was more optimistic and introduced a new category of *moral restraint* (which meant delaying marriage until able to support a family). Since Malthus classed birth control as 'vice', moral restraint was the only acceptable check. The importance of these checks varied from country to country. For example, some European countries practised moral restraint but in the 18th century China, where early marriage was encouraged, the checks were disease and famine.

The writings of Malthus were controversial but had considerable influence on social policy. Malthus criticized the 18th century Poor Law in England because assistance was freely given to large families. He believed that man was naturally lazy, and would only work if he needed to support his family. The harsh new 1834 Poor Law showed the influence of Malthusian theory and the poor were

'punished for their poverty' (Meek, 1953:16). By 1860, many British administrators in India thought that famine was a positive check which government policies could not alter. (Ambirajan, 1976). Although the theories of Malthus dropped from favour during the 19th century, interest has revived in recent years because of rapid population growth in developing countries, the wastage of natural resources, and concern over the food supply. His writings challenged the view of the Mercantilists (see Table 2.3) that people determine resources; and the Malthusian controversy emphasized the need to examine population growth and socio-economic conditions.

Some Criticisms of Malthus

- (i) Malthus emphasized the limited supply of land, but he did not anticipate the benefits from improved transport combined with the opening up of new agricultural lands in the U.S.A., Australia and elsewhere.
- (ii) Animals and plants can increase in geometric progression, under favourable conditions. Technology can also advance at a rapid rate. Improved agricultural methods, such as the use of fertilizers and new types of seed, have increased productivity.
- (iii) Malthus did not envisage the control of fertility within marriage. In 1822 Francis Place advocated the use of birth control by married couples (see Flew, 1970:26).
- (iv) Fertility can fall as economic development takes place and as the standard of living rises.

Socialist Writers (see United Nations, 1973:46-51)

Amongst the many critics of Malthus were socialist writers, such as those in France who thought that the unequal distribution of

incomes was a major cause of misery. Marx believed that misery would disappear after a socialist revolution. For Malthus the answer was increased individual responsibility leading to 'moral restraint', but he doubted man's ability to do this.

Marx and Engels denied the existence of a universal 'principle' or law of population; on the contrary they maintained that every stage of development has its own law of population. Under a capitalist system, efficiency is obtained by installing machinery. This creates a 'surplus population' of unemployed workers.

The writings of Malthus implied the 'law of diminishing returns' so that if capital and labour were fixed, the addition of more workers would reduce per capita output. However Engels (cited in Meek 1953:30) felt that scientific progress, combined with an increase in the labour force, would overcome this. Engels also wrote in 1881 that if a communist society ever needed to regulate the birth rate, it could do so without difficulty. He felt that birth control was a private matter for the couple and their doctor. In 20th century Russia Lenin approved of the spread of medical knowledge about population while objecting to the social teachings of neo-Malthusianism (see Uralnis, 1970).

TRANSITION THEORY (see Caldwell 1976, Coale 1975, Teitelbaum 1975)

By the beginning of the 20th century it was apparent that mortality had fallen in many Western countries, and that fertility was beginning to fall too. This historical experience gave rise to what is now the major demographic theory; the *theory of demographic transition* or *transition theory*. Basically the demographic transition refers to the change from one *stationary* situation (where population growth is zero) to another. Before the transition

death rates are high and birth rates must also be high, otherwise the population decreases. The intermediate or transitional stages occur when mortality falls, followed by falling birth rates. After the transition, birth and death rates are again similar, both low. Blacker (1948) discerned five phases, shown in Table 2.4, of which phases 2 and 3 are transitional.

Although earlier writers had noted the European transition, the first comprehensive explanation of fertility change was given by Notestein (1945 and 1953). He argued that when mortality was high, fertility was kept at a high level by social and cultural supports (or 'props') such as marriage habits and family organization. When mortality fell, the props were less necessary. At the same time 'urban industrial society' was destroying the props. While the economic importance of the traditional family weakened, the chance of individual advancement increased. Health and education improved, and there were expanding opportunities for women outside of the home.

Yet even in Western Europe enough differences existed between countries to throw doubt on the transition theory. Fertility in pre-transition Europe varied considerably, partly because marriage patterns differed between countries and provinces, but perhaps also because some groups deliberately regulated their fertility. The fall in fertility in France began in the early 19th century, before the spread of industrialization and urbanization, and about 75 years earlier than in other Western European countries. In France too, fertility fell around the same time as mortality.

There are also many problems in applying the theory to developing countries. In Europe the mortality decline was more gradual, and more obviously related to socio-economic development. Because mortality has fallen very rapidly and fertility has remained high (sometimes higher than in pre-transition Europe), many

Table 2.4

Phases of the Demographic Transition

Phase	Birth Rates	Death Rates	Natural Increase	Examples
1. High Stationary	High	High	Zero, or very low	Europe in the 14th century
2. Early Expanding	High	Falling slowly	Slow	India before World War II
3. Late Expanding	Falling	Falling faster than birth rates	Rapid	Southern and Eastern Europe before World War II India after World War II ⁺
4. Low Stationary	Low	Low	Zero, or very low	Australia, New Zealand, U.S.A., in the 1930's
5. Declining	Low	Higher than birth rates	Negative	France before World War II East & West Germany in 1975 *

Sources: Blacker, 1947; + Dyson, 1978; * Day, 1977.

developing countries have unprecedented rates of growth. At the same time a number of factors (e.g. improved contraception, and increased government interest) suggest that the potential exists for fertility to fall very rapidly too.

At a very general level the theory correctly predicted that in developing countries mortality would fall before fertility, but it was less helpful in predicting when and how fertility would fall. Since agriculture will continue to be the dominant sector in most developing countries for many years, recent writers have preferred to talk about 'modernization' rather than 'industrialization' as the main cause of fertility declines. According to the theory, family planning programmes in developing countries will be useless without social and economic change since 'modernization' causes the fertility decline.

However, Freedman's view is that high levels of 'Western-type modernization' are not essential for declining fertility. He emphasizes two factors which may have been important in China, Indonesia, Korea, Taiwan, and Thailand: firstly, communicating to the people the idea that they can control their own fertility, and secondly making contraception readily available. In Indonesia, family planning may be leading, rather than following, other development sectors. Another factor is the status of women. In Thailand their status is high, and contraceptive use is rising rapidly yet the level of economic development is only moderate. In Taiwan, fertility has fallen even though the family has retained many traditional forms and attitudes (Freedman, forthcoming, cited in *International Family Planning Perspective and Digest*, 1978: 86-7).

Another modification to transition theory was suggested by Caldwell in 1976. He argued that in traditional societies parents gained economic advantages from their children: fertility decline was only possible when this flow of wealth (from children to parents) was reversed.

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* Recommended for further reading.

CHAPTER 3

MORTALITY

PETER MCDONALD

Chapter 3

MORTALITY

INTRODUCTION

The scientific study of demography began with the study of mortality. John Graunt's classic study, *Natural and Political Observations Made upon the Bills of Mortality* published in 1662 is usually considered as the starting point in the statistical analysis of deaths and of demography. The Bills of Mortality for London originated early in the sixteenth century and they provided weekly statistics of the total burials for each parish, the number of deaths attributed to plague and the total number of christenings. The chief concern in the compilation of these statistics seems to have been a desire to monitor the geographical incidence of deaths from plague.

Graunt's study was followed by other isolated studies of mortality based on church records in various parts of Europe but these studies remained fragmentary until the nineteenth century. Following the introduction in 1836 of civil registration of births, deaths and marriages in England and Wales, William Farr, the newly appointed Registrar General, set about formalizing the collection and tabulation of death statistics. He published annual statistics of deaths, thus facilitating the study of mortality and its causes. He also recognized the need for a uniform classification of causes of death. His proposed system was accepted by the International Statistical Congress in 1855 and has survived as the basis of the classification of causes of death in the *International Classification of Diseases*.

In the twentieth century, the standardization of registration procedures and classification of causes of death has been the responsibility of international agencies, formerly the International Statistical Institute and the League of Nations and, nowadays, the World Health Organization. It is now recommended internationally that the statistical reports of death at least include information on the age, sex and usual place of residence of the deceased person as well as the cause of death, the date and place of occurrence and the date of registration. In addition the United Nations recommends the collection of the following characteristics of persons who have died:

- marital status
- industry and occupation
- occupational status
- education
- number of children born (women only)
- age of surviving spouse (if married).

Collection of this type of information allows research into how mortality or a particular cause of death may be related to some characteristic of the person. These statistics have been very important in identifying diseases which were related to particular industries. For example, *silicosis*, a disease of the lung, was found to be a common cause of death of coal miners.

Individual countries are, of course, free to add any additional characteristics of particular importance to them. For example, many countries with a large migrant population require the country of birth of the deceased person to be reported.

The International Classification of Diseases currently in use is the Ninth Revision (1978). All of these revisions have been based on the principle developed by William Farr of distinguishing between general diseases and diseases localized to a particular part of the body. Before the Sixth Revision (1948) a system of priorities was required when the physician certified more than one contributing cause of death, but, with the 1948 revision, a new concept, that of the *underlying cause of death*, was introduced. The underlying cause of death is defined as the disease or injury which initiated the train of events leading directly to death. Thus the underlying cause of death for an elderly person who suffered a broken hip in a fall, was confined to bed and died from pneumonia would be the accidental fall. This fundamental change tended to reduce the number of deaths classified as due to purely *terminal* causes, such as pneumonia, which lead directly to death.

Many countries in the world do not have complete or nearly complete registration of deaths. This is especially true in countries where a large proportion of deaths do not take place in hospital or are not attended by a doctor; or where illiteracy rates are high or the administrative costs of a registration system are prohibitive. In these circumstances the study of mortality is based on information from surveys and upon measures obtained by indirect methods.

DEFINITION OF TERMS

The definition of death is currently a subject of controversy but in the statistical analysis of mortality, this discussion is only of interest in distinguishing an *infant death* from a *late foetal death (still birth)*. A late foetal death and an infant

death are separated by the event of a live birth (see Figure 3A) which the World Health Organization defines as follows:

'Live birth is the complete expulsion or extraction from its mother of a product of conception, irrespective of the duration of pregnancy, which after such separation, breathes or shows any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached; each product of such a birth is considered live-born.'

Therefore, for a death to have occurred it must have been preceded by a live birth. However, it is obvious that implementation of this definition depends upon the presence at the birth of a medically qualified person, and even in medically advanced countries there are differences in application of the definition.

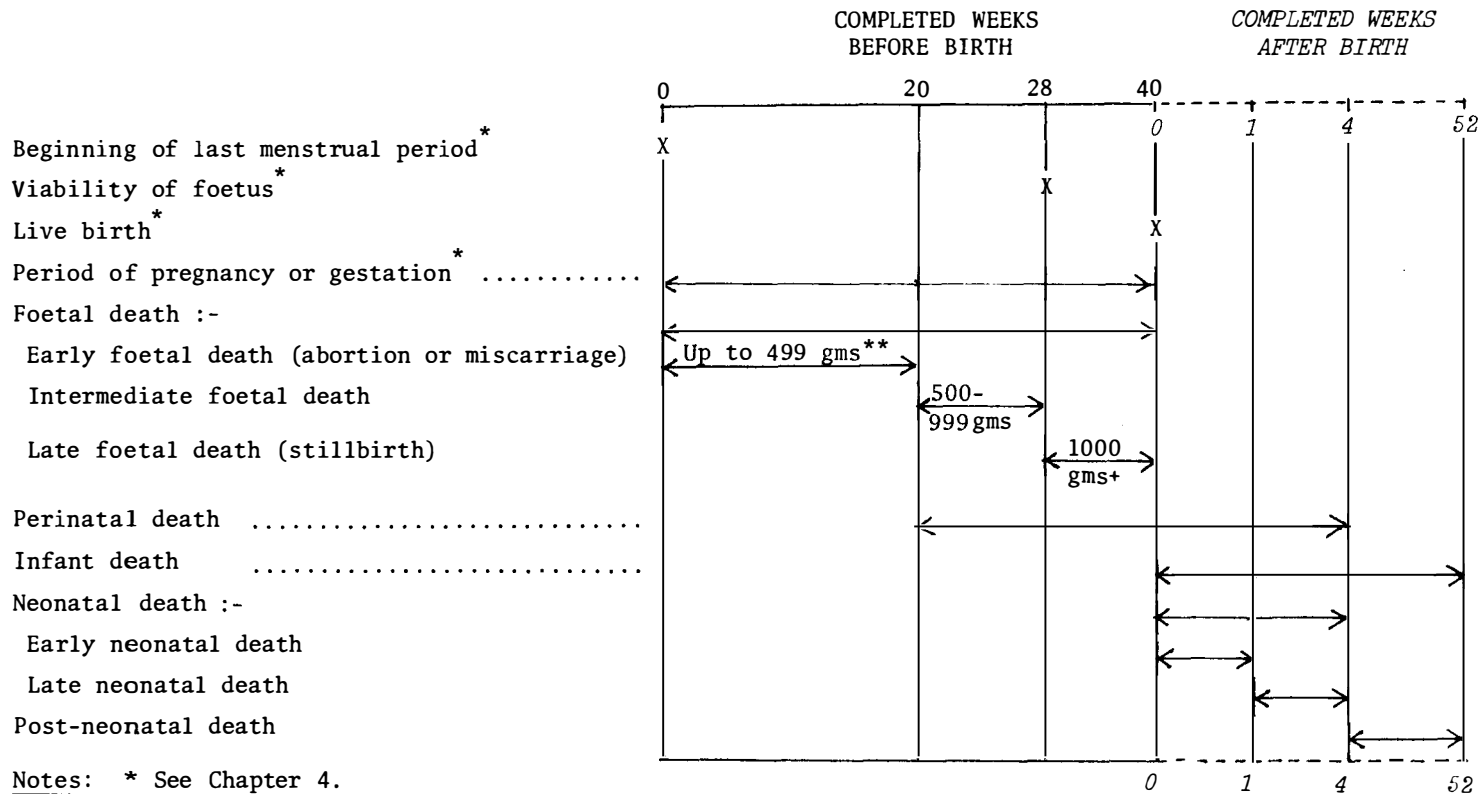
Considerable attention in research has focused on deaths during the first year of life (*infant deaths*) and upon foetal deaths. Figure 3A illustrates the definitions of terms used to describe events occurring during pregnancy and the first year of life. Recently the viewpoint has been expressed that for medical research into causes of death, the distinction made between a death following soon after live birth and a stillbirth or foetal death which occurs late in the woman's pregnancy is not very meaningful because both are related to the same set of causes arising during the pregnancy. Consequently, the World Health Organization has recommended that information be gathered and cause of death specially classified for *perinatal deaths* which occur between the end of the twenty-eighth week of pregnancy and the first week of life.

CRUDE AND AGE SPECIFIC RATES

Previous reference has been made to the Crude Death Rate: the annual number of deaths per 1,000 of population. Table 3.1 shows the crude death rates applying in selected countries and regions

Figure 3A

Definitions of Terminology for Events Occurring During Pregnancy
And The First Year of Life (Based on a Live Birth of Full Term)



Notes: * See Chapter 4.
 ** Up to 400 grams in Australia.

Table 3.1

Crude Death Rates, Infant Mortality Rates
and Expectations of Life at Birth for
Selected Countries Around 1970

Country	Crude Death Rate	Infant Mortality Rate	Expectation of Life at Birth for Both Sexes
Algeria	17	86 *	51
Egypt	13	98 *	53
Ghana	18	156	46
Mauritius	7	45	60
Nigeria	25	n/a	37
Tanzania	22	160	41
Uganda	18	160	48
Australia	8	17	71
Fiji	5	22 *	68
New Zealand	9	16	71
Papua New Guinea	20	n/a	47
Burma	17	n/a	48
Hong Kong	5	18	71
India	17	139	41
Indonesia	19	125	48
Iran	17	n/a	50
Japan	7	11	73
Korea (Republic of)	11	n/a	65
Malaysia (West)	7	39	66
Pakistan	12	124	51
Philippines	12	68 *	n/a
Saudi Arabia	23	n/a	42
Singapore	5	17	67
Sri Lanka	8	45	66
Syria	15	n/a	57
Thailand	10	n/a	56
North America	9	17	71
South America	9	75	61
Europe (including USSR)	10	24	71

n/a: not available

* based on registration of deaths of unknown reliability

Source: United Nations, Demographic Yearbook 1974, Table 4.

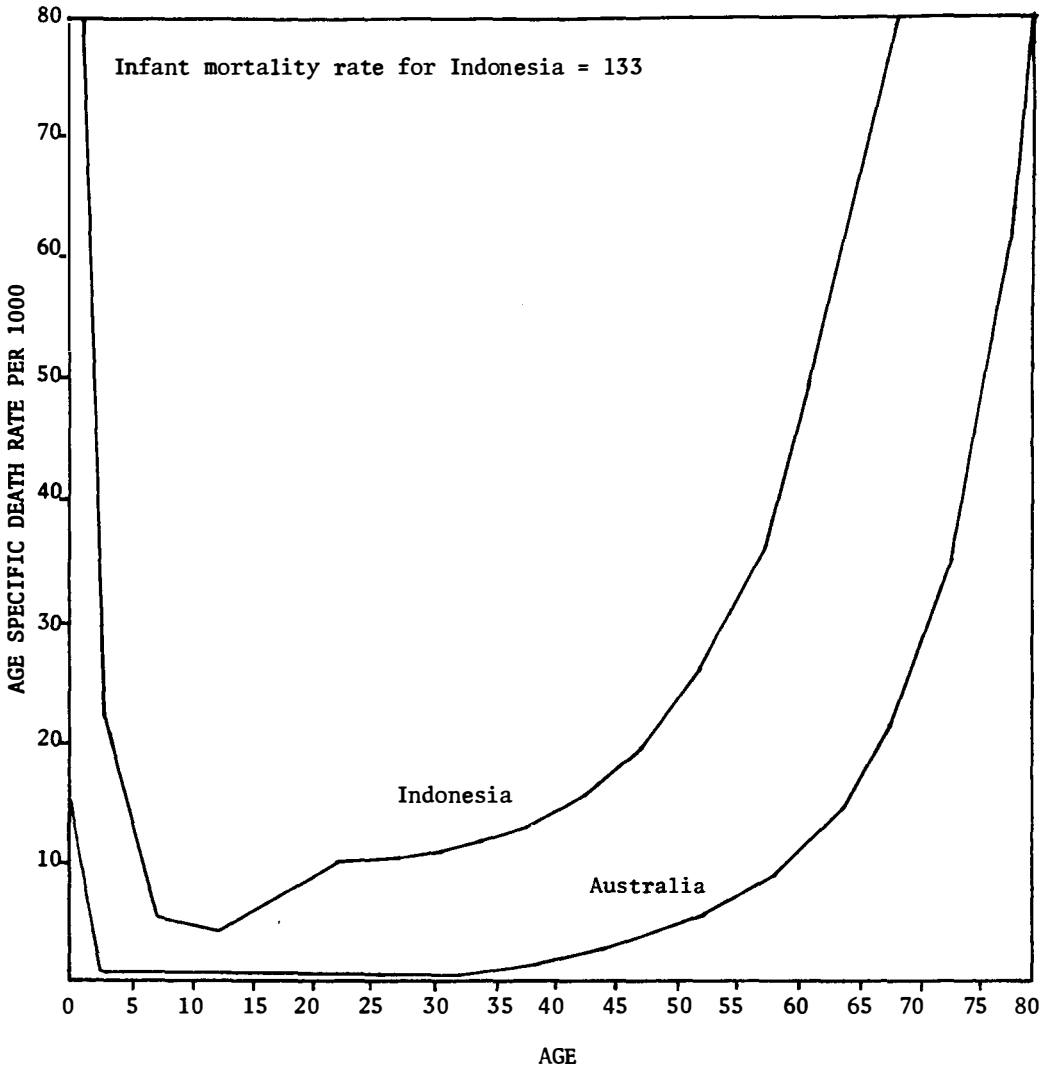
recently. Not all the places shown have complete or near-complete registration of deaths so that the figures given in these cases are only estimates. The table shows Crude Death Rates ranging from around 5 per 1,000 to 25 per 1,000. Table 3.1 shows that the Crude Death Rate is not a reliable indicator of comparative mortality levels. For example around 1970 the Crude Death Rate for Sweden, the country reputed to have the world's lowest mortality, was 11 per 1,000 while the rate for Sri Lanka was only 8 per 1,000. This apparent anomaly is due to the fact that Sri Lanka has relatively fewer deaths because its population is much younger than that of Sweden. A comparison of the age specific death rates of the two countries, that is, the number of deaths per 1,000 persons in each individual age group rather than in the total population, shows that for every age group, the age specific rate is lower in Sweden than in Sri Lanka. Age specific death rates are usually calculated for each sex in five or ten year age groupings.

The rather distinctive age pattern of mortality is illustrated in Figure 3B which shows the age specific death rates for women in Indonesia and Australia. For both countries, although the overall level of mortality differs greatly, mortality is high in the first year of life, drops rapidly to a minimum in the age group 10-14, rises slowly to about age 50 after which it increases at an ever accelerating rate. Observance of this standard pattern led in the 1950's to the United Nations producing a fixed set of age specific death rates corresponding to different overall levels of mortality. By referring to this system, complete information on the mortality in a society could be deduced from the age specific death rate in one age group only. Subsequently this basic idea of the United Nations has been refined and modified to take account of observed variations in the standard age pattern of mortality (Coale and Demeny, 1966, Ledermann, 1969, and Brass, 1971). The most important deviation from the standard pattern that these writers

Figure 3B

Age Pattern of Mortality, Females

Australia and Indonesia Around 1970



observed was that there was considerable variability between countries in the ratio of mortality at age 0 to that in the age group 1-4. (Age 0 means persons who have not reached their first birthday.) In many poorer societies it was found that mortality was relatively high in age group 1-4, reflecting high mortality subsequent to *weaning* (the change from breastfeeding to normal feeding).

While these systems, known as systems of *model life tables*, have many deficiencies, they have made it possible to carry out quite extensive analyses of mortality for countries in which death statistics were either unavailable or unreliable.

THE INFANT MORTALITY RATE

In the first year of life, when mortality is comparatively high a special rate, the *infant mortality rate*, is calculated by relating the number of infant deaths during a year to the number of live births occurring during the same year. Some writers have suggested that the infant mortality rate is a good indicator of the social and health condition prevailing in a society. This view is broadly confirmed in Table 3.1 which shows that the poorer countries in Africa and Asia had infant mortality rates in excess of 100 per 1,000 live births while the rate was below 20 per 1,000 in most developed countries.

At the beginning of the 19th century, the infant mortality rate in these developed countries was around 200 per 1,000 live births, a level rarely found in the world today. The decline in infant mortality in the developed societies since 1800 has been continuous but slow at a rate of a little over one point per 1,000 in a year in Western Europe, the United States and Australia with a slower decline in Germany, East and Central Europe. Some developing countries today, however, have experienced much more rapid declines

in infant mortality. For example, in the 1930's, infant mortality in Guyana, West Malaysia and Mauritius stood at about 150 per 1,000 but had fallen to about 40 per 1,000 around 1970, representing a decline about three times faster than the decline in developed countries. Although infant mortality is still high in the poorer countries of Asia and Africa the current levels still represent a decline from very much higher levels prevailing 20-30 years ago.

EXPECTATION OF LIFE

Table 3.1 also gives figures for the *expectation of life at birth* for the selected countries. The expectation of life at birth is a summary index obtained from a life table, the basic instrument of measurement for the demographer.¹ It indicates the average number of years that persons can expect to live from the time of birth if they experience throughout their life the age specific death rates currently prevailing. Because the expectation of life at birth is based upon age specific rates, it is independent of the age structure of a population and therefore provides a more reliable basis than the crude death rate for international comparisons of the level of mortality. The life table also allows us to calculate the average number of years that persons can expect to live from their current age. For example, a woman in Australia can expect to live on average to age 74 from her birth, but if she survives to age 20 then she can expect to live on average another 56 years to age 76. Further, if she is still alive at age 60 she can expect to live another 20 years to 80 years.

1. The reader can find a complete description of the life table and its concepts in any standard text of demographic techniques, for example (Barclay, 1958; Pollard, et al., 1974; Shryock and Siegel, 1975).

The expectation of life at birth is heavily influenced by infant and early childhood mortality, because these deaths mean the loss of a whole lifetime with a potential length of sixty to seventy years. For example, the Australian woman who could expect to live to age 74 from birth only increases that expectation by two years if she survives to age 20. On the other hand, an Indonesian woman who could expect to live to age 47.5 from birth would increase this expectation by 15 years to 62.5 years if she survived to age 20. Thus countries with an infant mortality rate of, say, 100 per 1,000 live births can be expected to have an expectation of life at birth below 55 years.

CAUSES OF DEATH

Statistical analysis of levels and trends in individual causes of death is primarily the interest of the medical statistician or the epidemiologist. The demographer, however, has a substantial interest in trends in death rates by cause because of their impact on the overall level of mortality, on the age pattern of mortality and on differences in mortality between the sexes and between various groups within the society. For example, there has been much discussion regarding the impact of malaria control on the overall level of mortality. Specifically, following the Second World War, malaria was brought under rapid control in various countries including Sri Lanka, Guyana and Mauritius. These three countries have experienced quite substantial declines in general mortality but estimates as to the proportion of this mortality decline which was due to malaria control range from close to zero up to about 40 per cent. Likewise, analyses of trends in the various causes of death have contributed to an understanding of the levelling off during the 1960's of the long-term decline in mortality in many developed countries. In Australia, this change in trend was most evident at

ages 35-64 years for both sexes and at ages 15-34 years for females and has been attributed mainly to increases in death rates from lung cancer for males and motor vehicle accidents for females with additional impact from slight rises in death rates from heart disease for both sexes (McDonald, 1972).

The list of causes of death set out in the *International Classification of Diseases* is so detailed that it requires a four-digit system of categorization. However, the World Health Organization groups these causes into seventeen classes and most demographic research would employ these groupings or the B List of 50 causes of death, a standard, international grouping of major causes (World Health Organization, 1967). However, international comparisons of cause of death statistics are limited by the accuracy of the certification and differing interpretations of the causation of various diseases. These factors can also affect the comparability of cause of death statistics in one country at different times.

Although mortality has been declining in developed countries for a very long time, even within the past fifty years substantial changes have occurred in the distribution of causes of death. Table 3.2 shows that in Australia, between 1931 and 1973, infectious and parasitic diseases as well as maternal deaths virtually disappeared as causes of death while heart disease (diseases of the circulatory system) increased from less than 30 per cent of deaths in 1931 to well over 50 per cent in 1973. Deaths from cancer (neoplasms) also increased in their proportion to total deaths. This indicates that as the diseases which affected younger people were brought under control, there was a shift in the distribution of causes of death towards the degenerative causes which affect mainly older people. The apparent stability of the proportion of deaths by violence for males conceals a rapid decline in deaths from industrial accidents balanced by a rapid increase in

Table 3.2
Percentage Distribution of Deaths
by Cause for Males and Females
in Australia, 1931 and 1973

Cause	Males		Females	
	1931	1973	1931	1973
Infective and Parasitic Diseases	8.7	0.7	8.4	0.7
Neoplasms	11.4	17.7	13.3	17.7
Diseases of the Circulatory System	28.0	51.2	29.9	57.8
Diseases of the Respiratory System	11.8	8.5	11.2	4.9
Complications of Pregnancy	-	-	2.6	0.1
Congenital Anomalies and Certain Diseases of Infancy	5.9	3.1	5.6	2.9
Accidents and Violence	9.6	9.7	3.4	5.7
All other Causes	24.6	9.1	25.6	10.2
Total	100.0	100.0	100.0	100.0

Sources: Australian Bureau of Statistics, Demography 1931, Table 53.
Australian Bureau of Statistics, Deaths 1973, Table 8.

deaths from motor vehicle accidents. As control over mortality has been extended, the age at which a person dies and the cause of death has increasingly become a result of the person's life style such as occupation, smoking behaviour, drug-intake, exercise, diet, stress and use of automobiles.

For developing societies, because of the shortage of doctors, statistics on cause of death, if they exist at all, are usually unreliable. Despite this, in many developing societies, infective and parasitic diseases are still of major importance. For example, in West Malaysia in 1971 only 33 per cent of total deaths were certified. Out of these certified deaths about 9 per cent were caused by infective and parasitic diseases, such as tuberculosis and malaria.

The distribution of deaths by cause varies greatly according to age. In developed societies about two-thirds of all deaths over age 65 are due to heart disease (diseases of the circulatory system) while almost 80 per cent of deaths of persons aged 15-24 are due to accidents and violence. Control of particular diseases can, therefore, influence the age pattern of mortality.

SEX DIFFERENCES IN MORTALITY

In Western countries, with the exception of Ireland in the 1920s, all recorded life tables show a consistently longer life span for females. Animal studies have also shown almost without exception that the male of the species is inferior in terms of expectation of life. In most countries, the initial excess of males over females among births is reduced by subsequent mortality so that the overall sex ratio of the population shows an excess of females. The 1974 United Nations Demographic Yearbook shows a longer male life span in only six countries: Nigeria, Upper Volta, Jordan, India, Pakistan and Cambodia. All of these countries had low expectations

of life at birth and the male life expectancy was only about one year more than that for females in every case except Pakistan where the difference was almost five years.

It is evident that as expectation of life increases females benefit more than males. In Australia, for example, the excess of female over male expectation of life at birth increased from a level of about 3.5 years which had remained constant from 1870 to 1930 to 6.5 years in 1970-72. In Sri Lanka, where males had enjoyed a longer life span of about two years from 1920 to 1953, female expectation of life had by 1963 surpassed that of males and by 1971 was 2.9 years greater (Table 3.3).

Table 3.3
Life Expectancy at Birth by Sex in Australia
and Sri Lanka for Selected Years

Year	<u>Australia</u>		Year	<u>Sri Lanka</u>	
	Males	Females		Males	Females
1870-81	46.5	49.6	1921	32.6	30.6
1932-34	63.5	67.1	1946	43.8	41.5
1946-48	66.1	70.6	1953	57.8	55.7
1965-67	67.6	74.2	1963	62.8	63.0
1970-72	67.8	74.4	1971	64.0	66.9

Sources: Australia: Australian Bureau of Statistics, Deaths 1975, Table 7; Young, 1975, Table 1.

Sri Lanka: Rao, 1976: Table 1.

Both the human and the animal studies suggest that there is a biological difference between males and females which leads to higher male mortality. Retherford has made the point that the observed increases in the superiority of female life-expectation have been too rapid to have been caused by biological change. Using data for the United States, he claims that the increased superiority of females has been due to the detrimental effect of new environmental factors, especially increased cigarette smoking among men (Retherford, 1975). However, this theory is less satisfactory as an explanation of the even more spectacular change in relative male and female mortality in Sri Lanka. An alternative explanation of the increased difference in life expectancy for males and females is that, under conditions of declining mortality, there is a shift in the distribution of causes of deaths towards those causes, such as the degenerative diseases, which are more influenced by the relatively constant biological difference between men and women. In this case, the increased sex mortality difference would be due to the disappearance of older environmental factors rather than to the appearance of new ones.

MORTALITY DIFFERENTIALS

Studies of mortality by marital status have shown that married persons have lower death rates than the unmarried but it has been suggested that some of this difference is due to selection. That is, healthy persons are more likely to be selected as partners in marriage than people suffering from some disease or abnormality and this selective factor becomes more important as fewer people remain single.

While this marital status differential is rather clear, it is often difficult to isolate other mortality differentials. For example, we may observe that mortality is lower in urban areas than

in rural areas and thence conclude that this was due to the better health facilities available in urban areas. However, the regional differential may have, in fact, been due to differences in education or standard of living between the people in the towns and those in the country or to the better health condition of people who migrate to the cities. Surveys in both developed and developing countries have usually found massive differences in mortality of children according to the education and economic standard of the mother. In developing countries, mothers scoring highest in socioeconomic status have childhood mortality rates little different from the average prevailing in developed countries. Likewise, in the developed countries, underprivileged groups, such as the Australian aborigines, sometimes have mortality rates far higher than those of the majority of the people.

Studies of the mortality of immigrants in Australia have in general indicated that the migrants take on the mortality pattern of their new country rather than the country they have left. Migration from England and Wales to Australia appears to have increased the migrants' chances of dying from heart disease while lowering their chances of dying from lung cancer with the new risks of dying from these causes being in conformity with the Australian risks of death from these diseases. However, migrants are again a select group often subject to health checks prior to migration so that they can be expected to have lower mortality than the group that they leave. Deaths from suicide are an exception to this and are usually found to be more prevalent among migrants. Sometimes, in the case of certain infectious and parasitic diseases, migrants can be carriers of disease. This has been shown to be the case with malaria in Africa, with cholera in Asia and the Middle East and during the world-wide influenza epidemic following the First World War.

Research into the mortality of particular occupational groups in the nineteenth century focussed attention on occupational

risks and has led to a considerable reduction in industrial accidents. Despite this, some occupations and recreations are still hazardous while others involve stress or debilitation (physical weakness) which contributes to mortality.

MORTALITY DECLINE AND ECONOMIC DEVELOPMENT

Decline of mortality has played a significant part in some theories of economic development. In the early 1950s, underdeveloped countries were regarded as being in a 'low level equilibrium trap' in which small gains in income per head produced a decline in mortality leading to increased population growth which in turn dissipated the initial increase in income. A 'big push' in economic development was suggested to be the only way out of this trap. Counter to this argument, it has been claimed that mortality decline in developing societies has been independent of income level and more related to public health procedures. A recent study by Preston has indicated that 75-90 per cent of the growth in life expectancy for the world between the 1930s and the 1960s was attributable to factors not influenced by the nation's contemporary level of income (Preston, 1975). In the 1960s, countries with expectations of life between 40 and 60 years had only one third of the national income (at constant prices) of countries in the same range of expectations of life in 1930.

While making these observations about the past, Preston goes on to suggest that, nowadays, mortality is more responsive to variations in income levels especially in countries with low national incomes. The realization that alleviation of poverty was the crux of any future mortality decline in these countries led to the inclusion in the World Population Plan of Action (United Nations, 1975b) of a statement calling for reduction of mortality

which 'should be achieved in conjunction with massive social and economic development'. In the poorer countries of Asia with very large populations such as India, Bangladesh and Indonesia, gains in expectation of life obtained through improvements in public health may well be slowing down and future mortality decline may be very slow because of the obstacle of poverty. Because of their large populations, overcoming poverty in the developing countries today is more difficult than it was for the developed countries.

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CHAPTER 4

FERTILITY

DAVID LUCAS

Chapter 4

FERTILITY

MEASURING FERTILITY

Fertility refers to the number of live births, and is more easily measured for women because they, and not men, actually have the babies. One simple measure of fertility is to take the average or *mean live births* to women of a particular age. For example in a 1974 survey in rural Ghana, 393 women aged 45-49 years reported 2058 live births during their lifetimes, giving a mean of 5.2 births per woman. One problem with this measure, especially in developing countries, is that older women may forget to report all their births, particularly if a child died while young.

The Crude Birth Rate, defined in Chapter 1 as annual births divided by the total mid-year population, is inadequate for many purposes because it fails to allow for the age and sex composition of the population. *Age-specific fertility rates*, which relate to women of specified ages, are much more informative. We can obtain a rate for women aged, say, 15 years by dividing the number of births in the last 12 months to mothers aged 15 by the number of women aged 15. By adding the age-specific rates for women aged from 15 up to 49 years, we obtain the *Total Fertility Rate*.¹ If the same procedure is followed but only female births are considered, the rate is known as the *Gross Reproduction Rate*. This is an attractive statistic because it gives an impression about replacement levels: if the average woman has less than one daughter, then the women are not

1. A more common approach is to calculate rates for five year age groups, from 15-19 years up to 45-49 years. The seven rates must then be added and the result multiplied by five because it takes five years for a woman to pass through the age group. See Pollard et al., 1974:17-18.

replacing themselves. In the developed countries of the world the Gross Reproduction Rate between 1970-75 was estimated to be 1.1 per woman, compared with 2.5 for the developing countries (Nortman and Hofstatter, 1978, Table 1).

FECUNDITY AND HUMAN REPRODUCTION

The difference between fertility (the production of live births) and *fecundity* (the potential, or physiological capacity to produce a live birth) often causes confusion. If a woman is capable of giving birth to a live born child, she is *fecund*, if she is not, then she is *sterile*. A fecund woman may not necessarily be fertile, for example if she is regulating her fertility by abstaining from sexual intercourse, or using contraception.

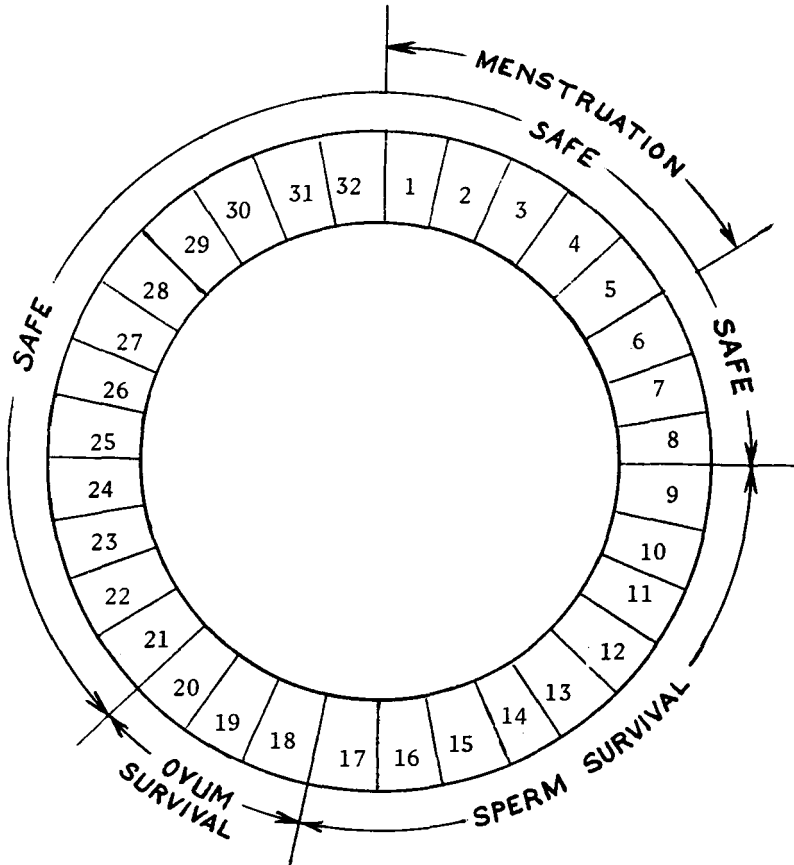
The age of *menarche* is the age when a girl has her first *menstrual period* or flow of blood from the womb or *uterus*. As the girl gets older, a more regular *menstrual cycle* is established, so that the periods are about four weeks apart. When a woman stops having menstrual periods, she has reached the *menopause*. A woman's *reproductive period* is from *menarche* to *menopause*, and for practical purposes this is generally defined as beginning at age 15 and ending at age 49.

How does a live birth occur? For a woman to become pregnant she must first have *coitus* (sexual intercourse) when the man's seed or *sperm* enters her body. A fecund woman produces a cell known as an *ovum* or egg, and, for a few days around the middle of a woman's *menstrual cycle*, *ovulation* occurs when these eggs are released. (See Figure 4A.) If one of these eggs is fertilized by a sperm, *conception* or pregnancy begins. Next *implantation* must take place, when the fertilized egg is set in the lining of the womb. In demography, the product of a conception is called a *foetus*, and it takes on average about nine months or 280 days for the foetus to develop in the womb before a live birth can take place.

Figure 4A

The Menstrual Cycle

The diagram below assumes a regular menstrual cycle of 32 days, and that the menstrual period lasts for the first five days. Day 18 is assumed to be the day of ovulation, but even if the woman has a regular cycle, ovulation may be delayed. If sexual intercourse takes place before ovulation, the sperm may still survive to fertilize the ovum. The 'safe period' when the woman will not conceive is estimated to be 20 days, from day 21 to day 8 of the next cycle.



Source: Llewellyn-Jones 1974:255.

THE INTERMEDIATE VARIABLES

In considering why a developed country such as Australia has lower fertility than developing countries we can use the important classification of *intermediate variables* by Davis and Blake (1956) listed in Table 4.1. These variables, as shown in Figure 4B, have a direct effect on fertility, while the socio-economic, bio-social and other factors can only have an indirect effect.

In order to have a live birth, a woman has to pass through three stages:

- she must have sexual *intercourse*
- she must become pregnant (*conception*)
- she must successfully complete the period of pregnancy (or *gestation*) and give birth to the child (*parturition*).

The 11 intermediate variables fit into three categories: the intercourse variables, the conception variables and the gestation variables. Davis and Blake try to show how other factors, acting through these variables, can affect fertility. Each variable may have a negative (minus) or positive (plus) effect on fertility. For example, if a society uses contraception, this has a minus effect. If contraception is not used, this has a plus effect.

However, quantifying the link between a set of intermediate variables and fertility has proved difficult and to allow for simple quantification Bongaarts (1978) has collapsed the 11 intermediate variables into eight factors. For example in his framework, intermediate variables 1-3 are reduced to only one factor 'proportions married'.

THE INTERCOURSE VARIABLES (Intermediate Variables 1-6).

Sexual Unions (Intermediate Variables 1-3)

In order to become pregnant, a woman must first have sexual intercourse, and an arrangement between a man and a woman where sexual intercourse takes place is called a *sexual union*. The number of years during the reproductive period that women spend in stable sexual unions

Table 4.1

The Intermediate Variables

-
- I. *Factors Affecting Exposure to Intercourse ('Intercourse Variables').*
- A. Those governing the formation and dissolution of (sexual) unions in the reproductive period.
1. Age of entry into sexual unions.
 2. Permanent celibacy: proportion of women never entering sexual unions.
 3. Amount of reproductive period spent after or between unions.
 - a. When unions are broken by divorce, separation or desertion.
 - b. When unions are broken by death of husband.
- B. Those governing the exposure to intercourse within unions.
4. Voluntary abstinence.
 5. Involuntary abstinence (from impotence, illness, unavoidable but temporary separations).
 6. Coital frequency (excluding periods of abstinence).
- II. *Factors Affecting Exposure to Conception ('Conception Variables').*
7. Fecundity or infecundity, as affected by involuntary causes.
 8. Use or non-use of contraception. (Davis & Blake distinguish between a. chemical and mechanical means and b. other means of contraception, but see Table 4.2 below for another classification.)
 9. Fecundity or infecundity, as affected by voluntary causes (sterilization, subincision, medical treatment, etc.).
- III. *Factors Affecting Gestation and Successful Parturition ('Gestation Variables').*
10. Foetal mortality from involuntary causes.
 11. Foetal mortality from voluntary causes.
-

Source: Davis and Blake, 1956.

can have a considerable effect on total fertility, but temporary sexual unions generally have little effect. In most societies almost all births occur within marriage, a legal form of sexual union, and factors affecting the number of years of marriage are discussed in Chapter 5.

In societies where fertility control is not widely practised, the patterns of stable sexual unions are a major determinant of fertility. Tables 5.1 and 5.2 indicate that in Africa women marry early, and that almost every woman marries. Since in many parts of Africa the woman tries to become pregnant as soon as possible to prove her fertility, the marriage patterns have a plus effect on fertility.

A historical feature of some Western European societies has been the regulation of fertility by postponing marriage, but since World War II the age of marriage has fallen. For women in the United Kingdom it fell from 25.5 years in 1931 to 22.6 years in 1971. In Australia the median age for women first married in 1973 was 21 years, compared with over 23 years for those married between 1921 and 1940 (National Population Inquiry, 1975:65). The proportion of women who have never married has also decreased in Australia, so that today only about 5% have never married by age 40, compared with 15% before World War II. Yet this is still relatively high compared with countries such as Ghana and Nigeria where the proportion is about 1%.

Although marriage has become more prevalent in Australia, so has divorce. McDonald (1974: 32-35) has estimated that one in eight marriages of persons aged 20-39 will be terminated by divorce by age 50, and that about 10% of marriages will end in widowhood by that age. The extent to which termination of marriage influences fertility levels depends on three factors:

- the extent and rapidity of re-marriage;
- the relative fertility of the marriage that was terminated; and
- the relative fertility of the re-marriage.

In Australia the changes of re-marriage after divorce strongly depend on the age at divorce, and almost all persons divorced under the

age of 25 years had re-married within six years. The mean live births of divorced women was lower than that of married women, and this might reflect the disruption of the marriage before the divorce.

Intercourse within Sexual Unions (Intermediate Variables 4-6)

Even though women are in sexual unions, there may still be periods when they are not having sexual intercourse. This may be because they have voluntarily given up sexual intercourse (*voluntary abstinence*) or because it is impossible for them to have sexual intercourse (*involuntary abstinence*).

Voluntary abstinence includes five types of restriction on intercourse: *postpartum*, *terminal*, *occasional*, *gestational* (i.e. during pregnancy) and *menstrual* (during menstruation). However, gestational and menstrual abstinence have little effect on fertility. Voluntary abstinence can also include the rhythm or 'safe period' method of birth control, which involves abstaining from sexual intercourse when the woman is ovulating (see Figure 4A and Table 4.2).

The time after childbirth is known as the *postpartum period*, and in almost every society the parents voluntarily abstain during the first few weeks after birth. In some societies this is reinforced by the custom that the woman stays with her parents after giving birth. According to Chinese tradition a woman has to stay at home for a month after the birth. To have sexual intercourse during the month is believed to bring bad luck to both husband and wife (Pillsbury, 1978). To protect the health of the mother or baby, some societies extend this postpartum abstinence considerably. For example in Central Java it lasted for two years and was closely connected with a belief that sexual intercourse would harm the mother's breast milk (Singarimbun and Manning, 1976).

Similar beliefs have been reported for the Yoruba of Nigeria, who also practise *terminal abstinence*. As a result many women aged over 35, particularly those who are grandmothers, have permanently stopped sexual intercourse (Okediji et al., 1976). Among the Nupe of Northern Nigeria 'mothers do not bear children in

competition with their married daughters' (Katcha, 1978:56). In many parts of India, notably among higher status groups, women with adult children may be ashamed to become pregnant again. Mandelbaum (1974:29) calls this 'the pregnant grandmother complex'.

Occasional abstinence can be related to special ceremonies and holidays, or to taboos (prohibitions on conduct). In India, sexual abstinence is required on numerous Hindu religious occasions, and also, in one region, when any family member is sick (Mandelbaum 1974:45 and 64). Among the Baganda of Central Uganda a wife will abstain when in mourning after a death and it is also polite for her to abstain when older female relatives are in the house (Kisekha,1973:151).

Involuntary abstinence can arise because of impotence, illness, and unavoidable but temporary separations. Migrant labour can be an important cause of involuntary abstinence when the husband goes to work in another part of the country, or to another country. For example at the time of the census of Lesotho in 1966, 53,000 men were reported as being absent from the country, often on one or two year contracts at the South African mines. More than half of the married women in the main childbearing years (20-29 years) reported that their husbands were absent.

Perhaps one less satisfactory feature of the intermediate variables classification is the inclusion of variable 6, *coital frequency* (the frequency of sexual intercourse). Conception is only possible in the middle of the menstrual cycle, so other acts of coitus have no significance. Davis and Blake (1956:234) found no reliable evidence that frequencies varied between societies and Bongaarts (1978:118) has shown that coital frequency is not an important determinant of fertility.

Reports of coital frequencies are often ambiguous and unreliable, especially if periods of voluntary abstinence are not taken into account. However, survey data from India, Bangladesh, Australia and the U.S.A. clearly shows that for married women coital frequency declines with age. In both Melbourne, Australia, and the U.S.A., the average frequency was 3.0 times a week for wives aged 20-24, falling

to 1.7 for wives aged 45-9 (Ware, 1979). Although these two countries have low fertility, their average frequencies were generally higher than those for India and Bangladesh.

From their analysis of a 1978 Bangladesh rural survey, Bhatia and Ruzicka (cited in Ware, 1979) found that 12% of the wives had not engaged in sexual intercourse for a month or more. Almost all these abstainers said that their abstinence was involuntary: because their husbands were absent, because of the ill-health or tiredness of the husband, or because of the sickness or pregnancy of the wife.

THE CONCEPTION VARIABLES (Intermediate Variables 7-9)

These refer to two sets of factors, sterility and contraception, which reduce the probability of conception if intercourse has occurred. Sterility can be involuntary or voluntary, and voluntary sterility can also be regarded as an alternative to contraception.

Sterility

Sterility (or *infecundity*) is the lack of ability, by a man, woman, or couple to *procreate* (to produce a live birth). It is extremely difficult to measure, either statistically or medically. Asking about sterility in surveys can create measurement problems, as can be seen from the response from wives aged under 45 in the 1971 Melbourne Survey. About 13% of the husband and wife couples were definitely sterile, and 80% were definitely fecund. However, there was some doubt about the remaining 7% who were classed as either 'possibly' or 'probably' sterile, often because a doctor's confirmation was lacking (Lavis, 1975:78-88).

One important influence on *involuntary sterility* (intermediate variable 7) is age. At the beginning of the reproductive period women may be less fecund because their ovulation is irregular, and this contributes towards *adolescent sterility*. Fecundity, as well as

the age-specific fertility rates, reaches a peak for women aged 20-29 years; then fecundity declines until the menopause, around age 50, when the woman becomes permanently sterile.

Sterility can also be related to extreme hunger, and to venereal disease. It has been suggested that gonorrhoea is the cause of a zone of low fertility in northern Zaire and neighbouring countries. One crude indicator of sterility is the number of women who have never had a live born child, and in parts of Zaire about one third of women over 45 were reported to be childless (Heer, 1975:70-71; Guest, 1978).

Amenorrhoea is the absence of ovulation in a woman. After childbirth there is a period of *postpartum amenorrhoea*. Breastfeeding the baby can extend this period. In women who are not breastfeeding, menstruation (an indicator that ovulation has returned) resumes on average three months after the birth. If, as indicated by various rural studies in Africa and Asia, prolonged breastfeeding can delay the return of menstruation by more than a year, it acts as a traditional form of birth spacing (Rosa, 1976). However, about 5% of women become pregnant before menstruation returns, so although breastfeeding can space pregnancies in a population, it may be a risky form of family planning for the individual woman. In some societies, such as the Yoruba of Nigeria, the length of breastfeeding is indirectly significant in fertility regulation because it determines the length of postpartum abstinence.

Voluntary Sterility is where the person has had an operation designed to make him or her sterile. Amongst the kinds of operations usually performed for contraceptive reasons are the *vasectomy* for men and *tubal ligation* for women.

Out of 1,977 wives aged under 45 in the 1971 Melbourne Survey, 72 (3.6%) reported operations for contraceptive reasons. This included only three reporting husbands with vasectomies. Out of the wives in the 1971 sample, 201 were traced and interviewed again six years later. For these wives sterilization had assumed the same importance as the pill by 1977: 32% of couples (27% of wives and 5% of husbands) had been sterilized. When asked about their expected method of contraception

Table 4.2

Major Contraceptive Methods

	Sex of user	Mode of Action	Pregnancies per 100 women per year	
			Theoretical	Actual (Use effectiveness)
<u>Appliance Methods</u>				
Condom (sheath)	Male	Prevents entry of sperm	3	15-20
Diaphragm	Female	" " " "	3	20-25
Douche	"	" " " "	?	30-40
Spermicide	"	" " " "	3	30-40
Interuterine Device (IUD)	"	Prevents implantation	1-5	6
<u>Steroid Methods</u>				
Oral contraceptives ('the pill')	"	Suppresses ovulation	0-1	2-5
Injectibles (De Provera)	"	" "	Nil	?
<u>Natural Methods</u>				
Coitus Interruptus ('withdrawal')	Male	Prevents entry of sperm	15	20-25
Rhythm ("safe period")	Both	Abstaining from sexual inter- course during the period of ovulation	15	35

Sources: Segal and Tietze, 1971; Segal and Nordberg, 1977; Wood 1969,p.128 and p.150;
Boston Women's Health Collective, 1975, Chapter 10.

Notes: (a) Sexual abstinence and prolonged breastfeeding are sometimes classified as natural methods.
Sterilization can be classed as a permanent method.

(b) The references on contraceptive effectiveness are often conflicting.

after all their desired children had been born, 56% mentioned sterilization (Young and Ware, 1979:4).

In some other parts of the world the increase in voluntary sterilization has been similarly recent and dramatic. According to one estimate, 75 million couples in the world have been voluntarily sterilized. Countries where sterilization is an important method of birth control include Hong Kong, Korea, Singapore, Taiwan and Thailand (Nortman, 1977). Sterilization does not have the 'side effects' or health complications of the pill (see Chapter 7), but the sterilization operation is usually permanent and irreversible.

Contraception (Intermediate Variable 8)

In a narrow sense, contraception refers to the appliance and steroid methods of preventing conception (see Table 4.2) but broader definitions would include the natural methods, and also sterilization. Some methods of preventing the sperm from reaching the ovum have been known for a very long time. Over three thousand years ago the Egyptians had the idea of using a mixture of honey and leaves as a spermicide (a chemical which kills the sperm).

By the 18th century, there were exports of condoms from London to other countries in Europe (Wood and Sutters, 1970). In the 20th century the scientists turned their attention to ovulation, and initially to the *rhythm method* (avoiding intercourse during ovulation). However, modern contraception really developed from 1955 onwards when new materials such as plastic and stainless steel were used for the inter-uterine device (IUD) and when the contraceptive pill became available.

In assessing the effect of a particular contraceptive method, it is necessary to consider not only how widely it is used, but also its *use-effectiveness*. In Table 4.2 this is measured by the number of pregnancies, that is contraceptive failures, in one year for a hundred women using the method. Contraceptive failures are of two types (i) *method failures* which arise even when the method is used correctly and (ii) *user failures* which result from an error by the user, such as

forgetting to take the pill. *Use-effectiveness* is based on records of actual use over time, so it includes both types of contraceptive failure. The theoretical effectiveness of a method assumes ideal conditions, such that only method failures can arise.

Historically, before the invention of the diaphragm in the late 19th century, women had to depend on men using the condom or coitus interruptus to prevent them from getting pregnant (Boston Women's Health Book Collective, 1975:182). Today, as shown in Table 4.2, the female methods are in the majority. With these not only does the woman take the responsibility for avoiding pregnancy, she can also suffer any complications or side effects (e.g. the risk of infection with the IUD) related to the method. More research money has been spent on developing contraceptives for women than for men. This is partly because it is easier to prevent ovulation or implantation in the woman than the production of sperm in the man (*People*, 1977; Bremner and de Kretser, 1975).

Freedman (1961:54) has written: 'most scholars probably would agree that the mass adoption of contraception is the most important intermediate variable change responsible for the decline in fertility in Western countries'. A comparison between survey data from Australia and Nigeria will illustrate the relatively low levels of contraceptive usage in many developing countries. In the 1971 Melbourne Survey 26% of the married women aged under 45 years were using the pill, 16% were using appliance methods, 13% withdrawal, and 8% rhythm (Caldwell et al. 1973, Table 9). In Lagos in 1969 less than 4% of the women aged from 15 to 49 were using any of these methods, although 30% were practising abstinence (Morgan, 1975:221).

THE GESTATION VARIABLES (Intermediate Variables 10 and 11)

If a woman becomes pregnant, but the pregnancy does not result in a live birth, then pregnancy wastage or *foetal mortality* has occurred, either voluntarily or involuntarily.

Involuntary foetal mortality includes *spontaneous* abortions, which are popularly known as miscarriages, and *stillbirths*. Very

approximately, one pregnancy in two results in a live birth. About one-third or more of the fertilized ova are rejected within two weeks of conception and for this reason most spontaneous abortions are *unrecognized* because they occur before the woman realized she is pregnant. Of the recognized pregnancies about 25% are spontaneously aborted (James, 1970; Bongaarts, 1975).

Voluntary foetal mortality refers to *induced abortions* which have been deliberately provoked by the pregnant woman or other person. Induced abortions are illegal in some countries (e.g. Belgium) and are regulated by law in most others. Between 1967 and 1977 at least 35 countries and five Australian States or Territories have extended the grounds for abortion (Cook, 1978). The 1969 law in South Australia, which was modelled on the 1967 British Abortion Act, is an example of this. In South Australia a doctor can terminate a pregnancy if he and another doctor consider that there was a risk to a pregnant woman's life or her physical or mental health.

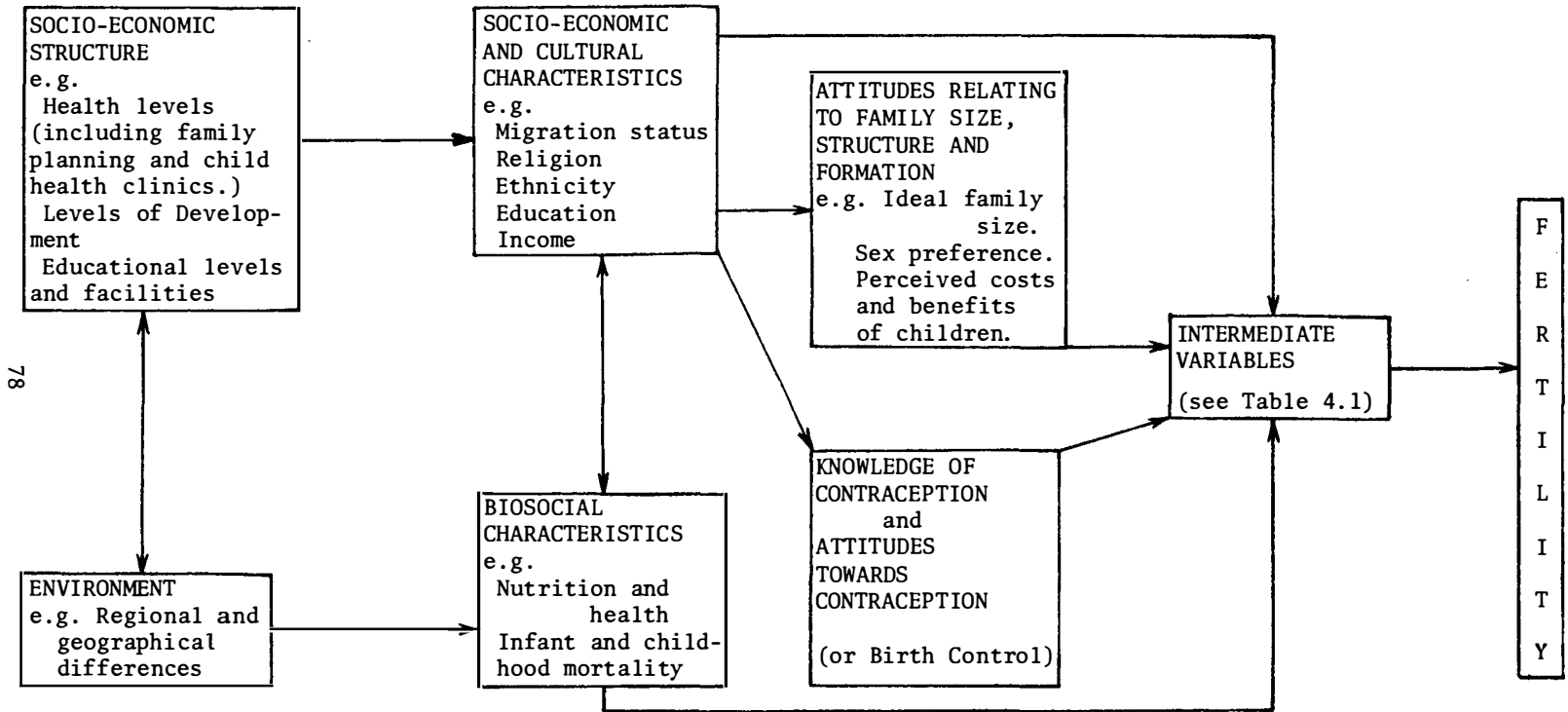
Estimates of the number of abortions performed annually in the world range from 30 to 55 million. About half of these abortions take place in those countries, mostly in Latin America and Africa, where abortion is either completely illegal or permitted only to protect the woman's life or health (Tietze and Lewit, 1978). Legal abortions were of particular importance in Eastern Europe in the 1960s, and in the U.S.S.R. from 1965 to 1970 there was probably an *abortion ratio* of 2 to 3 abortions for each live birth. Outside of Europe, countries with high abortion ratios include Cuba, Korea and Japan (Tietze and Murstein, 1975, Table 2).

ATTITUDES AND NORMS

As can be seen from Figure 4B, the intermediate variables are affected by individual attitudes or views: about ideal family size, about the use of contraception, and many others. Attitudes affect *social norms*, which define what actions are considered appropriate in a society and set limits on behaviour (Martin, 1970 : 50-52). Norms

Figure 4B

A Simple Framework for Fertility Analysis



Source: World Fertility Survey, 1977. For similar frameworks see Jones (1977) and Freedman (1975).

relating to marriage provide many examples, and these are discussed in Chapter 5.

Ideal Family Size

One approach by survey researchers towards identifying attitudes and norms affecting ideal family size is to ask such basic questions as 'What do you think is the best number of children to have?' and then to try to find out why the respondent prefers a particular number. These sorts of question have been described as 'meaningless' and 'unreliable' by some demographers. However, measuring the mean ideal family size does enable a distinction between societies and groups which have 'small' and 'large' family norms. In developed countries mean ideal family sizes of two or three can be expected. Several Asian samples have recorded means around four or five but in parts of Africa hardly anyone wants less than four children, and several African studies have reported ideal family sizes above nine (Ware, 1974 and 1975).

Sex Preference

In many societies, the emphasis on having sons for economic, social and religious reasons, is very pronounced. This *son preference* has led to the hypothesis that the desire for a minimum number of sons affects fertility behaviour. Repetto (1972) after examining data from India, Pakistan, and Morocco, concluded that the number of living sons does not influence fertility levels. However, evidence from Korea and elsewhere indicates that couples are more likely to use birth control when they have more boys than girls (Williamson, 1978).

Knowledge of Contraception, Birth Control or Family Planning

Although Figure 4B refers to 'knowledge of contraception and attitudes towards contraception', it could equally well refer to birth control or family planning. Grebenik and Hill (1974:27) define *birth control* as a 'conscious attempt to control the number and/or timing of births within a sexual union'. From Table 4.1 we can see that voluntary abstinence, contraception, sterilization and abortion are the

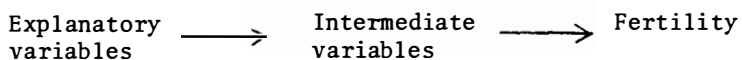
intermediate variables relating to birth control. The term *family planning* is used in a more restricted way since abortion is not usually considered to be a family planning method (Grebenik and Hill, 1974:33).

In many KAP surveys (which cover the knowledge, attitudes and practice of family planning) respondents are asked if they have 'ever heard of', 'approve of', and have 'ever used' a particular method of contraception. Results from the World Fertility Survey (1978) indicate that in several Asian countries (including Korea, Malaysia and Sri Lanka) over 90% of respondents had some knowledge of a modern method. At the other end of the scale only 22% of the respondents in the 1976 Nepal Fertility Survey had ever heard of any method of contraception (World Fertility Survey, 1978b).

However, women who have 'heard of' a method do not necessarily have a full understanding of the efficiency and proper use of a method. In addition, partly because of the problems of designing KAP questions, the results can be inaccurate and imprecise (Morgan, 1975: 213-215; Lucas and Ware, 1977).

SOME FERTILITY DIFFERENTIALS

In Figure 4B the intermediate variables affect fertility directly; the other categories, of explanatory variables, can only affect fertility indirectly. Thus



Of course, Figure 4B is highly simplified. For example, attitudes towards ideal family size may affect fertility, but the reverse is also true. Explanatory variables (such as education, income and occupation) may be interlinked with each other, so that it may be difficult to determine their relative influence on fertility. In the past researchers have tended to concentrate on either the intermediate or the explanatory variables. However the World Fertility Survey (1977:10) anticipates that any penetrating analysis of fertility will use both.

A general feature of fertility analysis is that some variables (especially age and marriage duration) are used as *controls*. In the examples below this involves comparing the fertility of women of the same age. Since some groups such as highly educated women are on average younger than the others, controlling by age or marriage duration is usually an essential step.

Fertility and Socio-Economic Status

Wrong (1977:81) believes that it is virtually a socio-economic law that persons of lower class or socio-economic status have higher fertility. When surveys in India and elsewhere have shown the opposite, the data has been criticized on the grounds that the lower class women were more likely to forget births. Because Hull and Hull (1977) had access to data on both explanatory and intermediate variables, they were able to challenge this popular 'law'. In their own study of a central Javanese village, the higher income wives reported the most children. Is this because the poorer women are more likely to understate the number of births? After examining data on intermediate variables 3, 4, and 7, Hull and Hull conclude that the differences are genuine. The poorer women in the village have less stable marriages, longer postpartum abstinence, and are more likely to be sterile.

Fertility and Education

According to Holsinger and Kasarda (1976:154), although 'rising levels of education result in lower fertility rates', the exact linkages between these two variables have not yet been adequately tested. Education certainly affects age at marriage since the typical school or college student is unmarried. Also, as education rises, so does the use of modern contraception. Hawthorn (1970:42) claims that 'it is true in all societies that awareness of birth control varies directly with urban background or residence, a higher than average education, and a higher than average income'. Education also has a substantial effect on other explanatory variables such as attitudes to ideal family size and the costs and benefits of children (see Holsinger and Kasarda,1976).

Bogue (1969:676) has concluded that education exhibits a stronger and more consistent relationship to fertility than any other variable. Thailand provides an example of this typical, inverse relationship: in 1960 the mean births of ever-married women aged 50 and over were 5.7 for uneducated women, 5.2 for those with primary education, and 3.4 for those with secondary education (Goldstein, 1972: 434). However, in some other countries, including Indonesia (Hull and Hull, 1977), women with no education and secondary education have lower mean births than those with primary. In considering a similar low-high-low pattern in Ibadan, Nigeria, Sembajwe (1977:151) notes that postpartum abstinence falls with education, while contraceptive use rises.

Rural-Urban Differentials

In the developed world rural fertility is generally higher than urban. Indeed, in some countries, such as Poland and Yugoslavia, it is over 30% higher (United Nations, 1976:48). In Australia, the national average for women aged 45-49 was 4.2 children in 1911, compared with 4.8 in rural areas. By 1966 this national average had fallen to 2.7 as against 3.2 in rural areas (National Population Inquiry, 1975:51-52).

In Asia recent World Fertility Survey *Summaries* (1977a and 1978) have confirmed the lack of any real pattern in Asia. In Korea and Pakistan, mean births were lower for rural than for urban areas, while in Indonesia the rural/urban difference was slight. The 1975 Sri Lankan Fertility Survey found that urban women aged 45-49 had lower mean births than rural women, yet the fertility of women living on tea and rubber estates was even lower. This result was considered surprising because the estate women had the lowest age at marriage (World Fertility Survey 1978d:4).

Results from the 1975 Survey of Fertility in Thailand (World Fertility Survey, 1978c) indicated that rural women were first married about one and a half years earlier than urban women. In urban areas, 60% of ever-married women had ever used a contraceptive method, compared with 43% of rural women. This obviously contributed to lower urban

fertility; yet on the other hand, significant recent increases in contraceptive use had made rural/urban differences less pronounced.

In Africa the situation is more confusing because of the lack of adequate data and because of difficulties in estimating rural and urban fertility. In several countries, including Congo, Gabon, Upper Volta and Zaire, urban fertility may be higher, and one possibility is that the better health facilities in urban areas may lead to reductions in sterility (Page,1975:52-53). For Nigeria, Morgan (1975:234) supports the view that fertility is higher in the capital city, Lagos, than in the rural areas. Postpartum abstinence in Nigeria is often related to the length of breastfeeding, and urban mothers tend to breastfeed for shorter periods (Lucas, 1977).

Religion and Fertility

Religion is certainly a significant explanatory variable. Catholics frequently have higher fertility than Jews or Protestants, and most studies indicate that Muslims often have higher fertility than non-Muslims. Each of the following three hypotheses tries to explain how religion can influence fertility differentials (Goldscheider, 1971: Chapter 10; Chamie,1977:365).

- (1) *The characteristics hypothesis* maintains that fertility differentials reflect socio-economic differences between members of religious groups, and religion is regarded as an indicator of education, occupation, income, urban/rural residence and social mobility.
- (2) *The particularized theology hypothesis.* According to this hypothesis, religion is significant in its own right, and its impact on fertility is through particular church doctrines or religious ideology on birth control and norms of family size. For instance the Catholic Church teaches that only total abstinence and the rhythm method are acceptable methods of birth control. (Jones and Nortman, 1968:1).

Goldscheider (1971:274) argues that these hypotheses are not mutually exclusive. The strategy for analysis should be to control for socio-economic characteristics and if fertility differences persist, the importance of religious ideologies should be assessed.

- (3) The *minority group status hypothesis* argues that under certain conditions the insecurities of a minority group may depress its fertility below majority group levels.

Catholic Fertility

Roman Catholic doctrine is essentially pro-natalist, since it supports large families and rejects the most efficient methods of birth control (Day, 1968:27; Jones and Nortman, 1968). Yet large numbers of Catholics do use these methods, and some predominantly Catholic societies, including France, Austria, and Luxembourg, have very low levels of fertility.

Day (1968) has shown that in developed countries where Catholics form a majority, their fertility is higher than that of Catholic minorities. Day's explanation is that in the developed world, Catholic pro-natalist teaching increases fertility only in countries where the Catholics are a politically important minority and feel themselves in a disadvantaged, threatened position.

Muslim Fertility (see Kirk, 1966; El-Kammash, 1971)

Islam is the dominant religion in more than 22 countries, and the believers of Islam, who are known as Muslims or Moslems, constitute perhaps about one fifth of the world's population. Kirk (1966:567) has noted that Muslim fertility ' (1) is almost universally high, (2) shows no evidence of important trends over time, and (3) is generally higher than that of neighboring peoples of other major religions'. Kirk therefore concluded that religion and fertility were more closely correlated for Muslims than for any other major religious group.

Amongst the factors favouring high fertility among Muslims are :-

- (a) The majority of Muslims live in traditional agricultural societies where children are economically useful and levels of education are relatively low. These societies tend to be conservative and maintain their old beliefs.
- (b) Early marriage is encouraged and marriage is almost universal.
- (c) Women are in a subordinate position and are often confined to the household. (Since Muslim women are often poorly educated, the variables religion and education are interlinked.)
- (d) Islam rejects sterilization, and also abortion after the fourth month of pregnancy. (In addition, some Muslim authorities totally disapprove of abortion.)

According to Kirk (1966:561), Islam has been more effective than Catholicism in limiting the spread of family planning. Yet the idea that Islam is opposed to all forms of family planning is incorrect. 'Withdrawal' (coitus interruptus) is traditionally acceptable, and there is wide support for the protection of the mother's health by spacing her pregnancies. Thus today many Muslim leaders and governments are clearly in favour of family planning.

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CHAPTER 5

MARRIAGE AND NUPTIALITY

PETER MCDONALD

Chapter 5

MARRIAGE AND NUPTIALITY

INTRODUCTION : WHAT IS MARRIAGE?

Without doubt the study of marriage lies firmly in the realm of the social anthropologist. In fact, it has been claimed that studies of *marriage* and *kinship* (family relationships) have constituted more than fifty per cent of research in social anthropology (Fox 1967: 10). The anthropologist's zealous recording of many different types of union has left us currently with the conclusion that there is no single definition of marriage. In demography, according to Grebenik and Hill (1974:41-53) the following definitions apply. *Marriage* refers only to legally recognized unions. A *consensual union* is one in which the man and woman are in a *stable sexual union* but have not gone through any formal legal marriage ceremony. The three systems of law under which people marry are religious law, civil law, and customary or tribal law. Marriage gives a new status in society to the person marrying. Demographers are interested in a person's marital status because marital status is, in virtually all societies, the most important achieved social status.

Marital unions (or *conjugal unions*) refer to any stable sexual unions and include all types of marriage and consensual unions. The demographer is primarily interested in marital unions because the commencement and the continuation of stable sexual unions form part of the intercourse variables of fertility (see Chapter 4). However, in addition, demographic techniques are highly suitable for the study of *nuptiality*, that is, the study of the formation and dissolution of marital unions. In this way, demographic techniques can play an important part in the anthropologist's study of marriage.

Demographers make a distinction between marriage and marital unions mainly because registration statistics almost always refer to legally recognized unions; the beginning of a consensual union is rarely registered. Therefore, while demographers would rather conduct analyses of all marital unions than of only legally recognized marriages, they are sometimes forced to restrict their study to those marital unions for which registration statistics are available. Where the vast majority of marital unions are legally recognized and registered, this problem of definition is unimportant but, in many parts of the world, particularly in Latin America and the Caribbean, analyses based on marriage registration statistics would lead to a totally misleading picture of nuptiality. It can be expected, however, that the group, 'currently married', obtained from population censuses includes both those legally married and in consensual unions. In censuses in the Caribbean, those in consensual unions are distinguished from those legally married.

For the remainder of this chapter, no further distinction will be made between marriages and marital unions. However the reader should take careful note of the statistical problem underlying this distinction.

TYPES OF MARRIAGE

Monogamy refers to a system of marriage where each man or woman may be married to only one person of the opposite sex at a time. In *polygamy* a person (either sex) may be married to more than one person of the opposite sex simultaneously. Where polygamy refers to a husband having more than one wife, the more specific term *polygyny* is applied. *Polyandry* is the situation in which one wife has more than one husband at the same time.

Polyandry is quite a rare phenomenon. Kapadia reports the practice of polyandry among the Khasa, Nair, Irawan, Coorg, Toda and Kota groups in India. However, he claims that Hindu tradition holds that polyandry is unnatural (Kapadia, 1966:52-97). Monogamy and polygyny, however, both occur quite commonly. In most Western, Christian-oriented countries, types of marriage other than monogamy are usually prohibited by law. Polygyny is prominent in African and Asian cultures. Cotran has written that 'all customary laws (of marriage) in Africa without exception, allowed, indeed encouraged, a man to have as many wives as he pleased' (Cotran, 1968: 17). Although the entry of Christianity and European colonialism caused conflict and confusion in this aspect of African customary law, polygyny is still quite common throughout Africa.

In rural Nigerian samples, Ukaegbu (1977) reported that one third of Ngwa Ibo wives were polygynously married, while among older Yoruba woman three-quarters were in polygynous unions (Orubuloye, 1977). Ware (1975) has shown that in fourteen selected Sub-Saharan African countries the number of married women exceeded the number of married men by more than 25 per cent. Ware goes on to say that the predominance of polygyny in many Sub-Saharan cultures has a strong economic basis related to the nature of agriculture in Africa.

Traditionally polygyny was permissible in most Asian cultures. However its practice has been limited and it is apparently becoming unacceptable nowadays. The Hindu Marriage Act of 1955 prohibits polygyny among Hindus throughout the whole of India. Among Muslims in Asia, from Iran through to Indonesia, polygyny is practised by only a small minority although Muslim law permits up to four wives. Some writers have suggested that the low rate of polygyny in Asia is due primarily to economic circumstances as under Muslim codes a man can only marry more than one wife when he can afford to keep the extra wives and children. In addition each wife is to be accorded equal status. Islam as practised in

Asia clearly favours monogamy and, while permitting polygyny, discourages its practice (Kapadia, 1966:116). The Marriage Law of 1974 in Indonesia, a predominantly Muslim country, has introduced quite severe restrictions upon the practice of polygyny.

Traditional Chinese culture permitted polygyny but the wives subsequent to the first wife had a lower status and have been referred to as secondary wives or concubines. The Nationalist regime attempted to abolish concubinage in China but its complete elimination was not achieved until it was prohibited under the Marriage Law of 1950 of the People's Republic (McAleavy, 1968:75-76). The Chinese in Southeast Asia still practise polygyny but to a very limited extent.

Wherever polygyny has been practised, it has been associated with high status and wealth which may account for some of the modern reaction to its practice in Asian countries.

AGE AT MARRIAGE

When demographers consider the impact of marriage patterns upon fertility, they are interested in measuring the distribution of age at entry into sexual union or, in terms of marriage, the age at which the marriage was consummated (the first occurrence of sexual intercourse after marriage). Where consummation occurred very soon after marriage and this is commonly the case, the age at first marriage could be taken to be equivalent to the age at entry into a marital, sexual union. However, in the past in some societies particularly in Asia, a young girl was married to her husband a number of years before the intended consummation of the marriage. Usually this delay was due to the fact that the girl was still a child, that is sexually immature, at the time of the marriage. Child marriages were very common in both Indian and Chinese traditional societies and were not uncommon throughout Asia.

Muslim law permits a girl to be married irrespective of age but consummation must wait until she has reached menarche. Christian Church (or canon) law, however, requires that a girl has reached the age of twelve and a boy the age of fourteen before they can be legally married. The codification, by civil authorities, of legal minimum ages at marriage somewhat above the age of puberty is a phenomenon of the twentieth century in both Western and Eastern countries. In China, the Marriage Law of 1950 restricted marriage to girls who had reached the age of 18 and men who had reached the age of 20, while in Australia, a similar law setting the legal minimum ages at marriage at 16 for girls and 18 for men was not enacted until 1961. Similar regulations now exist in most countries of the world. In most Western countries and in some Eastern countries, the impact of these new civil laws regulating the age of marriage has been slight because, at the time of enactment, only a small proportion of marriages occurred to persons aged less than the new legal minimum ages. However, in South Asia and parts of South East Asia, marriage of a girl as close as possible to puberty was regarded as an ideal. According to Hindu-Vedic tradition, a girl who has reached puberty can only enter heaven if she has married. In addition, in these countries early marriage ensured that the girl did not disgrace her parents by losing her virginity before marriage, and it established the parents' status in the society because their daughter was considered desirable. In these countries, implementation of the higher minimum ages at marriage has not been an easy task.

The frequency of marriages by age usually increases very rapidly at the younger ages but, after the peak ages of marriage, the decline in frequency of marriages by age is slower than the rise at the younger ages. With this kind of distribution, the median probably provides a better measure of the 'average' age at marriage than does the mean. In addition, because the frequency of marriage can be strongly influenced by events such as an economic recession which occur in a particular, short time period, statistics of marriage ideally

should be analysed for *birth cohorts* (all persons born in the same period) rather than for marriage cohorts (all persons marrying in the same period). The proportion of an age group who have never married is a simple cohort index of age at first marriage. These measures are shown for females aged 15-19 and 20-24 and males aged 20-24 and 25-29 for a number of different countries around 1970 in Table 5.1.

Ireland, a country renowned for its late age at marriage over the past century, still appeared in 1970 to be unique among European populations and to have the latest ages at marriage in the world, that is, the highest proportions never married in the given birth cohorts. For women, Ireland was closely followed in respect of late marriage by Singapore and the countries of East Asia. After centuries of very early ages at marriage the staggering increases in ages at marriage in recent years for women in Korea, Japan and reportedly also in China (Tien, 1975) and in the island states of Hong Kong, Singapore and Sri Lanka are a phenomenon in the field of social change.

In Europe around 1970, age at marriage for women was highest in the North and the South, intermediate in the West and lowest in the East. The pattern in Latin America was similar to that in North and South Europe while Mexico, Thailand, the Philippines, Canada, Australia and the United States had an age at marriage similar to that in West Europe. The grouping of countries with the second lowest age at marriage for women around 1970 included countries throughout Africa, the Middle Eastern countries, Pakistan and Indonesia, corresponding almost exactly to the areas in which the Muslim religion predominates. The youngest ages of marriage for women occurred on the Indian subcontinent, in India, Nepal and Bangladesh. Only one in every three girls aged 15-19 had never married in these countries at the time of their last census.

Table 5.1

Percentage of Population Who Have Never Married in Specified Age Groups,
Selected Countries Around 1970

Country	Year	Females		Males		Country	Year	Females		Males	
		15-19 %	20-24 %	20-24 %	25-29 %			15-19 %	20-24 %	20-24 %	25-29 %
Sri Lanka	1971	89	53	87	53	Kenya	1969	64	18	72	32
Indonesia	1971	63	19	59	19	Liberia	1971	54	16	77	40
Iran	1966	53	13	68	27	Morocco	1971	66	18	68	28
Japan	1970	98	72	90	47	Tunisia	1966	81	27	82	41
India	1971	43	9	50	19	Uganda	1969	50	13	57	31
Bangladesh	1974	32	5	66	24	Zambia	1969	58	10	63	22
Korea	1970	97	57	93	43	France	1968	97	56	79	33
Nepal	1971	39	8	33	12	Czechoslovakia	1970	92	35	66	22
Pakistan	1968	69	18	67	33	G.D.R.	1971	93	35	67	20
Singapore	1970	95	65	89	48	Greece	1971	89	53	87	53
Syria	1970	72	30	76	35	Ireland	1966	98	75	90	59
Thailand	1970	81	38	65	25	Hungary	1970	88	32	68	23
Philippines	1970	85	42	69	30	Sweden	1970	98	60	83	41
Mexico	1970	79	39	61	27	Switzerland	1970	96	55	81	37
U.S.A.	1970	88	36	56	20	England & Wales	1971	89	37	60	24
Brazil	1970	87	51	75	37						
Chile	1970	89	55	72	37	Australia	1971	91	36	64	26

Source: In most cases, these percentages have been obtained from Demographic Yearbook, 1973, Table 26, or Demographic Yearbook, 1971, Table 12, United Nations, New York. The figures for Sri Lanka, Indonesia, India, Bangladesh and the Philippines have been obtained from published and unpublished census data for the countries concerned.

The table shows similar rank ordering in age at first marriage for males around 1970 but there are some notable exceptions. In the North African and Middle East countries, males married at a relatively later age than females in the same countries when compared, for example, to Western European countries. This means that the difference in age between spouses was much greater in these countries than in Western Europe. The same kind of phenomenon also applied to an even greater extent for males in Bangladesh. However, the most startling change in rank order of age at marriage for males compared to that for females must surely be for the United States. The table shows that males in the United States in 1970 had one of the lowest average ages at marriage in the world.

From the historical viewpoint, an age at marriage for women substantially above the age of puberty was a phenomenon of European civilization (Hajnal, 1965). In countries other than those of Europe and of European settlement, the increase in age at marriage from a level close to puberty appears to have taken place only during the past 100 years. In the nineteenth century, quite high proportions of the population in most European countries adopted the strategy of 'moral restraint' which had been advocated by Malthus by delaying marriage to unprecedentedly high ages (Van de Walle, 1972: 140). For example around the beginning of this century, among women aged 20-24, the proportion never married was over 70 per cent in most countries of Europe and of European settlement. Table 5.1 shows that such a late age at marriage is found today only in Ireland. The decline in age at marriage that has subsequently taken place in European and European-origin countries began slowly in the 1920s and 1930s but, during the Second World War and the decade following the War, the downward trend became quite dramatic and has since been described as the 'marriage boom'. While short-term fluctuations in marriage rates and marriage ages may be related to economic changes, the reasons for these longer term changes in marriage patterns must be sought in changes of attitudes towards marriage (McDonald, 1974a, Chapter 6).

Table 5.2

Percentage Never Married Aged 45-49 (Permanent Celibacy) Specified Countries around 1970

Country	Year	Males	Females	Country	Year	Males	Females
Sri Lanka	1971	8.0	4.1	Kenya	1969	6.6	2.8
Indonesia	1971	1.8	1.0	Liberia	1971	4.6	1.7
Iran	1966	1.5	0.8	Morocco	1971	3.1	2.3
Japan	1970	1.9	4.0	Tunisia	1966	3.8	1.5
India	1971	2.9	0.4	Uganda	1969	12.1	5.8
Bangladesh	1974	0.8	0.3	Zambia	1969	3.0	2.2
Korea	1970	0.2	0.1				
Nepal	1971	1.6	0.8	France	1968	10.2	8.7
Pakistan	1968	3.7	0.8	Czechoslovakia	1970	5.7	5.0
Singapore	1970	5.9	3.1	G.D.R.	1971	2.1	10.6
Syria	1970	2.7	2.4	Greece	1971	6.2	7.1
Thailand	1970	3.2	3.0	Ireland	1966	29.9	20.4
Philippines	1970	3.7	8.0	Hungary	1970	4.2	5.4
				Sweden	1970	13.9	7.8
Mexico	1970	6.4	7.1	Switzerland	1970	9.7	12.2
U.S.A.	1970	6.6	5.3	England & Wales	1971	9.8	7.8
Brazil	1970	7.0	8.8				
Chile	1970	10.9	12.8	Australia	1971	8.9	3.5

Source: As for Table 5.1.

Note: The differences between the percentage of males and females never married in a particular country are affected by the sex ratio, patterns of re-marriage, and differential mortality of males and females.

Most of the developing countries which have achieved a decline in fertility in recent years have also experienced a significant increase in age at marriage for women. This has led to the suggestion that increased age at marriage may be a necessary precondition for the adoption of modern methods of fertility control within marriage. The effect of later age at marriage upon fertility can be both direct and indirect; the direct effect is that the woman has a shorter time at risk of giving birth. The indirect effect may be lower fertility because of new attitudes to marriage and the family. These may cause a woman to marry later, and may also cause her to restrict births.

CELIBACY

In demography, the term *celibacy* is used to the state of never having been married. If a person remains in this state throughout life, this is referred to as permanent celibacy. The proportion of the population who remain never married in the age group 45-49 is a commonly used indicator of the degree of permanent celibacy. These proportions are shown for various countries around 1970 in Table 5.2. In most of Africa, Asia and the Middle East marriage for females is close to being universal. The notable exceptions in Asia are the Philippines, Burma and Sri Lanka. In Europe, permanent celibacy for women ranges from about 5 per cent in Eastern Europe to over 20 per cent in Ireland. Countries with a Spanish/Portuguese colonial background such as the Philippines, Mexico and the countries of Latin America have higher rates of celibacy than other developing countries, possibly related to the fact that celibacy is given some sanction under Christianity but is discouraged by other major religions.

The level of permanent celibacy can be a result of voluntary or involuntary causes. Spouses are normally chosen from a subgroup of the society having the characteristics considered desirable for a match with the person seeking a spouse. These characteristics could include age, marital status, kin relationship,

education, socio-economic status, ethnicity, place of residence, and many more depending upon the particular culture. Sometimes there will be a shortage of appropriate eligible spouses and this situation may lead to involuntary permanent celibacy. On the other hand, when there is a shortage of the most appropriate spouses, restrictions are likely to be lowered and a less desirable match will be made. In the extreme situation following a war or in new settlements there may be an absolute shortage of persons of one sex. For example, by comparing the proportions of males and females never married in age group 45-49 as shown in Table 5.2, there is an indication that there was an excess of males in Australia and a deficit of males in the German Democratic Republic about 20 years before 1970.

WIDOWHOOD

The incidence of widowhood for males or females is, of course, determined by the mortality level for persons of the opposite sex. Widowhood is a function of the difference in age of husbands and wives. Where the husband is commonly much older than the wife, the chance that the wife will eventually become a widow is much higher. In addition, because mortality is lower for women than for men in low mortality societies, widowhood is more likely to be experienced by women than by men. This is evident from Table 5.3 which shows, for Australia, the percentage of ever married persons of three birth cohorts who had ever been widowed by a given age.

Table 5.3

Percentage Ever Widowed by Given Age Among Persons Ever Married, Australia, Birth Cohorts 1900, 1916 and 1926.

Exact Age	Males			Females		
	Year of Birth			Year of Birth		
	1900	1916	1926	1900	1916	1926
30	1.5	0.9	0.4	1.8	2.2	1.1
40	3.7	2.0	1.2	5.5	4.7	3.7
50	6.6	4.2	-	12.6	11.0	-
60	11.7	-	-	26.9	-	-

Source: Unpublished tables derived from Australian vital and census statistics, Peter McDonald, Department of Demography, Australian National University.

Measurement of the extent of widowhood is usually difficult because census statistics normally only provide information on current marital status in which case widows who have remarried cannot be recognized as former widows. The proportion currently widowed is, therefore, a poor index of the incidence of widowhood. The Australian statistics given in Table 5.3 are based on death registration statistics where the marital status and age of the deceased person was given and the age of the surviving spouse was estimated.

In some cultures, primarily in Asia, widowed women do not remarry. Taboos on the remarriage of widowed males are much less common. The extreme case of taboos on remarriage was the practice of *sati* in India where the widow was burned alive on the same funeral pyre as her deceased husband. While remarriage of widows became legal among Hindus in India in 1956 (Kapadia 1966:147), it is still considered to be undesirable. Opposition to the remarriage of widows is prominent in societies which place a high value upon the virginity of brides. Even in societies in which the remarriage of widowed women is quite acceptable, remarriage rates following widowhood are usually lower for women than for men and depend heavily upon age at the time of widowhood. For women widowed in Australia in 1965, about 35 per cent of those aged 25-29 at widowhood had remarried within six years and the proportion was lower for women in older age groups. For males, the proportion remarrying within six years following widowhood fell below 40 per cent only for males aged more than 40 at the time of widowhood (McDonald, 1974b:34). In Indonesia, around 40 per cent of all widowed women under age 45 had remarried within five years (Sutarsih, 1976:87-92).

DIVORCE AND SEPARATION

Because it is difficult to find a definition of marriage which is applicable across all cultures it is equally, if not more

difficult except in the case of widowhood, to define the ways in which marriages can end. However, it is usually necessary to distinguish three types, namely annulment, divorce and separation, but these cannot be universally defined. When a marriage is annulled, the marriage is declared to have never been valid from its beginning. Divorce is the declaration by the society's representative that the marriage has been dissolved. Both annulment and divorce usually imply that the partners may marry again. In some societies, the inability to consummate a marriage is taken as a reason for annulment whereas in others it is a reason for divorce. Annulments may be more common among groups such as Catholics whose Church does not recognize divorce. In cross cultural comparisons, therefore, it will normally be necessary to consider annulments and divorces together. The term 'separation' is used to refer to the situation in which the partners of a marriage are permanently separated from each other but the marriage has not been legally dissolved. Again, however, in some cultures where marriage is not subject to a strict, legal definition, the distinction between divorce and separation may be vague. In consequence, it may be better to describe annulment, divorce and separation under the single terms, marriage dissolution or marriage termination.

Laws permitting divorce in Western, Christian-oriented countries have come into existence only during the past one hundred years and have been progressively liberalized. The Catholic Church, however, still forbids divorce to its members. Although Kapadia was able to write in 1966 that 'the principle of divorce is alien to the social pattern in which Hindus have been living for centuries', divorce was permitted throughout India by the Hindu Marriage Act of 1955 (Kapadia, 1966:186-187). Its practice among Indian Hindus is, however, not common. Traditionally in China, divorce was permissible upon the mutual consent of the partners or upon repudiation of the wife by the husband, but again its practice was not particularly common. Although divorce was still permitted under the Chinese Marriage Law of 1950, divorce has been officially

discouraged since that time (McAleavy, 1968:88-89). According to Muslim tradition, divorce was permissible but only as a last recourse. Consequently divorce rates in most Muslim countries, with the exception of those in Southeast Asia, are not very high.

Where subsequent remarriage of women following divorce is infrequent, for example, because it is considered most desirable to marry a woman who is a virgin, there appears to be a tendency for divorce rates to be low because the society considers that the presence of a large number of divorced women would lead to significant social problems. Thus we find that in countries such as Malaysia and Indonesia where divorce rates are high, the rates of remarriage are also high. This is also the case in most Western countries today.

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CHAPTER 6

MIGRATION

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MIGRATION

INTRODUCTION

Although fertility and mortality determine the rate of natural increase, the size of the population depends also on migration. The rate of migration can fluctuate widely from year to year, and thus population movements are often responsible for large, sudden changes in group size; for example, between 1851 and 1861 the population of Australia almost trebled, largely owing to an influx of migrants. Theoretically any member of a population may move, but in practice migration affects some people more than others. Young, highly-educated adults or school-leavers seeking employment are normally more likely to move than the unskilled, or the elderly, although exceptions may occur, such as the migration of retired people to the Queensland Gold Coast of Australia or to Florida in the United States. Migration therefore influences the socio-demographic structure of a population and, as a consequence, the rate of natural increase. It must be taken into account in the analysis of population trends (see for example, Rowland, 1979).

DEFINING MIGRATION

Migration is a difficult process to measure because it can be defined in a variety of ways and because it is an event which may be repeated several times within the lifetime of an individual. Most definitions use time and space criteria and thus moves which are included in the migration process are generally considered to be at least semi-permanent and to take place across definite geographical boundaries. For example, Lee (1969:285) describes migration as 'a permanent or semi-permanent change of residence' while Mangalam (1968:8) calls it 'a relatively permanent moving away of a collectivity, called migrants, from

one geographical location to another'. Neither of these statements provides a clear definition of time. Although migration is assumed to be 'permanent', an apparently permanent migrant, for example a person who states on arrival that he is to be a permanent resident of Australia, may only stay for a short time in his chosen destination. The United Nations (1973:23) defines a long-term migrant as one who intends to stay for longer than twelve months; but of course there is no guarantee that the individual migrants actually adhere to their intention.

The definition of space in migration analysis raises similar problems. Migration may be measured across national boundaries between countries (international migration) or across the boundaries of smaller administrative units within countries (internal migration). The level of internal migration recorded depends on the size of units selected, and will increase with decreasing size because more short distance moves are counted. Thus, in Australia, the volume of internal migration recorded across the boundaries of Victoria, a small state, is proportionately greater than that recorded for the largest state, Western Australia. Similarly, analysis of inter-regional migration in Papua New Guinea in 1971 shows that only 4% of the indigenous population were living outside their region of birth (Table 6.1), but when migration across the boundaries of smaller units, provinces, is analysed, 7% of the population had moved outside their province of birth. Obviously the use of still smaller units would reveal even larger levels of internal movement.

Some writers suggest that since migration cannot be defined exactly, it should be considered as part of a continuum covering all types of population movements. These movements, which range from daily commuting journeys to long-term shifts of residence, are together described as *population mobility*. Gould and Prothero present a typology or groupings for tropical Africa (1975:42-45), in which movements are classified according to time

Table 6.1

Inter-regional migration in Papua New Guinea, 1971Region of Residence

Region of Birth	Papua		Highlands		New Guinea Coastal		Islands		Total		Out-Migrants %
	No.	%	No.	%	No.	%	No.	%	No.	%	
Papua	453950	96.5	3866	0.8	8303	1.8	4153	0.9	470272	100.0	3.5
Highlands	12013	1.3	918943	96.5	9148	1.0	12253	1.3	952357	100.0	3.5
New Guinea Coastal	8972	1.3	7188	1.0	660734	94.4	23238	3.3	700132	100.0	5.6
Islands	3152	1.0	1664	0.5	4504	1.4	302041	97.0	311361	100.0	3.0
TOTAL	478087	19.6	931661	38.3	682689	28.0	341685	14.0	2434122	100.0	
% In-migrants		5.0		1.4		3.2		11.6			

Source: Papua New Guinea, National Population Census, 1971

(daily, periodic, seasonal, long-term, irregular, permanent) and space (rural-rural, rural-urban, urban-rural, urban-urban), and also according to whether the individual returns to his place of origin (circulation) or takes up residence elsewhere (migration). Since this typology does not attempt to impose strict definitions, it could also be adapted to describe population mobility in developed countries such as Australia. Zelinsky (1971) suggests that the relative importance of different types of movement changes when a society is affected by different stages of the modernization process; in a developing country rural-urban movements may be dominant, while in a developed country daily commuting to work and urban-urban movements may be more important.

A further important problem in migration analysis is that although a single individual may make several moves within his lifetime, most censuses and surveys only record one of these moves. Even if all moves are described, as occurs in some sample surveys, the data are incomplete because a person remains a potential migrant until death. Thus the analysis of population movement from any type of data source can only provide an approximate description of an extremely complex phenomenon.

TYPES OF MIGRATION AND TERMINOLOGY

Migration is usually divided into two main types - *international* or *internal*. *In-migrants* and *out-migrants* are people who have entered or left a given population during the time period under consideration. Thus, in Table 6.1 over 9,000 people born in the New Guinea Islands region were enumerated elsewhere at the time of the 1971 census, i.e. were out-migrants; and over 39,000 of those resident in the Islands region were in-migrants from other regions. In terms of *net migration*, the difference between the number of out-migrants and the number of in-migrants, the New Guinea Islands region had made a total numerical population gain

of 30,324 from other parts of the country. *Gross migration* for the region, the sum of in-migrants and out-migrants, was 48,964. Population exchange in international movements is calculated in the same way, using the corresponding terms *immigrants* and *emigrants*. The number of in-migrants or out-migrants may be compared with the appropriate total population to give a *crude rate of migration*. In Table 6.1, the crude rate of out-migration for the New Guinea Islands region is $\frac{9320}{311361} \times 100$, i.e. 30%, and the crude rate of in-migration is $\frac{39644}{341685} \times 100$, i.e. 11.6% (note the different denominators).

Table 6.1 compares area of origin (birthplace) with area of destination (place of residence) and thus measures migration over the entire lifespan of the respondent. Those whose birthplace and place of residence differ are *life-time* migrants, while those still living within their region of birth are *non-migrants*. Although both of these terms are in common use, they are misleading. Life-time migrants may have made many moves during their lifetime, or alternatively, may have made only one move. Non-migrants may have previously moved outside their area of origin, but later returned and should therefore be described as *returned migrants*. Censuses cannot measure this type of movement and, as small scale surveys such as those conducted by Bedford (1973) in the New Hebrides and by Hugo (1975) in West Java have shown, must grossly underestimate the total significance of migration.

Difficulties in the measurement of migration arise through problems of definition (see above) and problems associated with types of statistics which are available. Much of the information collected only partly describes the migration process, and international variations in the accuracy and coverage of data limit the value of even the crudest comparisons. International and internal migration are analysed with differing statistical bases, and are therefore best discussed separately.

INTERNATIONAL MIGRATION

Analysts have on the whole paid more attention to international migration than to internal migration. This is partly because the data available on international migration are of a more standard type than those on internal migration, but also because international migration is often responsible for social tension, arising from the clash between people with different cultural and linguistic backgrounds. These problems seem to be greater than those which occur through the internal movement of people with similar ethnic backgrounds. Moreover, international migration is more likely to become a political issue at national level, although in recent decades the governments of many developing countries have recognized that major difficulties also arise through internal population movement associated with rapid urbanization.

International migration can be analysed from a variety of different sources such as:

- (a) statistics collected by immigration officials at national frontiers;
- (b) population registers tracing the movements of foreigners;
- (c) national censuses.

The United Nations recommends data collected at frontiers as being the most suitable. In an attempt to standardize the form of these statistics, it suggests that both arrivals and departures should be subdivided into permanent and temporary immigrants and emigrants, visitors, and residents, with a period of 12 months or longer as the definition of permanency. As Shryock and Siegel (1973:581) point out, many countries have not so far adopted this format, and thus international migration statistics for different countries are not strictly comparable. Price (1965) suggests that the accuracy of frontier data also varies according to the extent of border control, and that a country such as Australia, where all points of entry are ports, should obtain more accurate information than a land-locked country where it is harder to supervise all border crossings.

Population registers provide useful data on international migration but exist in few countries and thus do not provide a good basis for comparison. Censuses record birthplace and may include additional information on residence abroad at a previous specific date. Although both these types of data show what proportion of the population has lived elsewhere, they describe migration as a one or two stage movement only, and cannot show the extent of return migration (see above). They are thus incomplete.

Types of International Migration

People crossing national boundaries can do so either as participants in a system of mass movement which results in the transfer of a large number of people with common ethnic or social characteristics, or as individuals or members of small family groups. Mass movement usually takes place over many years, although the volume may vary widely from one year to the next. It is a response to fairly well-defined social and economic factors, and has often involved some form of government intervention or even coercion. Shryock and Siegel (1973:580) distinguish several types of mass movement - conquest, invasion, colonization, forced population transfer and refugee movement. While conquest and invasion take place during warfare, colonization is a more peaceful movement involving the settlement of families from the colonial country in the annexed region. Conquest and invasion are often followed by colonization, especially where the native population has been sparse and where the physical environment has been attractive. Examples of this process occurred in Latin America following the Spanish Conquests of Mexico and Peru, and also in Medieval Britain after the Anglo-Saxon and Norman invasions. However, the Japanese invasion of Asian countries during the Second World War did not result in permanent Japanese settlement. Colonization may take place without warfare, but even relatively peaceful settlement, such as took place in Australia, has usually involved clashes and skirmishes with the original occupiers of the land. Forced population transfers, such

as the movement of West African slave labourers to the southern part of the United States, have been less common. Refugee movements, normally the result of political upheavals, may affect large numbers of people, for example the Asians from Uganda in the 1970's.

The motives for individual or family international migration are less obvious. Undoubtedly these movements are often a response to economic factors, such as improved employment opportunities. However, they need not reflect the free choice of the individual concerned, since people may be transferred by their employers to posts in other countries. This 'directed' type of movement is probably becoming more common with the development of multi-national corporations and other forms of international organization. Social factors, in particular the wish to join other members of the family who have already moved (*chain migration*) are also important influences on individual movement.

International Migration to Australia

Australia, like other countries whose population has been greatly influenced by international migration, has experienced different types of movement at different times. Between 1788 and the 1970's, Australia's population has grown from about 300,000 (the estimated number of Aborigines at the time of first settlement) to over 14 million. Approximately one-third of this growth is directly due to migration, and two-thirds to natural increase. An initial period of forced population transfer (transportation of convicts) was followed by colonization. Most settlers were from Britain and Northern Europe and were either poor families or businessmen who felt that Australia's economic opportunities were superior to those at home. They often received financial assistance to meet travel costs. In the latter half of the 20th century, assistance has been extended to people from other parts of Europe, although the majority of Australia's immigrants still come from Britain.

Table 6.2 illustrates how migrant origins have changed in the post-war period. The 1950's was the main period of large-scale movement from Northern Europe, particularly the Netherlands and Germany. Eastern Europeans, especially from Poland and the Baltic States, came in their largest numbers in the immediate post-war years, and Southern Europeans, mainly Italians and Greeks, between 1951 and 1966. Immigration from Asia has grown within the last decade, and between 1971 and 1974 was much more important than movement from Europe, excluding Britain. These changes in migrant origins reflect the special needs of particular source areas. Thus Eastern European and South European movements are a result of war followed by population displacement and poverty among rural farming communities. The current influx of refugees from Vietnam into the Northern Territory of Australia is a further example of the same type of movement. These changes also reflect the operation of the official migration policies of the Australian government. Apart from providing financial assistance, which obviously encouraged certain favoured groups of migrants, the government has controlled migration by prohibiting entry on grounds of racial origin, health and occupation. Restrictions on Asian and coloured immigration, imposed after the influx of Chinese to the goldfields in the mid 19th century, were only relaxed in the 1960's. Since Australia will only accept people who satisfy certain criteria, entry for Asian and Pacific migrants is still difficult because many of them lack the required education, skills, and fluency in English.

International migration still accounts for a high percentage of population growth in Australia, but its significance has changed through time. As Figure 6A shows, until 1861 over three-quarters of the growth of population was due to net migration. During the slump in migration between 1891 and 1939, most growth came from natural increase, but since 1945, when immigration has been deliberately encouraged, the significance of migration has again increased.

Table 6.2

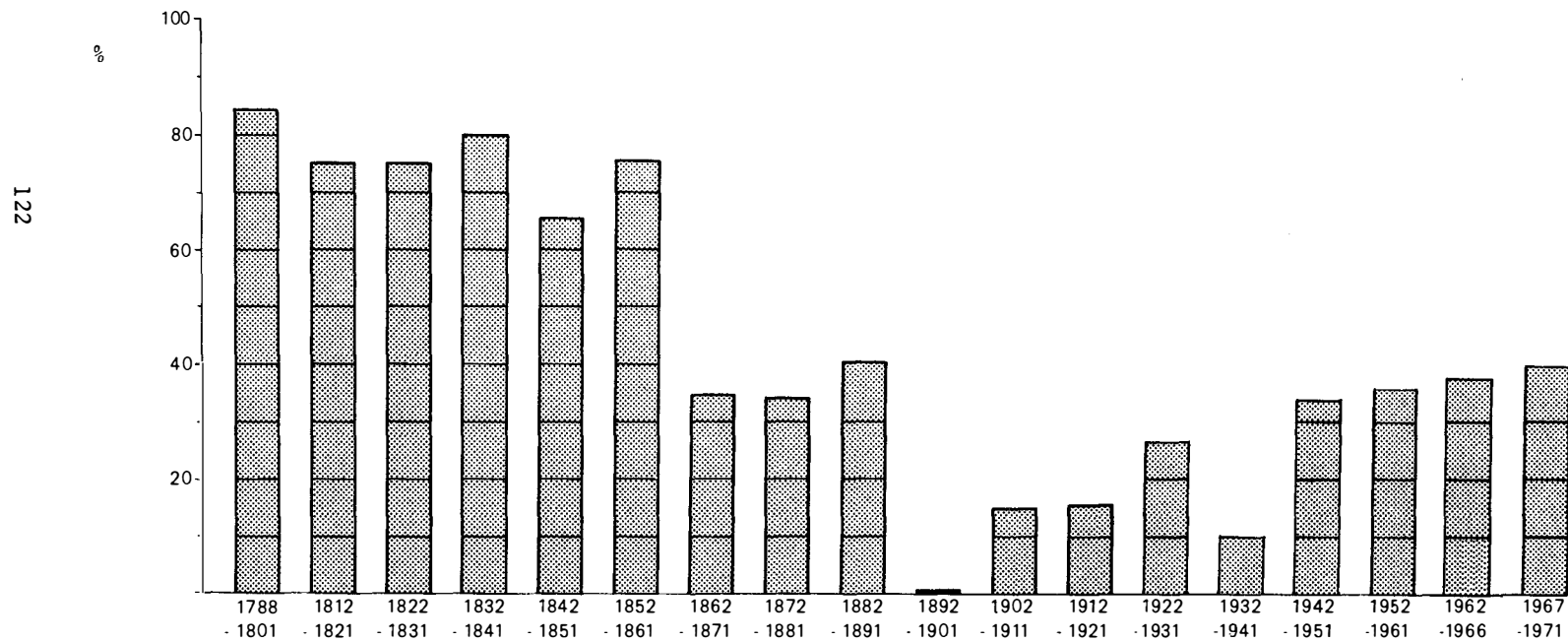
International Migration to Australia
Net Migration in Periods Indicated (%)

	<u>1947-51</u>	<u>1951-61</u>	<u>1961-66</u>	<u>1966-71</u>	<u>1971-74</u>	<u>1947-74</u>
	%	%	%	%	%	%
British	41.4	32.6	54.7	53.9	61.6	45.4
North Europe (e.g. Germany, Netherlands)	7.5	26.3	0.8	4.9	-0.8	11.2
East Europe (e.g. Poland, Yugoslavia)	37.3	5.0	6.6	13.3	6.1	13.2
South Europe (e.g. Italy, Greece)	11.5	33.1	29.4	11.3	0.9	20.9
Asia	1.6	2.3	5.2	11.2	22.7	6.4
Other	0.7	0.7	3.3	5.4	9.5	2.9
	100.0	100.0	100.0	100.0	100.0	100.0
Total Number	441,445	782,337	395,485	521,139	142,917	2,283,323

Source: Price, 1975: 5

Figure 6A
Net Immigration and Population Growth, Australia 1788-1971

Increase in Population
 due to Immigration



INTERNAL MIGRATION

Internal migration, which has resulted in massive population shifts in both the Developed World and the Third World during the last 200 years, has received little attention from demographers until recent times. This is partly because of problems of measurement, but also because rural/urban movements, apparently a major component of internal migration, were regarded as an inevitable part of the modernization process, and hence irreversible. In the second half of the 20th century social scientists have revealed that increasing urbanization is accompanied by social, economic and psychological difficulties, and that these are particularly serious in Third World countries where urban population growth is outstripping the growth in employment opportunities. Thus greater emphasis is now placed on understanding the process of internal migration. Although it is impossible to make a numerical comparison of the relative significance of international and internal migration, internal movements are probably more important now than in the past because of increased efficiency in transport and communications.

Internal migration is analysed using data from national population censuses or data collected in small sample surveys. In general, census data are fairly standard in form and, since they cover the national population, are most suitable for macro-analysis, i.e. for examining broad population movements. Censuses do not show the extent of return migration, and underestimate the significance of short distance movement. These aspects can be examined using different types of data which describe the entire migration process for each individual, and which adopt more flexible definitions in space and time. These data are too complex to include in national censuses, and thus only cover small sample populations. While some small surveys are based on random samples, most have been conducted among highly specific groups, and the results cannot be generalized. However, in conjunction with the evidence from censuses, they provide a much more complete description

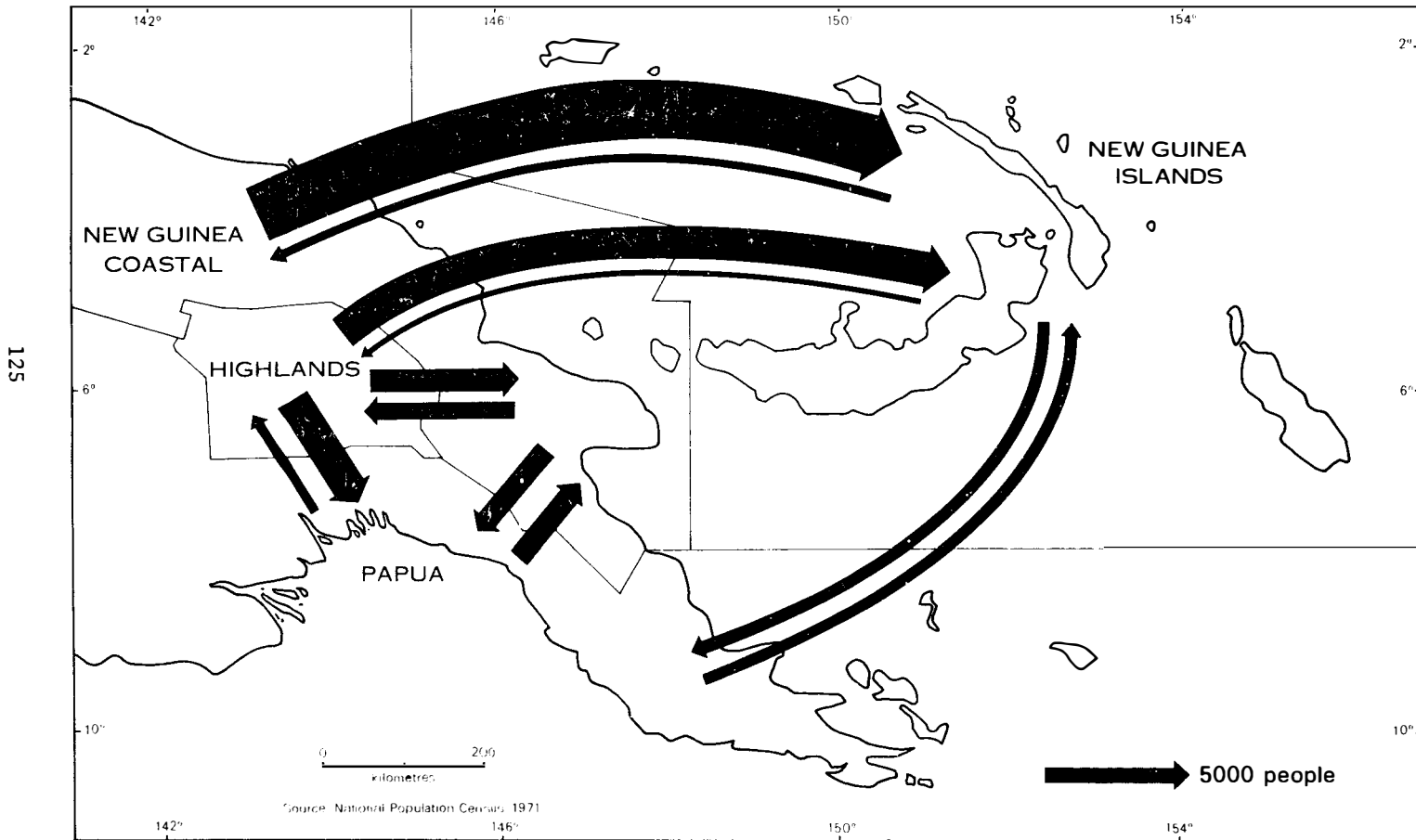
of the operation of internal migration and ideally the two approaches should be used together.

Types of Internal Migration

Censuses normally include only a few questions applicable to migration analysis:- birthplace, place of enumeration, place of residence at some fixed time in the past. Comparison of birthplace with place of enumeration measures life-time migration between the administrative units used. As was stated earlier, the level of life-time migration recorded depends on the size of the administrative unit. Table 6.1 shows that for Papua New Guinea in 1971, over 95 per cent of the population were non-migrants, i.e. were living within their region of birth. The New Guinea Coastal Region, where 5.6 per cent of those born in the region were living elsewhere, had the highest crude rate of out-migration, while the Islands Region, where in-migrants accounted for 11.6 per cent of the resident population, had the highest crude rate of in-migration. As these rates suggest, the net population exchange between regions was uneven. Inter-regional migration streams (Figure 6B) show that while Papua gained population mainly from the Highlands, the Islands gained both from the Highlands and the New Guinea Coastal region. While every migration stream had, as Lee (1969:283) and others have suggested, a *counterstream*, many of these were unbalanced. Equally sized streams result in a low level of net migration but may reflect a high level of gross migration. In this example, gross migration between Papua and the New Guinea Coastal region exceeds that between the Highlands and Islands region although net migration between the latter is by far the larger. In general, internal migration flows in Papua New Guinea show an outward movement from regions with a dense rural population and limited resources to regions where there are employment opportunities in commercial agriculture or in urban centres.

Censuses which include additional questions on place of residence at some previous date, can show how many of the apparently

Figure 6B
Inter-regional Migration in Papua New Guinea, 1971



life-time migrants had in fact moved in recent times. By comparison with the results of previous censuses, these data also measure the rate of population turnover (the percentage change in individual members of a population) in the inter-censal period. In addition, they measure some return migration but, since they still only describe the situation at single points in time, they cannot reveal the full significance of this type of movement.

Most censuses are conducted on a *de facto* basis (i.e. the population enumerated in a particular area includes everyone actually present on census night) and define place of enumeration very specifically. Thus they record the actual populations of towns and rural census districts at single points in time. Successive censuses in developed countries such as the United States, Great Britain and Australia have shown that throughout the 20th century urban populations have been growing more rapidly than those of the rural sector, and it is assumed that this is largely due to rural/urban migration. Similar comparisons cannot be made for Third World countries because few censuses have been conducted, but recent rapid urbanization in those areas indicates that the same process is operating. Rural/rural, urban/urban and urban/rural migration also occur, although these types of movement have been discussed less frequently because they cause less obvious social problems and because census data cannot reveal their true significance.

It is difficult to make valid international comparisons of the level of urbanization, because different countries use different definitions for urban centres. Thus in Malaysia urban centres are gazetted areas with populations greater than 10,000, in Australia they include centres with an urban population of at least 1,000, and in Papua New Guinea they have a minimum size of 500 and urban (as opposed to traditional rural-oriented) functions. Despite these difficulties, census statistics show that levels of urbanization are currently higher in developed countries than in developing countries. As Table 6.3 shows, over 80% of the population of Australia and New Zealand lived in towns in 1970, while in Uganda only 7% of the

Table 6.3

Urban Populations around Dates Shown (%)

		<u>Urban</u>
	<u>1960</u>	<u>1970</u>
Algeria		45.4
Egypt		42.1
Ghana	23.1	29.1
Mauritius		44.1
Tanzania		7.3
Uganda		7.1
Australia	81.9	85.6
Fiji		33.4
New Zealand	63.6	81.4
Papua New Guinea	4.8*	9.5
India	18.0	19.7
Indonesia	14.9	17.4
Iran		40.7
Japan	63.5	72.1
Korea (Republic of)		41.2
Malaysia (West)		28.8
Pakistan		26.8
Philippines		31.7
Sri Lanka		22.4
Syria		43.5
Thailand	12.5	13.2
North America		73.7
South America		57.5
Europe (including USSR)		60.5

* 1966

Source: United Nations Demographic Yearbook, various years.

population were urban dwellers. In Asian countries the percentage in towns varied from 13 (Thailand) to 72 (Japan). These marked differences suggest that the level of urbanization is a useful indicator of the stage which a country has reached in the modernization process. It is not yet clear what level of urbanization might be achieved since, as Table 6.3 shows, both developed and developing countries increased their urban populations in the 1960's. However, the rate of increase appeared to be greater in developing countries. Between 1966 and 1971 Papua New Guinea doubled its urban population, while the urban population of Australia grew by only 27% during the 1960's. High rates of urban population growth in developing countries have created many serious problems - insufficient employment opportunities, pressure on social services, particularly education, health and housing, and a rise in urban crime. The most obvious expression of these problems is the growth of uncontrolled migrant settlements and slums in many towns, and it is this aspect of rural/urban migration which has received most attention. The effect of this movement on the rural societies from which migrants originate has not been considered to the same extent, although, since migrants are often young and relatively well-educated, the socio-demographic structure of these communities must be changing.

While censuses suggest, but cannot measure, the significance of rural/urban movement, they give little information on the other types of internal migration. Rural/rural movement is only apparent when it occurs across administrative boundaries and thus much short-distance movement is not measured. Small-scale surveys indicate that this is an important type of migration: in tribal societies in Third World countries it is often associated with marriage within traditional kinship links. Longer distance migration within the rural sector may be associated with agricultural resettlement projects, for example the recent transmigration from parts of Java to Sumatra, but because these projects are expensive they rarely affect a large number of people.

Urban/urban and urban/rural migration are not normally measured in censuses. It seems likely as some micro-surveys have shown, that urban/urban movement is now highly significant, particularly for highly-qualified people who are likely to be employed in urban areas throughout their working lives. While urban/urban movement is probably more important in developed countries, it is also a characteristic of the elite group in developing nations. Urban/rural migration is certainly taking place in countries such as the United States, Australia and parts of Western Europe. Urban dwellers in those countries are now taking advantage of improved communications systems to shift their homes to rural districts surrounding the towns where they work, and escape from the disadvantages of high population concentration. Since they often still work in town, they are scarcely migrants, but would be enumerated as such in censuses.

DETERMINANTS OF MIGRATION

International and internal migration streams show that people move from regions which they feel are relatively disadvantaged in comparison with others. The most obvious type of disadvantage is economic, and in general migration takes place from poorer to richer regions. This characteristic is so common that it has been described by Ravenstein (1885) and later by Lee (1969) as a Law of Migration. Ravenstein also noted that most migrants only moved short distances, and later investigations have confirmed that there is a strong relationship between migration and distance. These two determinants of migration are so significant that other factors tend to be overlooked. Migration also takes place for social reasons, often because people wish to join friends and other members of their families. This process of *chain migration* results in population movement between highly specific origins and destinations. Other social reasons, such as the feeling that large cities are more exciting places to live than small villages, are less obvious but may still be important factors determining migration.

CHARACTERISTICS OF MIGRANTS

The individuals who form both international and internal migration streams often have special characteristics which differentiate them from the population from which they were drawn and also from the population into which they have moved. The most common of these characteristics are sex, age and education/occupational skill. Because migrants often belong predominantly to one sex, are in the younger adult age-groups and have relatively high levels of education, their departure changes the socio-demographic structure of the original group. The population at place of destination also has an abnormal structure.

International migrants, as stated earlier, often belong to specific countries and have specific skills which are in demand in the receiving country. Australia for example (Table 6.2) has received the majority of her migrants from Western Europe. The occupational skills of migrants who settle in Australia differ, to some extent, according to their racial origins. Thus, while 60% of those who came from the United States in 1967/68 and 1971/2/3 were in professional and administrative occupations (Table 6.4), only 3% of those from Yugoslavia belonged to this category. In contrast, 62% of Yugoslavs but only 6% of Americans were unskilled workers. Migrants from Western Europe, here represented by the United Kingdom and Netherlands, occupied an intermediate position. In both cases a high percentage were skilled or semi-skilled craftsmen. Because of these differences, Australian society has become stratified according to ethnic origin and occupational category. Inter-class mobility is more likely to occur amongst those who migrated as children or the Australian-born children of migrants than amongst recent adult arrivals.

The results of selectivity in internal migration are seen most clearly in the different characteristics of rural and urban dwellers. In both developed and developing countries, young, well-educated people inevitably tend to move to the towns to obtain

satisfying employment. Rural areas thus have an ageing and less well-educated population. People are less progressive than town-dwellers, and consequently less able to take advantage of innovations even if these have been aimed specifically at boosting the rural sector. Under these circumstances, rural/urban disparities progressively increase. As Table 6.5 shows, internal migration has already changed the structure of the rural population of Papua New Guinea. In 1971, towns had a masculinity ratio well above average for the country as a whole, while that of the rural sector was below average. The dominance of males in the urban population reflects the lack of employment for females, the lack of family accommodation in towns, especially for lower-paid workers, and the continuing support of the subsistence agricultural system which enables men to leave their villages, knowing that their families will still be supported. Papua New Guinea's towns in 1971 had a higher percentage of females than in 1966 (masculinity ratio 1.95) which shows that the sex balance in towns is becoming more even. Rural/urban migration in developed countries does not necessarily show the same characteristics, and in the United States, for example, there are more women than men living in urban areas.

Urban dwellers in Papua New Guinea were also more highly educated than those in rural areas (Table 6.5). While a high percentage of the indigenous population, both male and female, had no formal education, this group was more significant in the rural sector. Very few people with any post-primary training lived outside the towns. This is a prime reason for difficulties in communication between administrative officials and members of the village communities which they serve.

These two examples illustrate how migration affects different groups within the total world population. The analysis of migration must take the characteristics of migrants into account in order to represent the true relationship between migration and other factors in demographic change.

Table 6.4
Occupational Skill of Settlers, 1967/8, 1971/2/3 (%) (Males Only)

	<u>Professional Admin.</u>	<u>Skilled Craftsmen</u>	<u>Semi- Skilled</u>	<u>Unskilled</u>	<u>Total</u>
<u>Australia</u>					
U.S.A.	60.0	14.0	19.8	6.2	100
U.K.	22.2	34.5	33.5	9.8	100
Netherlands	21.5	36.6	30.9	11.0	100
Italy	7.8	31.8	14.9	45.5	100
Yugoslavia	3.4	14.9	20.0	61.7	100
Total (incl. others)	19.8	29.1	27.0	24.1	100
<u>Source: Price, 1975: 13</u>					

Table 6.5
Educational Level of Rural/Urban Population (%)

	<u>Rural</u>		<u>Urban</u>		<u>Total</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
<u>Papua New Guinea</u>						
<u>Education</u>						
None	71.8	80.4	39.2	50.0	68.1	78.1
Primary	27.1	19.2	47.9	43.6	29.4	21.1
Post-Primary	1.1	0.4	13.0	6.4	2.5	0.8
	100.0	100.0	100.0	100.0	100.0	100.0
Male/Female Ratio	1.04		1.61		1.08	
<u>Source: Papua New Guinea, National Population Census, 1971 (special tabulations)</u>						

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*Recommended for further reading.

NOTE: This chapter does not cover the complicated topic of *circular migration* (a movement where migrants return to their place of origin without immediate plans to depart once more). For detailed discussion on 'circular' and 'permanent' movement see :

- YOUNG, Elspeth
(forthcoming) 'Circular and permanent migration in Papua New Guinea: the experiences of Simbu and New Irelanders', in Circulation in Population Mobility, ed. M. Chapman and R.M. Prothero. London: Routledge and Kegan Paul.

CHAPTER 7

INTER-RELATIONS BETWEEN THE DEMOGRAPHIC
VARIABLES

DAVID LUCAS AND PETER MCDONALD

Chapter 7

INTER-RELATIONS BETWEEN THE DEMOGRAPHIC VARIABLES

Now we can proceed to discussing how mortality, fertility, marriage and migration are inter-related. One important consequence of the interaction of the fertility, mortality, and migration of a country in its recent history is its present age distribution (the number of persons in each age group) and this is discussed first.

THE AGE DISTRIBUTION

In Table 7.1 the developing countries can be seen to have a 'young' age distribution. Because in recent years the Crude Birth Rate has been high, the percentage of the population aged 0 to 4 years is also high. Since parents in developing countries have twice as many children as those in developed countries, the percentage of the population aged under 15 is much higher in the developing countries. (See Nortman and Hofstatter, 1978, Table 1).

Why in Table 7.1 was the percentage of Australians aged 5 to 14 years in 1947 lower than in 1971? The answer is that because of the economic depression of the 1930's, fertility fell below replacement level from 1932 until 1940 (National Population Inquiry, 1975:44).

From the same Table, Hong Kong provides an example of how migration can affect the age structure. Immigrants form almost half of Hong Kong's population in 1971, and are mostly adults. However, in to-day's world international migration is becoming more restricted and it is having less effect on the age distributions of national populations.

Fertility affects the age distribution more than mortality and, rather surprisingly, reduced mortality can mean a younger

Table 7.1

The Age Distribution in Selected Areas

Age Group	Developed Countries 1976*	Developing Countries 1976*	Australia		Hong Kong 1971		
			1947	1978	Persons born in Hong Kong	Not born in Hong Kong	All
	%	%	%	%	%	%	%
0-4 years	8	15	10	8)		10)
5-14 years	17	25	15	18	60)	4) 46
15-64 years	65	56	67	65	40	87	60
65 years and over	11	4	8	9	1	9	5
Total **	100	100	100	100	100	100	100
Population (in millions)	1,142	2,899	7.6	14.2	2.2	1.7	3.9

Sources: *Nortman and Hofstatter, 1978, Table 1.

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the Pacific, 1974, Tables 19 and 24.

Note: ** Percentages may not add up to 100% because of rounding.

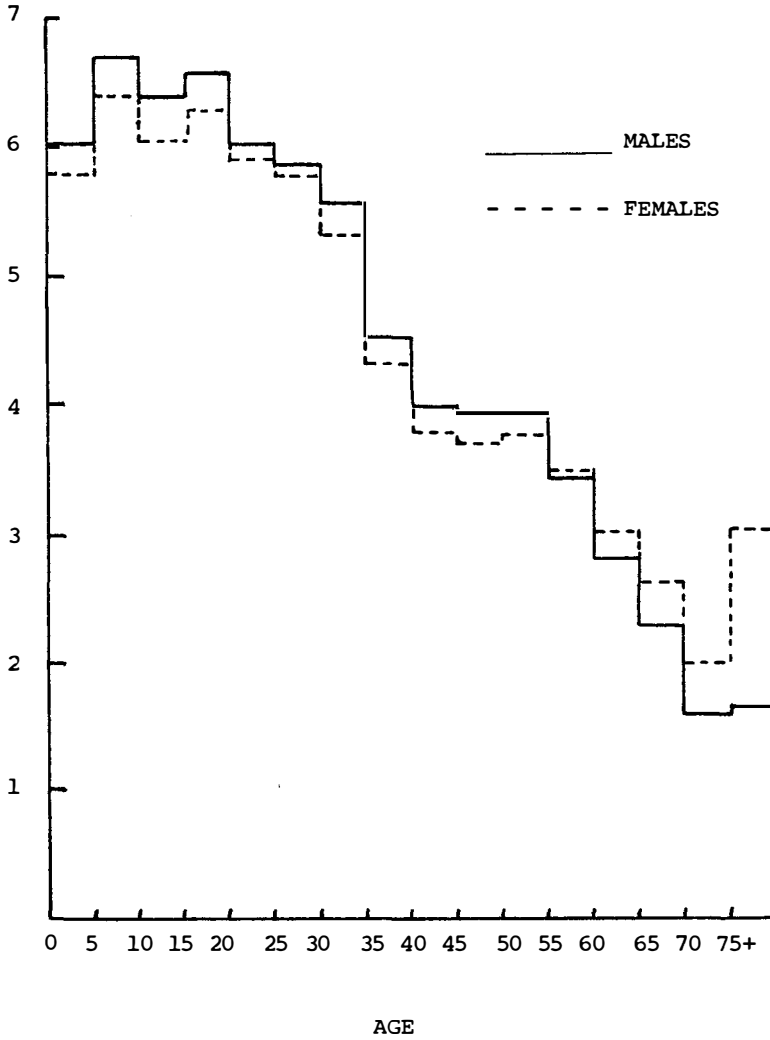
population. (See for example Coale, 1964:49). As mortality falls, the number of old persons will increase, but reduced infant and child mortality will increase the number of young people. Also, as more persons survive to be parents, more births can occur. This means that a country with a young age distribution has a considerable 'population momentum' and potential for future growth, even if the fertility of individual women is falling (Cassen, 1976:786).

In Figure 7A the age distribution for males and females in Australia in 1978 is shown, and this gives us some insights into the country's population growth in this century :-

- (a) For both sexes, the numbers aged 45 to 49 years are slightly less than aged 50 to 54, and the deficit results from the falling birth rate in the early 1930's. It also indicates that almost 50 years ago, Australians were capable of regulating their fertility.
- (b) After the economic depression of the 1930's, fertility was still fairly low because of the Second World War. After the War, a 'baby boom' occurred, and this is reflected in the relatively large numbers of persons aged 25 to 29 in 1978.
- (c) The deficit of persons aged 0 to 4 (compared with those aged 5 to 9) marks the current decline in Australian fertility. Births registered in Australia fell from 276 thousand in 1971 to 226 thousand in 1977 and the 1977 Crude Birth Rate of 16 was even lower than the rates for the depression years of the 1930's (Australian Population and Immigration Council, 1978:3). This feature of Figure 7A illustrates a general point of how declining fertility produces an older population, as is happening in various countries which are approaching Zero Population Growth.

Figure 7A

Age-Sex Distribution of Australia, November 1978



Source: Australian Bureau of Statistics, Unpublished Revised Population Estimates

- (d) The excess of females over males from age 55 is due to the longer life expectancy of females described in Chapter 3. The numbers of males aged 75 and over are affected by the increased mortality resulting from casualties in the 1914-1918 War about sixty years earlier.

Figure 7B shows the *population pyramids* for Singapore and Burma. It will be noted that this is another way of representing the age distribution of males and females. In Singapore fertility has been falling rapidly, so there are more persons aged 10-14 years than are aged 5-9 or 0-4 years. The population pyramid for Burma illustrates the age distribution of a population with high fertility.

FERTILITY AND MORTALITY

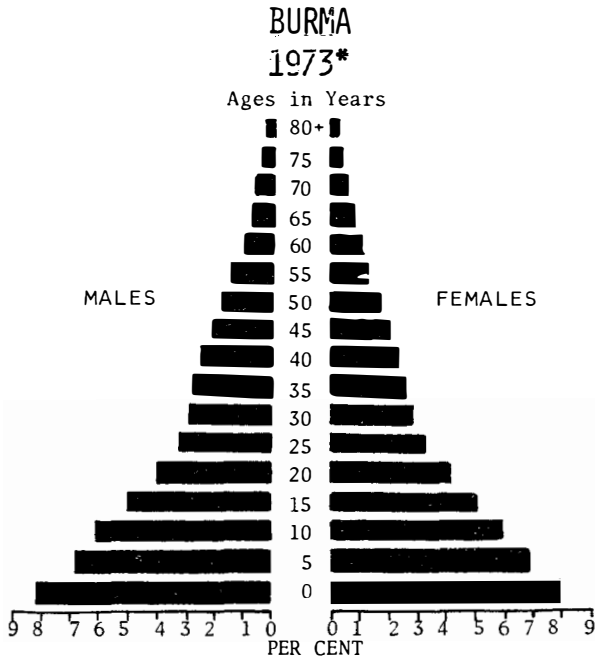
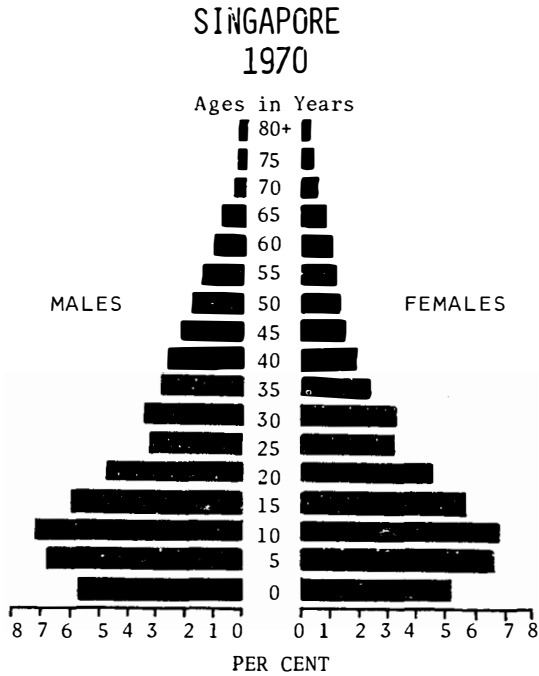
In Chapter 2, we have seen that world population growth was very slow before the 17th century. Wrigley (1969:15) has noted how in pre-industrial societies changes in one demographic variable can affect another. In the following example, they balance out, so that the rate of population growth is very low. For example:

- (a) fertility rises, so
- (b) resources (food etc.,) per capita fall, and thus
- (c) death rates rise, and
- (d) then fertility will fall because of the interruption of stable sexual unions by the death of one of the partners.

Fertility and Infant and Child Mortality

One frequently discussed issue is the impact of high infant and child mortality upon fertility. The argument is that high fertility is partly a response by society to offset high infant and child deaths. If parents experience the death of a child they may try to have another child. (This is the *replacement effect*). If parents fear that some of their children may die, they may try to ensure that some survive by having a high number of births. (This

Figure 7B
Population Pyramids for Singapore and Burma



* Smoothed and adjusted age distribution

Sources: Singapore, 1973:52; Nyunt, 1978:141.

is the *insurance effect*). There is also a *biological effect* of infant mortality: if the baby dies, then breastfeeding may be cut short. Prolonged breastfeeding, by delaying the return of ovulation, provides the mother with some protection against pregnancy. If the baby dies and breastfeeding stops, she will lose this protection. (Singarimbun and Hull, 1977:226).

Breastfeeding, Fertility and Mortality

In developing countries the length of breastfeeding has declined significantly, particularly in urban areas and among younger, educated women. (See for example Bader, 1976; Lucas, 1977). Jelliffe and Jelliffe (1975:558) believe that on a world-wide basis breastfeeding has given more protection against pregnancy than modern contraception. Shorter periods of breastfeeding, therefore, could lead to higher fertility (see also Van Ginneken, 1978).

As breastfeeding declined, bottle feeding became more popular. However, under conditions of poor hygiene, bottle milk may be associated with increased diarrhoeal disease, which in turn may lead to an increase in malnutrition and in infant and child mortality (Bader, 1976; Wray, 1978).

Fertility and Maternal Mortality

Maternal mortality refers to deaths of women during pregnancy or within 42 days of the termination of pregnancy. In all developed countries the maternal mortality rate has dropped considerably since the 1930's. In Australia in 1970 the rate was 3 per 100,000 live births, compared with 41 in 1939. Maternal mortality is related to fertility not only because the most fertile women are more often at risk but also because the risk increases considerably after the fourth pregnancy. (Llewellyn-Jones, 1974, Chapter 19).

Thus, by becoming pregnant a woman has an additional risk of dying. However, there may also be additional risks if she has an induced abortion or uses certain methods of contraception. The dangers

of illegal induced abortions can be very high particularly if the abortion is performed by an amateur abortionist. Statistics are lacking, but in Brazil it has been estimated that the mortality from illegal abortions is as high as 2,000 per 100,000 abortions. (Llewellyn-Jones, 1974:324).

Fertility, Regulation, Morbidity and Mortality

The Pill

Because the oral contraceptive ('the pill') has only been in use since the 1950's its long-term effects are largely unknown. Here are some of the conclusions from recent studies in Britain and the U.S.A.:

- (a) In a study of 46,000 British women, pill users had a lower rate of spontaneous abortions but a higher rate of induced abortions than non-users. (*International Family Planning Digest*, 1977c:3).
- (b) Women over 30 who take the pill have an increased risk of heart attacks but women who smoke and take the pill have twice the risk of non-smokers.
- (c) Pill users who smoke have less risk of dying from use of the pill than non-contraceptors have from complications of pregnancy and childbirth. However, pill users who smoke have a higher risk of dying than non-contraceptors. (*International Family Planning Digest*, 1977a:9).
- (d) Use of the pill does not affect future childbearing. In a study in Oxford, England, among the *nulliparous* women (those who have not had a live birth or stillbirth) who had stopped contraception because they wanted a baby, 89% of pill users and 90% of women using other methods had delivered a child within 42 months. (*International Family Planning Digest*, 1977b:11).

Although studies are in progress in Singapore, Hong Kong and Korea (*People*, 1978:33), little is known about complications of the pill in developing countries but it seems possible that users are at 'low risk' regarding the complications of the pill (e.g. because smoking is rarer among women in developing countries). According to the National Family Planning Board of Malaysia, the British research linking oral contraceptives and smoking with blood disorders has little relevance to Malaysian women because circulatory diseases are less common in Asia. (*Population Headliners*, 1978.)

Other Contraceptive Methods

Although side effects (such as pelvic infection) have been observed for the inter-uterine device (IUD), no serious disease consequences have been established for this method, or for male sterilization, the condom, or the diaphragm. Indeed, the condom and diaphragm protect women from cancer of the cervix, and the condom protects both sexes from venereal disease. (Royal Commission on Human Relationships, 1977:35-36).

Abortion

Is abortion safer than childbirth? Tietze (1977:16) has estimated that among women aged under 30 in developed countries the risks of using the pill, IUD, or barrier methods (the diaphragm or condom), or having an early abortion (in the first three months of pregnancy) are significantly less than birth-related risks without fertility control. The risks related with legal abortion never rise above 2 deaths per 100,000 women per year, while for women not using birth control the deaths rise from 6 per 100,000 women aged 15 to 19 years to 23 deaths for those aged 40 to 44 years. Tietze's conclusion is that the lowest level of mortality is achieved by combining the use of the condom or diaphragm with early abortion as a back-up in case of contraceptive failure. In the United States, deaths from early legal abortions are less than the risks associated with illegal abortion, full-term pregnancy, and most surgical

procedures. For example it is safer for women to have early abortions than to have their appendixes removed. (International Family Planning Digest, 1975:10).

FERTILITY AND NUPTIALITY

The effect of nuptiality on the intercourse variables of fertility has already been discussed in Chapter 4. The beginning of childbearing can be regulated either by the timing of marriage (if sexual unions do not take place before marriage) or by the use of contraception and abortion. So a usual sequence is :

Marriage-Conception-Birth.

Extra-marital or *non-marital conceptions* refer to situations where the parents were not married to each other at the time of conception. Possible sequences are :

Conception-Marriage-Birth (these are *pre-marital conceptions* or *bridal pregnancies*).

or

Conception-Birth-Marriage (these are *ex-nuptial* or (illegitimate births

or

Conception-Birth (

The link between fertility and nuptiality can therefore work in either direction. If a man and a woman intend to have children, they may decide to get married. Alternatively, if a couple are already in a sexual union without being married, the conception may encourage them to make the union legal.

In a 1977 French survey of 2,700 persons aged 18-29 years, 363 respondents (about one-third of the married persons in the sample) had *co-habited* ('lived together') with their partner before marriage. Of the 363 couples, about 15% had decided to get married because the woman was pregnant. (Roussel, 1978:16 and 21). Ruzicka (1976: Table 1) has shown that most Australian girls who marry at ages 16 and 17

are already pregnant, but this proportion falls to 10% for brides aged 21 and over.

Ruzicka (1975:113) has also noted the upward trend in non-marital pregnancies in Australia: the proportion rose from 10% of live births in 1947 to 18% in 1972. Since the early 1960's the incidence of pre-marital conceptions has fallen for all except the youngest brides, but this has been more than offset by rising ex-nuptial fertility. Between 1961 and 1971 the ex-nuptial fertility rates doubled at ages 15-19, and increased by 50% at ages 20-24 and by 20% at ages 25-29 (Ruzicka, 1975:121). Possibly the younger, unmarried persons cannot obtain contraceptives so easily or are less well informed. In addition unmarried motherhood may have become less socially objectionable (Ruzicka and Caldwell, 1977:124).

In some African and also in some traditional European societies a pre-marital conception has the advantage that the woman has proved her fertility before marriage. In societies where fertility or having male children is important, divorce may result if the marriage is without a child or a son. An alternative in a polygamous society is for the husband to take another wife.

MIGRATION AND THE OTHER DEMOGRAPHIC VARIABLES

It is often interesting to compare the mortality, fertility, and nuptiality patterns of migrants with those of non-migrants (a) in the place of origin, or (b) at the place of destination. For example, the mortality of Italian migrants in Australia can be compared with the mortality of non-migrants in Italy and Australia.

Migration and Mortality

In Chapter 3, it was mentioned that migrants, if selected after health checks, may have lower mortality than non-migrants in the country of origin. Also, they may have lower mortality than the people born in the country of destination. Price (1975:25-26) has shown this to be the case in Australia and

he has suggested that 'This arises partly from the fact that few families travel to Australia with babies younger than four weeks (that is, during the weeks when infant mortality is highest) and partly from the fact that the selection process itself tends to prevent the less healthy from emigrating.'

On the other hand, some migrations, such as pioneer and nomadic movements, can be hazardous and precarious and are therefore associated with high rates of mortality. The mortality and morbidity experienced by Europeans along the West Coast of Africa was devastating before the 20th century because they had no immunity to the tropical diseases and because the treatment of these diseases was inadequate. (Schram, 1971:24). At the same time West Africans who were taken as slaves to the West Indies also experienced high mortality because of the poor conditions during the sea journey and at the place of destination. The Slave Trade was also responsible for the spread of some diseases, such as yellow fever, from Africa to the Americas. (Schram, 1971:31).

The role of migration in the transmission of diseases such as malaria and cholera has already been discussed in Chapter 3. An additional illustration was the outbreak of cholera in 42 countries in the early 1970's, many of which were infected for the first time in recent history. In the 20th century cholera had tended to be restricted to Bangladesh and India. However, another variety of cholera, known as El Tor, existed in Sulawesi in Indonesia. By 1971 El Tor had affected Asia, Africa, and the Middle East, and air passengers had taken the disease to Australia, New Zealand, and the United Kingdom (Finklestein, 1973:559).

Migration movements in which one sex is dominant (that is a sex-specific movement) may produce a surplus of one sex in the area of destination and a shortage of the same sex in the area of origin. In some rapidly growing cities of the developing world there is a surplus of single young adult males. Yet in Ethiopia a large female surplus exists in Addis Ababa and other big cities (Monsted and Walji, 1978:134). In colonial Australia, young single men sought work in the rural and mining districts while the single

girls stayed in the cities (McDonald, 1974:56). In such situations the absence of a suitable marriage partner can be solved by internal or even international migration. For example in the Tokelau Islands in the Pacific there is a surplus of females, so some women migrate to New Zealand to avoid remaining unmarried (Stanhope and Prior, 1977). However, in Tunisia, the migration of young men to the cities, and to other countries, causes some village women to postpone marriage because men of the right age are scarce. (Duza and Baldwin, 1977:20).

Marriage patterns in the U.S.A. and Australia during the 19th century provide an interesting contrast between the marriage patterns of immigrants from Europe. Jones (1971:325) concluded that the people of Australia apparently followed the British pattern of late marriage more closely than the Americans did. However, the later age at marriage in 19th century Australia was also associated with Australian conditions such as the excess of males and their relative concentration in rural areas, the insecurity of employment and the failure of schemes for family settlement upon the land (McDonald, 1974:163).

Migration and Fertility

The Australian experience is that, contrary to expectations, the overseas-born have tended to show a smaller family size than the Australian-born. In the years after World War II, the completed families of the older wives from Greece, Malta, Italy, and the Netherlands were considerably above those of the Australian-born category, but among the younger wives this remained true only for those from Malta and the Netherlands. The National Population Inquiry (1975:50) concludes that 'This pattern may reflect both the conformity to Australian norms on the part of younger settlers and also the marked trend in their countries of origin towards low fertility patterns'.

Ware (1975:376) has listed four factors which explain why migrants' fertility behaviour may differ from that of the native-born Australians:

- (a) immigrants retain the distinctive characteristics of their own culture;

- (b) they represent a different balance of basic socio-economic characteristics from the native-born population;
- (c) the migrants differ physiologically from non-migrants; and
- (d) the migrants' attitudes have been influenced by the process of migration itself.

She continues that to compare, for example, the fertility of Italians in Italy with the Italian born in Australia or the United States, involves a number of hidden difficulties because the Italian migrants do not represent a cross-section of the Italian population.

Although Ware is referring to international migration, her four factors can also apply to internal migrants. McCook (1975:8) considers that the inter-relationships between urbanization, internal migration, and fertility are of pressing interest to planners in developing countries and raises the following questions: 'What role does migrant fertility play in the mushroom growth of Third World cities? Do migrants from rural areas bring their traditional large-family values to their new homes? What are the implications of migration for rapid population growth and population distribution patterns?' Unfortunately the study of this topic is restricted by inadequate methodology and by a lack of satisfactory data on migration and fertility (McCook, 1975; Zarate and Zarate, 1975).

For Thailand, analysis by Goldstein (1973) of the 1960 census indicated that, regardless of migration status, the fertility of urban women is markedly lower than that of rural women. Thus urbanization can have the effect of reducing national fertility. In the place of destination, non-migrants and life-time migrants had similar fertility, yet the migration of recent migrants (women who'd changed their province of residence in the last five years) was considerably lower. To explain this, Goldstein suggested that recent migration has been more innovative and that the migrants are ready to accept new behaviour patterns. An additional factor is that the initial stages of migration may result in the temporary separation of husband and wife.

In the Philippines in 1966, rural-urban migrants in Manila had lower fertility than the Manila born wives. Hendershot (1971) thought that a 'social mobility model' could be used to interpret this differential. This model assumes that rural-urban migrants have higher aspirations and a greater desire to 'get ahead' than the non-migrants. Therefore, the migrants were more likely to limit their families.

In developed countries, rural-urban migrants generally have higher fertility than other urban residents. One explanation is provided by the 'assimilation model'. The rural-urban migrants are assumed to be influenced by the rural sub-culture where fertility is relatively high. Since the influence of the urban sub-culture becomes gradually stronger, the migrants' fertility will be intermediate between rural and urban fertility.

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CHAPTER 8

THE FAMILY LIFE CYCLE APPROACH
IN DEMOGRAPHY

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Chapter 8

THE FAMILY LIFE CYCLE APPROACH IN DEMOGRAPHY

BACKGROUND

Early reference to the family life cycle occurs in Rowntree's study of poverty in 19th century London (published in 1901). He found that a labourer passed through periods of relative prosperity before his children were born and again when the children were old enough to start work, but during other periods of the family life cycle the family lived below the poverty line. (For more on the historical background see Young, 1977: Chapter 1.)

Until the 1970s the study of the family and the family life cycle was largely the concern of sociologists. However, these topics have recently become recognized as an important field in demography. (See for example United Nations, 1975, and International Union for the Scientific Study of Population, 1977).

DEFINITIONS

'A *family* is defined as those members of the household... who are related, to a specific degree, through blood, adoption or marriage.' (United Nations, 1973: 337).

Note that this differs from a *household* which is defined as 'a group of individuals who share living quarters and their principal meals'. (United Nations, 1958)

A *nuclear* or *biological family* consists of the husband, wife and their unmarried children.

An *extended* or *composite family* 'generally consists of more than two generations of a biological family and is found in countries where it is not the custom for children to leave the parental home on marriage'. (United Nations, 1958)

A *stem* family refers to the extended family where only one married child remains in the parents' household, while a *joint* family exists when two or more married children (usually sons) stay. (Castillo et al., 1968)

In *family demography* the family, rather than individuals, is the unit of observation, and so family demography is concerned with the effect of demographic events on families.

Family life cycle is the term used to describe the changes in the size, composition and functions of the family over its lifetime; in sociology this is sometimes referred to as the *developmental* approach to the study of the family.

The *functions* of the family fall into five main categories: biological, economic, cultural, educational and psychological, and these functions vary according to the family's demographic structure at a given point of time. (Stolte-Heiskanen, 1977; Herberger and McEwan, 1978)

FAMILY LIFE CYCLE STAGES

The family life cycle is normally considered to begin with the marriage of the couple and ends at the death of the last surviving spouse. During its lifetime the family is considered to pass through several stages which relate to its changing functions. The timing and duration of these stages are defined either by various key demographic events, or by the progression of the children from one age group to another.

Using key demographic events as a framework, Glick (1947, 1957) defined the following set of life cycle stages:

- (a) *Initial childless stage* - from marriage to the birth of the first child;
- (b) *Childbearing stage* - expanding stage - from the birth of the first child to the birth of the last child;

Table 8.1

Timing of the Life Cycle Stages in Selected Countries

<u>Age of wife at</u>	<u>India (Banaras)</u>	<u>Japan</u>		<u>United States</u>		<u>Australia - Birth Year</u>			<u>Belgium</u>
	<u>1956</u>	<u>1940</u>	<u>1972</u>	<u>1890</u>	<u>1950</u>	<u>1860</u>	<u>1900</u>	<u>1940</u>	<u>1968</u>
First marriage	14.6	20.8	23.1	22.0	20.1	24	24	21	22
Birth of first child	18.2	23.2	25.3	23.0	21.8	26	26	23	23
Birth of last child	37.0	35.5	27.9	31.9	26.1	40	35	29	28
First child leaves home	34.2	-		47.0	43.3	52	49	45	46
Last child leaves home	53.0	58.3	52.5	55.3	47.6	66	58	52	51
Death of one spouse	39.5	42.9 ^a	67.1 ^a	53.3	61.4	56	61	67	66 ^a
Age at own death	54.5	49.6	75.5	67.7	77.2	76 ^b	79 ^b	83 ^b	80

Sources :- India: Collver 1963; Japan: Aoki in Kono 1977; United States: Glick 1947, 1957; Australia: Young 1977; Belgium: Dumon et al., p.181 in Cuisinier 1977.

Notes :-

^a Refers to death of husband.

^b Refers to death of other spouse, i.e. the spouse that died second (which is the wife in about two-thirds of the cases).

- (c) *Intermediate stage* - from the birth of the last child until when the first child leaves home (or marries);
- (d) *Leaving home* or 'launching' stage - from when the first child leaves home until the last child leaves home. (Very often, 'marriage' is used as equivalent to, or as an approximation of, 'leaving home'.)
- (e) *Post-parental* stage - from when the last child leaves home (or marries) until the first spouse dies;
- (f) *Widowhood* - from when the first spouse dies until the last spouse dies.

Obviously, in societies where the extended family is common and married children remain in the household, the concept of children 'leaving home' is inappropriate, and so 'marriage' or some other definition of adult independence is used. Again, in such societies, the 'post-parental stage' refers to the stage after all the children have married, i.e. where the relationship has changed to one between parents and married children.

Alternatively, using the second approach, life cycle stages are defined according to the ages of the oldest child, the youngest child, or both, and certain age groups are chosen to represent important developmental stages in the child's life. One of the pioneers in this approach, Duvall (1967), used the age groups 0 to 2½ years, 2½ to 6 years, 6 to 13, 13 to 20 years, and then age 20 years to leaving home, to represent important developmental stages of the family in terms of the age of the oldest child. Many different sets of life cycle stages based on the ages of the children have been used by other authors, ages around 5-7 years, or 16-18 years being commonly used to divide one stage from the next. (See Young, 1977: 5-13)

EXPANSION OF THE BASIC FAMILY LIFE CYCLE STAGES

Glick's formulation of the life cycle stages forms a basis for describing the progress of the family in terms of events within the biological family i.e. childbearing, children marrying or leaving home, and the death of the parents. This formulation is useful for international comparisons (see Table 8.1). However, obviously, this

Table 8.2

Examples of Life Cycle Stages of the Japanese Stem
Family According to Morioka's Formulation

Number of nuclear units within the family	Stages of development of each nuclear unit *	Description
I	B	A nuclear family with the oldest child aged 7-12 years.
II	F:C	A stem family where the father has retired and the son's oldest child is aged 13-18 years.
III	G:D:A	A stem family where the grandmother is widowed, the parents have children leaving or left home, and the oldest son has a child aged 0-6 years.

* The developmental stages are:

- O - newly married couple, pre-child stage;
- A - oldest child 0-6 years old;
- B - oldest child 7-12 years old;
- C - oldest child 13-18 years old;
- D - oldest child 19 years and over until the last child has left home;
- E - last child left home until the father retires;
- F - from father's retirement until his own death, aging period;
- G - from father's death until mother's death.

Source: Morioka 1967.

set of stages has greatest relevance in countries where the nuclear family is the norm.

Nevertheless, the basic formulation can be changed to cover:

- (a) Variations from the typical family life cycle, for example, childless couples, the unmarried mother, adoption, *de facto* relationships, families in which there is premature widowhood, divorce or remarriage. (See Feldman and Feldman, 1975; Trost, 1977).
- (b) The life cycle stage of other relatives. This is especially applicable to societies where the extended family system is the normal pattern, but it may also be appropriate for some studies of nuclear family systems. Also, when using the basic life cycle stages it may be useful to record the fact that in many developing and developed countries (particularly in the past) young married couples stay with their parents until the first child is born or until they save enough to live in a house of their own, and later, the elderly or widowed parents live with the married children, or with other relatives.

Morioka (1967) shows the way that a set of life cycle stages relating to the nuclear family can be adapted to describe the Japanese stem family system. This is shown in Table 8.2.

It is rather more difficult to use the life cycle stages for the family system in polygynous societies where each wife is a mother to all the children, where wives may not necessarily live with the husband, and where widowed wives are inherited by the dead husband's brother or other close relatives. The adoption of children by other relatives poses further complications.

Other variations are:

- (c) It may be useful to extend the family life cycle stages to include the lifetime experience of husband (or wife) from birth. (This is in fact what Rowntree did.) In this way, it is possible to follow a person's typical experience during early childhood, through the school years, to

starting work, leaving home and marrying, and then through the family life cycle stages.

- (d) A new set of family life cycle stages could be developed which relate to a particular topic, for example, the economic experience of the family. In this case, some important events would be the mother's pattern of workforce participation, and the ages at which the children start work and whether they continue to contribute income after leaving home (see Young, 1977: Chapters 8 and 9).

IMPORTANCE OF FAMILY LIFE CYCLE CONCEPT

There are five main reasons why a consideration of the life cycle of the family is important:

- (a) It shows the interaction between members of the family. Events such as births, deaths, and changes in the age or status of the children affect not only the individuals directly concerned but also other members of the family. For example, the birth of the first child greatly affects both parents.
- (b) It makes clear the continuing effects of events which took place in the early stages of the family life cycle throughout the remainder of the family's life-time. Thus the number of children born, the sex of the children, or the early work experience of the mother have implications for behaviour during subsequent years. The importance of continuing effects also reinforces the use of the *cohort* or generation approach which is an integral part of family life cycle analysis.
- (c) It disposes of misconceptions regarding the family. We become accustomed, from popular literature, TV and radio, to regard a family in one or two favoured stages, e.g. the typical TV advertisement shows a young mother and father and the children under 12. However, one very important

characteristic of the family is that it changes in several ways during its lifetime. Therefore a study of the family life cycle forces the researcher to consider when various events occur, how these change the structure and function of the family, and the approximate duration of each stage of the family life cycle.

- (d) It is a valuable summary of the combined effects of fertility, mortality, nuptiality, and cultural and economic factors. Naturally, the family life cycle varies between countries, at different times within the same country, and between different socio-economic groups in the same country at a given time. (See Table 8.1.) Young (1977) compares life cycle patterns between different socio-economic groups, and trends over time in Australia can be seen from Figure 8.1.
- (e) It can provide an explanation for a variety of social demographic and economic activities. The family life cycle stage explains more of the variation in such activities than do other measures such as age, number of children, or duration of marriage. (See Young, 1977: Chapter 1.)

One well-known example of (e) is the way that family life cycle stage explains married women's workforce activity. In Australia, women are more likely to work outside the home before the first child is born and after the youngest child has reached school age. The important factors with regard to absence from the workforce and return to work are the length of the childbearing stage and the ages of the children.

The family life cycle stage also explains patterns in housing and mobility. Many moves that a person makes during a lifetime are related to events during the family life cycle, such as the young couple moving into their own dwelling at marriage, with perhaps another move as more children are born and the family needs more space. Migration to seek new opportunities in a different

community is also more common at certain stages of the family life cycle.

The family life cycle concept has also been widely used in the analysis of income, expenditure and consumption. Pethe (1963) describes this in an Indian community, Sholapur; there is a period of relative prosperity at the beginning of marriage before the children are born, followed by increasing hardship as each child is born and as the children grow up and consume more. The family's financial position then improves as the first child and subsequent children start work, but soon after this the children leave home to set up their own families. Following a brief period of moderate well-being, the father leaves the workforce and the family again enters a period of poverty.

The term *life cycle squeeze* has been used to describe the incompatibility or problem of the increasing trend of financial needs of the children as they grow older and the decline or levelling off in the income of the family head as he passes his peak earning capacity (Oppenheimer, 1974).

Several studies show that *marital satisfaction* varies during the family life cycle. Low periods of marital satisfaction are found during the childbearing and early childrearing stages, but these seem to be balanced by high levels of parental satisfaction at these stages (see Young, 1977:30). Santini (1977) refers to the finding that divorce in France was most likely to occur during the pre-child and the post-parental stages.

Use of *health services* also varies during the family life cycle. There is a high use among mothers of young children, a lower use during the middle years, and then greater use at the older ages when chronic diseases become more prevalent (Gove et al., 1973).

Family planning services also have a different function according to the life cycle stages. Complete protection is important during the long fertile intervals between menarche and when the first child is desired, and again after the last wanted child is born and before menopause, while advice on spacing, maternal and child health are important during the childbearing stage (Economic and Social Commission for Asia and the Pacific, 1977).

MORTALITY AND THE FAMILY LIFE CYCLE

The general trend has been a decline in mortality in most societies. This affects the family life cycle both directly and indirectly. Some of the main effects are:

- (a) An increase in expectation of life of the parents, thus prolonging the duration of marriage and, in particular, the duration of the post-parental stage.
- (b) A possible increase in the length of the child-bearing period, if a greater proportion of women survive to the end of their fertile period;
- (c) An increasing proportion of wives who survive their husbands because the decline in mortality has been greater for women than for men.
- (d) Because a higher proportion of children survive, couples may decide to have fewer children and may no longer need have an additional child to replace a dead child, thus shortening the child-bearing period.
- (e) Increased survival for parents and children means that the nuclear family now has a longer assured period of co-existence. Part of the preference for the extended family system occurs because high mortality destroys the viability and security of the nuclear family (Collver, 1963). Therefore, the trend of reduced mortality may result in an increase in the proportion of nuclear family households.
- (f) There is an increased survival of the grandparents. In a greater proportion of families, three generations will be alive at the same time (World Health Organization, 1976a). Also, the existence of greater numbers of surviving grandparents alters people's attitudes to aged persons.

FERTILITY, FAMILY PLANNING AND THE FAMILY LIFE CYCLE

The length of the childbearing stage is determined by

- (a) the number of children in the completed family; and
- (b) the spacing between successive births.

The characteristic pattern of a decline in fertility in societies such as Australia is, first, that women stop childbearing at a younger age and so have fewer children. Some time later this pattern is followed by a trend towards closer spacing of births, which again shortens the length of the childbearing periods and means women are even younger when the last child is born. A change in the length of the childbearing stage has a continuing influence on the timing and duration of the remaining family life cycle stages. A shorter childbearing stage will mean a younger age of the mother when the last child starts school, and a longer post-parental stage.

A more recent trend in developed societies is an increasing delay of the first birth after marriage. This prolongs the initial childless stage, and shifts the childbearing stage (and subsequent stages) until later in marriage. One effect of this is that, if other things remain unchanged, couples have a longer time together when they are young before the children arrive and a shorter time together without the children in middle age after all the children have left home.

A new area of research is the part played by family planning in the dynamics of the childbearing stage, and the wider implications of this on the family life cycle. This has particular relevance to developing countries where large-scale family planning programs exist or are planned, and where the emphasis has been on the birth rate and targets but with little research on the full effects of birth limitation on individual families. From the family's point of view it is not only the reduction in the total number of children born which matters, but also the resulting changes in the timing and duration of stages in the family life cycle and how this affects the *functioning* of the family (World Health Organization, 1976b).

THE LEAVING HOME STAGE

The timing and length of the leaving home stage depends on

- (a) The length of the childbearing stage.
- (b) The age at marriage of males and females in the society, because marriage is often a major reason for leaving home.
- (c) The sexes of the children. Age distributions of children leaving home differ for boys and girls. This is largely because ages at marriage differ between the sexes. Ages for leaving for other reasons may also be related to the sex of the child.
- (d) The proportion of children who leave home for marriage, and the proportion who leave for other reasons. It is often found that the age at leaving home varies according to the reason for leaving; in some societies marriage is associated with an older age at leaving home compared with other reasons such as education or independence. In Australia, in the last decade, there has been an increasing trend for young adult children to leave home some years before marriage in order to be independent, to study, to work, or to travel (Young, 1977).

MODELS

Models are one of the new and useful techniques which can be used to observe the effects on the family life cycle of certain patterns of fertility, mortality and children leaving home. Calculations based on existing life tables will produce estimates of the probability that a wife survives her husband, the average duration of marriage, and the average duration of widowhood. Similar techniques can be used to estimate from varying initial family structures the proportion of children at selected ages with only one parent or neither parent surviving, or the probability that a father is survived by at least one son. Immerwahr (1967, and with Gupta, 1973) has applied these techniques to data for India.

Models based on life table and fertility functions have also been used effectively by Ryder (1975) to illustrate the different family life cycle experience at three stages of the demographic transition (high mortality and high fertility, lower mortality and high fertility, and low mortality and low fertility).

Recently economic-fertility models have been used to describe the fertility and consumption patterns of couples during the family life cycle. A common approach is to assume that during the first stage couples will control their expenditure and choose the number of children to have so as to maximize their well-being at the later stages of the family life cycle (see Young, 1977: Chapter 1).

STRESS AND THE FAMILY LIFE CYCLE

There are four types of stress or crisis which can occur during the family life cycle:

- (a) *Transitional.* These are related to the stress involved in moving from one stage to another, and are experienced by all families in varying degrees.
- (b) *Non-transitional.* These are not related to the normal progression through the family life cycle but to other events which affect the family and its function, such as sickness, death, unwanted pregnancies, unemployment, mental ill-health, and prolonged absence of a family member. The World Health Organization (1976b) refers to various studies which show that the use of health services and the ability to cope with an illness vary according to family size and educational and cultural background.
- (c) *Variations in phasing.* It is possible that an extreme variation in the timing of a life cycle stage (or phase) may occur. This makes the family life cycle pattern of some couples so different from the general pattern that it constitutes a form of stress. Examples are a delay in childbearing until very late in marriage, or a child remaining at home until a late age (McEwan, 1978: 75-79).

- (d) *Stress arising from rapid demographic or social change.*
- Families in societies undergoing rapid change have to adjust to a family life cycle pattern which is quite different from that experienced by the previous generation. There is no "role model" from their parents that they can copy or use to judge their own progress during a given stage. For example, there are vast changes in life style between having six children and having only three, or between having all children leave school when quite young and having children continue their schooling to their early twenties.

NEW DIRECTIONS FOR RESEARCH

The family life cycle is a new but important field in demography. This approach makes it possible to observe the combined effects of mortality, fertility, nuptiality and cultural background on the timing and duration of key stages during a family's lifetime.

However, the majority of published studies on the family life cycle relate to societies in developed countries. There is relatively little quantitative information which has been documented, regarding the timing of key events during the family life cycle in developing countries. There is considerable scope for pioneering research in both the developed and developing countries in the field of health and the family, and in the study of the later stages of the family life cycle.

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* Recommended for further reading.

CHAPTER 9

POPULATION ECONOMICS, AND THE
VALUE OF CHILDREN

DAVID LUCAS WITH PAUL MEYER

POPULATION ECONOMICS, AND THE VALUE OF CHILDREN

In earlier Chapters the effect of economic development on population has been briefly mentioned. For example, developed countries generally have low fertility and low mortality. In the first part of this Chapter the effect of population growth on economic development is considered. In the second part, the value and costs of children are discussed, from an economic and then a psychological viewpoint.

POPULATION AND NATIONAL INCOME

The national income of a country is often taken as an indicator of its standard of living, and one approach to national accounting involves taking all the incomes received by the people who share in the economy's production. Economists try to distinguish between three factors of production (or 'inputs' or 'resources') used in an economy to produce and distribute goods and services. As shown below, each factor can produce an income.

<u>Factor of Production</u>	<u>Examples of Income</u>
Land (including natural resources and other 'free gifts of nature')	Rent
Labour	Wages, Salaries, and the earnings of self-employed workers.
Capital (buildings, and production goods, such as machines)	Profits of companies and public corporations, dividends, and interest.

In some ways technological change and enterprise can be regarded as a fourth factor which contributes towards increasing incomes from the other factors. Several writers have noted how economic growth and a high standard of living are related to technological development (Parsons, 1977:141-2).

The sum of all these incomes is the Gross Domestic Product (or GDP), and dividing by the population gives us per capita GDP. Obviously per capita GDP is influenced by the rate of population growth: if total GDP is growing at, say, 2% per annum and population at 3% then per capita GDP will fall. To arrive at the national income from GDP we have to (a) make adjustments for income from abroad and (b) subtract the value of capital or investment goods which wear out.

In the sections below, the effect of population growth on the factors of production, and therefore on national income, is considered. (See Jones, 1969).

Land

In Chapter 2 it was noted that various population theorists, of whom Malthus is the most well known, have been concerned about the relationship between population size and the land. Economists have called the Malthusian idea of a population unable to rise above subsistence levels of income the 'population trap' (Todaro, 1977:149). The writings of Malthus implied the Law of Diminishing Returns: if one factor (e.g. labour) increases while another (e.g. land) remains constant, then eventually average production per capita will fall.

In the 19th century this was not important in many areas of the world, notably in North and South America and Australia, where there was a need for people to open up and farm new lands. Even in more densely settled areas, technological advances can raise production per head for a fixed land area. Yet such advances are not automatic, and where technology remains constant, the Law of Diminishing Returns still holds. Indeed, in the 20th century, land has become extremely scarce in some parts of the world (e.g. parts of Europe, India and Indonesia) and over-population has sometimes meant that even less land is available for farming. In the mountainous regions of Lesotho and Java agricultural land is so scarce that steep hillsides are ploughed, and this causes soil erosion. Also, as a country becomes more urbanized, the towns often take up land which was formerly used for agriculture.

When agricultural land is scarce and densely populated, it will not help if the population increases, because more people just mean that more food is needed. Agricultural production has often benefitted more from improved farming methods than from increased number of workers. The 'Green Revolution' which has led to increased agricultural production in many developing countries refers, in its broad sense, to the use of high-yielding varieties of rice and wheat combined with more irrigation, better water control, the use of fertilizer, and more intensive weeding. Thus the Green Revolution requires inputs of capital and enterprise (and the same is true of other possibilities of increasing incomes, such as starting new industries, or exploring for oil and other minerals).

As Cassen (1976:809) observes, experts keep changing their minds about the overall balance between food and population in the world. Recent projections have tended to be optimistic, indicating that world food supplies will grow faster than population, but in the long-term high food growth output rates may be difficult to maintain (Johnson, 1976).

A basic assumption of economics is that resources are relatively scarce (Bannock et al., 1972:352). Yet Pitchford (1974:54) has noted that for many years after World War II, economists tended to neglect issues related to natural resources. One reason for this neglect was the rapid rate of technical progress, which was continually broadening the natural resource base. (For example uranium has now become a potentially important source of energy.) However in the 1970s the world became much more concerned about the supplies of non-renewable energy sources such as petroleum, and also about the effect of pollution on the environment (Pitchford, 1974 54-60; Bowen, 1976:108-129).

Labour

Where a population is increasing, then the supply of labour can also be expected to increase. An increase in the numbers of workers in a sparsely populated region may bring economic advantages, but if a country is poor, and land and capital are scarce, unemployment and underemployment may result.

Some economists have emphasised the existence of 'surplus labour' in many developing countries. This idea implies that some agricultural workers produce almost nothing, so that if these surplus workers move into urban employment, agricultural output will not be affected. However, if a high population density and a labour surplus situation leads to rapid out-migration, eventually permanent or seasonal shortages of agricultural labour may result. (See Okafor, 1979). In the 1950s, rural-urban migration was regarded as a positive step towards industrialization and development, but by the late 1960s urban unemployment was clearly a problem in developing countries (May and Skeldon, 1977:24).

The *dependency ratio* compares the persons in a population who are too young or too old to work with persons of working age (Parsons, 1977:181-2). Because of the higher proportion of children in the developing countries, they have a higher dependency ratio than the developed countries. This greater 'dependency burden' affects the capacity of Third World countries to save and invest (United Nations, 1973:298).

Capital

If saving is defined as 'not spending income on consumption' then:

$$\text{Income} = \text{Consumption} + \text{Savings.}$$

If a part of income is saved then investment, or the creation of new capital goods, including machines, equipment, and factories and other buildings, can take place. Investment or capital formation involves a sacrifice so that benefits, such as increased production, can be available in the future. Some investment is needed for the infrastructure or 'social overhead capital', such as schools and hospitals. If a population is growing quickly then saving may be more difficult, and a greater percentage of investment may go into social overhead capital designed merely to maintain existing ratios of services to population.

At the household level, lower fertility can mean fewer dependents and more saving, and in the United States it has been shown that the savings of individual families decreased as family size increased. Less is known about household savings in developing countries. Possibly the households which do the most saving are not representative of the general population: they may plan ahead more and have fewer children. Also, the source of income may be more important than the level, and evidence from Asia suggests that income from profits are more likely to be saved than income from wages (World Bank, 1974:27-8).

Technological Change

Technological change is the 'residual' factor of production. It includes scientific, technical and managerial advances, improvements in the quality of the labour force, and benefits from the growth of the market.

Improvements in the quality of the labour force can arise from better education and training, migration to places where workers are needed, and better health services so that the worker is sick less often and lives longer. Although a developing country may have a large 'quantity' of people in the labour force, it may lack 'quality'. If workers with special skills or training are in short supply, then these shortages can cause bottlenecks which check the expansion of the economy.

THE POPULATION DEBATE

How serious is the effect of population growth on economic development? After reviewing the literature Cassen (1976:785) concluded that 'little support is found for any strong positive or negative relationship between growth of population and that of real output, but it seems clear that at least among poor developing nations a slowing down of population growth must facilitate the growth of per capita output'.

Todaro (1977:138-140) has made a good summary of the various arguments that rapid population growth is not a serious development problem. These arguments include the following:

- (a) Underdevelopment is the real problem. Population growth will only slow down after economic development has taken place.
- (b) The unequal allocation of the world's resources is of greater concern than population growth. Less than 30% of the world's population live in the developed countries but they consume over 80% of the world's resources. 'Resource control' may be more important than population control.
- (c) Population growth is a false issue generated by the rich countries for selfish reasons.
- (d) The distribution of the population is the problem, rather than the total numbers.
- (e) Population growth is needed to stimulate economic development. It is argued that some areas, particularly in Latin America and Africa, are really underpopulated.

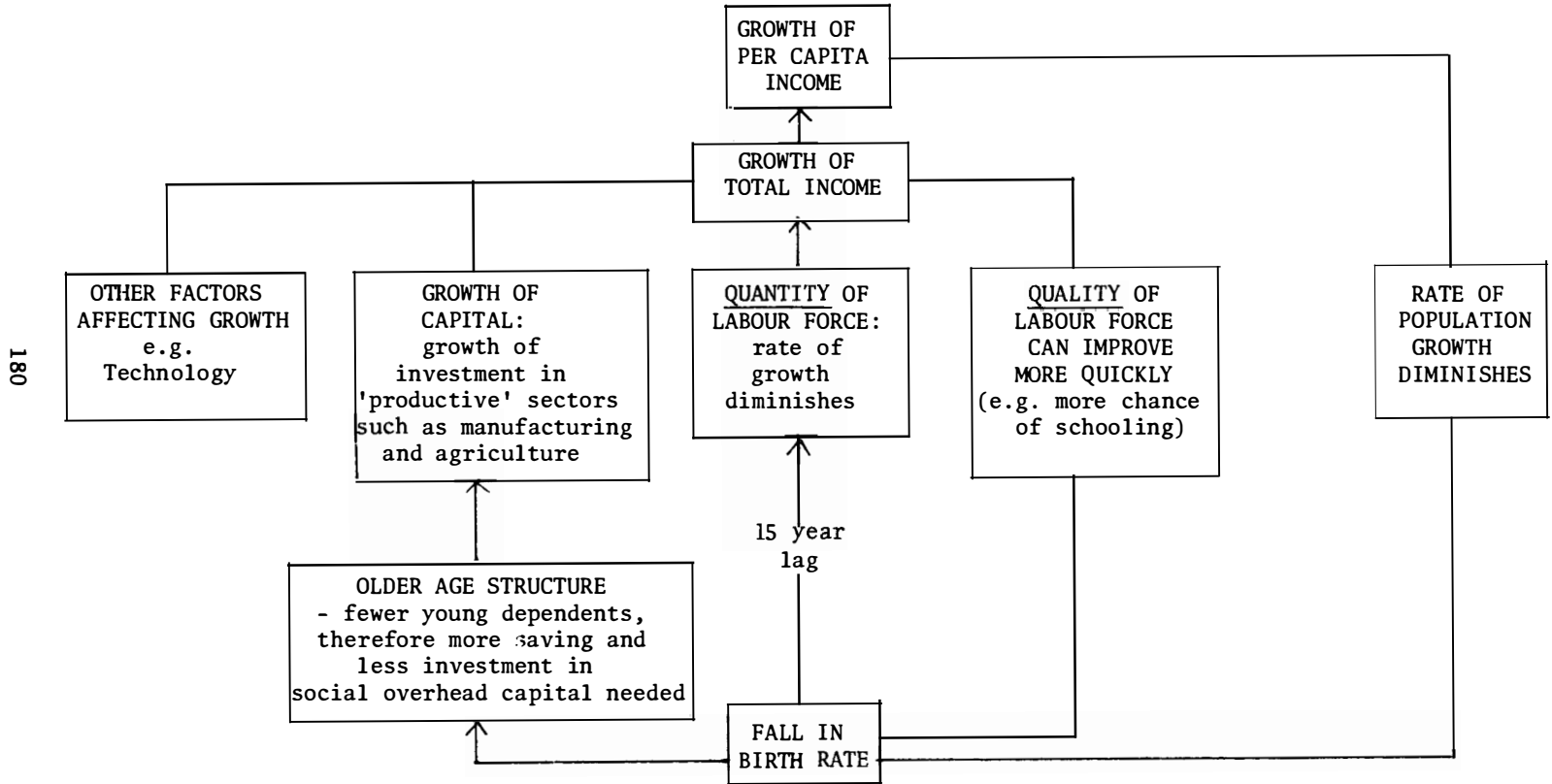
ECONOMIC-DEMOGRAPHIC MODELS

If an economic demographer is interested in the relationship between population growth and economic development, he may build a macroeconomic model which tries to capture the essential features of a real-world economy in a simplified, mathematical way. The model consists of a set of relationships between key economic variables (e.g. between income and savings) or, as illustrated in Figure 9A, between economic and demographic variables. The model-builder can change one or more variables, and then, using a computer, see the effect on other variables.

The earlier economic-demographic models, including the classic study of India by Coale and Hoover (1958), show that both national income and per capita income grow more slowly if population growth is

Figure 9A

Simplified Relationship between Lower Fertility and Per Capita Incomes



Sources: Zaidan, 1969: Figure 1.
Cassen, 1976: 804-5.

rapid. Because of the assumptions and simplifications made by the model-builder, a model can be easily criticized, and amongst the criticism of Coale and Hoover was their exclusion of non-monetary savings (such as when a farmer saves a part of his crop) and their assumption of more investment if fertility falls. (See Robinson and Horlacher, 1971:13; Coale, 1977: 420; and Cassen, 1976:804-5).

This first generation of models has been described as 'neo Malthusian' by Anker and Farooq (1978:144-5) who note that in many countries rapid population growth has been accompanied by rapid economic development. Typically these early models ignore technological change and the effect of socio-economic change on population growth (e.g. industrialization may lead to lower fertility).

To-day more than a dozen complex, large-scale, economic-demographic models exist. These incorporate many improvements over the earlier models, and provide a closer approximation to the interactions and other complexities of the real world. For example, falling fertility may affect consumption patterns. This in turn affects trade and employment, and thus economic growth, and these changes may then affect the demographic variables. (Anker and Farooq, 1978:151). The International Labour Organization's well-known model, *Bachue*, appropriately named after a Columbian love goddess, is designed 'to provide a laboratory that can evaluate policies which affect the size and distribution of population and policies which might create productive employment and alter the distribution of income over the longer term' (Hopkins et al. 1976:261). The claim of model-builders that their models help to show the long term implications of policy decisions is the subject of an interesting debate in the *Population and Development Review* (Arthur and McNicoll, 1975 and 1977; Rodgers et al., 1976; and Blandy, 1977). Models of this type can help in the analysis of sub-sectors, such as education and migration, to see how they are influenced by trends in population and in other aspects of the economy.

THE ECONOMICS OF CHILDREN

In the previous section the macro-economic or aggregate situation was discussed, but population economics can also be looked at from the micro-level, from the point of view of the parents or the household unit. Some economists have regarded children as consumer durables like cars or T.V. sets which give satisfactions over a long period of time. According to the theory of consumer behaviour the individuals (in this case the parents) have limited resources and are trying to maximize their satisfactions by choosing between different goods. Their choice is influenced by the price of the various goods (the costs of children are discussed below) and by their own income. One problem with this approach is to explain why, as income rises, fertility is often lower. One explanation may be that as income rises parents want better-educated children, that is they prefer 'quality' to 'quantity' (see Jones, 1977:12-13).

Another approach, with more relevance to developing countries, treats children as investment goods or economic assets. Parents expect to receive economic benefits from the children in the future. These benefits will arise if the children work without wages on the family farm or in the family business, or give some of their wages to the parents, or support them financially in their old age.

The Economic Costs of Children

If children are thought of as consumer durables or investment goods it is necessary to consider how much they cost. The economic costs are of two main types (Robinson and Horlacher, 1971:24):-

1. Financial or Direct Maintenance Costs. These are the parents' expenditures on the children's food, clothing, housing, education and medical care.

2. Opportunity Costs. These are the costs or income foregone by the parents: what they lose by rearing a child. If a wife gives up work when her children are young, then the parents have 'lost' her wages. If the wife continues to work but has to pay for childcare, this is also an opportunity cost.

In developed countries such as Australia and the U.S.A., the costs are high. In the U.S.A. the total economic costs of a first child up to age 18 in 1977 for moderately well-off families was estimated at about US \$100,000 (Espenshade, 1977:25-27). In these countries children are not good investments, from a purely economic point of view, for the costs are high and the economic benefits low. Also, pensions and social security payments mean that children do not need to support their parents in their old age.

In a developing country the reverse is often true. The economic costs are much lower, especially in rural areas and if the child does not go to school. At a very early age the child can begin contributing to the household income by working in the fields, looking after the cattle, and doing other jobs. As the parents grow old the children may provide economic support, perhaps by working in their parents' fields. Caldwell (1976) has expressed this in another way by saying that the flow of wealth is from parents to children in developed countries whereas in developing countries the flow is from children to

Discussion of the economic costs and benefits of children should not blind us to the fact that nobody is influenced only by economic considerations. Feelings of love and affection, of the need for a 'normal' family, and so on enter into the calculation. Even economists recognize this, though they sometimes tend to ignore it. All of these considerations can be summed up by saying that in deciding on the number of children to have, people are influenced by the utility that children give them. The word 'utility' as used by economists means much the same as 'satisfaction'.

THE VALUE OF CHILDREN (VOC) APPROACH

Since fertility can not be explained purely in economic terms it is important to assess the non-economic values and costs of children. The value of children can be defined as 'That collection of good things which parents receive from having children' (Espenshade, 1977:4). Hoffman and Hoffman (1973:46-61) have produced a value system which incorporates nine categories, eight of non-economic values (such as adult status, immortality, happiness, creativity) and one of economic utility.

Among the different approaches to the value of children are the micro-economic approach (described in the previous section), and the social-psychological approach which developed from the Hoffman and Hoffman framework (Fawcett, 1977 and 1978). This approach emphasizes 'the needs of individuals that are fulfilled by having children, the alternative ways of meeting these needs, and the interaction among emotional, social and economic values and the costs of children' (Fawcett, 1977:96).

The measurement of these values and costs in this approach has relied on observations drawn from anthropological studies and from surveys which ask parents their attitudes regarding children. A major effort in this field is the VOC Project, a cross-national study begun in 1972. The first phase of this project consisted of interviews with small samples of parents in six countries (Thailand, Philippines, Taiwan, the Republic of Korea, Japan, and Hawaii) in 1972-3. The second phase

was done in 1975-6 using larger, nationally representative samples of married couples in eight countries (Indonesia, Turkey, Thailand, Philippines, Singapore, Taiwan, the Republic of Korea, and the United States). Results of the first phase are reported for all countries in Arnold et al. (1975) and in individual country reports in subsequent volumes of the same series. The second phase results are to be published in reports comparing all the countries, beginning with two by Bulatao (1979a, 1979b). Smaller investigations using this approach have also been undertaken, focusing on specific communities in Australia, India, and Indonesia (Callan 1979; Narayan-Parker 1979; Saefullah, 1979).

One of the results of the first phase of the VOC Project was the elaboration of the earlier Hoffman and Hoffman system of values into a more elaborate framework (reproduced here as Table 9.1) which attempts to incorporate all the dimensions of the value of children including economic benefits and costs, opportunity costs, psychological or emotional benefits and costs, and societal costs. Sex preferences, an important dimension often overlooked in purely economic studies, are also included.

The various reports explore differences between the national samples and between groups within those samples. In general it was found that rural parents emphasize the economic and practical benefits (including support in old age) from children, while the urban parents (especially those with more education) stress the emotional or psychological aspects of having children (Arnold et al., 1975:42). In Taiwan and South Korea where sons have special religious significance, the preference for sons was strongest (Arnold et al., 1975:64-65). Daughters were desired more among middle-class parents to provide companionship for the mother (Arnold et al., 1975:131). Differences in the responses of husbands and wives were relatively few, and can be attributed to sex roles and the division of labor within the family. For example, women (who spend more time with children and who have a narrower range of social relationships) emphasize the companionship from children and the emotional strains and physical demands of childrearing. On the other hand, husbands were more likely to mention

Table 9.1

Categories of the Value of Children

<u>Category</u>	<u>Example</u>
A. <i>Positive general values</i> (or 'benefits')	
1. Emotional benefits	Children bring joy and happiness into their parents' lives. They are an object of love and affection, and companions for their parents.
2. Economic benefits and security	Children can help the family's economy by working on the farm or in other family enterprises, or by contributing their wages from outside employment. They can do many tasks around the house (thus freeing their mother to do income-producing work).
3. Self-enrichment and development	Raising children is a 'learning experience' for parents. Children make their parents more mature, more responsible. Without having children, married people are not always fully accepted as adults and full members of the community.
4. Identification with children	Parents derive pride and pleasure from watching their children grow and in teaching them new things; they take pride in their children's accomplishments.
5. Family cohesiveness and continuity	Children help to strengthen the marriage bonds between husband and wife, and are the natural fulfillment of marriage. They continue the family line, the family name, and the family traditions.

B. *Negative general values* (or 'costs')

1. Emotional costs Parents worry about their children a lot, especially about their children's behaviour, and their safety and health. With children the house is noisy and untidy. Sometimes children are a nuisance.
2. Economic costs Feeding and clothing children and other expenses can be considerable.
3. Restrictions or opportunity costs After having children, parents have less freedom.
4. Physical demands There is a lot of extra housework involved in caring for children. Parents may be more tired.
5. Family costs Parents have less time with each other and argue about rearing the children.

C. *Large-family values* (reasons for having a 'large' family)

1. Sibling relationships Children need brothers and sisters. (Conversely, an only child is spoiled and lonely.)
2. Sex preferences Parents may have a specific desire for a son or daughter or for a specific combination. Parents want to have at least one child of each sex, or the same number of each.
3. Child survival Parents need many children to be sure that some will survive to adulthood and help them in old age.

D. *Small-family values*

1. Maternal health Too many pregnancies are bad for the mother's health.
2. Societal costs The world is getting overcrowded. Too many children already will be a burden to society.

Source: Fawcett, 1977:98-9; Arnold et al., 1975: 9-10.

the need for descendants to continue their family line and to show greater concern for the economic costs of children (Arnold et al., 1975: 97-8).

The effects of development on fertility change can be better understood by examining such comparisons between groups from different ecological, cultural, and socio-economic backgrounds. After considering the African evidence, Ware (1978:4) argues that 'in areas where all essential natural resources are in abundant supply parents will benefit materially from having many children'. In such a situation, psychological values and costs have little relevance. As natural resources, especially land, begin to be in short supply, and as certain aspects of social and economic change (such as wider education, especially of girls; the emotional and economic nucleation of the family; and the individual ownership of land) become more widespread, the economic benefits received from having many children decline while the financial costs of childrearing increase (Ware, 1978:6-13). Psychological aspects then begin to assume greater importance, and in highly developed societies economic considerations become irrelevant. As Davis (1973: vi) said: 'If economic factors were decisive, no one in modern societies would have any children'.

In Western, industrialized societies the psychic benefits to a young couple of having their first child can be generalized as a fulfillment of socially prescribed roles ('parenthood is expected of married couples') and the satisfaction of curiosity motives ('we wanted to experience childbirth'). Similarly, the second child is strongly desired for specific reasons: to be a companion for the first child, and to have one of the opposite sex (Fawcett, 1977:104-105). Most psychological and social needs are thus met by the first two children, and the two-child family becomes an established norm rather rapidly when children have few economic functions.

The results of VOC studies can be used to improve the effectiveness of population IEC (information, education, communication)

programs by expanding our knowledge of the motivations of target groups ('audience research') and helping in the formulation of effective messages about population to these groups. The design and evaluation of incentive and disincentive programs (such as those already in use in Singapore and Taiwan to promote small families) can also be enhanced by a better knowledge of the relevant motivations in the affected populations. VOC studies also illuminate the effects of development programs on fertility, for example, whether land reform (by supplying a form of security to parents) will decrease the need for many children for support in old age.

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* Recommended for further reading.

CHAPTER 10

POPULATION POLICIES

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Chapter 10

POPULATION POLICIES

DEFINITIONS AND TYPES OF POPULATION POLICY

According to the United Nations (1973:632) there is no generally accepted definition of population policy. In this chapter, population policy is defined fairly narrowly, and refers to all deliberate government actions (such as laws, regulations, and administrative programs) intended to influence population growth, size, distribution, and composition (see Eldridge, 1968:381; Monsted and Walji, 1978:196). The purpose of these actions is to facilitate the achievement of the government's population goals or policies (United Nations, 1973:362).

Berelson (1971:173) includes 'governmental actions that are designed to alter population events or that actually do alter them'. However, Stycos (1977:106) argues that Berelson's broad definition causes confusion by including actions which have an unintended influence. For example, a health program to reduce venereal disease may also reduce sterility and thus increase fertility. Stycos argues that if the policy makers are unaware of this effect, or ignore it, the health program is not a part of their population policy.

An even broader definition, by the U.S.A's National Academy of Sciences (1974:86-7), would include *population-responsive* policies. This category covers the ways that governments respond to population changes e.g. by building more schools if the number of children is rising. The Kenyan Government responded to substantial migration to Nairobi in the 1960's by encouraging private employers to hire additional workers (Farooq, 1975:143).

This population-responsive action is better described as an employment policy, rather than as a population policy.

Dividing population policies into various types can also be confusing. According to various writers, population policies can be either:-

direct or indirect;
explicit or implicit;
domestic or international; and
policies of *intervention or non intervention.*

Direct policies affect population variables directly: for example, encouraging immigration can increase growth rates. As noted in Chapter 4, rising levels of education usually result in lower fertility. Thus making secondary education compulsory could have an *indirect* effect on fertility. In France, Veil (1978:316) believes that people would disapprove of direct government intervention to raise the birth rate, but they overwhelmingly approve of the payment of family allowances. The French Government introduced these allowances to compensate parents for a part of the cost of childrearing, hoping that this indirect measure would raise fertility levels.

Explicit policies are associated with the stated intention of a national government to influence population events. For example, after World War II Australia had a direct and explicit immigration policy designed to increase its population. *Implicit* policies are unstated, sometimes because the objective is universally acceptable, such as lowering mortality; or because publicizing the policy may cause political controversy (Stamper, 1977:44). For instance a government may give financial support for family planning at MCH (maternal/child health) clinics, but, if family planning is controversial, the maternal and child health services of the clinics may be emphasised in the government's

public statements.

According to Dobson (1975:625) the main goal of development is to increase human welfare, and population policies are one way of achieving that goal. In 1974 when the World Population Plan of Action was adopted at Bucharest, paragraph 14c read 'Population and development are interrelated: population variables influence development and are also influenced by them' (World Population Conference, 1975:157). Many countries wish to integrate population policies with broader development policies, and so explicit population policies are often considered as a part of the development plan. Stamper (1976:56-7) studied 60 development plans of developing countries: 15 of these countries (five in Africa, eight in Asia and two in the Caribbean) had definite objectives or *targets*, representing reductions in growth rates. For example Bangladesh planned to reduce its rate of natural increase from 3% to 2.8% in the plan period 1973-1978.

In China, rapid population growth is believed to have an unfavourable impact on economic growth. China's target is to reduce its annual rate of natural increase to 0.5% by 1985, mainly by encouraging the one child family. To achieve this objective, a number of government measures are planned. These include the mass production and free distribution of contraceptives, additional publicity and population education, and giving priority to women with one child when housing, land, and government jobs are allocated (Chen Muhua, 1979:19).

So far we have only considered *domestic* policies. Besemeres (1976:19) defines *international* policy as 'the official attitude adopted by the country in question to attempts to affect population growth rates in the world as a whole, or in particular countries or regions which are held to have a "population problem"; this attitude can express itself in the giving or not giving of

aid to family planning programs in other countries or through activity in any of the international agencies concerned with population problems'. The United States provides 30% of the budget of the UNFPA (United Nations Fund for Population Activities, 1978:85) and is a major donor to many other international population agencies whereas traditionally the Soviet Union has opposed all international efforts to reduce population growth rates. However, some relaxation of the Soviet position was noticeable in the 1960's (Besemeres, 1976:19; Brackett, 1968).

The 1974 World Population Plan of Action also recommended that the monitoring of population trends and policies should be undertaken continuously by the United Nations. Out of the 156 countries responding to the 1976 United Nations survey, 132 considered that their rates of natural increase or growth placed constraints on development. Nearly all of these 132 countries were undertaking 'multidimensional' policy interventions combining measures affecting the demographic variables as well as economic, social, political and technological factors (United Nations, 1979a:14). However the United Nations (1979b:19) emphasises that it is possible for a government to have explicit or implicit policies of *non-intervention*. This situation could arise when, perhaps after substantial investigation, the government concluded that intervention was unnecessary or undesirable.

Before discussing the influence of population policies on each of the components of population change, it must be remembered that some policies are never implemented, and that policies may change if the government changes (Stamper, 1977:44). The Islamic revolution in Iran provides a dramatic example of this: in 1979 the new government made abortion and voluntary sterilization illegal (*People*, 1979). Furthermore, it must be noted that population policies may be in conflict with other government policies. France encourages larger families by the

payment of family allowances based on the number of children and their ages (Bourgeois-Pichat, 1972:8). At the same time the rights of the individuals to choose are recognized, so the laws on abortion and contraception have been liberalized.

POPULATION POLICY, MORTALITY AND MORBIDITY

One view is that 'In a sense, since all governments have a health policy and this is related to mortality, all countries have some form of "national population policy"' (United Nations, 1979a:14). However, Eldridge (1968:383-4) warns that if the purpose of a governmental action is to improve the health of a population, then this is not necessarily a population policy. To reduce malnutrition Papua New Guinea (1974:232) promotes breastfeeding and discourages bottle feeding. This action can be classed as population policy since the government also intends to reduce infant and child mortality. As shown in Chapter 4, prolonged breastfeeding can reduce fertility: this could be an unintended effect of the government's policy.

In the developing countries mortality has been more responsive to government intervention than has fertility. Thus the countries which want to reduce their rates of natural increase must allow for the effect of falling mortality (United Nations, 1979b:24-7).

Heer (1975:128) has observed that 'almost all governments place the independence of the nation above the protection of human life..... As a result throughout human history wars and armed conflict have resulted in millions of deaths.....'. Sometimes in history a government has tried to destroy a particular race or ethnic group, and this is known as *genocide*. Hitler's policy was the genocide of the Jews; he also ordered his army to destroy the Polish nation so that Germany

could acquire more 'living room'. Because of a policy of genocide by the Turks, 1.5 million Armenians in Turkey died between 1895 and 1920, and another half million became refugees (Lang and Walker, 1976).

POPULATION POLICY AND FERTILITY

If a government wishes to encourage population growth it may adopt *pro-natalist* policies to increase the birth rate. If the government policies are designed to reduce the birth rate, then they are *anti-natalist*. Table 10.1 shows that out of 156 countries reporting to a United Nations inquiry in 1976, almost one half were intervening to influence fertility.

When death rates are high (as in Europe in the 19th century), attitudes are usually pro-natalist. Even after World War I, many European countries encouraged increased fertility for nationalistic and military reasons (Glass, 1940 and 1967; Thomlinson, 1976: Chapter 28). More recently, the low birth rates and the ageing of the populations have had an important influence on policy orientations in some developed countries (United Nations, 1979c:85). Yet in these countries pro-natalist policies have little effect, partly because their populations are already in the later stages of the demographic transition (Stycos, 1977:103-4), and are thus controlling their fertility.

The 'populate or perish' idea has generally been taken very seriously by Australian Governments, and pro-natalist influences were apparent in the introduction of maternity allowances in 1912 and child endowment (or family allowances) in 1941. In addition, various restrictions on the sales and advertising of contraceptives were imposed between 1931 and 1946 (National Population Inquiry, 1975:178; Browne, 1979:Chapter 3).

One colonial inheritance is the French 'Law of 1920'

Table 10.1

1976 Government Policies on Fertility

	Developed Countries	Developing Countries	Total
<u>Government Intervention:-</u>			
to increase fertility	8	18	26
to maintain fertility	8*	-	8*
to decrease fertility	1	40	41
	<u>17</u>	<u>58</u>	<u>75</u>
 <u>No Intervention:-</u>			
Overall policy of non-intervention to influence natural increase	12	12	24
Other	13	44	57
	<u>42</u>	<u>114</u>	<u>156</u>

Note: * These Governments are intervening to maintain fertility at current levels because without intervention fertility will probably decline.

Source: United Nations, 1979b : 22,28 and Table 17.

which made abortion illegal in France and the French colonies, and restricted the advertisement, distribution, and sale of contraceptives. Although the 'Law of 1920' was liberalized in France in 1967, it is still in force in many Francophone (French speaking) countries in Africa (Wolf, 1973:18). For Sub-Saharan Africa in 1976 it was noticeable that the 9 countries intervening to reduce fertility were all Anglophone (English speaking), while the 6 obviously pro-natalist countries were former colonies of Catholic countries: France, Spain or Portugal.

Before the 1950's, no developing country had an explicit population policy, while those policies that existed in developed countries were mostly designed to increase fertility and immigration. To-day about 58% of the world's people live in countries whose governments considered a lower rate of natural increase to be desirable (United Nations, 1979a:16).

India, in its First Five Year Plan 1951-6, was the first developing country to adopt an official anti-natalist policy. According to Symonds and Carder (1973:202), once the Indian Government had asked for international aid to support this policy, it became increasingly difficult for the United Nations agencies to ignore the problem.

Of the 41 countries intervening to lower fertility in 1976, 17 were in the ESCAP (Economic and Social Commission for Asia and the Pacific) area, and these included the three population 'giants' of the developing world, China, India, and Indonesia. The four pro-natalist ESCAP countries were all socialist or centrally planned economies: North Korea, Monogolia, Kampuchea and Laos (United Nations, 1979b:Table 60). Although Burma lacks an official population policy, contraceptives are illegal there and family planning services are not available (Whitney, 1976: 347).

Family Planning Programs

A family planning program can be the means of achieving a falling birth rate. However Watson (1977:1) has observed that since a family planning policy may evolve very gradually, a family planning program may exist prior to a clear policy statement. In Table 10.2 most of the 56 developing countries with policies of support for family planning in the early 1970's also had anti-natalist population policies.

Mauldin and Berelson used 15 criteria to classify family planning programs into three categories: strong, moderate and weak. Table 10.2 shows that countries with anti-natalist policies are less likely to have a weak program effort. Between 1965 and 1975, the strong and moderate groups had both achieved an average percentage decline of over 20% in the Crude Birth Rate, compared with around 2% for the 38 countries which had no family planning program. Most of the weak programs (e.g. those of Bangladesh/Pakistan, Morocco, and Kenya) had made little impact even after many years.

Beyond Family Planning

Berelson (1969) has classified proposals for limiting fertility outside the scope of national family planning programs. To each of the 8 categories shown in Table 10.3, Berelson applied 6 criteria (scientific readiness, political viability, administrative feasibility, economic capability, ethical acceptability,* and presumed effectiveness) and he concluded that there was no easy way to the reduction of fertility. For example, the compulsory sterilization of males, while very effective, is not likely to be acceptable either politically or ethically. In fact in India

* Ethics is the science of morals. A 1971 Population Council Occasional Paper by Daniel Callahan is devoted to 'Ethics and Population Limitation'.

Table 10.2

Family Planning Program Efforts
in Selected Developing Countries

Program Effort	Score *	Reason for Government Support		Total
		Policy to reduce population growth	Non-demographic reasons (e.g. material health, or as a human right)	
Strong **	20 ⁺	9	2	11
Moderate	10-19	12	3	15
Weak	0- 9	10	20	30
		31	25	56
No program or not known				38
				94

Note: * To assess the strength of a program, 15 criteria were used. These included such items as favourable public statements by political leaders, and the availability of contraception, abortion and family planning services. The maximum score for each criterion was 2 giving a maximum score of 30 for individual countries.

** The 'strong' programs included those in Singapore, China, the Republic of Korea, Taiwan, Hong Kong and Fiji.

Source: Mauldin and Berelson, 1978 : 102 and 114.

Table 10.3

Policy Proposals for Limiting Fertility

<u>Policy Proposal Categories</u>	<u>Example(s)</u>
A. Extension of voluntary fertility control	Liberalization of abortion; extension of rural maternal child health/family planning clinics.
B. Involuntary fertility control	Compulsory sterilization of men with three or more living children.
C. Educational campaigns	Population education in schools.
D. Incentive programs	Payments to contraceptors; or to couples who do not bear children for specified periods.
E. Tax and welfare benefits, and penalties (disincentives)	Withdrawal of family allowances after the third child.
F. Making changes to social and economic institutions	Increasing the minimum age of marriage; encouraging female labour force participation outside the home.
G. Approaches via political channels and organizations	Insisting that aid is accompanied by population control; the creation of specialized agencies to deal with the population problem.
H. Additional research efforts	More research on sex determination, improved contraceptive technology, and on the social means of achieving fertility goals.

Source: Adapted from Berelson, 1969.

reports of compulsory sterilization contributed towards the defeat of the government in 1977 (Gwatkin, 1979).

Berelson thought that the administrative feasibility of proposals in his categories B,D,E,F and G was low, and an example from Singapore provides some support for his opinion. While the Singapore disincentives program includes various penalties for large families, there are difficulties of implementation. One disincentive is the sliding scale of government hospital fees for delivering a baby: these fees rise steeply according to the parity of the mother. Yet in practice the hospital staff are over-worked and can only make a sample check of the birth records and, moreover, it is unlikely that the hospitals will take parents to court if they refuse to pay a given fee (Salaff and Wong, 1978:50-1).

On the other hand, in the decade which followed Berelson's paper, considerable progress was made in some of the 'beyond family planning' categories. For example, abortion laws have been liberalized in many countries and in several Australian States (Cook, 1978). Under category G, one significant step was the expansion of the United Nations Fund for Population Activities. Founded in 1967 as a small trust fund, by 1978 the UNFPA had grown into an organization with an annual budget of over US\$100 million. Although UNFPA policy is 'to respond to requests by governments, without attempting to influence them to adopt any specific policy or population goal', in fact an increasing number of projects are designed to reduce population growth (United Nations Fund for Population Activities, 1978:18).

POPULATION POLICY AND NUPTIALITY

According to Duza and Baldwin (1977:1) 'Raising the age at marriage is seen by demographers as one of the relatively few policy interventions "beyond family planning" that might be

able to initiate or accelerate population growth changes on a major scale'. Tunisia is one country which has attempted to do this by raising the legal age of marriage. In 1964, the legal minimum was set at 17 for females and 20 for males. This 1964 law was only a part of a program of laws, dating from the mid 1950's, which was directed towards development, education, and improving the status of women. In China, in June 1956, the government announced a policy to promote late marriage and birth limitation (Chen, 1976:78) assuming that late marriage often lowers the birth rate and the growth rate.

POPULATION POLICY AND PERMANENT INTERNATIONAL MIGRATION

The Historical Background

Appleyard (1977) has listed the following important migration streams in the 19th century and early 20th centuries:-

- (i) The 'old migration' to the U.S.A., from the U.K., Ireland, Scandinavia, and Germany.
- (ii) The additional 'new migration' stream to the U.S.A. and Latin America from South and South-East Europe in the late 19th and early 20th century.
- (iii) British and other European immigration to Canada, South Africa, Australia, and New Zealand.
- (iv) Jewish migration to Palestine.
- (v) Chinese migration to South-East Asia.
- (vi) Indian migration, mostly to Ceylon, Malaya, Mauritius and South Africa as indentured or contract labour in the mines and plantations.
- (vii) Japanese migration after 1885 to Asiatic Russia, and to Hawaii and other parts of the U.S.A.

As shown below most of these streams were at some stage influenced by government policies.

Encouraging and Discouraging Emigration

Laws restricting emigration were common in Europe in the 17th and 18th centuries, and are found to-day in most socialist countries. Emigration was also illegal in China from 1718 up to 1860, and in Japan up to 1885. On the other hand, at various times, particularly in the mid-19th century, the British Government has assisted emigration, while after World War II a number of countries, including Italy and Malta, have actively encouraged it (United Nations, 1973:240-1).

In the 1940's when the population of the small island of Malta exceeded 300,000, its government decided to adopt an official optimum population of 250,000; to be achieved by net emigration of 5% per annum. A formal migration agreement was signed with Australia, and between 1947-71 Australia accepted about 70,000 Maltese settlers, about two thirds of Maltese emigration in that period (Price, 1973).

In the 19th century, the migration of Indians to the British colonies provided a supply of cheap labour to the plantations after the abolition of slavery. After considerable criticism, this system of indentured or contract labour was abolished in 1920. A new Act in 1922 considerably restricted the movement of unskilled labour from India, but encouraged the short-term migration of skilled labour to Malaya, Ceylon, and Burma (Davis, 1951:Chapter 13). Because of these migration streams in the 19th and 20th centuries, persons of Indian origin are now numerous in parts of Asia, Africa, and the Caribbean, and their presence has occasionally given rise to political problems. In 1964 the Sri Lanka (Ceylon) Government reached an agreement with India so that almost one million Indians would be sent back over 15 years (United Nations, 1973:241). More recently, in 1972, Uganda expelled most of its Asian population.

Encouraging Immigration

In the 19th century various countries, notably the U.S.A., Canada and New Zealand, stimulated immigration by giving free or cheap land to immigrants. However, by the 1870's land settlement was no longer a powerful 'pull' factor for European migrants (Borrie, 1970:90). Such receiving countries as Brazil, Argentina, Australia, and New Zealand also used to encourage immigrants by helping with their transport costs.

To-day the freedom to travel is increasing, but since World War I opportunities for permanent migration have become progressively more restricted because of such laws as the U.S. Quota Acts of 1921 and 1924. Among the few countries that still have a definite policy of encouraging limited permanent migration are the U.S.A., Canada, and Australia (United Nations, 1979b: 79-80). Since these countries have vast frontiers illegal immigration is possible. Every year the United States admits up to 400,000 immigrants under a system which gives preference to individuals with family in the United States or with needed skills. The number of additional immigrants who enter illegally or overstay their visa or work illegally, is unknown (Keely, 1977:473).

IMMIGRATION AND AUSTRALIA

The history of Australia has been described as a history of immigration, and Price (1975:1-3) has observed that immigration into Australia has rarely been free of government control and intervention. Initially, after loss of its American colonies, the British Government needed a place for its surplus prisoners (or convicts) and so, between 1787 and 1867, when the system was abolished, about 160,000 prisoners were sent from

Britain to Australia (O'Brien, 1950:1). Other details of immigration to Australia have been given in Chapter 6.

The 1901 Immigration Act had the effect of excluding Asians and this 'White Australia' policy survived until the 1960's when Australia, like Canada and the U.S.A., removed restrictions on race. Because these new laws were more liberal for Asians, they contributed to the 'brain drain' of professional and skilled workers to the developing countries (Appleyard, 1977; United Nations, 1979a:93).

In 1973, Australia adopted an explicit immigration policy of non-discrimination on grounds of race, colour, or nationality. Migrants now fall into four main categories:-

- (i) family reunion (e.g. the spouse, child or parent of an Australian resident);
- (ii) refugees;
- (iii) persons with occupational skills in continuing demand in Australia; and
- (iv) others

(Australian Population and Immigration Council, 1977:28-30).

Persons wishing to reside in Australia must obtain a migrant visa, but New Zealanders are exempt from this requirement and they continue to figure significantly in Australia's net migration statistics (see Price, 1975:34-5).

In 1978, Australia introduced a numeral migrant assessment system (NUMAS) for selecting migrants in categories (i) and (iii). Under this system, points were allocated for certain economic, personal and settlement factors including work skills, fluency in English, financial assets, education, age and family unity (Australia, 1979). Although NUMAS is designed to ensure

consistency in the selection of migrants, some critics claim that it discriminates in favour of persons of North European descent, including white South Africans and Rhodesians (Grenard, 1979).

Refugees

This special category of immigrants includes persons unwilling to return to their own country because of fears of persecution on account of their race, religion, nationality, political opinion or membership of a particular social group. Persons whose refugee status is recognized by the United Nations High Commissioner for Refugees (U.N.H.C.R.) are given care and protection by the U.N.H.C.R. until they can be permanently re-settled.

In 1975, the estimated number of refugees in Africa exceeded one million (United Nations, 1979a:Table 154; Knight, 1978:2). The number of refugees who have fled from Indo-China (especially Vietnam and Kampuchea) since 1975 is probably equally substantial (Committee on Australia's Relations with the Third World, 1979:147).

In 1938 and 1939, 7,500 Jewish refugees came to Australia to escape Hitler's rule in Germany. Out of the 3.3 million settlers who came to Australia between 1945 and 1976, approximately 300,000 were refugees, or persons in refugee type situations. Between 1947 and 1952, these were mostly from Eastern Europe (Australian Population and Immigration Council, 1977:39-41). In the period 1975-80 the number of refugees from Indo China admitted to Australia will probably exceed 30,000 (Committee on Australia's Relations with the Third World, 1979:148).

TEMPORARY INTERNATIONAL EMIGRATION AND IMMIGRATION

Many countries use migrant workers to overcome

temporary or longer term labour shortages. Böhning (1977) has described the following four categories of movements of migrants from poor to rich countries:-

- (i) Around 1976 Western Europe, especially France and Germany, employed about 2.5 million 'guest workers' from the poorer Mediterranean countries.
- (ii) The United States and Canada admit 'non-immigrants' from poor countries for seasonal work.
- (iii) The oil-rich Arab countries employ at least one million foreigners in a variety of occupations.
- (iv) South Africa employs about 400,000 citizens of neighbouring African countries, mostly to work in the mines. However, the permanent immigration of non-whites is not permitted (United Nations, 1973:245).

Australia's immigration policies are oriented towards permanent settlement so there is no guest worker program. Indeed, the Australian Population and Immigration Council (1977:101) has emphasised the substantial social disadvantages of European programs where the guest workers were regarded as 'second-class citizens'. It has been suggested that Australia could follow New Zealand's practice of allowing South Pacific Islanders to enter for temporary employment. However, New Zealand has recently experienced problems with 'overstayers' who continued working after their permit had expired (de Bres, 1977).

INTERNAL MIGRATION POLICIES

Of the 156 countries responding to the 1976 United Nations survey, 113 (72%) were intervening to alter the spatial distribution of the population (United Nations, 1979b:Table 17), a clear indication that the location of population caused more

concern to governments than the rate of natural increase. For both developed and developing countries about 75% wished to slow down or reverse the direction of their main internal movements, including rural-urban migration (United Nations, 1979c:93-5).

Some aims of internal migration policies include:-

- (a) encouraging permanent internal migration to selected areas (e.g. to sparsely population areas, to rural areas, or to smaller cities);
- (b) discouraging internal migration (especially rural-urban migration); and
- (c) altering the ethnic or occupational composition of an area.

(a) Java with 7% of Indonesia's land area contains almost two-thirds of the nation's population. Thus Java is over-populated, while some other regions are short of manpower (Stamper, 1977:150). To solve these problems governments since 1905 have adopted the policy of *transmigration*, moving people from Java and Bali to the Outer Islands. About 810,000 people were resettled from 1905 to 1975, including 184,000 in 1970-5. However, this seems insignificant when compared with the 8.7 million increase in the population of Java/Bali in this five year period (Speare, 1978:98-9).

Very few countries have programs of moving urban residents to rural areas. Yet in China in the period 1969-73, over 10 million urban secondary school leavers were resettled in rural areas. The major goal was to stimulate agricultural production, although a desire to reduce urban unemployment may also have been a factor (Simmons,1979:90).

Although there has been no deliberate policy by Asian Governments to develop large cities, other policies (e.g. the encouragement of industrialization and the mechanization of

agriculture) have favoured urban growth, particularly of the largest cities. Consequently, several Asian Governments have developed 'growth poles' in smaller cities. According to Simmons (1979:98), 'growth people' theory assumes 'that initial government expenditures in sparsely populated or economically disadvantaged areas lead to self-sustaining economic growth'.

The Republic of Korea was particularly successful in re-directing migrants to non-metropolitan cities. In the period 1966-70, Seoul grew at 9.8% per annum, with migration accounting for 81% of the increase. From 1969 onwards, a number of explicit policy measures (including tax and credit incentives for industrial investment in other locations) were implemented to restrict the growth of the metropolis. Subsequently, Seoul's growth rate fell to 4.5% per annum (Simmons, 1979:99-100; Son-Ung Kim and Donaldson, 1979).

(b) Another problem in Indonesia in the 1960's was the rapid growth of Jakarta at 4.9% per annum, of which 2.6% was due to migration. This in-migration led to various problems such as the shortages of schools, housing, and jobs. In August, 1970, the Governor declared Jakarta to be a closed city. The purpose of this regulation was to prevent people from other areas, who did not have a permanent job and legal residence in Jakarta, from entering and settling there (Universitas Indonesia, 1974). Similarly, in Tanzania, persons in urban areas who cannot show that they are currently employed are returned to rural areas (Todaro, 1973). However, Tanzania found it difficult to keep such people on the farm settlements, and Jakarta's 'closed city policy' has been virtually abandoned.

South Africa effectively controls African rural-urban migration and also regulates the ethnic composition of its White areas, which comprise 87% of the country and include all the cities

and major towns. One aim of *apartheid* (the separate development of ethnic groups) is to confine Africans to their Homelands (or Bantustans) unless they are needed as migrant workers in the White areas. All adult Africans must carry a reference book (or 'Pass') which indicates whether they are eligible to live or work in the White areas. In many cases, although a man works in a White area, his wife is forced to stay in their Homeland (Bernstein, 1975). For security reasons, a pass system also exists for Arabs working in Israel (Black, 1978:404).

(c) In Malaysia, the Malays were concentrated in agriculture while the Chinese and Indians dominated commerce and industry. One objective of the Malaysian Government's 'New Economic Policy' of the 1970's was to give Malays greater opportunities in the modern sector. This means that the percentage of Malays living in the urban areas will increase when they became more involved in the manufacturing and commercial sectors of the economy (Malaysia, 1976:149).

Papua New Guinea provides an example of government control of circular migration. Until 1949 the recruitment of labour in the Highlands for work at lower altitudes was forbidden because of fears that the Highlanders would have little resistance to the diseases at the coast. Subsequently, from 1949 to 1974, there was a Highland Labour Scheme, managed by the government, which recruited male villagers to work for several years as unskilled labourers in the coastal plantations and gold mines (Ward, 1971; May and Skeldon, 1977:5).

Population Studies and Population Research

In conclusion, we examine the issue of the relationship between population studies and population policies. Certainly demographic theories influence population policies. This is especially true of theories concerning the links between population

growth and economic development. In the nineteenth century, the theories of Malthus (discussed in Chapter 2 above) had a clear influence upon British policies in India (Ambirajan, 1976). For many years the policies of the centrally planned economies or communist states reflected the Marxist view that under a socialist regime population growth would not constitute a problem, a view which was in fact based upon Marx's critique of Malthus (Sauvy, 1969:524). Although Stycos (1977:107) has declared that 'policy without theory is only for gamblers', many population policies are based upon commonly accepted beliefs rather than proven theories. It is also true that, at present, not enough is known about the causes of demographic behaviour for the fully scientific development of population policy.

Population studies still have a vital role to play (1) in determining what are the desirable demographic goals to be aimed for; (2) in deciding what are the most effective and acceptable routes to the achievement of these goals; and (3) in assessing the consequences of the adoption of individual strategies and the overall plan. Even before a population policy is implemented, an attempt should be made to examine both the demographic and the non-demographic consequences to be expected from the policy for there are countless interactions with social, economic and other variables. As Fawcett (1970:22) has said, ideally a population policy should constitute but a part of a co-ordinated program of planned social change; certainly it should take current social values into account. The integration of population themes into national development plans is evidence of an awareness of the need to integrate population and development policies.

The Executive Director of the UNFPA has referred to the 'take off' in population policy-making during the last 10 to 15 years. However, 'Modern population policy as an arm of

development policy is still too new to permit identification of trends or degrees of success' (United Nations Fund for Population Activities, 1978:11). The United Nations (1979a:14) has described population policy analysis as a new field of research. It is also presumably destined to be a growth field, for at present the UNFPA spends only about 2% of its budget on this topic (Stycos, 1977:110).

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APPENDIX

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Population Index

This journal is published quarterly by the Office of
Population Research, Princeton University, and its bibliography of
population literature is so comprehensive and useful that it deserves
a special mention. The bibliography is arranged by subject in 19
divisions, A to S, as follows:

DIVISION

SUBJECT CLASSIFICATION

- A. General Population Studies and Theories
- B. Regional Population Studies
- C. Spatial Distribution

- D. Trends in Population Size
- E. Mortality
- F. Fertility
- G. Nuptiality and the Family
- H. Migration
- I. Historical Demography and Demographic History
- J. Characteristics
- K. Demographic and Economic Interrelations and Natural Resources
- L. Demographic and Non-Economic Interrelations
- M. Policies
- N. Methods of Research and Analysis including Models
- O. The Production of Population Statistics
- P. Professional Meetings and Conferences
- Q. Bibliographies, Directories, and Other Information Services
- R. New Periodicals
- S. Official Statistical Publications.

The rules for classifying items by subject are given in Population Index Vol. 42, no. 2, April 1976. Most divisions are sub-divided into sections. For example Division A is sub-divided into A1, General; A2, Population Theory; A3, Interrelations with other Disciplines; and A4, Textbooks and Teaching Programs.

The Population Index has geographical and author indexes at the back. Let us consider the example of students who have two main interests: (a) the demography of Australia and (b) infant mortality. To keep up-to-date with the literature they would be well advised to check all citations on Australia listed in the geographical index, and to read section E3 which covers Infant and Childhood Mortality.

Apart from the current volumes of Population Index, in 1971 the Office of Population Research published Population Index Bibliography: Cumulated 1935-1968 for both the author and geographical indexes.

CONFERENCE PAPERS

Important collections of conference papers have been published by the IUSSP (International Union for the Scientific Study of Population) and by the United Nations. These include:-

IUSSP

1971

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COUNTRY DATA

A variety of countries is covered by the following series.

- (a) Country Profiles published by the Population Council.
- (b) Country Demographic Profiles published by the United States Bureau of the Census.
- (c) CICRED (Committee for International Co-ordination of National Research in Demography) Monographs which were prepared for World Population Year.
- (d) Country Reports produced by countries participating in the World Fertility Survey.

- (e) Country Monograph Series published by the Economic and Social Commission for Asia and the Pacific (ESCAP) from 1974 onwards.

Country statistical data is also available in the United Nations Demographic Year Book series which began in 1948. These Year Books, apart from various Tables published annually, also have Tables relating to a special topic. For example in the Demographic Year Book 1975 this was mortality statistics. With these Year Books it is essential to read the Notes which accompany the Tables.

In Division S of the Population Index, official publications are classified by country under the following broad geographical areas: Africa, America, Asia, Europe, Oceania, and the U.S.S.R. For each country the entries are arranged by topic in the following order: (1) Census Data, (2) Sample Survey Data, (3) Vital Statistics, (4) Yearbooks, (5) Other Primary Data.

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JOURNALS

<u>Name</u>	<u>Publisher</u>
Demography	Population Association of America
Demography India	Indian Association for the Study of Demography
Draper World Population Fund Report	Population Crisis Committee, World Population Fund, Washington, U.S.A.

<u>Name</u>	<u>Publisher</u>
International Family Planning Perspectives and Digest	Alan Guttmacher Institute (for the Planned Parenthood Federation of America)
International Migration	Inter-governmental Committee for European Migration, Brussels
International Migration Review	Center for Migration Studies of New York Inc.
Jimlar Mutane	Population Association of Africa, Nairobi, Kenya
Journal of Biosocial Science	Galton Foundation, Cambridge, England
Majalah Demografi Indonesia	Indonesian Demographic Association
People	International Planned Parenthood Federation
Population and Development Review	Population Council, New York
Populi	UNFPA, New York
Population Bulletin	Population Reference Bureau, Washington, U.S.A.
Population Bulletin	United Nations, New York
Population Index	Office of Population Research, Princeton University
Population Profiles	UNFPA, New York
Population Reports	George Washington University Medical Center, Washington, U.S.A.
Population Studies	Population Investigation Committee, London
Reports on Population/ Family Planning	Population Council, New York
Social Biology	Society for the study of Social Biology, U.S.A.
Studies in Family Planning	Population Council, New York

Two other important journals, Population (in French) and Genus (in Italian) both contain English summaries of their articles, and sometimes Genus features articles written in English. Because of the inter-disciplinary nature of demography, articles in a number of other journals are often relevant. These include Economic Development and Cultural Change, International Labour Review, Journal of Marriage and the Family, Milbank Memorial Fund Quarterly, Social Science and Medicine and Urban Anthropology.

NEWSLETTERS

Abortion Research Notes	International Reference Center for Abortion Research, U.S.A.
ADOPT	Economic and Social Commission for Asia and the Pacific, Bangkok
African Demography Newsletter	Regional Institute for Population Studies, Accra, Ghana
African Population Newsletter	Population Division, Economic Commission for Africa, Addis Ababa, Ethiopia
Asian & Pacific Census Forum	East-West Center, Hawaii
Asian-Pacific Population Programme News	Economic and Social Commission for Asia and the Pacific, Bangkok
Intercom	Population Reference Bureau
Population Newsletter	Population Division of the Department of Economic and Social Affairs, United Nations, New York.

Announcements of new periodicals, monographs, serials and newsletters specifically relating to population are given in division R of Population Index.

WORLD FERTILITY SURVEY

The World Fertility Survey (WFS) assists a large number of countries, particularly developing countries, in carrying out fertility surveys. At the end of 1976, 35 countries were firmly committed or actively participating in the WFS program. The various publication series of the WFS include :-

Annual Reports
Basic Documentation
Occasional Papers
Scientific Reports
Technical Bulletins.

The WFS also produces summaries of the reports of participating countries.

MISCELLANEOUS ADDITIONS

The following recent publications are also of interest :-

WORLD BANK
1979

World Atlas of the Child
Washington: World Bank

MCEVEDY, Colin and Richard JONES
1978

Atlas of World Population History
Harmondsworth, Middlesex: Penguin.

U.S. BUREAU OF THE CENSUS
1978

World Population 1977
Washington D.C., Department of Commerce.