

**AN HISTORICAL ANALYSIS OF CHANGES IN THE POPULATION  
PATTERNS OF INDIAN SOUTH AFRICANS: 1860-1991**

by

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*This thesis is dedicated to the Memory of my son.*

*David Marc Sugden*

## **ABSTRACT**

This study examines the quantitative aspects of the demographic characteristics of the Indian population of South Africa over a period of one-hundred-and-thirty years, from 1860 to 1991, within the framework of demographic transition theory. It informs us about a distinctive group of people within a country of mixed races and presents a hitherto uncollated historical account of the demographic changes of a small, specific, minority group, in a racially mixed society, within a developing country. Its emphasis lies in tracing the historical evolution and development of a demographically unbalanced population to one that today may be regarded as falling within the general demographic classification of an 'ageing' population. It is set within the framework of demographic transition theory and a discussion of the formation of this theory and its usefulness today is included in this work. Changes in the vital rates of mortality and fertility are examined in detail and an in-depth look is taken at changes in the age and sex structure over time.

Apart from a detailed account of the patterns and numbers of indenture during the years 1860 to 1911, the core of the analysis is contained in three major chapters dealing with population structure, mortality and fertility. The bulk of the primary data was obtained from the results of twelve censuses between 1891 and 1991, inclusive.

During the relatively short time-span of Indian settlement in South Africa, considerable demographic changes have taken place in this population. This study traces the

progression of the population far beyond its original, unbalanced structure, which arose from the practice of indentured labour. After this practice was abandoned, growth and structural change took place almost entirely by natural increase, the balance of births and deaths. The population passed through the youthful, expanding stage of development to a structure that today resembles, in many ways, those to be found in most developed, industrialised countries of the world – with a slow rate of growth, a decreasing proportion of children under 15 years of age and an increasing proportion aged 60+ years.

The social and economic challenges which face the Indian community today are very different from those encountered in the previous 130 years of settlement in this country and can be directly related to the extensive demographic changes that have occurred over this period. These demographic changes and their occurrence over time form the essence of this treatise.

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## **PREFACE**

The work presented in this thesis represents original analysis done by the author over several years under the auspices of the School of Life and Environmental Sciences, University of Natal, Durban.

These results have not been submitted in any form to another University. Where reference has been made to the work of others it has been duly acknowledged.

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 RATIONALE**

This study is a quantitative, historical analysis of the innate demographic characteristics of the Indian population as a minority group in South Africa and the changes that have occurred within this group over time. My interest in this topic was aroused while undertaking research on a three year fellowship for The Natal Town and Regional Planning Commission into the potential Indian labour force of the Pietermaritzburg-Durban region (Sugden 1978). While looking for background information on various demographic aspects of this population, it became apparent that several gaps existed in this field. No detailed assemblage of historic demographic data concerning Indian South Africans had been undertaken, and no systematic analysis of their demographic evolution, from a male-dominated migrant labour force to an ageing population, existed.

I found the interesting and sometimes dramatic demographic changes of this population in the short period of their settlement in this country (since 1860) worthy of detailed analysis. It appeared that this small population group (which never exceeded one million persons in total until 1996) had followed a pattern of structural change similar to that expounded by the demographic transition theory (Chapter 2). Tracing the historical demographic development of Indian South Africans thus provides not only a definitive study of rapid structural change in the population over time, giving insight into a unique phase of South African demographic history, but also illustrates the flexibility of this small population in its ability to adapt to changing economic and social circumstances within the sphere of the broader total South African population.

Arising out of observed changes in the population structure and demographic indices, questions arose as to whether this population could be expected to, or did in fact, follow the several stages of the demographic transition theory, (as detailed in Chapter 2), given its unusual beginnings and isolation within the country, and what time period would be required to overcome this unbalanced beginning. Furthermore, would conventional methods of analysis yield meaningful results when applied to a minority group numbering under one million persons for most of its history in this country?

Originating in a developing country, the original Indian immigrants undertook (voluntarily, and for a variety of reasons) to be transferred to a developing country with Western-style cultural and economic values, where their labour skills were required. Since the majority then chose (voluntarily) to remain in their new country, a process of social, economic and demographic change occurred, as they adapted to the Euro-centric way of life in South Africa, whilst living under the harshly isolationist policies of 'apartheid' (separate development) prevailing in the country for much of the twentieth century (the first democratic elections in South Africa took place in 1994).

In the following chapters, this population will be shown to have become restructured from a rapidly expanding population typical of a developing country to one typical of Western industrialised nations (with an increasing number of elderly people and a relatively small proportion of children - an ageing population). This has occurred amongst the study population without outside interference in terms of governmental anti-natality policies placing a limit on family size (as occurred in China in the 1960's - Kirk 1996), but rather as a progression, over two or three generations, towards what the majority of Indian South Africans appear to have perceived as a more desirable state in modern times. The

years from 1860 to 1991 form an interesting and unique study period of development and change amongst the Indians of South Africa. Circumstances have made it possible to isolate this segment of population for purposes of analysis, and trace its development and changes over many decades and through several generations. The political situation in South Africa in the past (pre-1994), and the implementation of the policy of apartheid in particular, tended to keep this population contained within racial, social and spatial boundaries, and this has contributed to the preservation of its unique mixture of both eastern and Western characteristics. Such a situation is not likely to occur again in this country or indeed anywhere else in the world.

## **1.2 AIM AND OBJECTIVES**

The aim of this thesis is to undertake an historical analysis of changes in the population patterns of Indian South Africans for the period 1860 to 1991. The objectives are threefold:-

- i) To undertake an historical, statistical analysis of recorded demographic data concerning South Africans of Indian origin, covering the specified time period of 1860 to 1991.
- ii) To compile an account of the changes in population structure of this minority group during this period, and to interpret the results based on recognised demographic techniques, as a contribution to the understanding of the complex demographic patterns found in South Africa.
- iii) To apply the theory of population transition as a framework for understanding the patterns and changing structure of this population.

The present study of the Indian population of South Africa thus arose out of the perception of a unique opportunity to examine the demographic factors that have had a profound effect on a small, distinct population group within a multi-racial and multi-cultural country. Considerable and rapid change in structure, and adaptability to imposed circumstances under the forces of modernisation, characterise this population. This study highlights the speed of structural change that is possible where a small population is involved - an investigation of a minority group under restrictive legislation (apartheid) within a developing country, forming basically a closed population. It tests the transition theory of demographic progression (from a situation of high fertility and high mortality to one where both fertility and mortality reach low, stable levels), as applied to a small migrant population. The steps and type of structural adjustment that were necessary before any comparison with recognised stages of demographic progression could be made are investigated.

In order to undertake such an analysis, a multi-disciplined approach had to be used. Thus the data and approach have a strong demographic and statistical emphasis, while historical factors have been accurately recorded. The changing political regimes over time have played a large part in both the initial immigration patterns and the isolation of this population, both under the British colonial government of the early years and later the harsh apartheid legislation of the National Party government. Concepts derived from both the sociological and economic disciplines have been applied in the following analysis.

Thus it can be seen that this thesis does not neatly fit into any one disciplinary framework but requires the reader to approach it with an open mind, and to extract those aspects of information relevant to their own research and interest. Inevitably, in today's society, race

is a sensitive issue, and criticism may be levied at the choice of topic dealt with in this thesis. Tinker (1977) however has noted that colonial and post-colonial society has often been explained by social scientists in terms of racial difference. The objective of this thesis has been to assemble a comprehensive, statistical, historical account and interpretation of the development and changes in population structure that occurred over a period of 130 years in a specific minority group in South Africa.

The analysis presented in the following pages, a strictly localised account of a unique population, has been undertaken within the framework of accepted demographic methods of investigation (see Chapter 3). Demographic transition theory was chosen and tested as the conceptual framework within which this analysis was undertaken. A detailed and comprehensive discussion of this theory is undertaken in Chapter 2, together with arguments for and against its continuing value. The several stages contained in the transition model are referenced and applied throughout this study, in order to understand and analyse changes in the structure and nature of the study population and to relate these findings to patterns elsewhere in the world. The historical settlement patterns are investigated and population growth and structural change are traced over the study period of 130 years. The vital demographic elements of mortality and fertility are dealt with in depth in order to document the development and transition of this population from a male-dominated indentured labour force in the nineteenth and early twentieth century, to an ageing population in the closing decades of the twentieth century. It is felt that the analysis presented in the following pages, covering the period 1860 to 1991, makes a contribution towards an understanding of the historical, structural patterns of the Indian population within the overall pattern of demographic complexity of the total population of South Africa.

### 1.3 THE STUDY POPULATION

Little attention has been given by analysts to the *historical* demographic development of the South African Indian population. The present day composition and structure of this population have arisen in spite of, and because of, their past history in this country. The ability of the Indians to adapt and change, both socially and culturally, the various historical practices and aspects of their way of life (see Cumpston 1957, Bhana and Brain 1990), has enabled them to become an integral part of a broader society, operating as a distinctive, minority group within the country. The opportunity to undertake an *historical* study of the population patterns and related changes in population structure of this distinctive element of the South African population has not been recognised or investigated in detail to date.

The early Indian population initially shared many socio-demographic similarities with the indigenous population of the area, such as the perceived desirability of large families, early marriages and relatively low levels of education, particularly in the case of females (Bhana and Brain 1990). Exposure of this immigrant population group to Western cultural, economic and social patterns introduced into South Africa by earlier European immigrants and settlers, and the diffusion and adoption of many of these new ideas, brought about rapid changes in the demographic structure of this population, as detailed later in this thesis. Contributing to this was also the better and more accessible health and medical infrastructure of their adopted country and the opportunities for economic advancement in the developing Colony of Natal (Cumpston 1957, Bhana and Pachai 1984, Bhana and Brain 1990). In a relatively short time span, the Indian population underwent demographic and social changes that were not evident in the indigenous population at that time. This adaptability led the Indian population rapidly to the path of declining fertility

and improved economic status. It brought them, demographically, to near parity with another minority group in the country, the descendants of the original settlers from Europe, whose demographic patterns resemble those to be found in most of the developed countries of the world.

Thus it can be seen that considerable demographic interest is embedded in this population group. Within the second half of the twentieth century, it changed from a youthful population, with high birth rates and a large proportion of children, to what can be termed an ageing population. It has undergone considerable alteration in the face of the processes of urbanisation and industrialisation to become, in a relatively short period of time, a vital and unique part of the South African demographic picture. The proportion in the younger age-groups decreased in the last years of the twentieth century, while a steady increase in the older working and elderly age groups, both numerically and proportionately, occurred. The population structure is approaching that to be found in the developed countries of the world, where rapid ageing is taking place. Present-day demographic characteristics of the study population are far more in keeping with those of, for example, North America (where similar demographic changes took a great deal longer) and other demographically mature populations of Europe, than with the characteristics of the 'mother country' of India (the origin of the majority of South African Indians), where the population is still in the rapid expansion stage, with fertility rates (although declining) still at a high level.

#### **1.4 STRUCTURE OF THESIS**

Data in this thesis has been arranged as a series of chapters, dealing first with population theory and the framework within which this thesis has been set, followed by analysis and

description of the early migration patterns and numbers of the Indian population, and its historical growth and structural change. Detailed analyses of the vital demographic elements of mortality and fertility are then undertaken.

Chapter 1 deals with the rationale behind the work presented here, and the aims and objectives of this study are detailed. A brief look is taken at the study population in terms of its position within the spatial framework of the broader South African population paradigm.

This is followed by Chapter 2 which provides the theoretical framework within which this investigation was undertaken. Demographic transition theory is discussed in detail and arguments for and against it are presented. The level of acceptance of transition theory today is critically investigated. The importance of both the mortality and the fertility 'transitions' are discussed in detail and their relationship to each other and to social and cultural factors investigated.

Chapter 3 deals with the collection and assembling of data and the methodology used for analysis. Sources of data are detailed and problems of accuracy and reliability of early historic information are discussed. The nature of population studies in South Africa is briefly mentioned and related to the complex racial structure that is found in this country. An analysis and discussion of various problem areas such as race classification, census undercount and age-sex reporting is undertaken. Demographic indicators, terminology and various measures used in the analysis are defined in order to lend clarity to their usage in this thesis.

This is followed by Chapter 4, which supplies the historical background to the practice of indenture, the immigration of Indians to South Africa and the patterns of population growth that have developed over the years. The focus in this chapter is on the historical demographic patterns of Indian migration to and from South Africa and reference is made to the various laws and acts that controlled and influenced this movement from its inception in 1860. The volume and demographic structure of early immigration is analysed in some detail, while the spatial patterns of settlement and migration that occurred from the early beginnings of an indentured labour force to the present distribution of the population are traced and discussed. Internal migration and urbanisation of the population are investigated within the historical context of this thesis.

In Chapter 5 the overall age-sex structure of the population is investigated and described for the twelve census years for which data on Indian South Africans was available, spanning the study period 1860 to 1991. The primary data of population numbers by sex and age category were obtained from published results of these censuses, and intercensal trends and developments are noted. The primary numerical data for each census is presented firstly in *tabular* form, together with calculated percentage distribution of each age group by sex. From the tabulated census results two illustrations are then plotted for each census year (with the exception of 1904 for which no breakdown of the Indian population by sex and age category was available). The first is *simple line graphs* showing the distribution by sex and age of the population at each census date. This is followed by *population pyramids* (histograms or age-sex pyramids) depicting the same population characteristics in an entirely different, but visually effective, form. These graphics form an interesting visual illustration of change with a strong impact on the understanding of the changes that occurred in the population structure over time.

The population recorded in the census years is then grouped into three major age groups viz. children under 15 years of age, the adult working population between the ages of 15 and 59 years, and the elderly of the ages 60+ years, and the trends and changes that occurred within these groups over time is discussed. Further demographic characteristics of the population that are discussed in this chapter include the overall age-sex ratios, dependency ratios and median ages. Chapter 5 closes with a discussion of population ageing as being an important trend amongst the study population in the closing decades of the twentieth century.

The vital aspects of mortality and fertility, which influence population growth and bring about structural change, are investigated in detail in the next two chapters. The patterns they form are traced through more than a century, since the arrival of the first Indian settlers in South Africa in November 1860. Comparisons of vital demographic rates are made with those of other population groups within South Africa, with the rates of developed countries, and also with those of India, as representing the historical 'mother country' for the large majority of South African Indians. The changes that have taken place in these rates are presented in tables and in graphical form, where applicable, to illustrate the historical development of the population and its change and progression (in terms of the transition model) over time.

The in-depth look at mortality in Chapter 6 is undertaken in terms of the crude death rate, deaths by age and sex, infant mortality and maternal mortality. Graphical illustrations are presented where possible, related to the availability of appropriate data. Comparisons are made with past levels in India, with developed countries and with the situation of other races within this country. The chapter closes with a discussion of life expectancy amongst

the local population and a comparison with past, present and expected future trends in the broader world arena.

In Chapter 7 fertility of the population is traced over time and the demographic importance of these changes is discussed. Comparisons are again made with the situation in India and with the historical levels and trends of several developed nations, as well as with the situation of the other race groups of South Africa at various times. Measurements of fertility such as crude birth rates, and general and age-specific fertility rates are tabulated and discussed, while the sex ratio at birth is investigated.

In the concluding chapter the demographic highlights of change and development that have occurred amongst this population are recalled and placed in an historical progression of evolution over the one-hundred-and-thirty years of investigation. The 'goodness of fit' within the framework of transition theory is assessed and discussed and the demographic status of Indian South Africans as an urbanised, ageing population is confirmed.

## **CHAPTER TWO**

### **THEORETICAL FRAMEWORK**

#### **2.1 INTRODUCTION**

This chapter deals with the methods and type of analysis used to promote understanding of the various demographic measures and patterns used in this thesis. Although the use and application of these theories to certain aspects of the South African population may be relatively recent they have been well tested, over a long period of time, in most of the developed nations of the world. Refinement of theory has continued as populations are continually changing in their structure, albeit over extended periods of time, and theories and models periodically undergo additions and revision as researchers continually strive to maintain realistic and workable hypotheses. Demographic transition theory has undergone such development and a discussion of this theory, forming the framework of the analysis of population contained in this thesis, forms the bulk of this chapter.

#### **2.2 THE NATURE AND THEORY OF POPULATION STUDIES**

Population studies may be said to involve the utilisation of official statistics and independent research as primary sources of data, and the application of statistical methodology to this primary data for the determination of quantitative facts. Analysis of this data involves the calculation of recognised demographic measures (such as general and age-specific fertility and mortality rates, and expectation of life), their comparison, and the estimation of those figures that are not available. Population studies encompass a wide range of issues and topics, including such aspects as the effects on society and economy of different levels of immigration, reconstructing past population levels and

components of change from fragmentary data, explaining the transition from high to low birth and death rates in specific historical populations and examining population ageing and its related economic consequences. The techniques of analysis have been well documented over many years in several United Nations publications (e.g. 1951, 1953) and by researchers such as Hauser and Duncan (1959), Smith (1960), Robinson (1964), Benjamin (1968), Bogue (1969), Coale (1972), Spengler (1978), Woods (1982), Day (1983), and Rives (1984). Extensive use has been made of the information obtained from these combined references in the methodology employed and the analytical approach adopted in this thesis.

The analysis and interpretation of basic demographic data obtained from official statistics can assist many disciplines and official institutes in the planning and implementation of a wide range of social and economic policies. Appropriate policies and programmes can be formulated to accommodate the population in such areas as education, housing, health services and geographical distribution, as well as in a productive capacity, if the likely changes in demographic composition and size are known.

Recent valuable contributions to demography and related sciences by researchers in the social and economic fields have given new insight into some crucial aspects of the interplay of demographic variables with social and economic factors, but have also led scholars to be aware of the still considerable shortcomings of knowledge. It has not been possible, for instance, to determine precisely the relative influences of different economic and social factors which contributed to the long-term decline of fertility in Europe, nor to explain satisfactorily the fact that fertility differences exist among culturally separate population groups within one country (as occurs in South Africa). The conditions

conducive to fertility decline within developing countries appear to be wide and varied in their application and interpretation. Influences such as the level and type of education required to initiate important changes in cultural patterns of fertility (Kekovole 1998), the motivation operating at an individual level as well as at a community and national level, the economic incentives and social benefits of such changes, have no universal measure.

Coleman and Schofield (1986: 4-5), maintain that “Demography without numbers is waffle, an amiable kind of social natural history”. They liken demography to a sphere with a hard mathematical core. This core is the mathematical theory of statistics and the dynamics of population (vital rates such as age-structure dynamics, growth, techniques of measurement, analysis and substitution) which does not touch the surface of the real world directly. This happens only when the population is made specific. An outer structure of theory and fact is then necessary to explain and predict that population’s response, through the specific agencies of independent biological, social and economic causes and consequences of population trends. An analysis of the fundamental human events of births and deaths can be analysed interchangeably by ideas that may draw on sociology, geography, history and other subjects.

Since 1950 there has been impressive growth in knowledge about human populations and related social and economic developments in developed countries, upon which policies and programs have been initiated. Despite significant advances, however, gaps still exist in the knowledge of demographic relationships with economic and social factors. Such factors as inadequacy of available statistical data, over-simplification or obsolescence of demographic theory, the limited ability to predict demographic consequences of particular economic and social changes and to trace the interrelationship of these changes, all

contribute to the complexity of the subject. One of a few attempts to bring together ideas in demography – Sauvey’s *General Theory of Population* (1969, translation 1974) – is referred to by Coleman and Schofield (1986: 4) as “an adventurous compilation of generalizations on a broad front, but there is no central paradigm which links all the ideas together”.

### **2.3 DEMOGRAPHIC TRANSITION THEORY**

“Demography is a science short on theory, but rich in quantification. In spite of this it has produced one of the best-documented generalisations in the social sciences: the demographic transition” (Kirk 1996: 361).

What is demographic transition theory? It began as a classification of populations differentiated by different combinations of fertility and mortality and basically states that societies that experience modernisation, progress from a regime of high fertility and high mortality to a state of low fertility and low mortality. It was developed in an attempt to formulate a generalised explanation, from actual historic experience, of the processes of mortality and fertility decline in the countries of Europe.

Contrary to many other theories of population, the theory of demographic transition derives from actual historic experience - it describes fertility and mortality trends in nineteenth- and early twentieth-century Europe as they were understood when the model was first developed in the first half of the twentieth century. Although based on a summary of European population change in the last two hundred years or so, it underpins many assumptions about population change elsewhere in the world.

It is not a set of logically interrelated propositions from which empirical statements can be formally derived and tested, but does include explanations of observed trends. It also includes an element of prediction - since it assumes other regions of the world, where population growth rates are still high, will follow a similar pattern of *change in relationships between births and deaths*, “.... although this is highly problematic” (Sarre and Blunden 1995: 112). Kirk (1996: 361) wrote “For some, transition theory lies at the centre of modern scientific demography. To others it is a non-theory to be dismissed as an unproven generalisation”.

### 2.3.1 THE HISTORY OF TRANSITION THEORY

Several theories of population growth and structural change have been postulated over the years since Malthus first presented his theory of simple geometric population growth, limited by the means of subsistence (Malthus 1798). His work has continued to stimulate demographic theorising and research ever since. The theory of demographic transition, in which several distinct stages of change are recognised, arose to explain observed divergences from Malthus’ simple explanation of a population-sustenance relationship. As a theory, it was not formally propounded until the anomalous demographic trends were virtually complete in north-western Europe. Theory thus followed in the wake of empirical observations of population trends observed in European nations (see Beaver 1975, and Sarre and Blunden 1995).

By 1800, mortality had fallen substantially in the more developed areas of Europe (generally in the north-west). This contributed to a slow but persistent growth of population, as it was some years before natality reductions became obvious. By 1900, however, birth rates over most of Europe were dropping. “In its most elementary form, the

theory of demographic transition does not try to explain these trends, but simply summarises them and labels the resulting empirical generalisation the *demographic transition*” (Beaver 1975: 3). The basic assertion of the theory is that a substantial mortality decline invariably precedes and is inevitably followed by a major natality decline. The tendency of mortality decline to precede natality decline is widely, but not universally, accepted (Stolnitz 1964).

Probably the first twentieth century demographer to attempt a comprehensive description of the demographic stages experienced by a population over time was Landry in his publication *Les trois théories principales de la population* in 1909. In 1929 an American demographer, Thompson, published a paper (later expanded upon in *Population Problems*, 1935) in which he provided what proved to be the first formulation in the English demographic literature of transition theory, although he did not use the word transition or refer to the process as a theory. He grouped the countries of the world into three broad groups with distinctive birth and death rates. The first group were those with low birth rates and low death rates, and thus, with falling rates of increase, were facing potential population decline. This group included countries of Western Europe and overseas countries settled by immigrants of European origin. The second group consisted of countries where death rates had declined earlier and more rapidly than birth rates, (which, however, were also declining), thus undergoing very rapidly growing populations. Included here were countries of eastern and southern Europe. The third group had both high birth rates and high death rates and were classified as ‘Malthusian’ - possibly containing up to 70% of the world's population (Thompson 1929). Landry in his later works (1934 and 1949) also postulated three major groupings of population based on the levels of fertility and mortality prevailing in those countries where data was available. He

became the first to make use of the term 'transition' in his book *La Révolution Démographique* which was published in 1934. Landry's basic ideas were the same as those presented some years earlier in the paper by Thompson, although formulated independently.

Other mid-twentieth century demographers such as Fairchild (1939), Notestein (1945) and Davis (1943) added their views to the concept of transition theory and refined and developed a widely accepted (though still contentious) transition model of population progression. From these and other similar observations in the following decades, a more abstract conception of transition theory arose. In all cases the demographic transition was associated with the process variously termed 'modernisation', 'development', 'industrialisation', or other similar term, representing the transition from a traditional agrarian economy to a modern urban society.

The accumulation and abstraction from work by Notestein in the early 1940's led to the formulation of a 'demographic transition theory' by the Office of Population research in Princeton (Notestein 1945), contending that populations historically tend to pass through somewhat well-defined stages. The basic theory has been added to and adapted in subsequent years as observations of population behaviour and trends have been examined and documented over time. Notestein's 1945 publication is regarded as the first definition of transition theory, although he did not at first use the term transition. He postulated that societies that experience modernisation progress over time from high fertility and high mortality to low fertility and low mortality.

### 2.3.2 STATEMENT OF TRANSITION THEORY

A comprehensive generalisation of demographic evolution favoured by several researchers is based on the early works of Thompson (1935) and Notestein (1945) and refined in the late 1940's into five stages, with a sixth stage being proposed by Davis in 1950.

While the theory suggested that fertility would stabilise at around replacement level, resulting in zero or stable population growth, fertility in all European countries (with the exception of Albania) has now fallen below replacement level (Sarre and Blunden 1995, and United Nations World Population Data Sheet 2000). If this continues, then population numbers will inevitably decline. In the nineteen-eighties, Bourgeois-Pichart (1986) observed that Europe, and more generally the industrialised countries of the world, appeared to be in the midst of a hitherto unforeseen complex process of demographic evolution that cast doubts on the basic principles generally accepted until recently by a large majority of students. “ .... well before the close of this (the twentieth) century, the population ‘implosion’ may replace the population explosion of today as the main subject of concern” (Bourgeois-Pichart 1985: 24).

Following the observation of these disturbing trends in several parts of Europe and elsewhere, a seventh stage has been added to transition theory. This stage in population development has been described as ‘the second demographic transition’, or as ‘beyond the demographic transition’ (Van de Kaa 1987: 4-5, and Sarre and Blunden 1995: 128).

The demographic transition theory, a seven stage model as it now stands, can be regarded to consist of the following stages:-

1. High birth rate and high death rate (high stationary stage)
2. High birth rate and declining (though still high) death rate (early expanding stage)
3. High (though falling) birth rate and already fairly low death rate (late expanding stage – the beginning of modernisation and economic development)
4. Declining or low birth rate and fairly low death rate (low stationary stage with modernisation and economic development well advanced and a stable or slow-growing population)
5. Low or fluctuating birth rate and low death rate (declining stage).
6. Relatively low and stable birth rate above the level of mortality, permitting a significant rate of increase.
7. Relatively stable mortality but ever-decreasing fertility, which carried to its logical conclusion, will result in the extinction of the species (the ‘second demographic transition’)

Since transition theory deals with the *dynamics* of population change, based on the broad *relationships* between mortality rates and fertility rates (a two-fold relationship between a mortality transition and a fertility transition, occurring independently but also at some stages concomitantly, over a greater or lesser period of time), several identifiable population *structures* will emerge related to the stages of the theory. The proportion of total population by age found at each stage and presented in the following paragraphs are obtained from the 1973 United Nations publication *The Determinants and Consequences of Population Trends* on pages 58-59 and 264-266.

Populations in stages one, two and three will all have a high proportion of the total population under the age of 15 years, around 40% to 45%. In stage one, however, the potential for rapid growth is offset by the accompanying high death rate, particularly among children, giving rise to the term 'high stationary stage', with a somewhat youthful structure. Stages two and three are times of rapid expansion as mortality rates are declining while fertility rates tend to remain relatively high (upward of 30 births per 1 000 population), or show only a slight decline. The result is a typically 'progressive', 'youthful' population structure, with a large proportion of children and relatively few aged persons.

Stage four represents the low stationary stage of population development, with a moderate proportion of children and an increase in the proportion of older adults. The birth rate has declined considerably and is only slightly above the death rate, resulting in a low rate of increase. At this stage the start of population 'ageing' can be observed.

Carried beyond stage four, a population enters the declining or 'regressive' stage. The proportion of aged persons reaches around 30% and the average age of the workforce increases. This type of structure is being approached in some countries in Europe (Belgium, Greece, Italy and Sweden) and in Japan, where 17% of the population in 2000 was older than 65 years, while in Britain, France, Germany and Spain this proportion was 16% (World Population Data Sheet 2000). The most characteristic feature of the dynamics of the age structure (of the population of Europe) is the accentuation of ageing, with the proportion of old people steadily increasing and the proportion of children decreasing. In many countries less than a quarter of the population were children under 15 years of age in the year 2000 - Sweden, Britain, and France 19%, Belgium and Switzerland 18%,

Austria, Hungary and Portugal 17%, Germany, Greece and Japan 16%, Italy and Spain 15% (World Population Data Sheet 2000).

Stages six and seven of the transition model are those that are causing demographers to be faced with hitherto unimagined problems, as stage six with its increase in fertility levels is not readily observed at present, while stage seven appears as a real possibility in some countries (Van de Walle and Knodel 1980, Bourgeois-Pichat 1985, Preston 1985). Since the late 1960's fertility rates in many European countries have fallen steeply (Council of Europe 1978), and in some actual decreases in population numbers have been recorded.

### **2.3.3 CRITIQUES**

Transition theory has proved to be a topic that has been widely debated and discussed among demographers in recent decades. The European experience, while conforming to the most general predictions of the transition theory, does reveal certain problems related to theoretical, methodological and empirical issues. It does not state clearly what aspects of development should be measured nor how long time lags between declining mortality and declining fertility should be. Although the theory does treat mortality in a special way, most theoreticians of the past assumed that mortality decline was closely linked to economic development.

Further criticism of the theory has been on the grounds that it gives too much attention to socio-economic factors as causes of the decline and insufficient attention to cultural factors (see Day 1968, Goldscheider and Uhlenberg 1969, Guzman 1996). Assertions such as mortality decline always preceding fertility decline, the stress on socio-economic modernisation at the expense of cultural or linguistic factors, and the accuracy of its

interpretation of European demographic history, have been challenged by independent demographers. Individual researchers have had to make their own assumptions, and transition theory can be made to appear either confirmed or refuted depending upon how exactly it is used (Beaver 1975). Kreager (1986: 9) argues that population development is critically mediated by cultural systems, and that population theory must consequently pay careful attention to the cultural and institutional context. He notes that some population theories in the past, including transition theory, have been seriously flawed by the dismissal of the importance of social and personal life, or culture.

While the theory may have been widely adopted, some questions have been raised regarding the strict validity of its application to all nations, and several demographers have been dubious about making predictions for 'outside-Europe' societies based on the European experience (Kirk 1996). Knodel and van de Walle (1979) emphasise the complexity of the European experience and the differences between nineteenth century Europe and the developing countries of today. They recommend caution in such comparisons and note that often socio-economic factors seem less closely tied to regional fertility patterns than linguistic, cultural and ethnic differences.

However, when transition theory is applied to the experiences in countries outside of Europe, including developing countries, the conformity is impressive. In every instance mortality has declined first and later has been followed by declining fertility, with the result of considerably accelerating population growth for some years – the transition being much more rapid than it was in Western Europe (Kirk 1996). Transition has occurred under strikingly diverse socio-economic conditions, with fertility decline taking place under a wide variety of social, economic and demographic conditions. In several cases the

issue of cultural setting has been observed to influence the onset and spread of fertility decline independently of socio-economic conditions (see Kirk 1971 and Knodel *et.al.* 1987). Oeschli and Kirk (1975) in a study of 116 countries with populations over one million, found a clear overall pattern of declining natality as economic well-being increased and they contended that both mortality and fertility levels must be correlated with the level of modernisation, but that social factors have their part to play in the final spread and speed of fertility decline. They put forward the proposition that:-

- 1) Development or modernisation is a multi-faceted, but holistic process, consisting of a number of inter-related aspects, touching and profoundly modifying all aspects of life.
- 2) Mortality and natality declines are part of the very process of development and are themselves sensitive indicators of the level of development.
- 3) Mortality declines are found at early stages of development while natality declines are found only after a certain level of development has been reached.

The progression from relatively high birth and death rates in the past to a state of relatively low birth and death rates some years later was usually found to be concurrent with the economic development of those countries. Kammeyer (1986: 222) points out that

“The transition therefore relates not only to changes in vital rates but also to changes in economy, from a primarily agrarian to a more urban, commercial, and eventually industrial, society. The demographic/economic transition is referred to as a theory because the economic change is believed to account for the changes in the demographic rates.”

In 1975 Beaver noted that there had been a resurgence of interest in transition theory due to an unprecedented increase in world population, due largely to declining mortality in developing countries, where conditions seemed to resemble in certain respects those

which preceded the massive natality decline in Europe (Beaver 1975). Coale two years earlier had expressed the same opinion: "... despite many objections, qualifications and doubts about the demographic transition, the force of the generalisation remains" (Coale 1973: 69). One of the persistent problems of transition theory is that various authors make essentially similar arguments but stress different points or use different terminology. Coleman and Schofield (1986: 10) feel that "An approach is needed which treats the social context not merely as a descriptive background but as an integral part of the theory of population processes". However, the many different approaches tend to lead to somewhat similar formulations and agreements on the link between mortality and fertility declines.

#### **2.3.4 NOTABLE EXAMPLES OF FERTILITY DECLINE**

Two areas (amongst many) which are worthy of note are Thailand (Knodel *et. al.* 1987) and Latin America (Beaver 1975, Oeschli and Kirk 1975, Guzman 1996), representing, respectively, an eastern and a western developing context.

Thailand is among the growing number of countries both in the eastern and western hemispheres that have moved in relatively recent years from an early stage of demographic transition, characterised by falling mortality in the presence of high, relatively stable fertility, to a later stage in which fertility also started to decline (Knodel *et.al.* 1987). This is illustrated by the drop in mean family size from five or six children a generation ago to the present two to three child family preferred and attained by couples in 1995, with a TFR (2,2) just above replacement level, and a further fall of the TFR to 1,9 in the year 2000 (World Population Data Sheet 1995 and 2000), which is below replacement level and is causing some concern.

The explanation given by Knodel *et.al.* for the timing, pace and extent of Thailand's fertility decline include:- rapid and fundamental changes that caused couples to view large numbers of children as an economic burden; a cultural setting that was relatively conducive to the acceptance of deliberate fertility regulation and limitation of family size; a latent demand for acceptable fertility control; and a National Family Planning Scheme that provided awareness of and access to effective and acceptable means of fertility regulation.

However it is important to realise that in any society, the impact of social and economic change on reproductive behaviour is mediated through the cultural setting (Knodel *et.al.* 1987). The one readily identifiable group that has remained resistant to the changing reproductive patterns in Thailand is the small Muslim minority (Knodel *et.al.* 1987). One of the more important barriers to fertility decline characteristic of many developing societies is the control or influence over reproductive decisions of younger couples by parents or relatives. In the case of Thailand, the interaction between socio-economic change and an organised program of fertility control, both operating within a cultural setting conducive to reproductive change and in which a latent demand for birth control already existed, resulted in a rapid and extensive decline of fertility within this receptive setting. "Thailand has achieved a remarkable transformation in reproductive behaviour in a very short period of time" (Knodel *et.al.* 1987: 194).

In the case of Latin America, Beaver (1975) found that the rate of increase in economic development and the rate of decrease in mortality had accelerated over time, these rates of change being unprecedented by historical standards. In parts of the area studied, he found that the accelerating rates of development and mortality reduction had been followed by

accelerating and extremely rapid rates of natality decline. In Colombia, following a community based programme to provide family planning services, initiated by a group of medical practitioners but later supported by the government, total fertility fell from almost 7 during the early 1960's to 2,7 in 1995 (Kirk 1996), rising slightly to 3,0 in 2000 (World Population Data Sheet 2000).

Fertility decline, once started in tropical Latin America, quickly spread to nearby countries, independently of their level of socio-economic development. In Mexico the government launched a national family-planning scheme in 1972 and the birth rate fell precipitously from around 7 in 1972 to 3,2 in 1992 (Kirk 1996) and 2,7 in 2000 (World Population Data Sheet 2000). This acceleration Beaver (1975) regards as an extension and amplification of trends of social and demographic change first noticed in comparing northwest, central and eastern Europe. He states that the diffusion of ideas and aspirations and the openness and exposure of cultures to modernising influences strongly affects the timing of socio-economic development, mortality decline and fertility decline.

### **2.3.5 THE MORTALITY-FERTILITY LINK**

Transition theory has often come to mean the fertility transition alone rather than 'joined' to the other important transition, that of mortality. This may be partly due to the easier explanation of the causes of mortality decline and the easier identification of the factors involved in the general improvements in the lives of the people, often considered non-problematic. In the latter part of the eighteenth and first half of the nineteenth centuries the establishment of the public order and the modern state directly reduced deaths from wars and feuds. Improvements in the infrastructure and commerce, reductions in famines and improvements in agriculture, a knowledge of hygiene, improved nutrition, safe water

supplies, food hygiene, housing, sanitary conditions, control of infectious and contagious diseases and medical intervention probably all played their parts (McKeown *et.al.* 1972). The removal of disease-carrying elements from the environment of a population will result in a decline in the death rate. This requires no personal or conscious choice, decisions or changes in people's lives, and in this respect is quite different from the personal involvement of individuals necessary in fertility decline (Kammeyer and Gevin 1986, and Kirk 1996). The discoveries of medical researchers such as Pasteur and Koch caused reductions in child and later infant mortality, the latter decline contributing notably to the overall decline in mortality and an increase in life expectancy. Fleming's discovery of penicillin initiated a dramatic reduction in epidemic and contagious diseases. Reduced morbidity and mortality and a healthier population are major contributors to a rise in living standards, which are often regarded as a major factor in fertility decline. Reductions in morbidity and related mortality are reflected in improved productivity and economic development.

In the classic view of the demographic transition, a decline in mortality is matched by a later decline in fertility until a rough balance is reached around the replacement level, as detailed earlier in section 2.3.2. From this it is frequently inferred that mortality decline has some influence on fertility decline, though the importance of the former is variously rated (see Carlson 1966, Schultz 1973, Bulatao and Elwan 1985, Kirk 1996). One major point of agreement, however, is that socio-economic development is the basic cause of natality decline. Beaver (1975: 9) stated that "..... the only clear implication of the (transition) theory is the prediction that socio-economic development will lead to natality decline, and that this will tend to occur sometime after a major decline in mortality". Bulatao (1984: 9) states that "development is essential for fertility transition to run its

course. Development is the long-run answer to fertility reduction, but no factor or factors have been found to trigger this decline”.

Another particular area of considerable debate and investigation is the influence of infant and child mortality on fertility (see Oeschli and Kirk 1975, van de Walle and Knodel 1980). Bulatao and Elwan (1985) investigated both fertility and mortality transition in detail, with the importance of a continuing decline in the total fertility rate (TFR) and an increase in life expectancy receiving emphasis as factors contributing to fertility decline. The rapidity of mortality decline appeared to be less important and reaching low levels of mortality was found to be “not sufficient alone” (page 77). They noted that the speed of mortality decline may be less important for fertility transition than initial low mortality levels, and that “the initiation of fertility decline showed no relationship to mortality levels in the European experience and, it has been argued, shows no relationship either in developing countries today” (page 60). But they found that no fertility transition has been observed to start in any developing country until expectation of life at birth has stayed above 50 for at least five years and finally reached 53. This was found to be almost always a necessary condition for fertility transition, with a life expectancy of 56 years being necessary for rapid transformation.

But merely reaching these levels was found to be not a sufficient condition for fertility transformation, and Bulatao and Elwan (1985) suggest that factors such as education, urbanisation and contraceptive availability also have to attain particular levels, individually or in combination, before transition starts. They found that the longest lag between reaching this level of life expectancy and the start of fertility decline was in Latin America and the Caribbean, while a faster pace was evident in Asia, Africa and the

Middle East. Their analysis was strictly bivariate, involving only mortality and fertility but they acknowledged that other factors, as mentioned above, should also be considered.

Knodel and van de Walle (1979: 224) noted that “significantly, in most countries of the world today, infant mortality has fallen substantially... (but)... there has been little evidence to suggest that this fall has been sufficient in itself to initiate a drop in the birth rate”.

A feature of both the fertility and the mortality transitions has been their increasingly faster tempo. A mortality transition that took 75-100 years in northern Europe to complete was achieved within 20-25 years in eastern Europe and within even shorter periods in the less developed countries of the east. Kirk feels that mortality decline should be afforded a primary place as a *cause* of fertility decline – although he admits that “... definite proof of this connection may not always be possible” (Kirk 1996: 368).

### **2.3.6 FACTORS AFFECTING FERTILITY DECLINE**

It is possible that it is in the area of natality decline that transition theory has made its greatest and most original contribution, through stimulating research and theoretical discussion, with the application and viability of any fertility decline being influenced by a plethora of factors (Beaver 1975).

It is impossible to isolate and measure exactly the effect of any particular factor, since the different factors are interrelated in very complex ways. The number of births in a population is determined partly by demographic factors – such as the sex and age composition of the population, the number of married couples and their distribution by

age group, duration of marriage, number of children already born – and partly by many other factors in the economic and social environment. Mortality declines, restriction of marriage, limitation of births and the influence of modernisation all play their part, while a complex interplay between historical, geographical and institutional factors, plus the importance of increased international movements, communications and trade and the innovation of ideas (such as the widespread adoption of family planning) cannot be explained without assuming a major diffusion of new ideas and techniques (Montgomery and Casterline 1998). The fertility behaviour of a population is not a reflection of individual decisions alone but reflects complex social interactions and the diffusion of new ideas. Diffusion is likely to follow established lines of communication, however meagre they may be.

Most perceived causes of fertility transition are closely linked within the processes of modernisation and/or Westernisation, with economic and certain social factors being perhaps the most easily measured. However, there is patently a complex interplay between several factors and each fertility decline is likely to have its own distinctive and different mix. Patterns of developmental conditions actually associated with fertility decline are varied. An environment in which modes of life, aspirations with regard to mobility and life styles were in conflict with high fertility and large families came into being with the establishment and growth of urban areas (Goldscheider 1971). A social system and a level of development and prosperity which stimulate and promote social mobility aspirations, and create the opportunity of attaining such aspirations, offer a favourable environment for decreasing fertility. ‘Determinist fertility’ becomes supplanted by controlled fertility adjusted to a modern life style. Factors usually associated with the fertility transition – urbanisation, industrialisation and improved education – are thought to put the fertility

transition in motion. This downward trend is further facilitated by family-planning programs. Yet the question remains as to whether changes in fertility-related values precede and lead to fertility changes, or does this process operate in reverse.

Conventional statements of demographic transition theory have generally focussed on the role of mortality and socio-economic change as major causes of fertility decline, and the importance of the cultural context has been largely ignored. Various problems with standard socio-economic explanations eventually led to the question of the potential causal role of cultural values in fertility transition. Kirk (1971 and 1996) suggested that consideration *should* be given to cultural differences, as these may play a part in the way in which different aspects of socio-economic development affect natality reduction, and that by controlling for gross cultural differences, much non-uniformity is eliminated.

The culture of reproduction is of great importance as all the causal factors operate through proximate variables such as age at marriage, age at first exposure to the risk of pregnancy, breastfeeding, abortion and contraception (this latter factor, in some cases, is the most obvious cause of changes in fertility patterns). Society's social organisation may tend to facilitate or hamper the number of progeny, large families may be encouraged or frowned upon, and controls such as contraception, abortion or infanticide may be found. Socio-economic factors are not readily related directly to fertility. Rather they operate through the institutions of the culture in which they are found and work through mechanisms related to the reproductive process, thus affecting fertility. Cultural factors may be important in facilitating or inhibiting the fertility decline, largely independent of the level of socio-economic development. Fertility decline has occurred in a number of countries with limited developmental changes and with populations overwhelmingly poor and rural

- e.g. Sri Lanka, Thailand, Peoples Republic of China and Bangladesh. The evidence tends to indicate that cultural groupings are often related to fertility in ways that have not yet been explained by the general socio-economic factors central to transition theory (Hauser 1979). It is likely there are “facilitating and inhibiting factors that depend on the cultural context. Motivations for lower fertility are derived from perceptions by parents that there is an advantage to having fewer children .... and a shift in functions from the family to larger non-familial institutions, part of a growing national and international network of productive interdependence” (Hauser 1979: 68,79).

In several regions of Europe actual decline was not tied closely to socio-economic modernisation but rather to diffusion of ideas and ideals from individuals already positively inclined in that direction within a specific cultural or linguistic region. Cook and Repetto (1982: 106) maintain that the diffusion of better means of contraception and the promotion of more widespread use can now fairly persuasively be shown to accelerate the fertility transition. Similar situations were found in Central America (Beaver 1975) and Bengal (Basu and Amin 2000). The possibility of a cultural interpretation of fertility decline needs to explain the timing of decline in that particular group. Cultural settings influence the onset and spread of fertility decline independently of socio-economic conditions (see Goldscheider and Uhlenberg 1969, Knodel and van de Walle 1979). Knodel *et.al.* (1987) has pointed out the fact that the Muslim minority of Thailand has not fully participated in the reproductive changes of that country. He further suggests that a change in fertility patterns can be initiated by a critical minority of couples which, over time, can stimulate a wider desire for reproductive control. Lesthaeghe (1983) argues that differences in fertility behaviour are primarily related to cultural differences, and that differences in fertility levels and their speed of change are related to differences in

religious beliefs and their practices (Lesthaeghe is a leading representative of the European emphasis on cultural values as opposed to emphasis on material aspects, which is favoured by American authors). “Unfortunately, the notion of cultural region has an uncertain and presently inelegant (sic) theoretical meaning. Continued theoretical development could alleviate this problem” (Beaver 1975: 30).

In Coale and Watkins (1986), the findings of a study of fertility decline in Europe pointed to a cultural rather than an economic interpretation of fertility decline, a cultural hypothesis, and the findings of the European Fertility Project (Gilles *et.al.* 1992), that cultural settings have an influence on the onset and spread of fertility decline independently of socio-economic conditions, added support to this premise. Countries which differed widely in industrialisation and urbanisation began their declines at about the same time (in Europe) and some less-advanced areas began their declines before more-advanced areas.

It has been found that areas that are culturally similar (e.g. in language or ethnicity) demonstrate similar fertility patterns. Subregions with a common culture tend to have similar patterns of fertility decline even though they had different developmental levels at the onset of this decline (Hauser 1979). Fertility decline in Latin America, once started, quickly spread to other countries in the area independently of their level of socio-economic development (see section 2.3.4). Rapid diffusion of the idea of controlled fertility has also been noted in countries of Chinese culture, in China itself, and in Hong Kong, South Korea and Taiwan (Knodel & van der Walle 1979). In Bangladesh a government-initiated family scheme was readily embraced and had great success in reducing total fertility rates (Basu and Amin 2000), with extreme poverty and the effects

of Westernisation contributing enthusiastic public support to the project; while a crash program in Pakistan introduced during the 1960's was a failure - in 1975 TFR in Pakistan was 6,3 and by 2000 had decreased only slightly to 5,6. The degree of success of any program is correlated with readiness to adopt contraception, related to the level of socio-economic development as well as social desires as to family size, religious and cultural beliefs, personal aspirations, economic desires and standards of living. Diffusion itself can be regarded as an independent variable, amenable to independent manipulation and thus a useful policy tool, concerned primarily with the spread of attitudes and beliefs regarding contraception and controlled fertility. An integration of economic, cultural and institutional theories of fertility decline related to the rationality of fertility behaviour within the framework established by social customs give end results that differ from society to society.

However, in developing countries the introduction of an effective family planning programme may contribute to fertility decline even at very low levels of modernisation. Governmental influence on fertility can take indirect forms such as compulsory schooling, and the banning of child labour and child exploitation, but the most conspicuous aspect of intervention is the stance on population policy. Deliberate intervention through organised family planning programs can have a considerable influence on fertility transition if the setting is receptive. As a result of China's comprehensive but rigidly enforced family planning policy, total fertility in that country dropped to a level of 1,9 in 1995 and 1,8 by 2000 (World Population Data Sheet 1995 and 2000). Further, the community-based programme of family planning introduced in Colombia in the mid-1960's (Beaver 1975) was instrumental in a fall in the TFR from 7 to 2,7 by 1995, while in Mexico the TFR fell to 3,2 by 1995 in under twenty years and to 2,7 by 2000. In the east, a programme

introduced in Pakistan in the 1960's, as mentioned earlier, was a complete failure (the TFR in 2000 was still high at 5,6), while in Bangladesh a cautious programme in the 1970's gained momentum and the TFR fell from 7 to 3,3 by the year 2000. In India, the state of Kerala recorded a fall to below replacement level after a governmental family-planning scheme was introduced, while in the state of West Bengal the TFR fell from 4.2 in 1980 to 2,3 in 1997 (Zachareck 1984, World Population Data Sheet 1995 and 2000, Basu and Amin 2000). Comparative occurrences occurred in Korea where the TFR fell to 1,5 in the year 2000 in the south (where an active programme was in place) and this trend was even reflected in the north, which had no active programme, but where the TFR fell to 2,4 in 1995 and 2,3 in 2000.

An interesting statement of the underlying factors of transition has been offered by Caldwell in an attempt to integrate economic, cultural and institutional theories of fertility decline (Caldwell 1976). He criticises economic theories of fertility and points out that there does not appear to be a close relationship between economic modernisation and the beginning of fertility decline in the modern world. He makes an important distinction between 'modernisation' and 'Westernisation' with the primary force of change appearing to be Westernisation (a 'copying' of lifestyles and values as against the structural changes of economic organisation referred to as 'modernisation'). He points out that ideas of progress, secularisation, mass education, mastery over the environment, and social progress and upliftment are included in the process of Westernisation. This process can precede economic development, as it has done in several less developed areas. In Bangladesh, a predominantly Muslim country and one of the most intensely studied areas of fertility transition in the contemporary world, where few of the standard preconditions for fertility decline are met (such as significant socio-economic progress, major falls in

mortality and substantial changes in the status of women), fertility has fallen at a startling speed. Caldwell admits that this theory is not easy to test, but his argument is supported by the fertility declines which have occurred in the Indian states of Tamil Nadu, Kerala and West Bengal, areas with very low levels of modernisation (Drèze and Murthi 2001). The specific appeal of Westernised values and family systems is an unsolved question.

Lesthaeghe (1983) asserts that differences in fertility levels and their speed of change are related to differences in religious beliefs and practices and in the degree of secularism, materialism and “individuation”. He bases this on economic theories of economically rational fertility behaviour, a cost benefit paradigm being necessary but not sufficient. Economic prosperity creates a new hierarchy of needs - luxury goods and psychological non-material needs such as freedom of choice and relaxation of religious controls – the fertility decline being part of a broader emancipation process with freedom of individual choice and the attainment of individual goals. This link, although eminently logical, is not clearly defined and is somewhat tenuous and theoretical.

The importance of diffusion dynamics in the fertility transition is lacking in conceptual clarity, yet adds to the explanation of the rapidity and pervasiveness of fertility declines. Economic changes have commonly been given priority, but changes in reproductive behaviour have proceeded much faster. The diffusion of new ideas and techniques assumes a part in the widespread adoption of family planning, as it actively promotes or retards the practice of fertility control, more the end product of complex social interactions. For a programme to succeed, diffusion of ideas and interactions between people is necessary, helped in part by the audio or visual media.

Notestein (1945) observed that precision on the causal factors behind the fertility transition is impossible. Each factor may delay or accelerate the transition, but the transition itself is inescapable. Fertility cannot be ordered into a quantifiable equation - social factors have many parameters and concepts. Human fertility, as a complex process responsible for the biological maintenance of society, constitutes an essential aspect of demographic studies. Within the limits established by physiological factors, a multiplicity of economic, social and cultural factors are the ultimate determinants of fertility levels and of their variations in various societies. There are sufficient difficulties in determining accurately trends in fertility without becoming deeply involved in analysis of social systems or in the measurement of complex psychological, cultural and sociological variables. Attempts have made to link such a demographic variable as fertility to the social matrix of which it is an expression, but results are generally inconclusive (Notestein 1945, Lesthaeghe 1983). The complexity of the relationship between demographic and economic, social and cultural variables and the divergences arising in connection with population policies and objectives has been recognised for many years.

Taeuber in her study of Japan's demographic transition states that "the interrelations of population growth with resources, technology, economy and society, suggest that there are cultural and temporal specifics to demographic transitions" (Taeuber 1960: 28). She noted that mortality control in Japan had undergone great improvements in the mid twentieth century while advances in the production of food by agricultural and other techniques revolutionised the prospects for nutritional self-sufficiency, this occurring before the marked decrease in fertility took place. The people of Japan "questioned their ways and values of living" (Taeuber 1960: 39) and the reductions in childbearing were almost as great among farmers and fishermen in remote villages as they were among the industrial

workers and tradesmen in the large cities. These reductions she postulates as consistent with the values of the traditional culture and compatible with the changing structures of the modernising economy and society. “The means whereby the transition proceeded, perhaps even its course and speed, were associated intimately with the indigenous and the developing culture of the Japanese” (Taeuber 1960: 39).

Knodel *et.al.* (1987) postulates that in any society, the impact of social and economic change on reproductive behaviour is mediated through the cultural setting. He offers a series of hypotheses deserving of further consideration. He comments that ideational change influencing reproductive behaviour and changing perceptions of the socio-economic environment encouraging smaller families can outpace the major socio-economic shifts conventionally associated with development. Ideas and aspirations for a different way of life can serve as important motivating forces to lower fertility. In some developing countries, the erosion of patriarchal authority and emerging emotional and economic nucleation of families may be critical for the onset of fertility decline. The exposure of rural villagers to a wide range of consumer goods and life styles via the establishment of media communication and transport networks can bring about rapid changes in aspirations and attitudes in agricultural sectors of the economy (Caldwell 1982). Cultural factors may have an important role in facilitating or inhibiting the fertility decline independent of the level of socio-economic development in terms of modernisation and urbanisation. In the early stages of fertility decline, fertility may respond to many intangible factors. Religious doctrines, moral codes, laws, education, community customs, marriage habits and family organisation may all focus towards maintaining existing fertility levels or permitting declines (Caldwell 1971). Basu and Amin (2000: 764) contend that “..... history and culture can combine to create an

environment that is more conducive to social change in some situations than in others, a conduciveness that can lead to significant reproductive change even in the absence of change in the standard demand and supply factors associated with reproductive control”.

Another hypothesis relating to possible causes of fertility decline, that minority-group status could affect reproductive behaviour, was introduced in the 1950's and subsequently attracted much attention during the late 1960's and 1970's. Day (1968), and Goldscheider and Uhlenberg (1969) were amongst the first to expand upon the hypothesis that minority groups in multi-ethnic societies might adjust their fertility to achieve either security or upward mobility as a direct response to their social disadvantage.

Further research into minority groups was done by, among others, Ritchey (1975), and Jiobu and Marshall (1977). At a later date, Goodkind (1995), investigated fertility patterns amongst the minority Chinese population in Malaysia and noted that “causal links between ethnicity and socio-economic characteristics may be both subtle and inextricable” (Goodkind 1995: 45). Minority status has in the past been posited to increase fertility above that of the majority group, but only in the context of pro-natalism and advanced economic development (Goldscheider and Uhlenberg 1969). Elsewhere, minority status could decrease fertility, but only among the best educated as they encountered difficulties and tensions while making their way up the social hierarchy. Goldscheider and Uhlenberg (1969: 361) further suggested that

“.... fertility changes are features of social cultural change which, for minority groups, represent one aspect of behavioural and cultural assimilation. The distinct fertility of minority group members at any point in time merely reflects a matrix of social, economic and demographic attributes which characterise the minority group.”

In the latter part of the twentieth century, however, interest in the minority-group hypothesis declined. Methodological difficulties in showing the independent effect of minority status are thought to have contributed in large part to this decline. The number of qualifications that were progressively hung around the minority status hypothesis in order for it to work eventually sapped it of much of its analytical power. Although recent studies of fertility continue to consider the role of ethnic, religious and political conflict, the minority status hypothesis, as originally formulated, has been conspicuously avoided (Goodkind 1995). The application of demographic transition theory to small, culturally distinct, migrant populations (such as the Indian population of South Africa) has thus not recently attracted widespread research. A further difficulty towards the revival of interest may be that such populations are neither widely occurring nor easily identifiable in terms of (recent) collected demographic data.

### **2.3.7 BEYOND THE TRANSITION?**

While the theory suggests that fertility would stabilise at around replacement level, resulting in zero or stable population growth, (see Presser 1985, Sarre and Blunden 1995, Kirk 1996) fertility has already fallen to below replacement level in several eastern countries (China, Japan, Hong Kong, Singapore, South Korea and Taiwan) as well as in most European countries, with some countries having zero natural growth. In Europe, for example, in 1995, the TFR was between 1,3 and 1,4 (two-thirds the replacement level of 2,1) in twelve countries (World Population Data Sheet 1995), half of these being in Southern Europe (these twelve countries included Italy, Spain, Portugal, Greece, Germany and Austria). In China the TFR had fallen to 1,9 by 1995 following the comprehensive and rigidly enforced family planning policy of the late 1960's, with strict anti-natal conditions. If these widespread trends continue then population numbers in many

countries will inevitably decline. Van de Kaa (1987) and others regard a future decline of population in Europe as inevitable. Davis (1987: 63) notes that “for many observers the current below-replacement fertility in the industrial countries is a blessing, while to others it is a calamity. It gives the industrial countries ageing populations and international complications”.

Below replacement fertility has its costs. Coale (1985) notes that most of the social implications of sustained low fertility arise from how it affects the growth and the age composition of the population. Fertility is the principal determinant of age composition. Continued low fertility produces a population with relatively few young people and relatively many old people (Cowgill 1963). In June 1997 Japan’s government announced that elderly citizens outnumbered children for the first time in the Nation’s history (Daily News, November 28, 1997). Cowgill (1963: 274) noted that “.... any population which achieves a new equilibrium characterised by low birth rates and low death rates after having passed through the transition, will continue to be relatively old and highly female. Declines in both birth and death rates will manifest in an ageing trend” (see also Rowland 1984, and Johnson 1987).

### **2.3.8 TRANSITION THEORY TODAY**

Today demographers are still divided into those who accept transition theory and those who discard it. The true test of any scientific theory lies in its capacity to predict, and the philosophical basis of transition theory is one of understanding only, and not prediction or control. No two countries have followed identical paths to transition due to the many combinations of the influencing factors mentioned above. "Like so many areas of human behaviour, mortality and fertility cannot be resolved into an equation with a few

quantifiable parameters" (Chesnais 1992: 409). Any theory that involves human behaviour is likely to give rise to surprising and contentious issues. No two countries have followed identical paths to transition because there are so many possible combinations of nuptiality, fertility, mortality and migration at each stage of the transition. No theory can encompass all these phenomena within its scope, and in particular no social theory is likely to explain all the salient features of a particular phenomenon (Caldwell 1982). Socio-economic, social, economic, cultural and ideational factors are much too closely intertwined to be isolated. However, another view is to regard the theory as an "ordering framework" which permits observational data to be used for predicting and explaining empirical events (Sayer 1984). The dominance of economic factors was reflected in the early formulations of transition theory. Economic and related socio-economic theories have often tended to prevail and be used as 'ordered frameworks' because they were more successful than cultural-ideational theories in giving conceptual and mathematical precision to their models.

Questions still remain regarding the timing of the transition – is it more strongly influenced by linguistic and cultural boundaries and less strongly by modernisation factors? Perhaps it is more closely connected with the diffusion of new ideas than with changes in economic forces.

These and other such possibilities will ensure that debate around transition theory will continue for many years. The primary force of change appears to be Westernisation (Caldwell 1976 and 1982), which can precede economic development (e.g. Bangladesh). An important export of Westernisation is the nuclear family, but an explanation for the appeal of Westernised values and family systems is not forthcoming and is not readily

subject to testing. The transition is now beginning at increasingly lower levels of socio-economic development, most strikingly seen in the example of Bangladesh, one of the poorest nations in the world (Basu and Amin 2000).

There can be little doubt that the mortality transition has spread throughout most of the world. Life expectancy in industrial countries stands at 75-80 years with infant mortality rates of less than 10 per 1 000 births, the lowest being in Singapore, Hong Kong, Japan and Sweden, with levels of under four (World Population Data Sheet 2000). Such countries have presumably reached the end of the mortality transition.

The fertility transition has reached every major region, although Moslem countries have in general been slower to enter the transition (Kirk 1996). Bangladesh has been an exception, with fertility declining rapidly from six to seven children per woman in the 1980's to 3,3 in 1997, following a governmental family-planning program (Knodel *et. al.* 1987, and Basu and Amin 2000). In the Indian state of Kerala fertility fell below replacement level in the late 1990's, with a figure of 1,8 in 1995, and in West Bengal the TFR fell from 4,2 in 1980 to 2,3 in 1997 (Basu and Amin 2000). "It appears that once the fertility transition has begun it is inescapable" (Kirk 1996: 381).

The premise of early transition theory that a new balance of births and deaths will be reached at or slightly above replacement level (TFR equal to 2,1) has not materialised, and fertility is now below replacement in almost all European countries as well as in several far-eastern countries – Singapore, Thailand, Japan, South Korea, Taiwan, China and Hong Kong. Johnson (1987: 313) wrote that "... some observers believe that the decline in (Europe's) birth rate will have severe social consequences" (see also Rowland 1984).

Others see the problem as being of a transitional nature, to be rectified once a new demographic equilibrium has been established. Indeed, they anticipate positive benefits from a return to the smaller populations of the past.

There appears to be no answers to the questions as to how long the downward trend is likely to continue. Johnson (1987) notes that the natural tendency for populations is to move up or down periodically, then to veer back toward stability (with the time period being undefined), and this is also referred to in the Council of Europe publication of 1978.

Kirk (1996: 387) observed that

“..... a new era of development is approaching. In Western areas of low fertility we are moving into a post-transition era, where the old guidelines are no longer appropriate, an era in which much more attention will have to be given to raising fertility, rather than to lower it. What happens after the transition is the most exciting problem in modern demography, for which transition theory can provide some guidance but few answers, as it is tied to a particular epoch of history”.

Questions raised by the ideas and assertions of the theory have stimulated a large number of theoretical and empirical works. Transition theory is likely to survive if only for the fact that there is no theory of equal value that could be used to forecast future population trends or act as a guide to empirical research. It is fairly widely, but not completely, accepted that the theory of the broad processes of population change has been sufficiently tested to prove its general validity and provide a satisfactory *framework* and means for wider empirical generalisations. Quantitative data are increasingly available to measure demographic variables and many aspects of socio-economic structure, which would encourage refinement and extension of the theory. If the explanations of the various statements of the theory of the demographic transition are not rigorous, they are at least plausible in the light of modern social science. The inability to predict the timing of future development in particular countries is a weakness common to all social sciences. Some

years ago, Beaver (1975:11) stated that

“The most important function of the theory has been making further demographic research possible by telling investigators what variables to consider and what relationships are reasonable. The theory’s weakness ... is that it leaves too much unstated and too many ideas unintegrated. It still requires a great deal of refinement.”

Many of these refinements have been detailed in the foregoing discussion. In simple terms, transition theory has survived because no better theory has emerged to explain demographic behaviour in the modern world. Cowgill (1963: 274) observed that “... transition theory appears to offer a reasonably accurate model of the major population changes taking place in recent centuries” and this observation still applies today.

The question that has not been answered, and that will continue to encourage debate, is whether the demographic transition is a theory, a generalisation, a framework for analysis or merely an ‘idea’, or is it an historical model, predictive model or a mere descriptive term (Kirk 1996). Despite its shortcomings, the theory does provide a framework for the scientific study of human populations. “The survival of transition theory is enhanced by the fact that there is no theory of equal value which could be used to forecast future population trends or act as a guide to empirical research” (Kirk 1996: 383).

#### **2.4 THE STUDY POPULATION AND TRANSITION THEORY**

There are demographers, sociologists, economists and lately, historians who favour the demographic transition theory, and there are the critics, as outlined above. After consideration of the foregoing discussion, the author has chosen to use transition theory as the framework within which to set this historical analysis of major changes in demographic rates and population structure of Indian South Africans, following Kirk’s

assertion that "... there is no theory of equal value which could ..... act as a guide to empirical research" (Kirk 1996: 383), and Kammeyer and Gevin's assertion that

"The theory of demographic transition is .... one of the best documented generalisations (and) duly amended and supplemented, it is a useful framework within which to organise an analysis of population. The usefulness of transition theory as a way of analysing population growth is indeed one of its great merits" (Kammeyer and Gevin 1986: 224).

There can be little doubt that the demographic variables of fertility and mortality of the South African Indian population have undergone extensive and significant changes over the last 130 years, with far-reaching consequences on the population structure. While the early stages of the transition theory took some years to develop and become apparent in the case of the South African Indian population, due mostly to the patterns of early immigration, once a reasonably sexually-balanced population structure had developed both mortality rates and fertility rates underwent transition from high to low levels over time. This population has remained a distinctive group over its 130-plus-year history in the country, this fact aided by and arising out of the separatist policies of successive governments of the country. This is a unique phenomenon and has provided an opportunity to trace the demographic history of an isolated, culturally distinctive minority group over a period of a little more than a century, within a recognised theoretical framework. The socio-economic and political background within which these changes occurred is presented in detail in Chapter 4

## **2.5 SUMMARY**

This chapter has provided a detailed discussion of transition theory, starting with the original concept of population classification based on the relationships between mortality and fertility levels. The historical formulation of a 'transition theory' has been traced from

the original concept of a simple population-sustenance relationship to a present-day seven-stage model, based largely on actual historical experience in Europe. The contributions by leading exponents of this concept at all stages of its development have been detailed above. The seven stages of the theory have been clearly outlined and are then followed by a brief analysis of the population structure likely to occur at each stage. Arguments surrounding the use of the word 'theory' have been included.

Considerable reference has been given to the widely debated problem of the varying importance of the two key factors, mortality and fertility. The importance attached by various researchers to social, economic and cultural factors has been discussed and the importance of pro- or anti-natal policies has been illustrated, with relevant examples. The intrinsic value of transition theory as a tool for population analysis has also been investigated. The present-day standing of the theory and its future survival has been investigated and the problem of below-replacement fertility rates discussed.

On the basis of the foregoing arguments and discussions, it was decided to embrace the concept of demographic transition as the underlying and unifying theme to be used in the historical analysis of population undertaken in the following chapters as a logical and meaningful way of presenting such an analysis.

## **CHAPTER THREE**

### **APPROACH AND METHODOLOGY**

#### **3.1 INTRODUCTION**

This chapter sets out the way in which this investigation was undertaken and covers the major problems that were encountered in the assembling and analysis of the data. Section 3.1 includes an appraisal of the status of population studies in South Africa over time and is followed by details of the sources of primary and secondary data. The value and reliability of nineteenth century data is examined and an investigation and discussion of all pertinent census data is undertaken in sections 3.5 and 3.6. Specific problems are highlighted to keep the reader informed of areas of possible misleading primary data.

In section 3.7 the demographic indicators, measures and terminology are defined to clarify their use and the availability of such measures covering the historical period under study is investigated. The chapter closes with details of the method of analysis employed.

#### **3.2 POPULATION STUDIES IN SOUTH AFRICA**

Population can be regarded as 'a numbers game' (Sarre and Blunden 1995: 93) and although this thesis was embarked upon within the discipline of geography, the methodology employed extends into the fields of history and statistics. Population studies in this country were for many years traditionally included as a broad sub-discipline of geography, which is itself a very broad discipline that combines and interprets the inter-relationships between a wide variety of data as pertaining to human populations and their environments. The study of demography as a separate entity has, within the last half of the

twentieth century, been developed and expanded within South Africa, and today a wide variety of research is undertaken into demographic aspects of the population. However large gaps still exist in the level of information available and its reliability, leading to a lack of completeness.

For most of the years of recorded population data in South Africa, four major racial groups have been officially recognised. These are Blacks (also in past times referred to as Africans, Bantu or Natives), Coloureds (those of mixed race), Indians (formerly referred to as Asiatics, but in later years generally grouped for official purposes with other easterners under the heading 'Asians', of which Indians comprised about 97-98% in 1991) and Whites (the descendants of settlers from Europe). The terminology used in this study will be *Black*, *Coloured*, *White* and *Indian*. The latter term, to date, is basically representative of the Asian group, as non-Indians have always constituted a very small proportion of this group due to restrictive immigration policies (such as Act 22 of 1913 forbidding all male Asian immigration).

The collection of general demographic data in South Africa did not assume importance for most of the early history of this country. The collection and analysis of population data was introduced and carried out by the White government and thus concentrated mostly on this geographically more accessible segment of the population. Several early censuses that took place in the nineteenth and early twentieth centuries applied solely to the White group, while broad, general estimates were made regarding the other racial groups. It took many years before comprehensive data concerning the Black, Coloured and Indian populations were collected and made available for analysis in later census years. Even so, the collection of population data was seldom done systematically for all sections of the

population, and this has resulted in large gaps in the continuum of data for much of the South African population over many previous years.

As Indians were introduced as indentured labourers into South Africa only in the latter part of the nineteenth century, there is no statistical reference to them before 1860 (for details of the early years of immigration see Chapter 4). Even well into the twentieth century, scant attention was being given to this distinctive segment of the population, as evinced by the appalling records of data collected and presented for the group (referred to as Asiatics at this time) in the censuses of 1911 and, to a lesser extent, 1921. Had it not been for the establishment of various local offices specifically for the purpose of keeping records and reports of numbers and conditions pertaining to the Indians in Natal, such as the Protector of Indian Immigrants and the Indian Immigration Trust Board, much valuable demographic information would never have been recorded.

In the second half of the twentieth century, demography world wide became an accepted and integral part of a country's development policy and methods and theories were developed and improved upon to handle this facet. In South Africa eminent demographers such as Badenhorst and Sadie, in the mid-century years, laid the foundations of a growing awareness and usefulness of interpretation of raw census and research data on population as a means of providing guidance and advice in the development of this country (Badenhorst 1950, 1954, Sadie 1970, 1971, 1972, 1973). Their contributions were added to in the following decades by demographers such as Mostert, Hofmeyr, Lötter and van Tonder, to name but a few. However serious population research was limited outside the Human Sciences Research Council (HSRC), government departments and a few universities. Recognition of the importance of this branch of study on various social,

educational and economic aspects of South Africa's future development has only relatively recently been attained.

Demographic aspects of the White population of South Africa have now been well explored and documented over many years and a comprehensive picture over time has been established. The Coloured population has also been well analysed by demographers largely operating out of the Cape Province where most of this racial group resides. The Indian population has a record of fairly reliable documentation, particularly as the twentieth century progressed and they became more and more urbanised and thus more accessible for census purposes. Demographic statistics of the Blacks, however, have been somewhat neglected due to the difficulties of obtaining even the most basic data such as the number of births and deaths per annum. This is especially so in rural areas which have always been deficient in even such basic measures as reasonably accurate estimates of total numbers.

### **3.3 SOURCES OF PRIMARY DATA**

As this treatise is an historical study of the population dynamics of a particular group of people over a certain period of time, data collection has been from a variety of primary sources published over the 130 years covered by this study. Several problems concerning the availability and reliability of data were encountered, particularly for the early years of Indian settlement before comprehensive census data became available. With South Africa having undergone several changes in its political regime (and in the terminology used in official publications) since the first Indian settlers arrived in this country, the list of primary sources of data has been divided into three eras based on the controlling regimes.

1) Sources from the colonial era include the Government Census books of the Colony of Natal for 1891 and 1904, various editions of the Natal Blue Books between 1880 and 1900, Statistical Yearbooks of the Colony of Natal from 1893 to 1909, and reports of various commissions and departments. Included were the reports of the Wragge Commission of 1888 and the Clayton Commission of 1909, the Immigration Restriction Department reports 1897 to 1909, the Indian Immigration Trust Board reports from 1874/5 to 1909/10 and the Protector of Indian Immigrants reports from 1874 to 1911. In addition a small collection of original application papers and letters of the early immigrants were available from the Killie Campbell Africana library and yielded further understanding of the historical background and type of immigration that took place.

2) From 1911 to 1960, the former Colony of Natal became the province of Natal within the Union of South Africa. Government publications such as the census results of 1911, 1921, 1936, 1946, 1951 and 1960 yielded vital primary data for these years. In addition Official Gazettes and Statistical Yearbooks of the Province of Natal, the Natal Regional Survey series, and reports made by various commissions of inquiry into matters pertaining to Indian affairs, were referenced where appropriate.

3) Post 1960 data, after South Africa became a Republic, was obtained once again from census results for the years of 1970, 1980, 1985 and 1991 for the Republic of South Africa (RSA) and from Central Statistical Services (CSS) publications. Primary data was also obtained from various publications by the Department of Statistics and the Bureau for Information.

### **3.4 SOURCES OF SECONDARY DATA**

Secondary data sources included numerous publications of the Department of Economic and Social Affairs of the United Nations on specific as well as general aspects of population analysis. These proved invaluable for methodological and comparative purposes. Further theoretical information and background was obtained from a wide range of books, published investigations and journal articles on several related topics, spanning several decades of the twentieth century. The comprehensive publications of the Human Sciences Research Council in Pretoria (HSRC) proved especially useful in forming the core of secondary local references.

### **3.5 THE VALUE OF THE NINETEENTH-CENTURY DATA**

Historically, the collection and recording of basic demographic data, such as the number of births and deaths by race group, and the age and sex structure of these various groups, did not assume great importance in South Africa in the nineteenth century, particularly for those race-groups outside the ruling class of Whites. For several important aspects of demographic analysis undertaken in this study, significant gaps in recorded data for Indians in this country were found, thus necessitating extensive perusal and investigation amongst the archives of various libraries. Extensive scrutiny of various official and unofficial publications and reports of government and other local bodies was also undertaken. A wide variety of topics such as hospital records and school enrolment was covered in the hopes of perhaps gaining a further small amount of relevant information to add to or supplement the more readily available data and to increase understanding of the total historical picture of the time. Although these early records could in no way be regarded as complete or entirely accurate, at the least they gave a *general* idea of the

situation, though the analysis of early trends has had to lack the statistical refinement which became possible at later dates as more detailed records were kept. In some cases sketchy and incomplete data provided the only indication of prevailing conditions and trends during the early years of settlement and these are included where necessary to contribute to the total overall picture. While much of the data presented for the early years of settlement must be treated with caution, it is felt that the comprehensive picture presented in this thesis bears a strong relationship to the actual situation that has prevailed during the one-hundred-and-thirty years of Indian settlement in South Africa covered by this study. An assessment of primary data used for the purpose of analysis is presented below.

### **3.6 ASSESSMENT OF PRIMARY DATA AND PROBLEMS ENCOUNTERED**

Population statistics, like all other statistics, whether they are obtained by enumeration, registration, or other means, are affected by errors. The errors may be large or small, depending on the obstacles to accurate recording which are present in the area concerned, the methods used in compiling the data, and the relative efficiency with which the methods are applied (United Nations 1955). The importance of the errors, given their magnitude, depends on the uses to which the data is put, and this fact has been borne in mind in the various analyses and discussions which follow.

Since many of the available early statistics used in this study were obtained from the Statistical Yearbooks of the Colony of Natal or from the Reports of the Protector of Indian Immigrants (this latter official post being created in 1872 to serve the indentured Indian labour force in the Colony of Natal), early statistics did not in all cases include the total

Indian population of South Africa. Some assumptions had therefore to be made in order to obtain an holistic picture and these are mentioned as they occur in the text.

South Africa, in line with many developing countries, has come to recognise the importance of an effective statistical programme. This involves not only an effective programme for the compilation of the required data, but also an adequate measurement of their reliability. The degree of accuracy in a census count of total numbers is a function of the accuracy with which the entire census is conducted. In South Africa the error usually has been one of undercount and in recent years official assessments of estimated errors of undercount in the census results have been made (this is usually discussed in the foreword to the census publications of population numbers for the year concerned - see RSA, CSS, Census 1991c: xviii) and adjustments to the relevant tables have been calculated. These adjusted census results, where available, are used in this thesis and are referenced in the text where applicable.

The undercount in the past has been due in part to inaccessibility of the rural areas, lack of public co-operation (which can be affected by political factors), overcrowding in residential areas, suspicion, fears of forcible removal due to illegal occupation (in the apartheid era), failure to identify buildings used for residential purposes (such as outbuildings and storage sheds) and also the integrity and reliability of the census enumerators themselves. Most of these reasons were encountered in a previous study by Sugden (1978) and although largely overcome in that relatively small sample, could present real and significant obstacles on a larger scale, such as a general population census.

Comparisons of successive census counts may indicate inconsistencies in particular years, such as was found in the South African census counts of Indians in 1911 and 1921 in terms of race and sex classification (this is discussed in detail in section 3.6.1 below). In the censuses of 1946 and 1951, discontinuities occurred in terms of numbers in corresponding age groups (see section 3.6.2). Undercount amongst the Indians in recent years has been estimated by the HSRC and the CSS to vary between 4% and 12% for the 1980, 1985 and 1991 census years (see section 3.6.2 below).

The collection of *vital statistics* is different from that of a general census count and relies upon the public itself to supply the relevant data. Errors here are usually due to late registration of births and deaths and mis-statement of age of the mother of the baby or of the person recently deceased.

While every effort has been made in this study to minimise the effects of incomplete or inaccurate data, it is important to realise that assumptions have, of necessity, been made at various stages of this analysis. These are recognised in the text as they occur. A degree of error has therefore been introduced, but endeavours have been made to keep this error as small as possible by extensive cross-checking of data, where possible.

### **3.6.1 PROBLEMS OF RACE CLASSIFICATION**

As the terminology of race classification regarding Indians in South Africa underwent changes over the years as the political regimes changed, so the usefulness of the census results for the purpose of this study had to be assessed. This is referenced in the text in the appropriate sections.

The 1911 census presented considerable obstacles to usage regarding classification of the population by racial group. At this census Indians were classified under the group of 'Mixed and other Coloured Races' for most tabulations within the official census publications. This makes it difficult to identify with any accuracy, from official census sources, the characteristics of the Indians as a separate, distinctive group at that time, so analysis based on these results must be treated with caution.

In the next census (1921), Indians were grouped with other easterners (such as Chinese) under the blanket heading of 'Asiatics'. This terminology was changed to 'Asians' in later censuses. To some degree it has been possible to isolate those who were obviously not Indian, such as those born in China or speaking a Chinese dialect in their homes. However this depended to a large extent on the various classifications within the tables in the census books, and frequently the best that could be done was to be aware of the total number of non-Indians included in these tables. Sometimes this could be done by sex, rarely by age but most generally just by total number. Fortunately, the number of non-Indian Asians in South Africa has historically been very small. In the 1921 census (Union of South Africa, Third Census 1921), under 1 500 'Asiatics' (the term in use at that time), out of a population of 165 000, were recorded as being born in China and Japan (less than 1% of the total 'Asiatic' population at that time). It seems logical to assume that these are Chinese and Japanese (mainly Chinese) and not Indians. These 1 500 consisted of 89% males and 11% females. The proportion of the sexes of the total 'Asiatic' population at that time was calculated as 59% males and 41% females. So it can be seen that there is definitely a degree of error in the assumptions made. However, since the estimated non-Indians comprised less than one percent of the total 'Asiatic' population in the early twentieth century (Colony of Natal, Census 1904) and under 2% in 1951 (Union of South

Africa, Ninth Census 1951), it is felt that any irregularities caused by their inclusion will be minimal.

As the Indian settlers became integrated into the South African society many of them began to speak English as their home language. The number born outside South Africa dwindled and many adopted Western forms of religion (Brain 1983). This made it increasingly difficult to identify, from those social factors covered by census data, the number of Indians included in the broad group of Asians as the years passed.

It was thus necessary to assume that at this stage non-Indian Asians had a population structure similar to that of Indians (who by this time were achieving an increasingly balanced population structure). The assumption that only small irregularities would be introduced into the results and conclusions of this study by their inclusion had to be made. In all cases the general pattern appeared to be one of domination by male workers in the early years of settlement. The gradual attainment of a more balanced population structure took place once immigration of all Asians became restricted by legislation and the population became in effect closed, with further structural changes being due to the natural balance between births and deaths.

### **3.6.2 PROBLEMS OF UNDERCOUNT**

“The question of undercount is a general and world-wide phenomenon and an inescapable problem with the taking of, particularly, population censuses. The population censuses of the RSA (Republic of South Africa) are also unavoidably subject to this problem” (CSS, Report No. 03-01-01, 1991: xvi).

The extent of under-enumeration in the early years of Indian settlement in South Africa is unknown. Most population estimates made by various official bodies for these years do

not vary from one another by more than a few hundred people and, for the purpose of this thesis, totals published by the relevant government departments of the time will be taken as representative of the true situation.

After 1951 the accuracy and reliability of general census results concerning the Indians can be regarded as falling generally within acceptable bounds of under-enumeration, as the methods of reliable census-taking underwent improvements. The population counts in the last three censuses, i.e. 1980, 1985 and 1991, were examined by demographers of the CSS and HSRC and the percentage undercount for these years by age group and sex was estimated. The results (published in the explanatory notes to the 1991 census results) indicated an undercount rate for Indians of 4,4% in 1980, 6,5% in 1985 and as much as 12,4% in 1991, in which year the average undercount rate for all races combined was determined as 12,7%. Regarding this latter figure Sadie (cited in RSA, CSS, Census 1991c: xviii) writes of “.... considerable under-enumeration in the 1991 census revealed by a provisional examination”. In developing countries, a fairly wide margin of undercount is generally regarded as acceptable (United Nations 1955).

Since this study is concerned basically with overall demographic trends and is not intended as an analysis of the accuracy of South African census figures, use will be made of the available census data for all appropriate years, using officially adjusted data when available. Recent census data are comprehensive and cover a wide range of demographic aspects and in this thesis use is made of the census data with confidence.

### **3.6.3 PROBLEMS OF AGE-SEX CLASSIFICATION**

Before undertaking a detailed analysis of the age-sex structure of the population, a cursory

comparison of consecutive census age-and-sex classifications for the Indian population was made. This revealed several irregularities in the progression from one age cohort to another over a period of time. This could be expected in the early years of study when considerable immigration and emigration was taking place and for some years thereafter, as repatriation continued, but not all the anomalies could be explained by this aspect. As past published census results are the only sources available in terms of providing comprehensive historical records of age and sex structure for the total Indian population of South Africa, subsequent analysis has had to be undertaken using these statistics. Measures such as birth and death rates for the census years could have undergone distortion caused by the undercount of total population, due to the omission of many infants in the census counts, as well as irregularities caused by late registration of births. Personal discretion must be employed when detailed use is to be made of such census results, but it appears probable that the overall historical *trend* will not have been unduly distorted such as to seriously lower the value of the analysis presented in these pages.

When census data on age by sex is compared for all census years from 1891 to 1991, several anomalies are found. Firstly it must be remembered that comparisons of actual numbers between 1891 and 1921 should be treated with caution because immigration and emigration were continuing during these years. Thus the number in age groups between 30 and 50 years of age in 1921 will reflect not only survivors of corresponding ages over the thirty years since 1891 who chose to remain in this country after expiry of their indenture contracts, but will also include many persons who are not reflected in the 1891 census count, having immigrated subsequent to this date (see Table 4:1 for details of immigrant numbers). Similarly, many labourers reflected in the 1891 and 1911 census counts completed their indenture period and, together with their families, returned to India

and thus are not reflected in later counts. After indentureship ceased in 1911, census results of 1921, 1936 and 1946 show the development of a steady relationship between the age groups at progressive counts, with the exception of the first group aged 0-4 years, as mentioned above. This can be traced in Tables 5.1 to 5.5 and Table 5.12 in Chapter 5.

Many discrepancies were found to occur in the first few age-groups, with the number of children of ages 0-4 years in a particular year being less than the number in the corresponding group of survivors in the next census, five or ten years later. This could in large part be due both to the “... under-enumeration of young children, which is a world-wide phenomenon” (United Nations 1955: 27), and to the non-registration of births, particularly those occurring at home and in rural areas, until such time as a birth certificate became necessary for school-entry purposes some years later. This explanation is largely borne out by comparisons of ten-year age groups. When the first two age-cohorts are grouped together into a single ten-year cohort, and then compared with subsequent census results, the progression appears logical in most cases. Irregularities, though not absent, are on a much smaller scale. Such errors, while not readily perceptible in tabular form, are more apparent when graphical methods are employed. All of the census tables referenced here appear to have this problem of under-reporting of children under five years of age. As mentioned previously, this distortion for ages 0-4 years occurs world-wide and therefore has to be borne in mind at all times when inter-censal comparisons are made.

What is not so readily explained or accepted is the occurrence of a similar situation, at many ages, in the census results of 1946 and 1951, as is detailed in Table 3.1. For all ages under 45 years in 1946, (90% of the total population), for both male and female, it appears that the survivors five years later, *in all age groups*, outnumbered the original age-cohort.

As an example, there were 13 100 males recorded in the age group 20-24 years in 1946, while five years later there were 13 600 recorded as aged 25 to 29 years. This comparison again highlights the difficulties encountered in undertaking detailed analysis of available historical data for the Indian population.

**TABLE 3.1**  
*COMPARISON OF AGES 1946 and 1951 – to nearest 100*

Male				Female			
1946		1951		1946		1951	
Age	Number	Age	Number	Age	Number	Age	Number
		0-4	33500			0-4	33300
0-4	25900	5-9	29300	0-4	25900	5-9	29000
5-9	22400	10-14	24600	5-9	22700	10-14	24500
10-14	18000	15-19	19400	10-14	18100	15-19	19500
15-19	15700	20-24	16600	15-19	15100	20-24	16500
20-24	13100	25-29	13600	20-24	12600	25-29	13300
25-29	10900	30-34	11500	25-29	10300	30-34	10800
30-34	9200	35-39	10200	30-34	8300	35-39	8900
35-39	7900	40-44	8100	35-39	6500	40-44	6600
40-44	5800	45-49	6000	40-44	4700	45-49	4700
45-49	5100	50-54	4700	45-49	3600	50-54	3400
50-54	3400	55-59	3100	50-54	2400	55-59	2200
55-59	3400	60-64	3200	55-59	1900	60-64	1900
60+	7700	65+	5700	60+	3300	65+	2400
Total	148500	Total	189500	Total	135400	Total	177000

*Source: Union of South Africa, Seventh Census 1946 and Ninth Census 1951*

Obviously major discontinuities and errors have occurred in data collection or analysis in one or the other of these censuses, but the exact nature and size of these errors cannot be accurately determined. The 1946 census data although falling into line reasonably well with that of previous years, i.e. 1936 and 1921, has been assessed by Sadie (1970) to have an undercount error of some 9%. The 1951 data, however, corresponds agreeably with that of subsequent years. It is therefore entirely possible that the disparities are linked to factors such as method of data collection, enumerator education and dedication, willingness and accuracy of respondents, or organisational and analytical improvements. A reasonable hypothesis put forward by Woods (1954: 1) is that at the time of the 1946 census there had built up a spirit of non-co-operation amongst the Indians due to

dissatisfaction with the Land Tenure Act of that time, and as a protest against government policy there was a withholding of the recording and registration of data. By 1951 the promise (or threat) of the introduction of identity (ID) cards gave rise to the desire to be registered, as failure to produce an ID card when required could have serious repercussions. It is significant that the 1951 figures appear more satisfactory than previous counts.

### **3.7 DEMOGRAPHIC INDICATORS, MEASURES, AND TERMINOLOGY**

Statistics from such primary sources as population censuses and the registration of births and deaths are only the raw materials of demographic analysis. When converted into rates of fertility, mortality or population growth, or used to derive workable models and theories, they can be related to practical economic and social problems. Many sophisticated analytical techniques and measures are available for use by the demographer but the application of such techniques is dependent upon the availability of suitable basic data. In the case of the study population, such data are largely lacking until the last three or four decades of the twentieth century. Thus statistical refinements of analysis have not been possible until suitable and reliable basic data became available. This has necessitated the application of very simple measures for all the early years of Indian settlement in South Africa, and the continued application of such measures for the entire 130 years covered by this study, in order to present a continuing pattern of progression and development.

In the middle and later years of the twentieth century, as the importance of comprehensive data for planning and development of a country's future became more widely recognised,

a greater variety of detailed and accurate basic demographic data concerning the Indian population of this country was collected and published. This has enabled a wider variety of demographic indices to be assembled as time progressed. The indicators and measures used in this thesis to portray and analyse the data are listed and explained in the following pages.

As mentioned previously, (sections 3.2 and 3.3), three political regimes cover the period of study, namely the Colony of Natal, the Union of South Africa and the Republic of South Africa. Although the method of presentation of primary data by the various official bodies, and in some cases the terminology, underwent changes over the years, the data used in this study are presented as a continuous progression or trend throughout the 130 years being studied, with explanations of these changes where necessary.

The most basic measures of the dynamics of a population are the levels of fertility and mortality. The most readily available measures are those of *crude birth rates* and *crude death rates*. These relate the number of births or deaths occurring in a population over a specified period of time (usually one year) to the total population at that time (usually a mid-year estimate of population numbers). These are only rough measures which take no account of the population structure in terms of the age distribution (e.g. how many people fall within the reproductive years), the sex composition (in terms of the number of males relative to the number of females), or the susceptibility of certain sectors of the population to mortality (e.g. infant and maternal mortality). The age and sex structure of a population is both the cause of and the result of the interaction of fertility and mortality (and to a lesser degree, in most cases, to migratory movements) over the previous decades.

### 3.7.1 MEASURES OF AGE

In dealing with age structure, the following measures (based on the terminology and calculations widely used in United Nations publications and by researchers around the world) are detailed and analysed:-

- a) *sex ratio*, the number of males per 100 females
- b) *dependency ratio*, the relationship of the number of dependants to the number of people of working age (15-59 years)
- c) *youth dependency*, the ratio of children under 15 years of age to adults of working age
- d) *old-age dependency*, the ratio of elderly people to the working-aged population
- e) *total dependency*, being the sum of the previous two measures (c) and (d)
- f) *median age* or the average age of the total population

### 3.7.2 MEASURES OF MORTALITY

In the case of mortality, measures used include:-

- a) *crude death rate (CDR)*, which expresses the number of deaths as a rate per thousand population of all ages and both sexes combined. This measure, as for crude birth rates, takes no account of the population composition and, while used for comparative purposes within this thesis, must be treated with caution.
- b) *infant mortality rate*, a measure of infant deaths that occur within the first year of life per thousand live births occurring in the same year.
- c) *maternal mortality rate*, representing the number of women dying from causes arising from deliveries and complications of pregnancy and childbirth per thousand births
- e) *expectation of life*, the average number of years of life to be expected at birth.

### 3.7.3 MEASURES OF FERTILITY

In the analysis of fertility, the measures used include:-

- a) *crude birth rate*, (CBR), the number of births per thousand population, regardless of the sex or age structure of the population
- b) *general fertility rate*, (GFR), which represents the number of live births per thousand women of child-bearing age (generally taken as 15-49 years). This measure avoids some of the deficiencies of the crude birth rate by changing the denominator from total population to women of reproductive ages
- c) *age-specific fertility rate*, (ASFR), the number of births specific to the age of the mother
- d) *total fertility rate*, (TFR), the sum of the ASFRs and giving approximately the average number of children per woman living until the age of fifty. This measure has the advantage of taking into account female age-structure.

### 3.7.4 DEFINITION OF TERMS USED

Several other general terms are widely used throughout this thesis, particularly in discussion and usage of comparative data. In order to provide clarity on the usage of these terms within this analysis, they are defined as follows:-

- a) a *developing* region (which reference includes Africa, Asia (except Japan), and most of Latin America as well as Oceania, excluding Australia and New Zealand) is one in which levels of technology, industrialisation and economic enterprise are low, while fertility, mortality and population growth are high.
- b) a *developed* region (which includes Japan, Europe, North America, Australia and New Zealand) is one of considerable technological development and industrialisation, high standards of health care and hygiene, low fertility and

mortality, a high expectation of life and high standards of living. Such an area is often referred to as an *industrialised* country.

c) *Western* applies to the nations of Europe and America, which are also *developed* and *industrialised*.

d) *eastern* includes the countries of the continent and subcontinent of Asia. With the exception of Japan and possibly the former USSR they can also be termed *developing*

e) *vital rates* refer to birth and death rates, which are the major determinants of population change.

f) a *balanced age-sex structure* is one in which population numbers progressively decrease from the youngest to the oldest age groups and the ratio of the sexes show an excess of males at young ages but an excess of females in all adult age-groups. This is referred to in this thesis as a *normal* structure.

g) *youthfulness* and a *youthful population* applies to a population where 40% or more of the population is under the age of 15 years and less than 10% is over the age of 50. This type of population structure is also referred to as *progressive*.

h) *ageing of the population* or an *ageing population* are terms applied when a population has a small proportion of children, around 30% or less, and an increasing proportion aged 60 years or more – a *regressive* population.

### 3.8 METHOD OF ANALYSIS

Analysis of the primary data was undertaken in three stages. First the overall age-sex structure was analysed as representing the interaction between mortality and fertility factors over a period of time. Long-term and continuing changes in either the mortality or

the fertility rates and patterns will be clearly reflected in the age-sex structure of a population, and (in Chapter 5) these changes can be clearly seen in the graphical representations (line-graphs and histograms) included, with their calculation based on published census results. The aspect of past population structure does not directly involve much controversial matter, the shape of such structure being fixed by the interplay of mortality and fertility over the years (and to some extent migration, though this did not have a significant influence on the study population once indenture had ceased).

The structure of the population is described in detail and analysed in terms of three major groupings - children under 15 years of age, the adult population aged 15 to 59 years (i.e. the working-aged population), and the elderly aged over 60 years. The median age of the population is calculated in each census year and grouped into a table which reflects the changes of the three structural sub-groups over time. Sex ratios and dependency ratios have been calculated and their changes over time noted. At several stages comparisons are made with various other population groups, both in South Africa and abroad, and with expected patterns arising from transition theory in order to provide a perspective on the overall changes that were observed in the study population.

An in-depth analysis of firstly mortality and then fertility is undertaken in the next two chapters (Chapters 6 and 7), based on recognised demographic techniques, with primary data obtained from a variety of sources. Firstly, the historical progression of basic, crude death rates and birth rates is investigated and listed for all available years, and these rates are then plotted as line-graphs. A general trend thus emerges, and such trends are then analysed in terms of the demographic transition theory. These chapters therefore contain material that is open to differing analyses, based partially on the predilection of the

analyst, but this thesis has attempted to treat the recorded data with impartiality. Other interesting aspects such as infant and maternal mortality, life expectancy, fertility rates and sex-ratio at birth have also been included to enhance the overall analysis. In both these chapters there are periods, particularly in the nineteenth and early twentieth centuries, when accurate and comprehensive official data was lacking, but where possible these gaps have been filled by educated estimates gained from investigation of alternative sources, such as hospital records and school enrolment figures.

### **3.9 SUMMARY**

The setting of this study, within an historical context of a specified period of 130 years, calls for an interpretation of existing, recorded facts from a variety of sources, with impartiality and objectivity in the presentation of these facts being required. The basic data presented and analysed in this thesis, covering the 130 years of study, was obtained primarily from official sources. These sources ranged from reports of the Protector of Indian Immigrants and other official bodies of the early colonial days, to official gazettes, reports from boards of enquiry into problems relating to the Indian population, census publications and comprehensive South African statistical yearbooks, as well as United Nations population data sheets. The material presented here is predicated implicitly within the context of demographic impartiality, based on recognised demographic statistical methods, which have been detailed and outlined in this chapter. The data is quantitatively analysed and interpreted within this statistical framework, and various demographic measures have been employed where the suitability of data has enabled such measures to be used.

The insights and patterns of population change and development derived from this research, which is based on the availability of historical data, are not without their shortcomings, particularly in terms of comprehensive coverage and accuracy. Several such problems have been detailed and investigated in this chapter. Specific terms as used in this thesis have been defined in order to lend clarity to their usage in the following analysis, and the pattern of analysis has been explained.

While South African population census results will hopefully continue to identify racial groups in the recording of data, the registration of births, deaths and migration since 1991 has not required racial classification. The difficulty in distinguishing racially separate patterns and trends may result in the demographer being unable to produce reliable between-census data and cause a lack of reliable records upon which to judge future censuses. The different histories and demographic patterns of the various and diverse racial groups of the country give rise to a wide spectrum of differing basic needs and programmes to be followed for each population group. For this "... a comprehensive collection of vital statistics is fundamental to a successful understanding of the basic nature of the complex South African situation" (Sadie, RSA, CSS, Census 1991c: xviii).

## CHAPTER FOUR

### INDIAN MIGRATION, INDENTURESHIP AND POPULATION GROWTH

#### 4.1 INTRODUCTION

The coming of Indians to Natal was no spontaneous uncontrolled movement of adventurous individuals seeking a better livelihood than their home country gave them.

“ It was part of an elaborate system of recruiting and shipping organised over many years and controlled and directed by the Governments of Great Britain and India to alleviate a critical labour shortage in the British Colony of Natal” (Thompson 1952: 11).

It has been written in Massey and Jess (1995: 13) that “Indenture epitomised the colonial principal of divide and rule”. Referring to Indian indenture world-wide they noted that “most of the indentured migrants were men but the proportion of females was relatively high amongst Indian indentured migrants (and) largely for this reason the Indians tended to remain abroad and evolved into settled communities.” They continue “Indenture labour was part of evolving, colonially controlled, global economic empires, *creating and perpetuating uneven development between different parts of the world*” (Massey and Jess 1995: 14).

This chapter provides a general, historical background to the concept of Indian migration and indentureship worldwide and makes reference to the various laws and acts controlling such immigration. A brief résumé of Indian labour emigration is given, followed by a more detailed examination of the situation that prevailed in South Africa. The numbers and growth of Indian migrants to South Africa during the second half of the nineteenth century and the first few decades of the twentieth century is then traced, providing a comprehensive picture of the origins and patterns of South African Indian settlement.

#### 4.2 THE HISTORICAL PATTERNS OF INDIAN INDENTURE

Indian emigration on a large scale and over long distances was a phenomenon novel to the nineteenth century, and had to wait upon previous settlement of European colonies and investment of capital in tropical plantation agriculture (Cumpston 1957). The unskilled workers only had their labour to sell and were thus obliged to move into areas where there was a skilled white managerial group to direct them and where their labour was welcomed. This movement was, in a sense, 'colonisation of undeveloped colonies', with the moral philosophy in the British Empire being that all citizens were equal (Cumpston 1957 and Northrup 1995).

When slavery was abolished in the British colonies in the nineteenth century (the Emancipation Act of December 1833), a labour shortage was experienced by many colonial farmers, particularly in the 'sugar colonies' where sugar was the most important crop. This led to the colonial farmers having, in many cases, to look elsewhere for reliable and suitable labour (Cumpston 1957).

In 1834 the planters of Mauritius began to import workers on a contract basis from India. This process was regulated by the British Government in 1842 with rules of transport, provision of food, wages and medical care, and the length of contracts, being introduced to protect the worker. These rules originally applied to the indentured labour of Mauritius and were extended later to other areas such as Jamaica, Trinidad (from 1844), Fiji, British Guiana, Réunion, Martinique, Guadelope, French Guiana (from 1866), Surinam and Natal. Indentured Indian workers did not only go to British colonies, but to French, Dutch and Danish possessions as well, under basically the same conditions of employment (Tinker 1974). Mauritius, in particular, accommodated large numbers of Indian workers

and by 1910 immigrant Indians and their descendants formed 72% of the total population of that country (Cumpston 1957).

The Indian government's attitude to the emigration of labourers in these years was one of benevolent neutrality. It paid heed to the emigrant's protection, but dissociated itself entirely from any active promotion of emigration. Its chief concern was to see fair play between the parties to a commercial transaction, while it abstained from mixing itself up in the bargain. It did, however, constantly urge on the colonies the importance of making crown lands easily available for the settlement of time-expired Indians (Cumpston 1957).

In many parts of nineteenth-century India, unfavourable environmental conditions, natural disasters and burdensome taxation had caused continuing economic distress, forcing many to contemplate the prospect of indentured labour overseas (Brain 1985). Cumpston (1957) points out that the usually successful gamble of emigration brought an increase in opportunities, incentives to industry, security, and release from the bondage of traditional custom, caste prejudice and social disapproval. Tinker (1977: 2) suggested that it is the dominant population, "... the 'Host Society' as it is sometimes misleadingly called", which determines "... how the Asian immigrants and their children emerge".

The nineteenth century thus witnessed the arrival in several lands of indentured Indian labourers (Marks and Richardson 1984, Saunders 1984, Lock Lai 1993), initially recruited from the floating labour force of the Indian ports of Calcutta, Madras and Bombay. Soon more systematic recruiting was developed in areas where there was a surplus of labour. In the early export of labourers to Mauritius and British Guiana in the 1840's and 1850's, a large proportion were from Chota Nagpur, but when the tea plantations of Assam opened

up, offering domestic employment, recruitment had to turn to other areas, such as the rural districts of Bihar and Uttar Pradesh (Tinker 1977).

Most of the labourers from these areas signed up as single men, with very few emigrating in family units (partially due to the relatively young age of the men). Later rules laid down by the government required the colonial recruiting agents to send out forty women with every hundred men. When this quota could not be made up of legitimate wives, many widows, adulterers, out-of-work dancers and prostitutes were recruited. The social consequences of sexual abnormality in 'plantation life' were to last for many decades (Cumpston 1957, and Bhana and Brain 1990).

In the south of India, an enormous surplus of labour was to be found, with a large number of these being of the lowest caste, the Dalits (untouchables), although Thompson (1952), records that only a small proportion of labourers from this caste came to South Africa. When a demand for labour opened up in Ceylon in the 1840's many of the unemployed were willing to emigrate there, and further opportunities in Burma, South Africa and Fiji were met with a good response from many people in southern India. Other Indians who responded to the adventure of travel and migration included Punjabi Muslims, Sikhs and Patidars (Cumpston 1957).

Indians now form the majority of the population in the island states of Mauritius and Fiji and in Guyana in Latin America. They also form important groups in Trinidad, Malaya, Singapore and Sri Lanka (Cumpston 1957, and Timker 1977). Elsewhere they generally form under three percent of the population.

Almost all the overseas communities have preserved the essentials of the different religions they took with them from the sub-continent (Tinker 1977). Language has not fared as well, and many overseas communities have adopted, at least in part, the language of their present countries through the medium of schooling and business. The diversity of Indian communities overseas, emphasised by religious and linguistic differences, is accentuated today by economic differentiation – from the prosperous, urban middle-class Indian to menial labourers and artisans. In many cases, social and religious values of the mother country were replaced by the criterion of material well-being (Jayawardena 1968, Tinker 1977). An adjustment to Western norms, and a desire to achieve middle-class status, resulted in the development of separate living areas, either out of economic or social custom (within the Indian community itself) or created by law (to separate the races) as in South Africa.

In almost every place where they reside the Indians are classified as 'different'. Throughout the colonial world, European settlers, and particularly the British, created social orders based on concepts of white sovereignty. (As mentioned earlier, in section 1.2, colonial and post-colonial society has often been explained by social scientists in terms of racial difference).

In colonial South Africa, the concept of the Indian immigrants as being a temporary, alien and inferior class prevailed (Scott 1994). However since the early years of immigration, Indians in South Africa have become the racial group least identified with class. Although the majority of Indians do belong to the skilled and semi-skilled work force, an increasing number are becoming businessmen and professionals (Brain 1985). In the early twentieth century, the large commercial traders in South Africa considered themselves an

elite group, and the more numerous petty traders readily identified with them. This led to the existence of exclusive cultural organisations, narrowly defined by religion, language and caste (Brain 1985).

### **4.3 INDIAN IMMIGRATION TO AFRICA**

Indians, both Muslims and Hindus, have emigrated voluntarily to Africa for many years, mainly coming from the western Indian seaboard (Tinker 1977). Their activities included trade, manufacture and agriculture (e.g. the growth of cloves on Zanzibar Island). In general they formed communities leading somewhat secluded existences. Some brought their families with them while others maintained wives and children back in India. Businesses were built up in eastern and southern Africa, Aden and the Persian Gulf. These traders were known as 'passenger' (or independent) migrants, a name that remained in use for many years (Cumpston 1957).

In 1842 the British government had introduced regulatory rules intended to protect the indentured workers. They covered aspects such as the condition of the ships providing transport from India to the colonies, the provision of food, wages and medical care, the length of contracted employment (originally stipulated as one year but extended to three years in 1849 and five years in 1862), and the signing of the contract only after arrival in the colony (this was changed in 1858 to signing in India).

In effect these conditions served to define Indians as an alien, temporary labour force with no legal rights and privileges in the country to which they immigrated. Within the colonial context, the Indian immigrants were an 'anomaly' (Scott 1994). These changes to

indenture movements were all in place by the time that Indian indentured workers began arriving in Natal in 1860 (Bhana and Brain 1990).

#### **4.4 THE START OF INDIAN IMMIGRATION TO NATAL**

The White settlers who came to Natal from Europe had expected an abundance of cheap labour from the indigenous population of the colony, but found that labour was often in short supply, as few of the local inhabitants would work full time (Calpin 1949, Winks 1966). The settlers were aware that the British government and the government of India had agreed to supply Indian indentured workers to other colonies, and several had had experience of Indian workers and spoke well of them (Calpin 1949). Over the early years of farming in Natal, pressure mounted for a reliable source of labour, and in spite of some opposition to the idea, particularly by inland farmers and residents, this led to the first Indian indentured labourers arriving in Natal in November 1860 (controlled by Acts 13, 14 & 15 of 1859). At this stage the crops the settlers were growing were similar to those found in India and it was felt that workers from India would fit in well with the general pattern of farming (see Calpin 1949, Brain 1983 and 1985, and Bhana and Brain 1990). A requirement by prospective employers was agricultural experience, though some skilled craftsmen and other specialised workers were also in demand.

The workers indentured in Natal formed the third largest group in the stream of contract labourers from India (Clarke *et.al.* 1990). Many of these migrants had chosen emigration as a result of a variety of unfavourable socio-economic conditions in various parts of India. Two thirds of Natal's indentured immigrants were Tamil and Telugu speakers from southern India, in particular the Madras State and Bihar, the balance coming from the

Hindi speaking districts of the north (Brain 1985), These workers came from various castes, basically from low-status backgrounds - 60% Sudrass (workers), 25-30% Vaishyas (artisans) and the remainder mainly Kshatriyas, with a small percentage of Brahmins (priests) (Kuper 1960, Brain 1989, and Bhana and Brain 1990). In some cases this caused problems, with lower castes being employed in positions above those of the higher castes (Natal Archives 1909 and 1911). Caste distinctions, however, were difficult to maintain in the new social environment and the caste system in South Africa virtually disintegrated. It could not be recreated in a different cultural milieu with different economic, social and religious values. (In South Africa colour, not caste, determined access to social and economic privileges). However, the caste system had begun to break down the moment the voyage from India commenced, due to the close proximity of a variety of people (Thompson 1990). Employers in Natal usually ignored caste differences, as they were interested primarily in physically-able workers. Due to the small number of women, and freedom from the controls imposed by the village councils in India, the rules regarding marriage and caste also broke down. Today few of the descendants of indentured workers can identify their caste (Thompson 1990).

The original indenture contract for Natal, promulgated by Act 14 of 1859, included the following provisions (Palmer 1977):-

1. Each worker was indentured to his employer for a period of three years, later lengthened to five years, at a wage of ten shillings per month, rising by one shilling with each year of service.
2. Each worker was provided with housing and rations for himself and his family.
3. At the end of his indentured service the labourer had three choices:-
  - a) to return to India at the expense of the British government

b) to re-indenture for a further term of service

c) to accept a piece of crown land of value equivalent to the cost of his return fare to India (this clause was deleted after 1866 due to lack of sufficient crown land).

The presence of Indians in Natal was felt beyond the sugar plantations with which they are generally associated, as the suitability of other crops such as cotton, coffee and tobacco were being tested in other parts of Natal and agricultural labourers and overseers were required further up and down the coast and in the midland areas as well (Brain 1985). Indentured labour was also sought in the pastoral and wattle industries of the interior districts, and after 1880 the skills of some workers, acquired in India in railway construction and mining, were being utilised in the local industries (Brain 1985). By the 1890's the Natal Government Railways had become the largest single employer of Indians in the colony and by 1902 Indians constituted 45% of the labour force in the local coal industry. Certain indentured immigrants had been selected for their specific skills - chefs, interpreters, clerks, postmen and policemen. At the termination of their contracts, many 'free' Indians chose to remain in the colony and began to seek more attractive employment opportunities in other sectors of the economy – hawking, market gardening, domestic work and fishing, mainly in the urban areas where there were economic opportunities (see sections 4.4 and 4.5). There was also the possibility of employment in the semi-skilled and white-collar occupations and in industry – the possibility of economic success within a relatively short period of time (Kuper 1960). These people mainly settled in and around the municipality of Durban, exhibiting commercial skills and establishing monopolies over the fishing and fresh produce markets by the late 1870's (Brain 1985). As the 'free' (i.e. expired contract) Indian community increased in prosperity,

immigration of professional men and traders increased. From the mid-1870's the so-called 'passenger' Indians (who immigrated voluntarily through normal immigration channels) started arriving, firstly from Mauritius and then from India itself (Bhana 1990, Brain 1985). These were both Hindu and Moslem traders, mostly from Gujarat, to cater for the needs of their relevant fellowmen. They tended to settle first in Durban and adjacent coastal areas and later moved into the interior. This was in keeping with the imperial pattern of Indian migration elsewhere in the world, where the establishment of indentured communities prompted a secondary movement of immigrants who travelled independently (Palmer 1977, and Bhana and Brain 1990).

Those travelling to Natal came mainly from western India, several first staying for a period in Mauritius. These immigrants were attracted mainly by trading prospects and included many Muslims (Calpin 1949, Brain 1989, and Bhana and Brain 1990). They brought with them capital, expertise and commercial links with India. They set up family businesses and identified other business opportunities. They extended their activities to the Natal interior and established a monopoly over the indigenous Black trade in the region (Bhana 1985, Brain 1985).

During the economic recession of the 1880's, economic rivalry between White and Indian traders became increasingly hostile. Many White settlers felt that "... there were no Indian industrialists; there were too many Indian traders" (Calpin 1949: 11). A labyrinth of legislation became set up in the following years of both colonial and post-colonial rule to define categories of economic activity, urban form, health and social behaviour that were deemed acceptable and appropriate, categories in Western thought that had been transferred to colonial contexts. Racial differentiation became the basis for strategies

aimed at maintaining Western cultural and economic dominance in multi-cultural contexts (Guest and Sellers 1985, Scott 1994). To ease the animosity, the Wragg Commission of 1885-87 was appointed to investigate the problems (Brain 1989).

In the 1890's, natural disasters and economic recession in India produced a substantial wave of emigrants from India (see section 4.4). By 1893, at which date responsible Government was granted to the Colony of Natal, (in keeping with the British policy of decentralisation, self government and indirect rule – Christopher 1988), the Indian community of southern Africa had spread beyond the coastal areas of the colony into the interior of South Africa, particularly following the discovery of diamonds and gold in the interior (Bhana and Brain 1990). Many traders and hawkers were drawn to the gold-rush centres by the prospect of profitable economic returns. In the western Cape were to be found a small number of Indians who had been imported in the seventeenth century from Goa, Bengal and elsewhere as slaves, long before the first indentured workers arrived in Natal (Bhana and Brain 1990).

Apart from the artificial pressure of recruitment a hundred or more years ago, chronic poverty, unemployment and underemployment in India were equally potent factors stimulating emigration. The influence of seasonal crop conditions and also of famine and disease in India can be seen reflected in the records, year by year, of the number of Indian immigrants coming to the colony (as detailed in sections 4.4 and 4.5).

#### **4.5 MIGRATION AND GROWTH IN THE NINETEENTH CENTURY, 1860-1899**

The growth of the Indian population in South Africa in the nineteenth century was a

complicated pattern of the in- and out- movement of the workers - largely a balance between the numbers entering the colony under indenture contracts (some arriving accompanied by their families), and others departing with their families upon completion of their indenture term (see Table 4.1). Natural increase during these years did not play a major role as the number of recorded births could be offset against the number of deaths.

Early records do not generally show the age-sex breakdown of these labourers, many of whom returned to India once their period of indenture was completed (see Table 4.1). However large numbers chose to remain in the Colony of Natal after completing their indentureship (under the terms of their contracts), becoming farmers (either on the limited land grants made by the Government or as tenants of private landowners) or hawkers and in some cases storekeepers. Many, after returning to their homeland with free passages, (as per their indenture contract), came back to Natal as independent settlers, (sometimes with wives and children), paying for their own passage (Wragge Report 1888). These settlers were under no obligation to report to the Protector of Indian Immigrants office (which was established in 1872 to look after the indentured population) and this made estimates of the number of Indians in Natal somewhat inaccurate.

The available statistics of recorded arrivals and departures are presented in Table 4.1 and have been grouped in roughly five-year intervals (with adjustments where necessary to this time period related to the erratic nature of immigration), commencing in 1860 with the arrival of the first immigrants and continuing until 1911, when indentured labour was stopped by the British government. The amount of detail presented has been dependant on the method of recording and the amount of detail provided by the Protector in his annual reports. Information regarding migration for the early years of settlement was obtained

from the Wragge Commission Report of 1888 (Report of the Indian Immigrants Commission) and from the Blue Books for the Colony of Natal for later years.

A 'Protector of Indian Immigrants' was appointed in 1872 following reports to the Indian government of maltreatment by employers of indentured labour (Meer 1980, Guest and Sellers 1985), and part of this job involved the keeping of accurate records of most of the important demographic particulars of the Indians - arrivals, departures, births, deaths and total population figures - specifically of the indentured population. Thus after 1872 it is possible to make use of the more detailed statistics which were recorded. The erratic growth in the early years depended basically on the difference between the numbers arriving in the colony, those departing upon completion of their contracts, and those electing to remain in the colony upon completion of their contract (Table 4.1).

**TABLE 4.1**  
*ARRIVALS AND DEPARTURES - INDENTURED POPULATION 1860-1911*  
(including females and children)

	1860 -1866	1867 -1873	1874 -1879	1880 -1884	1885 -1889	1890 -1894	1895 -1899	1900 -1904	1905 -1911	Total
<b>ARRIVALS</b>										
Male	4484	0	10833	7895	3970	13524	11386	21949	30027	104068
Female	1785	0	4874	3478	1806	6461	5239	10331	13913	47887
unknown			506				1408			1914
<b>Total</b>	<b>6269</b>	<b>0</b>	<b>16213</b>	<b>11372</b>	<b>5776</b>	<b>19985</b>	<b>18033</b>	<b>32280</b>	<b>43940</b>	<b>153869</b>
<b>DEPARTURES</b>										
Male	638		309	193	2148	2640	1182	3792	17882	28784
Female	590		173	100	1230	1278	570	1950	8750	14051
unknown		1919	161	342	1331	279	1374			3487
<b>Total</b>	<b>1228</b>	<b>1919</b>	<b>643</b>	<b>635</b>	<b>4709</b>	<b>4197</b>	<b>3126</b>	<b>5742</b>	<b>26632</b>	<b>48831</b>
<b>NET GAIN</b>										
<b>Total</b>	<b>5041</b>	<b>-1919</b>	<b>15570</b>	<b>10737</b>	<b>1067</b>	<b>15788</b>	<b>14907</b>	<b>26538</b>	<b>17308</b>	<b>105038</b>

Source: *Colony of Natal, Annual Reports of the Protector of Indian Immigrants 1874-1911*  
and Indian Immigration records 1866-1911

In some years there was also a small number of 'independent traders' settling in the area (for whom statistics were not required to be kept by the Protector's Office, although estimates of various rates and totals were occasionally undertaken for these Indians also and are included where available). Some similarities of age-sex structure existed between the independent settlers and the indentured population (male dominated and mostly of a young age), but several older immigrants came voluntarily to the colony as traders and shopkeepers, usually accompanied by their wives and children. Some Indian workers were also introduced from Mauritius to work on the railways with contracts of three years. Most returned to Mauritius at the end of this time, but a few chose to remain in Natal (Colony of Natal, Wragge Report 1888).

By 1911, when the practice of indentured labour was stopped by the British government (Bhana and Brain 1990), there were estimated to be around 133 000 Indians in Natal (Union of South Africa, Natal Regional Survey 1951) and 150 000 in South Africa as a whole (Union of South Africa, Special Report Series No.39 1926), of which 47% had been born in South Africa (Arkin *et.al.* 1989).

The census data for 1911 presented difficulties in isolating the Indian population, due to the nature of data collection, and the figure used here is the official 1911 estimate of the Office of Census and Statistics. Available data is presented in Table 4.2 and represents the growth in total (officially estimated) numbers for the years during which Indian immigration took place, i.e. 1860 to 1911. The years 1908 to 1911 in particular showed a last final influx of indentured labour in response to the requests of the White settlers for extra labour once it was made known by the British Government that the practice of indenture would soon be halted.

**TABLE 4.2**  
*TOTAL POPULATION 1860-1911 (to nearest 100)*

Year	Male	Female	Total
1860	600	300	900
1865	3900	1100	5000
1870	3700	1700	5400
1875	5200	3300	8500
1880	14600	5900	20500
1885	19900	10300	30200
1890	25700	15500	41200
1895	26900	19400	46300
1900	41600	28800	70400
1904	63500	37500	101000
1911	94000	56000	150000

Source: *Union of South Africa, Office of Census and Statistics, Special Report Series 1926*

#### 4.5.1 THE STATISTICAL DETAILS OF IMMIGRATION, 1860-1899

In the following pages a detailed examination of the historical pattern of immigration in the nineteenth century, and the numbers involved, is undertaken. The numerical data included here is obtained from Tables 4.1 and 4.2 and mostly conforms to five-year periods of analysis. The sources of the statistical and general data, used throughout the following analysis, are the Annual Reports of the Protector of Indian Immigrants 1874-1911 for the Colony of Natal, Indian Immigration records 1866-1911, the Special Report Series, 1926, of the Office of Census and Statistics, Union of South Africa, and the Wragge Report of 1888, unless otherwise stated.

##### 1860 - 1866

The emigration of Indian indentured labourers to the Colony of Natal under Acts 13, 14 & 15 of 1859 commenced in 1860 and the first Indians arrived in Natal in November of that year. Since the original idea was to provide able-bodied men to work in the sugar-cane fields, the immigrant population was heavily male-dominated and remained that way for many years. A minimum balance of the sexes per batch of immigrants in the early years was legislated as 25 adult females for every 100 adult males, later increased to 35 females

per 100 males (Palmer 1977: 28). In the years 1860 to 1866 the average ratio was 40 females per 100 males. This ratio fluctuated from year to year, e.g. from 1880-1884 it was 44 per 100; between 1895 and 1900 it increased to an average of 47 per hundred, while between 1901 and 1904 the average was down again to only 40 females per 100 males. The immigrants were mostly bachelors in the 18-30 year age group, especially of ages 20-25 years, while the accompanying females fell into similar age categories. A 'European and Coolie Immigration Agent' was appointed in 1862 to co-ordinate and control immigration into the colony and a similar emigration agent was stationed in India.

A world-wide economic depression in the mid- 1860's caused immigration to be halted in 1865. White planters in Natal ceased to need additional labour, indeed some tried to get rid of their indentured workers. This situation lasted until 1871 when things improved economically and the demand for labour increased (Palmer 1977). Thus by 1874 the only Indians in Natal were those with expired indentures and independent settlers. In May 1872 the government of India expressed dissatisfaction about the treatment of the workers and their families in South Africa, based to some extent on reports made by returned workers. As a result, the conditions and control of employment underwent some revision to improve matters (Palmer 1977). The enactment of Law 12 of 1872 provided for a Protector of Indian Immigrants to be appointed to look after the welfare and well-being of indentured Indians in Natal. In addition an Indian Immigration and Trust Board of Natal was established in 1874 and an Indian Immigration Department in 1880.

In the first five-and-a-half years of settlement in South Africa (from November 1860 until indenture was temporarily halted in 1866) the number of indentured Indians and their families grew by over 450%, from the initial boatloads of 913 Indians late in 1860 to over

5 000 in 1865 (at which date 77% of the population were males and 23% females). Unfortunately no detailed breakdown by age is available for these early immigrants, and the totals recorded include dependants, (women and children), as well as adult male workers. The male-female ratio of these immigrants varied between 230 and 330 males per 100 females, averaging 250 for most of these years. A total of 6 269 Indians arrived under indenture contracts between 1860 and 1866, but at the end of their indenture period, and keeping to the terms of their contracts, 1 228 persons had elected to return to India, comprising 638 males and 590 females of all ages (see Table 4.1).

#### 1867 - 1873

Between 1866 and 1874 no new indentured workers came from India due to a world-wide depression limiting the amount of labour required in Natal. In fact some employers of Indian labour tried to reduce the number of their employees, while others were forced to abandon farming altogether due to the poor economic climate. In 1872 a period of re-negotiation of terms of indenture took place, resulting in the appointing of a 'Protector of Indian Immigrants' specifically to deal with the affairs of indentured labourers, after the Indian government had received reports of mis-treatment of indentured workers, before India allowed the resumption of this practice. Repatriation continued during these intervening years with a total of 1919 persons returning to India (see Table 4.1). The total Indian population was estimated at around 5 500 in 1870, having grown from 5 000 in 1865, and increased to 7 000 by 1874.

#### 1874 - 1879

Immigration recommenced in 1874 and continued for another thirty-seven years. In 1874 a total of 4 310 Indians landed in Natal (2 774 males, 1 446 females and a further 90 of

unrecorded sex, but likely to have been predominantly males). In the same year, 97 births and 137 deaths were recorded in the Colony of Natal, making a total of almost 7 000 Indians by the end of that year - a growth of 35% in one year alone. The total Indian population grew rapidly, from 7 000 in 1874 to 20 000 in 1880. Natural increase during this decade, according to available records, added only 307 persons (1 220 births and 913 deaths). In 1877/78 the Railway Contractors introduced 728 workers and their families, a total of 869 people, from Mauritius on three-year contracts. At the end of their contracts most of these workers were returned to Mauritius, but a few dozen remained to increase the total population numbers.

A further development that was occurring was the urbanisation of many of the former labourers upon completion of their contracts. In 1876 there were estimated to be 1 500 Indians living in the Borough of Durban, consisting of both ex-indentured and independent settlers. This latter group formed the bulk of urban Indians. Most ex-labourers in these early years were content to farm the land given to them upon completion of their contracts or hired from private landowners (Palmer 1977). Originally Crown land was made available to the ex-indentured labourers who wished to remain in the colony, but this land was very limited in extent as well as being some distance from the Borough centre and this practice did not continue for very long. The practice of 'free' Indians hiring (and sometimes buying) land (usually of poor agricultural quality) from private owners thus developed and became relatively widespread.

The crude birth rate for the 1870's was at the low level of approximately 13 per thousand population, while the death rate also averaged 13 per thousand. This indicated that either the statistics were inaccurate or that the rate of *natural* increase was almost zero, the

number of deaths balancing the number of births. This is in part due to the fact that there were relatively few women in the population at this time, plus the fact that there was a continuous in- and out- movement of population. The use of crude rates, which do not take into account the sex composition of the population, give a somewhat distorted picture. However, more sophisticated measures rely on detailed data, which is not available for these early years of settlement.

#### 1880 - 1884

During the next five years the population continued to increase rapidly due to immigration and at the start of 1885 totalled just over 30 000. At this time some 34 000 Indians had been introduced into Natal under indenture contracts, of which an estimated 10-11% had returned to India by free passage under the terms of their contracts (see Table 4.1). There had been 4 900 recorded births and 4 000 recorded deaths amongst the indentured population during this time. Births and deaths amongst both the 'free' and the independent settlers could not be accurately determined as they were under no obligation to report details to the Protector's office.

#### 1885 – 1889

In 1885 it was estimated that there was a total of 30 159 Indians in the Colony of Natal, (19 902 males and 10 257 females), giving a sex ratio of 190 males per 100 females. Of these, 16 210 were adult males (over 15 years of age) and 6 861 were adult females. The sex ratio amongst adults therefore showed great imbalance with 240 adult males for every 100 adult females, which fact is to be expected due to the reasons for, and nature of, immigration.

Between 1885 and 1889 the population grew relatively slowly. Indenture figures were low as the general world-wide economic recession reduced the demand for agricultural products from the colony, and thus reduced the demand for labour. Added to this, the low price of food in India and the great demand for labour for the Assam tea districts and for the Indian railway works created difficulty in inducing people to emigrate (Colony of Natal, Indian Immigration Trust Board, Annual Report 1902). About 6 000 new indentures (including dependants) arrived and 4 500 Indians departed during these years (as shown in Table 4.1), while births totalled 4 000 and deaths accounted for 2 300 people. The population in early 1889 was estimated as 30 355, an increase of only 196 persons over the 1885 figure of 30 159 indicating less than 1% growth during these years.

The ten-year period, 1890 to 1900, was to have a significant effect on Indian population numbers in Natal as it was in 1893 that Responsible Government was granted to the colony, transferring the power to pass various legislation regarding Indian rights to the Natal Parliament. Two years later, in 1895, the Immigration Law Amendment Act No.17 of 1895 was passed, which imposed a £3 residential tax on all adult Indian males whose contract had been drawn up under the terms of this amended law, i.e. on all new contracts from this date (Brain 1985). This would therefore affect all labourers whose indentures expired after 1901. In 1896 Act no. 8 of 1896 was passed, depriving Indians of the franchise. The following year the Indian Restriction Act of 1897 and the Dealers Licences Amendment Act were passed, aimed primarily at 'passenger' Indians and traders. In 1899 Natal was warned by the governments of both Britain and India that such unjust measures would bring an end to the indentured labour scheme in the colony (Brain 1985). However, during all these years the recruitment of new Indian workers and the departure of others continued.

### 1890 - 1894

By 1890, forty thousand Indians had entered Natal under indenture contracts since 1860. In addition an unknown number had immigrated to the colony as independent settlers (officially estimated in the Protector's Report of 1894 as about 3 500). Many workers had completed their contracts and decided to return to India by free passage (in terms of their contracts) and an estimated further 5 500 'free' (time expired) settlers had also decided to depart. By 1891, although the flow of indentured immigrants had not diminished, only one third of the Indians in Natal were still under indenture contracts (Calpin 1949). The number of Indians in Natal had increased from 6 800 in 1876 to around 35 800 in 1891 (Colony of Natal, Natal Blue Books 1880 to 1892).

The number of births since 1860 was estimated as 8 054, with records only being kept since 1873, while total deaths during this period, as recorded in the Protector's reports for these years, was 4 180. The total population in 1889 was estimated as a little over 40 000. The rate of growth had decreased from 280% for the years before 1880 to about 140% between 1880 and 1890. The number of immigrants during the early 1890's decreased temporarily due to an outbreak of plague in India during these years, and consequently restricted recruitment, but increased again in the middle and later years of that decade.

### 1895 - 1899

Immigration increased again towards the end of the nineteenth century and averaged over 5 000 per year for each of the years 1896, 1898 and 1900. During the last ten years of the nineteenth century (i.e. 1890-1900), there were nearly 40 000 Indian immigrants in total, including independent settlers as well as indentured labourers. In 1890 the estimated Indian population of Natal was 41 000, and by 1900 this number had increased to around

70 000 persons. Urbanisation was proceeding apace and 24% of the total population was to be found in urban areas along the Natal coastal region by 1900.

#### **4.6 MIGRATION AND GROWTH IN THE TWENTIETH CENTURY, 1900-1911**

The Indian community had increased and flourished during the second half of the nineteenth century, with many expired-contract Indians becoming small-scale cultivators of the land, hawkers or small traders (Palmer 1977).

A feature of the population in the early twentieth century was the continuing imbalance of numbers between the sexes and the skewness of the age structure. During the early years of settlement, the population had grown largely by means of immigration and this continued into the twentieth century. In 1904 alone over 8 000 new immigrants arrived while under 4 000 departed. The birth rate began showing a steady increase as the twentieth century progressed and the population began to take on a more sexually-balanced configuration, with the crude birth rate reaching into the 30's per thousand population. At the same time the death rate also increased (though not unduly) as the population became more balanced in terms of age structure, with a greater proportion of children.

##### **4.6.1 THE STATISTICAL DETAILS OF IMMIGRATION, 1900-1911**

By December 1900, combined estimates from the previous forty years indicated that more than 103 000 Indians had arrived from India, either by indenture contract or as independent settlers, while an estimated 39 000 had left the colony (see Table 4.1). There had been nine thousand deaths amongst the population since 1860 and about 21 000 births

had been registered during this time, giving an overall official population estimate, based on these figures, of 76 000 (Colony of Natal, Reports of the Indian Immigration Trust Board 1874/5 to 1900/1 and of the Protector of Indian Immigrants 1874-1900).

The early decades of the twentieth century saw the effects of legislation that had been passed since the granting of Responsible Government to the colony in 1893 – the £3 residential tax, the loss of franchise, and the restrictions on settlement and economic activity. In 1899 the governments of both Britain and India had warned that such unjust measures would bring an end to the indentured labour scheme in the colony (Brain 1985).

#### 1900-1904

Between 1900 and 1904, over 32 000 Indians entered the colony while only a little under 6 000 departed, a net gain of 26 600. The total Indian population of the Colony of Natal in December 1900 was given in the Statistical Yearbook of that year as 70 369 (against the above estimate of 76 000), of which 65 925 had initially entered the colony under indenture contracts or been born to the workers. The balance was classed as independent settlers.

No detailed breakdown by sex is available for the Indian population from the census results of 1904 (Colony of Natal, Census 1904). The Indian population at this time numbered 101 000 persons (of which some 19 000 were born in South Africa). Thirty two percent of this number were children under 15 years of age and 67% were between the ages of 15 and 59 years (i.e. of working age). The elderly accounted for less than 2% of the total population. From these figures it can be seen that considerable skewness in the age structure continued to exist. This would take many years to work its way

progressively through the age groups before the population finally attained an overall balanced age and sex structure, well into the twentieth century.

### 1905 - 1911

During these last years of indentureship a total of nearly 44 000 Indians (male and female workers and their families) arrived in South Africa, while over 26 000 people left, a net gain of only 17 400. The Colony of Natal Act 42 of 1905 allowed free Indians to re-indenture and several hundred took advantage of this, partially as a way of escaping the residence tax imposed after 1901 while remaining in Natal. Recruitment was suspended for seven months in 1908 due to the large numbers of ex-indentured workers in the country re-indenturing, resulting in a decrease in the demand for new immigrants. In 1909 alone over 600 time-expired, 'free' labourers opted for re-indenture.

In 1908 the British government carried out its 1899 threat and introduced a bill to provide for the cessation of Indian immigration at the expiry of three years, i.e. in 1911. An increased recruitment drive during these years was permitted as the demand by the sugar farmers was for 'another adequate supply of labour before Indian immigration is stopped' (Colony of Natal, Report of the Indian Immigration Commission 1909). However with the large numbers of time-expired workers returning to India during this period, the actual gain in numbers was only 17 400, some 9 000 less than the previous five years. This was in large part due to 'every encouragement (being) given to ex-indentured Indians to return home to India and (increasing) restrictions on those remaining', such as the £3 residence tax introduced in the early 1900's (Halliday 1940: 58). Repatriation of a 'stranger' class became the policy of the Union government (which took over control after the Union Act of 1910 under which the Colony of Natal became the Province of Natal) (Halliday 1940),

and this 'alien' status of the Indians remained until the 1960's when the Union of South Africa became the Republic of South Africa (see section 4.7).

By 1911 there were over 150 000 Indians in what was by then the Union of South Africa (into which the Colony of Natal had been incorporated in 1910). This indicates an increase in total population of around 49 000 over a period of seven years (from population census figures of 1904 and 1911). This increase was mostly due to newly indentured labourers and their families (with 17 000 alone arriving between 1909 and 1911) but also included some independent settlers as well as the surplus of births over deaths amongst the settled community. On completing their indenture period, many Indians applied themselves to market gardening, hawking and peddling. From the coast they moved into the interior of Natal and the Transvaal. There were no Indians to be found in the Transvaal before 1881, but by 1911 they numbered 8 500 males and 1 500 females, a total of 10 000 in this province. The number in Natal had risen to over 133 400 by 1911, an increase of some 20% in seven years. A further 6 800 Indians were to be found in other parts of the Union. While the constitution of the Orange Free State prevented permanent settlement of Indians in that province, a small community had been established in the Cape Colony by direct immigration. Of the 150 000 Indians within the Union of South Africa enumerated by the census of 1911, 63% were males, giving a sex ratio of 170 males for every 100 females at this date.

The year 1911 marked the end of an eventful era in South African population development. An additional 150 000 persons were to be found in the country, having been introduced over the preceding fifty years under an indenture contract negotiated by the governments of Britain and India. A plethora of legislation had been enacted during this

time, and more was to follow relating to the status of this 'alien' population. Mass inward and outward movements of people had taken place and a new dimension had been introduced to the picture of population in South Africa.

#### **4.7 THE AFTERMATH OF IMMIGRATION**

Once immigration under the indenture system had ceased, very little further international movement took place between India and South Africa. The year 1910 marked a significant alteration in the course of anti-Indian legislation with the Union government (established in that year) attempting to frame a national policy to deal with Indo-European conflict (mainly in an economic context). The restraining influences of the British government now had little impact on policies and legislation relating to South African Indians (Huttenback 1966).

The supply of indentured labour was halted in 1911, but for the next two years Indians were still able to enter the colony as settlers. In 1913 the Union Government elaborated upon the colonial immigration restrictions of Natal by introducing the Immigrant's Regulation Act, the Union of South Africa Act No.22 of 1913. This entirely restricted male, adult Asiatic immigration into Natal, served to restrict the movement of Indians from province to province for purposes of residence, imposed an English language test on prospective immigrants, and introduced a policy of voluntary repatriation. The £3 'residence tax', introduced under the Immigration Law Amendment Act No.17 of 1895 as a discouragement to permanent residency of Indians in the colony, was retained as a measure to encourage repatriation or re-indenture of time-expired workers. Admission to the Union was to be denied to all races that were considered 'undesirable' as settlers. The

Indian population in South Africa thus effectively became a closed society, with future growth and development taking place almost entirely by natural means. An exception made to the closed immigration situation was the admission (between 1925 and 1948) of a limited number (about 1 600) of young Indian females of marriageable ages to ease the age-sex imbalance in the population structure (Union of South Africa, Statistics of Migration 1948).

Repatriation had taken place throughout the entire indenture period, with a total of nearly 19 000 people returning to India between 1874 and 1911 (Colony of Natal, Reports of the Protector of Indian Immigrants 1872-1911). After indenture was stopped in 1911, there were still many Indians who wished to return to India, either in terms of their contract or at their own expense. Certain 'Indian issues' were redressed by The Indians Relief Act (Union of South Africa Act 22 of 1914), but existing legislation restricting rights of residence, trade and ownership of land was not altered. However the £3 tax was abolished (Calpin 1949, Huttenback 1966, Pachai 1979).

The Lange Commission of 1920/21 was instituted to investigate Indian land acquisition, and proposed that Indian settlement be confined to the coastal belt in Natal, up to 30-50km inland. A bill was prepared based on the recommendations of this commission, the Class Areas Bill of 1923, which provided for compulsory trading and residential segregation (Pachai 1979a). This Bill stimulated a round table conference in 1926 (Palmer 1977) which culminated in The Cape Town Agreement of 1927, an international conference involving the governments of both India and South Africa. Matters dealt with included a voluntary repatriation scheme and a raising of the standard of living of Indians in South Africa to conform to Western standards of life (Pachai 1979).

The Cape Town agreement (Union of South Africa, Act 37 of 1927) represented a compromise and a turning point. But this agreement was not accepted by the Natal Provincial Council, which had not been consulted but was expected to bear the financial burden of the proposed upliftment programme (Corbett 1947).

The grant of assisted passages to India (Act 22 of 1914) and the Cape Town agreement (Act 37 of 1927), as well as the ending of indenture contracts, resulted in the repatriation of about 27 000 Indians up to the time of the 1936 Census. From 1914 to 1933 an average of 1 200 Indians returned to India each year. The large number of Indians living in Natal in the early decades of the twentieth century were prevented from moving permanently to the other provinces of the Union by the Immigrants Regulation Act of 1913. The Trading and Occupation of Land (Transvaal and Natal) Restriction Act, or the 'Pegging Act' of 1943 further enforced this prohibition. This latter Act was an interim measure imposed for 3 years to allow for negotiations and consultation on the different restrictive legislation regarding Indians in the four provinces of the Union (Calpin 1949). Thus was entrenched the settlement pattern which still persists today - the majority of Indians being found in KwaZulu-Natal, mainly around Durban, in the adjacent coastal areas or a short way inland, and along the main arterial routes to the interior.

#### **4.8 GROWTH IN THE TWENTIETH CENTURY, 1911-1991**

Between 1911 and 1921 a total of 10 200 Indians returned to India under Act 22 of 1914 and Act 37 of 1927, while a further 15 500 emigrated elsewhere. Between 1921 and 1926 a further 10 200 returned to India and 2 000 emigrated to other countries (Union of South Africa, Special Report Series No.41, 1925). No immigrants were recorded during this

period, so the total loss by emigration was 37 900 over these fifteen years (see above for reasons). The estimated growth rate was thus down to 0,75% p.a. between the 1911 and 1921 censuses, an increase in real numbers of only 11 300 in these ten years (increasing from 150 000 in 1911 to 161 300 in 1921 - Tables 4.3 and 4.4).

**TABLE 4.3**  
*TOTAL POPULATION 1911-1991 - to nearest 100*

Year	Male	Female	Total
1911	94000	56000	150000
1921	94300	67000	161300
1936	119000	100400	219400
1946	148500	135500	284000
1951	189400	177000	366400
1960	241500	235300	476800
1970	316100	316300	632400
1980	408200	413100	821300
1985	428200	433300	861500
1991	489000	497700	986600

Source: *Census results of the Union of South Africa and the Republic of South Africa for these years*

In 1921, the 165 700 'Asians' (which term included all people of eastern race) recorded in the census (Table 4.3) were estimated to be 97% Indians. Of the estimated 161 300 Indians recorded in this total, 94 300 would be males and 67 000 females. The percentage population increase over the figures of 1911 was therefore of the order of 0,5% p.a. for males and 2,0% p.a. for females.

The overall annual population increase between 1911 and 1921 appeared to be a little under 0,8% p.a. (Table 4.4), but care must be taken in the use of these figures due to the necessity of using estimates from the broader census grouping of 'Asiatics', which included Indians. The relatively large increase in the number of females between 1911 and 1921 can be explained by the improvement in the accuracy of enumeration and the

correction of racial classification over the previous census, plus the fact that there was a steady increase in the number of Indian men seeking to bring their wives and families from India to settle in the Union, which was permitted for several years after indenture ceased (Union of South Africa, Statistics of Migration 1948). It must also be borne in mind that some repatriation (particularly of male workers) was still taking place during these years under the terms of the indenture contracts which reached the end of their terms during this period.

**TABLE 4.4**  
*INTERCENSAL RATE OF GROWTH*

Intercensal Period	% Rate of Growth
1904-1911	4,8
1911-1921	0,8
1921-1936	1,6
1936-1946	2,2
1946-1951	4,6
1951-1960	2,7
1960-1970	2,5
1970-1980	2,3
1980-1985	1,9
1985-1991	1,7

*Based on Table 4.3 (with adjustments for undercount)*

The 1936 Census appears to have improved its accuracy and claimed a considerable improvement in the statement of age. The 1921 Census had shown enormous concentrations in the ages 25, 30, 35, 40, 45 and 50 but the 1936 results appeared to reflect a better statement of true age (Union of South Africa, Census 1921 and 1936).

The 1936 census also reflected an increase in the number of children and young adults, due to '.... a change in the proportion of the sexes. The disproportion between the sexes has now largely disappeared' (Union of South Africa, Census 1936: iv). This statement was perhaps a little premature as it took many more years before this became true. Also

affecting the changes taking place in the age distribution of the population was a loss due to the excess of emigration in the higher age groups, while immigration of young workers and their families had ceased. A further factor worth noting is that the decreasing death rate during this period indicated a marked increase in the survival rates of the population at all ages.

The population in 1936 totalled 219 400 (Table 4.3). The proportion of adults, 15-59 years of age, had declined by over 6% since 1921, with a proportionate rise in the number of children under 15 years of age, resulting in a decrease in the median age of the population (see section 5.7). The rate of increase since 1921 was calculated to be 1,6% per annum (Table 4.4). An additional note was made in the 1936 census that the number of late registrations of births appeared "to have increased considerably in latter years, so the reflected number of registrations differs considerably from the actual number of births for a particular year" (Union of South Africa, Census 1936: v). Therefore the number of births given in most of the census tables for this year refer to the number of registered births, not necessarily those taking place in that year.

The overall 1946 Census results could be looked upon with greater confidence. Racial classification was done with more accuracy and age reporting seemed to have improved, though late birth registrations were still occurring, particularly in the rural areas (see previous paragraph). The growth rate since 1936 was 2,2% p.a., which was an increase over previous inter-censal years, but Sadie (1970) estimated that the 1946 total should be about 9% higher than that recorded, as in 1945 alone the growth rate was 3,4%. The increase in population numbers between 1946 and 1951 was calculated from Table 4.4 as 4,6% p.a., which is an extremely high growth rate. As has been discussed and examined in

section 3.3, a comparison of census results by age group for the years 1946 and 1951 shows several discrepancies.

For the intercensal period 1951 to 1960, the rate of growth was 2,7% p.a., which represents the second highest period of natural increase. The influence of the prevailing high birth rate during these years is shown in the high proportion of children under fifteen years of age, this proportion reaching 48% in 1951. Median ages during these years decreased to under twenty for females and under twenty-three years of age for males.

Following this period of extremely high growth, and based on statistics obtained from CSS annual statistical reports available since 1960, and the Republic of South Africa census results, it appears that the average annual rate of growth fell from 2,7% between 1950 and 1960 to 2,5% p.a. between 1960 and 1970. For the period 1970 to 1980, the average rate was 2,3% per annum, though in the second half of that decade it fell to under 2% per annum. Since 1980 the rate has remained under 2% (1,8% in 1985) and for 1990 an estimate of 1,5% was made by the CSS (Statistical Report 1991). The average annual growth rate of the Asian population from 1980 to 1990 was 1,72%, (CSS, Statistics in Brief 1992) representing an increase of 18,6% in total population numbers over these years.

#### **4.9 URBANISATION AND DISTRIBUTION**

After the indenture agreement with India ended in 1911, there was virtually no further Indian immigration into South Africa (with the exception of a small number of young females in the early decades of the twentieth century to address the sexual imbalance of

the population – see section 4.5 above). Migration was virtually confined to internal movements, with the large numbers living in Natal (88% of the total Indian population of South Africa) being prevented, for many years, from moving to other provinces by the Immigrants Regulation Act of the Union of South Africa, 1913. Rural-urban migration within a province became the major redistribution factor and several restrictions of movement were legislated due to government policy on repatriation of the Indian population. "Every encouragement was given to ex-indentured Indians to return home to India and restrictions on those remaining were increased" (Halliday 1940: 58).

By 1991 the descendants of the original indentured workers, by then in the fourth or fifth generation had, on the whole, prospered economically and socially. They had become a largely urbanised community, with 96,2% living in towns or cities in that year (SA, CSS, Census 1991b). The majority of Indians are still found in and around the city of Durban, which historically has been the major urban centre of this population.

In 1876 there were an estimated 1 500 Indians living in the then Borough of Durban. This number had grown to 3 700 by 1885, with another 2 000 living within two miles of the Borough borders (Colony of Natal, Wragge Report 1888). It was initially the independent settlers who settled in the towns, as the early indentured labourers who remained in the colony after expiry of their contracts were "mostly content to farm the land given to them under the terms of their contracts" (Palmer 1977: 42). However, as the number of ex-indentured labourers increased, and the small supply of Crown land available was exhausted, a large number moved to the urban centres where they rented land and became market gardeners and hawkers or petty traders (Meer 1980). By 1900, 76% of the Indian population of the colony still lived in the rural areas, with the proportion in urban areas

having increased to 24% of the population (Colony of Natal, Protector's Report 1900). In 1904 Indians constituted 9% of the total population of the Colony of Natal, accounting for 8% of the total rural population and 20% of the total urban population of the colony (Colony of Natal, Census 1904). The increase in urban dwellers resulted in 37% of the population residing in urban areas in 1904. By 1911 this proportion had increased to 47%. The trend towards urbanisation gained momentum once the practice of indenture ceased and opportunities for independent economic survival in the urban areas were realised.

In 1921, 60% of the Indian population (98 000 persons) were living in urban areas and this proportion increased to 70% in 1936, with 71 000 in the Durban municipal area alone (Union of South Africa, Third Census 1921 and Sixth Census 1936). After the Second World War, urbanisation proceeded at an increasing rate. The proportion of urban dwellers increased to 78% of the total Indian population in 1951, with 145 000 Indians to be found in Durban (Union of South Africa, Ninth Census 1951). By 1970 the proportion of urban dwellers had reached 86% (RSA, Department of Statistics, Census 1970b). During the period 1960 to 1970 the metropolitan area of Durban–Pietermaritzburg was the major reception area for these migrants, but since that time the Witwatersrand metropole, centred on Johannesburg, has become the major reception area of this (mainly family) migration (see Mostert *et.al.* 1989: 18-38).

In 1985 some 93% of the Indian population was to be found in towns and cities and this figure stood at 96% in 1991. This made the Indians the most urbanised of all the racial groups in South Africa at this date, with the second slowest growth-rate of the four recognised population groups in the country (RSA, CSS, South African Statistics in Brief 1992). The rural areas have experienced a continuous decrease in Indian population

numbers since 1970, with the rate of decrease reaching 7% for the period 1980 to 1985, and a similar decrease occurring between 1985 and 1991 (RSA, Censuses of 1970b, 1980c, 1985a and 1991b). The rural dwellers were (and still are) to be found almost entirely in the former province of Natal, with 93% classed as urban in 1991 compared with the former provinces of the Cape (98%) and the Transvaal (97%) (RSA, CSS, Census 1991b).

Today, the majority of the Indian population is still to be found in Natal and this situation has its origin in the historical nature of their settlement patterns in this country and in early legislation. In 1911 only 8% lived outside the boundaries of that province and free movement was restricted for many years. In 1991, 81% of the population was still to be found in Natal, with a small number, 4%, living in the Cape province and 15% to be found in the Transvaal, mostly in and around the city of Johannesburg. The Orange Free State, historically forbidden to Indian settlement since 1891, accounted for less than 0,01% of the total *Asian* population in 1991, and these were possibly non-Indian Asians (RSA, CSS, Census 1991b).

#### **4.10 SUMMARY**

The rate of population increase world-wide is chiefly determined by the balance of births and deaths. Migration affects population growth to a varying extent, and in the past was the factor that led to the establishment of an Indian community within the South African borders. The terms under which immigration occurred and the subsequent governmental policies of the host country have markedly affected both the original population structure and the pattern of subsequent growth of the Indian population.

Since 1911, however, when immigration effectively ceased (although some emigration continued to take place), the erratic growth of the early years has been halted. It has been natural increase, i.e. the surplus of births over deaths that has shaped the demographic development of the Indian population to its present status of an ageing population.

Growth of the Indian population in South Africa was distorted for many years by the imbalance between the sexes which persisted for more than half a century after indenture was halted. Once this imbalance began to rectify itself (mostly by natural progression over many years) the rate of increase of the population rose in some years to over 3%, with the highest *intercensal* rate being 4,6% between 1946 and 1951 (Table 4.4). After this date a slow but steady fall in the fertility rate occurred and the growth rate hovered around the 2% p.a. level in the late 1970's and early 1980's. With the proportion of children having declined significantly in the intervening years, and the population falling within the classification of an ageing phase, with a low rate of growth, the number of births was only slightly ahead of the increasing natural loss through death in the higher age cohorts, reflected in the low rate of growth of 1,7% p.a. for the period 1985 to 1990, and 1,5% p.a. for 1990/91.

## CHAPTER FIVE

### AGE - SEX STRUCTURE

#### 5.1 INTRODUCTION

The aim of this chapter is to examine and analyse the age-sex structure of the population of Indian origin in South Africa and to describe the patterns and changes that have taken place over time. The sex and age structure of a population has many important implications, “the most fundamental being to define the limits of the society's reproductive potential” (United Nations 1973: 262). Sarre and Blunden (1995: 142) maintain that “Age structures are the living record of past population dynamics: past levels of fertility, mortality and migration”. In addition, the age and sex structure of a population is also the basic demographic determinant of a nation's manpower supply and it influences requirements for various essential goods and services. A population that has a higher ratio of persons in the productive age group will have a higher *per capita* output, greater savings and larger investments available for development. Less will be spent *per capita* on primary education, housing and social overheads. Fluctuations in the number of persons attaining particular ages can have significant repercussions, such as pressures on schooling, employment opportunities, housing and social services (Sarre and Blunden 1995). The age-sex structure of any population at any time is the result of past trends in fertility, mortality and migration, and in turn influences the current level of vital rates, (births and deaths), and the rate of population growth. It is therefore a key demographic factor in a discussion and analysis of any population.

“Because of its significant demographic, economic and social implications, the dynamics of a population's sex and age structure constitutes a central subject in demographic analysis and furnishes the basis for many types of demographic investigations” (United Nations 1973: 262).

A systematic statistical examination of recorded census data concerning the age-sex structure of Indian South Africans in the years since the original immigrants arrived in 1860 is undertaken in this chapter, followed by detailed descriptions of the results of this analysis. The analysis relies on past recorded data and is therefore constrained by the availability of such historical data. Where possible (related to the availability and nature of the primary data) calculations have been undertaken to enhance and assist in an understanding of the overall patterns of change and development, and measures such as median ages, rates of growth and dependency ratios are included, following the methods of calculation outlined in various secondary sources. The data is presented in the form of tables, line graphs and histograms. Where appropriate, comparisons have been made with other racial groups in South Africa as well as with other nations, and trends have been highlighted as they became apparent. The overall analysis and discussion is set within the framework of transition theory, to which frequent reference is made.

## **5.2 SOURCES OF PRIMARY AGE-SEX DATA**

The investigation of population structure undertaken in this chapter spans the period 1860 to 1991. The main sources of primary data used were the published census data on total population numbers for the years in which colonial or national censuses took place in Natal, and later in the whole of South Africa, in which data on the Indian population were included (in colonial times some censuses were conducted amongst the Europeans only). These censuses therefore span the periods of Colonial government (before 1910), Union government (between 1910 and 1951), and finally Republican government for the remaining years of investigation, thus providing a continuum of population data. While basically the methods of census-taking have remained the same under the various forms of government, the reliability and accuracy of recorded information has varied (noted in the

text in the relevant sections). The importance of recording in detail various demographic aspects of the Indian population was often ignored in the early years of settlement. However, as the twentieth century progressed, and Indians became an established component of the South African population, many deficiencies in the collection and recording of census data for this minority group were addressed, and confidence in the published census results increased.

Apart from census publications regarding total numbers, age-sex breakdowns and geographical distribution, a variety of other sources were accessed, particularly for the nineteenth and early twentieth century periods, when the official recording of pertinent Indian statistics was somewhat neglected. Thus Year Books for the Colony of Natal and later for the Union of South Africa, Official gazettes and various Special Reports served to enhance and supplement the census data.

### **5.3 SECONDARY SOURCES**

This chapter is a statistical and descriptive investigation of recorded primary data, and secondary sources were accessed in terms of methodology, development patterns, interrelations, trends and outside influences, as well as for comparative examples both inside and outside the study area. Various publications by the United Nations over the last fifty years were consulted in terms of methodology of analysis and significance of results, while relevant papers presented at world population conferences were perused. Comparative works relating to the populations of other countries were studied and relevant comparisons have been made where appropriate. Many publications by the HSRC proved to be invaluable for the purpose of comparison with other population groups

within South Africa. These sources are recorded in the bibliography at the end of chapter eight.

#### **5.4 ORGANISATION OF DATA**

The published census results on the age and sex structure of the population at the various census dates are presented firstly for the nineteenth century (which involved only one comprehensive census amongst the Indians, in 1891), followed by the results of the twentieth century censuses for the years 1921, 1936, 1946, and 1951, the period of Union government, and for 1960, 1970, 1980, 1985 and 1991 under the Republic government. (The census years of 1904 and 1911 did not yield adequate data for the Indian population and therefore could not be analysed in detail.) Supplementary information from secondary sources for some intervening years has been included. Numbers in the tables have been rounded to the nearest 100 (nearest 10 in the case of 1891, as numbers are small). The census totals by sex and age-group are presented in tabular form, from which percentage distributions have been calculated (using actual recorded numbers where published) and included in the same table. From the census totals, line graphs have been constructed for each sex by age-group which allow for a visual comparison of relative numbers and overall age-sex structure for each census year. Age-sex pyramids (histograms) were then compiled as a visually powerful form of presentation, contributing an increased understanding and awareness of the changes that have occurred in the population over time (see section 5.4.1). The sex differential in age structure can be clearly seen using this form of representation (where both sexes are plotted on the same vertical axes).

Following the statistical and graphical presentation and analysis of the numerical census data, several important demographic aspects are discussed and relevant measures

calculated. These include sex ratios, dependency ratios, median ages and the ageing of the population over time. For the 130 years covered in this thesis, an interesting picture of major population structural change emerges.

#### **5.4.1 THE USE OF HISTOGRAMS IN THIS ANALYSIS**

Age-sex pyramids (histograms) reflect not only long-term trends in fertility and mortality, but are also sensitive to short term phenomena, such as wars, migration and other social changes. These short-term fluctuations are particularly visible when age is plotted for single years but due to the nature and availability of data for this study, the available information has had to be treated in five-year age groups.

Certain basic types of pyramids exist, with the true pyramid shape being best shown by a population where fertility is high, giving a wide base (United Nations 1973). Such a population can be termed progressive (see section 3.7.4) and is representative of stages one and two of the transition model (section 2.3.2). This form of pyramid is typical of the populations of most developing countries (Hofmeyr and Mostert 1989). A substantial decrease in fertility over time will produce a regressive pyramid (section 3.7.4) which is narrow at the base and has more the shape of a bell, also variously described as 'bee-hive', 'Chinese lantern' or 'barrel' (United Nations 1973). This is typical of an ageing population that has passed from stage three of the transition model, through stage four, and has moved into the declining phase of stage five (see sections 2.3.2 and 2.3.3). The pyramids included in this thesis show clearly a population that has undergone transition from a progressive to a regressive state over a specified period of time.

Age-sex pyramids for the study population have therefore been included in the following analysis for all census years between 1891 and 1991 where the required data were available (except for 1904 and 1911, for which years no breakdown of the Indian population by sex and age was available). The shapes of many of these pyramids for the early years of settlement are unique to this population in that they reflect the effects and structure of a carefully engineered immigration scheme, resulting in an artificially imposed population composition for all the early years of settlement in this country (see section 4.4). Once immigration was halted and the population grew by the excess of births over deaths, a fairly rapid normalisation of population structure can be observed in the changing shapes of the pyramids.

For the two census years of 1891 and 1921 it was decided to present the respective histograms in two ways. Firstly, in a manner specifically chosen to enhance the disparities between the sexes, the actual numbers in each age cohort, for each sex, were expressed as a proportion of the *total* population at that time (obtained from census results of the respective years). This method illustrates clearly the imbalance of the sexes within the total population that existed during the early years of settlement (64% of the population was male in 1891 and 59% in 1921) and enables a visual comparison of the structural gender changes that occurred over the thirty-year period covered by these figures. These presentations are followed by pyramids (for the same two census years), with the numbers in each age group expressed as a proportion of the total number of persons *of the same sex*. These show clearly the uneven and unbalanced age structure occurring within each sex (41% of males were aged 20-24 years in 1891 and 30% in 1921). These two methods have resulted in slightly differing pyramids for these years, reflecting the very unbalanced population structure at those times.

For all census years after 1921 the latter histograms were used as depicting the changes and normalisation in population structure over time. The feature of imbalance between the sexes (which was responding to the normal balancing effects of the fertility-mortality relationship) is not as apparent in this latter form of representation but the imbalances in the age structure within each sex (a feature of the study population for many years) are highlighted and can be traced through successive census years. Finally the histograms for all the available census years during the period of study are collectively presented on one page in Figure 5.23. This yields a clear and definitive visual image of the changes in population structure that have occurred over the 130 years of settlement being studied, and the progression of this population from a progressive to a regressive state.

## **5.5 THE NINETEENTH CENTURY**

The structure of the Indian population in South Africa in the nineteenth century was a shifting pattern and at any one time reflected the in- and out- movement of the indentured workers since 1860, who had a transitory influence on population patterns and numbers. Natural increase during these years did not play a major role as the number of recorded births could be offset against the number of deaths (see sections 4.4 and 4.5). Early records do not generally show the age-sex breakdown of these labourers, many of whom returned to India once their period of indenture was completed (see Table 4.1) and this created difficulties of structural analysis during the early years.

### The 1891 Census

Only one comprehensive census count that included the Indian population of the Colony of Natal was undertaken in the nineteenth century, and that was in 1891 (Colony of Natal, Census 1891). Before that date there existed no comprehensive collections of detailed age

and sex statistics for the total Indian population, including those still indentured, those 'free', having completed their period of indenture, and the independent or passenger settlers, upon which to base estimates of the age-sex structure of the population (see section 4.5 for available statistical data).

The indentured population in the early years was roughly classed as male and female adults, and children (usually taken as under ten years of age). Sometimes a further breakdown of the children into male and female children and infants was made by the Protector of Indian Immigrants in his annual reports, though it was not always clear as to the upper age limit of these groups (Colony of Natal, Reports of the Protector of Indian Immigrants, 1874-1911). The 1891 census was the first comprehensive collection of detailed demographic data of Indians in the colony and the numbers and proportions from this census are set out in Table 5.1.

**TABLE 5.1**  
*AGE-SEX STRUCTURE 1891 – to nearest 10*

Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	2730	2570	5310	11,2	18,6	13,9
5-9	2390	1250	3640	9,8	9,0	9,5
10-14	1430	1200	2640	5,8	8,8	6,9
15-19	1830	1200	3030	7,5	8,7	7,9
20-24	3530	2100	5610	14,4	15,1	14,6
25-29	3450	1970	5420	14,1	14,3	14,2
30-34	3030	1420	4450	12,4	10,3	11,6
35-39	1990	750	2740	8,1	5,5	7,2
40-44	1670	630	2300	6,8	4,6	6,0
45-49	820	270	1090	3,4	2,0	2,9
50-54	730	220	950	3,0	1,6	2,5
55-59	280	70	340	1,1	0,5	0,9
60-64	330	100	430	1,4	0,7	1,1
65-69	90	20	110	0,4	0,2	0,3
70+	200	50	250	0,8	0,4	0,7
Total	24500	13810	38310	100,0	100,0	100,0
unknown	1240	650	1890			
TOTAL	25640	14460	40200			

Source: *Colony of Natal, Census 1891*

The population at this time exhibited a badly skewed structure in terms of both age and sex and this distortion was to remain visible to some degree for many years to come (shown clearly in the age-sex graphs and pyramids). The results of the 1891 census indicated that males constituted 62% of the total population at that time, with young able-bodied workers in the age-group 20-34 years forming 41% of the male population (28% of the total male population being between the ages of 20 and 29 years). There were very few people of either sex over the age of 59, just over 2,5% of males and 1% of females. Children under the age of 15 years accounted for just over 30% of the total population. The median age of males in 1891 was calculated to be 27 years while for females a difference of six years was found, giving the lower value of 21 years.

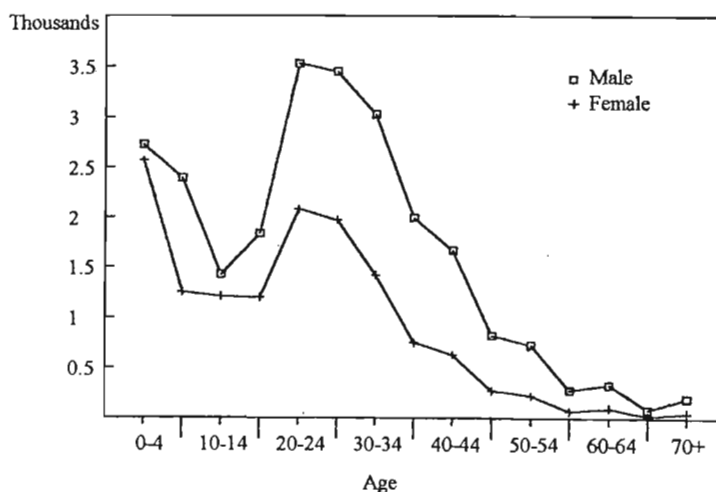
The imposed imbalance of sexes persisted for many years, with changes in the sex ratio occurring slowly, from over 200 males per hundred females before 1880, according to available records of the Protector's Office, to a little over 166 males per hundred females for the years up to 1904. The population structure during these years was influenced by the structure and size of immigration under the indenture contracts between the governments of the Colony of Natal and India respectively (see section 4.5).

As a result, the structure of the population in these early years of settlement is solely related to the reason for - and type of - migration, both inward and outward movements, that led to the establishment of an Indian community in South Africa (see Chapter 4). Net immigration had the effect of keeping the population youthful by adding primarily to the young-adult age groups (Marks and Richardson 1984). Secondary effects of migration included the prevailing low crude birth rate, due to imposed distortions in the sex ratio and age composition of the population (Coale 1972, United Nations 1973, Saunders 1984).

For most populations of the world, the age-sex line graphs of the total population generally have a fairly smooth, somewhat concave or convex shape, depending on whether they represent progressive or regressive populations respectively (Woods 1979 and 1982). For the study population, an unnatural 'bulge' in the age curve, caused by the indentured origin of the population, can be clearly seen in Figure 5.1 for 1891, particularly in the case of males and to a lesser, but still obvious, extent for females.

The situation of imbalance of the sexes and skewness of age-structure as found here is not uncommon in migrant populations where selective movement, either by choice or design, has taken place (United Nations 1973, and Marks and Richardson 1984). It means, however, that the population fits no recognised demographic pattern and can, at this time, in no way be related to any stage within the demographic model of population transition, or compared with patterns found in other countries.

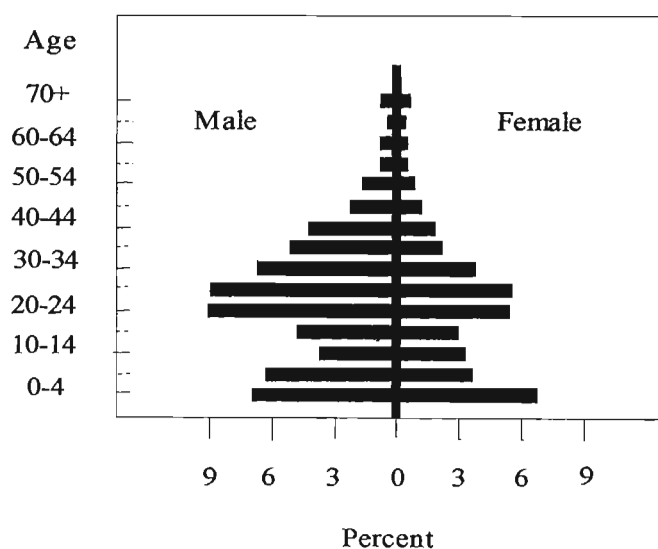
**FIGURE 5.1**  
*AGE-SEX STRUCTURE 1891*



*Based on Table 5.1*

A further analysis of the structure of the population was undertaken by the use of population pyramids (histograms). When a histogram for 1891 is compiled and plotted for each age group as a proportion of the *total* population (Figure 5.2), imbalances in both the age and sex structure become visually apparent. A preponderance of young adults, especially males, is evident in Figure 5.2, causing a marked ‘bulge’ of young adults, particularly males, between the ages of 20 and 39 years. A similar, though lesser, distortion in the case of females, for the same ages, indicates the corresponding age structure of their accompanying wives and other female immigrants. Children and elderly persons comprise very small proportions of the total population.

**FIGURE 5.2**  
*AGE-SEX PYRAMID 1891*  
*% of Total Population*

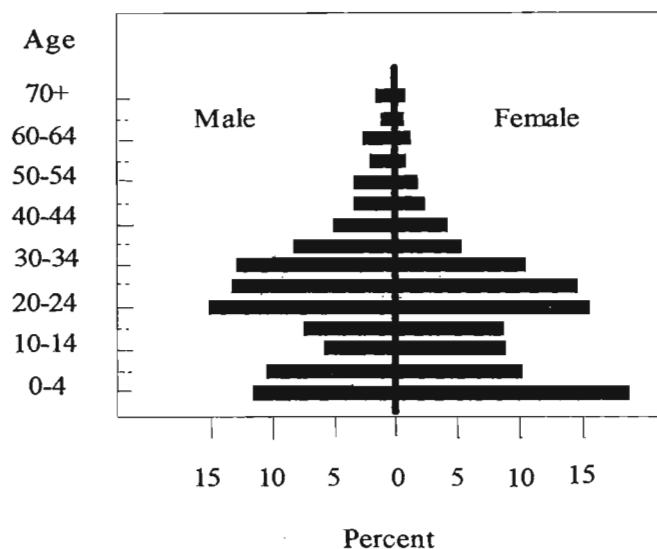


*Based on Table 5.1*

Figure 5.3 depicts each age cohort as a proportion of the total number of that sex. While the overall shape appears to be very similar to that of Figure 5.2, it does not highlight the

marked skewness in the balance of sexes, as appears clearly in Figure 5.2, an important factor in the structure of the Indian population for many years.

**FIGURE 5.3**  
*AGE-SEX PYRAMID 1891*  
*% by Gender*



*Based on Table 5.1*

In the years following the 1891 census, considerable and significant legislation relating to Indian settlement in the Colony of Natal was passed under the new order of Responsible Government, granted in 1893 (see section 4.4). These new Colonial Acts served to impose restrictions on all Indians in Natal, and several were designed to encourage repatriation of both those Indians remaining in the Colony after expiry of their indenture contracts, as well as the independent settlers (see section 4.4). This had the effect of further complicating the pattern of inward and outward movement of Indians during the last years of the nineteenth century and for a few decades into the twentieth century.

## 5.6 THE TWENTIETH CENTURY

Considerable changes took place in the early years of the twentieth century, such as the legislative transition of Natal from a Colony to the status of a Province in the new Union of South Africa in 1910, as well as the ending of the practice of indenture in 1911 and the enactment of a further large body of legislation designed to discourage and prevent permanent Indian settlement in the new Union (see section 4.5). Several censuses were undertaken under the Union government and the results are presented and discussed below.

### The 1904 Census Results

No detailed age breakdown by sex is available for the Indian population from the 1904 census of the Colony of Natal, and thus no age-sex line graphs or histogram could be compiled.

The overall pattern in terms of age structure showed only small changes from that prevailing in previous years. The population census of 1904 (Colony of Natal, Census 1904) put the total Indian population in Natal at 87 980, a growth of 25% since 1891. Of the 1904 population, 38% fell into the 20-34 years age group (with 27% aged between 20 and 29), while just over 1% was aged 59 years or more (Table 5.2). Very few elderly persons, over 60 years of age, were recorded (only 1% of the total population).

The principle changes in the structural pattern since the previous census of 1891, had taken place both in the proportion of children under 15 years of age, (which had increased slightly from 30% to 32% during the intervening thirteen years), and in the proportion aged 20-35 years, (which had decreased from 40% to 38% over the same period). This

had the effect of slightly lowering the median age (of both sexes combined) to 23 years in 1904 from the level of 24 years in 1891. Considerable skewness still existed in the overall structure at this time, as evinced by the large numbers in the 24-39 age group (Table 5.2).

**TABLE 5.2**  
*AGE STRUCTURE 1904 - to nearest 100*

Age	Number	%
0-4	13100	13,0
5-9	11900	11,8
10-14	7600	7,5
15-19	9400	9,3
20-24	14100	14,0
25-29	13500	13,4
30-34	10800	10,7
35-39	9500	9,4
40-44	4200	4,1
45-49	2800	2,8
50-54	1600	1,6
55-59	1300	1,3
60-64	400	0,4
65-69	400	0,4
70+	300	0,3
Total	100900	100,0

Source: *Colony of Natal, Census 1904*

### The 1911 Census Results

The following census, in 1911, which was undertaken as the first census since The Union of South Africa was constituted, contained certain intrinsic problems for analysis - notably the classification of many census tables under only two groups namely, Whites and Coloureds/Others (excluding Blacks), which made establishing the demographic structure of the study population at this time extremely difficult. Careful perusal of several aspects such as language, religion and country of birth did not yield satisfactory or reliable statistics with what was felt to be an acceptable degree of confidence in their accuracy. For this reason it has been considered inadvisable to include detailed results from this census, so as to avoid misrepresentation of the situation at this date and distortion of the

continuing patterns of structural development. Estimates of the total Indian population of South Africa at this time, made by the various bodies concerned with Indian affairs, (such as the Immigration Restriction Department and the Indian Immigration Trust Board), record variously totals between 150 000 and 152 000, a difference of just over 1%.

The practice of Indian indenture was permanently halted by the British Colonial and Indian governments in 1911 and further immigration of Indians to the Union of South Africa was forbidden after 1913 by the Immigrants Regulation Act of that year (see section 4.4). Future structural changes would be related to natural growth rather than arising from immigration, which had, up to this date, imposed a distorted structural pattern on the population. However various restrictive legislation regarding Indian residence in the Union was enacted in the following years tending to encourage emigration amongst this population (sections 4.4 and 4.5). Thus for several years the rate of increase in total population numbers was extremely small (see sections 4.6 and 4.7).

#### The 1921 Census Results

At the time of the 1921 census, Indian immigration had been halted for ten years and demographic development had been controlled and directed largely by the natural balance between births and deaths. Repatriation and voluntary emigration had continued during the intervening ten years (see section 4.6), involving about five percent of the population of 1911, largely time-expired workers.

In the 1921 census, unfortunately, complications in the recording of data for the Indian population once again occurred. Indians were grouped with other eastern races under the blanket heading of 'Asiatics', which classification was to be adopted in all future censuses

(with a change of terminology to 'Asians'), making it difficult to isolate those South Africans of Indian origin from other eastern groups such as Chinese. However, the non-Indian 'Asiatics' in the early years of the twentieth century were very few in number (around 1% of this group) and, as mentioned in section 4.3.1 it is felt that the errors or distortions introduced by their inclusion would be minor. Table 5.3 sets out the situation as recorded in 1921.

**TABLE 5.3**  
*AGE-SEX STRUCTURE 1921 – to nearest 100*

Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	12700	12900	25600	13,1	19,0	15,5
5-9	12900	12400	25300	13,3	18,1	15,3
10-14	9800	8400	18200	10,1	12,3	11,0
15-19	7200	6100	13300	7,4	8,9	8,0
20-24	6300	5500	11800	6,5	8,1	7,2
25-29	6500	5300	11800	6,6	7,7	7,1
30-34	7700	5100	12800	7,9	7,5	7,7
35-39	9400	4000	13400	9,7	5,8	8,1
40-44	8100	3100	11200	8,3	4,5	6,8
45-49	6000	1900	7900	6,2	2,8	4,8
50-54	4600	1600	6200	4,7	2,3	3,7
55-59	2300	700	3000	2,4	1,0	1,8
60-64	1900	700	2600	2,0	1,0	1,6
65-69	800	300	1100	0,8	0,4	0,6
70+	900	400	1300	1,0	0,6	0,8
Total	97100	68400	165500	100,0	100,0	100,0

Source: *Union of South Africa, Third Census, 1921*

Some fundamental changes had occurred in the structure of the population since 1860. Continued skewness in terms of both age and sex distribution (due to the influence of the origin of this population as a young, male-dominated workforce) can be seen (and this imbalance remained visible in the older age groups some fifty years later). By 1921 the early indentured workers from the 1860's, 1870's and 1880's who had elected to remain in South Africa after expiry of their contracts were nearing middle- to old- age. The

proportion of males over 59 years of age had grown to 4% while females of similar ages accounted for 2% of the female population.

Children under 15 years of age had proportionately increased to 42% (a proportion still found today in most of Africa and parts of Central America and Asia - World Population Data Sheet 2000) while the middle age groups of the population (i.e. of working ages 15-59 years) of both sexes had proportionately decreased to 52%.

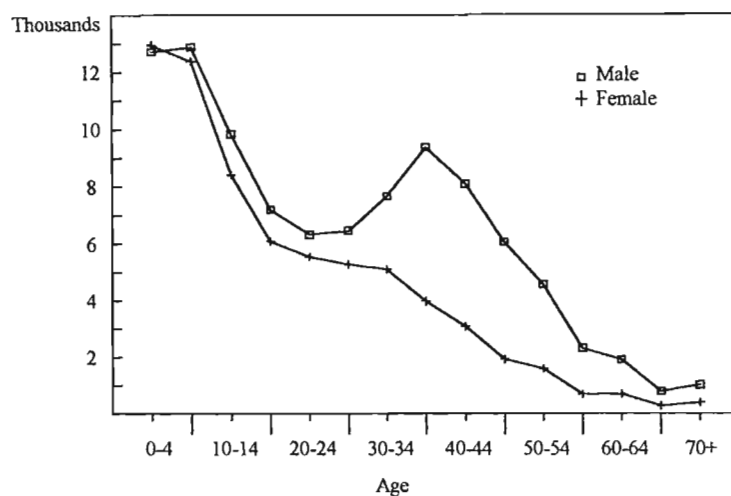
Males at this time comprised 59% of the total population, of which 60% were of working age. Median ages were 20 years for females and 28 years for males, reflecting a slight decrease since 1891 in the case of females, from 21 years, but a slight increase in the male median age over the value of 27 years found thirty years previously.

The data from Table 5.3 are presented graphically in Figure 5.4. The female graph for 1921 shows a much smoother shape than that for males, with only a slight distortion being seen around ages 30-35 years in the female graph in Figure 5.4. At this stage, Indian immigration had been stopped for ten years, while restrictive legislation had served to encourage the repatriation of many workers and their families (see section 4.7). Female numbers overall remained well below those for males in corresponding age-groups (due to the sexual imbalance in the original indentured population). In both sexes some additional irregularity occurred at very young ages, possibly related to late birth registration (see Chapter 7).

The distortions which are observable in Figure 5.4 for 1921 will be seen to have continued for many future years in the line graphs for subsequent censuses, progressing successively

through the higher age-groups, as the original large cohorts of males of working age from the early years of settlement progressively aged over time.

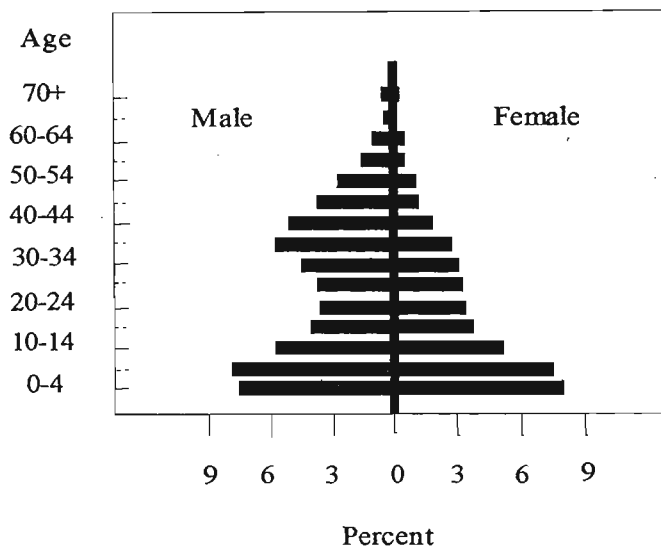
**FIGURE 5.4**  
*AGE-SEX STRUCTURE 1921*



*Based on Table 5.2*

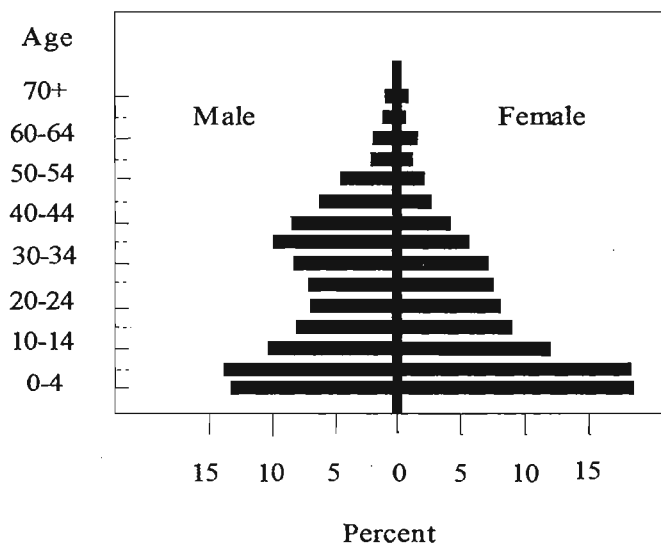
In keeping with the methods used for the 1891 population pyramids, two histograms are plotted for 1921 (Figures 5.5 and 5.6). However, the differences between these two pyramids in 1921 are not as marked as in the case of the 1891 histograms. Continuing sexual imbalance can be seen in the slight inclination of the pyramids towards the left-hand side, representing male domination of numbers in most adult age-groups. The effects of natural processes at work during this time, the excess of births over deaths, are reflected in a proportionate decline in young workers and an increase in the proportion of infants and children. The 1921 pyramids thus show the first signs of the population moving towards a more balanced structure, with normalisation in terms of population structure working upwards from younger to older ages (Figures 5.5 and 5.6).

**FIGURE 5.5**  
**AGE-SEX PYRAMID 1921**  
*% of total population*



*Based on Table 5.3*

**FIGURE 5.6**  
**AGE-SEX PYRAMID 1921**  
*% by Gender*



*Based on Table 5.3*

An increasing number of children had slowly broadened the base of the pyramid to the more-recognisable shape portrayed by young populations in the throes of rapid expansion (Coale 1964). Such instances are seen in the case of Brazil in 1950 and the Philippines

and Mexico in 1965 (United Nations 1973), and the Blacks and Coloureds of South Africa in 1965 (Mostert *et.al* 1991).

The distortions observed in the 1921 census results for ages 30-45 years can be traced in the next two censuses, for 1936 and 1946, as they progressed upwards through the age groups (see Figures 5.7 and 5.9). Thereafter, for some further years, an unnaturally high number of males occurred in the upper age groups, where females usually predominate due to their greater life-expectancy.

#### The 1936 Census Results

The census results of 1936, as presented in Table 5.4, were considered by the officials involved to be largely free of major errors of sex or race classification and can be approached with more confidence (Union of South Africa, Sixth Census 1936). Indications of an increasing movement towards a balancing of both the age and the sex structure of the Indians can be seen from the results of this census (Table 5.4).

However, although indentured immigration had ceased 25 years earlier, the effect of the distortion caused by that practice could still be seen in 1936 in the higher age groups of 45-49 and 50-54 years. Median ages in 1936 had dropped by half a year for females to 19,5 years, and by 3,5 years, to 24,5 years of age, for males, indicating that the population had become more youthful over the fifteen years since the last census of 1921 due to an increase in the birth rate (see Chapter7). The structure found in 1936 (Table 5.4) is in keeping with a population that almost fits into stage one of the transition model, i.e. the high stationary stage, with high fertility and high mortality (section 2.3.2) although the death rate has never been overly high amongst South African Indians.

Perhaps during the early years of settlement it is better to consider the population as being in a 'transitional stage of normalisation', with the birth rate rising as the population became more sexually balanced (see section 7.2.1).

**TABLE 5.4**  
*AGE-SEX STRUCTURE 1936 – to nearest 100*

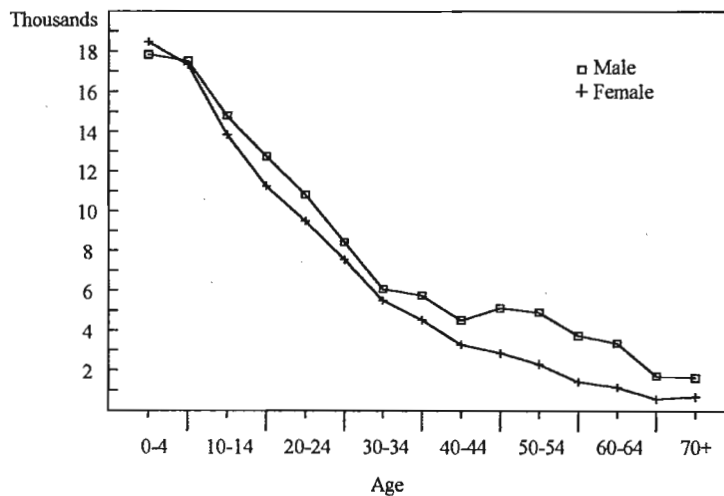
Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	17800	18500	36300	15,0	18,4	16,6
5-9	17500	17300	34800	14,7	17,3	15,9
10-14	14700	13900	28600	12,4	13,8	13,1
15-19	12700	11300	24000	10,7	11,2	11,0
20-24	10800	9500	20300	9,1	9,4	9,3
25-29	8400	7500	15900	7,1	7,5	7,3
30-34	6100	5500	11600	5,1	5,5	5,3
35-39	5800	4500	10300	4,8	4,5	4,7
40-44	4500	3300	7800	3,8	3,3	3,6
45-49	5100	2900	8000	4,3	2,9	3,7
50-54	4900	2300	7200	4,1	2,3	3,3
55-59	3700	1400	5100	3,2	1,4	2,4
60-64	3400	1100	4500	2,8	1,2	2,1
65-69	1700	600	2300	1,5	0,6	1,1
70+	1600	700	2300	1,4	0,7	1,1
Total	119000	100400	219400	100,0	100,0	100,0

Source: *Union of South Africa, Sixth Census, 1936*

In 1936, nearly half the population, (45%), were children under the age of 15 years, while the proportion of working age, i.e. between the ages of 15 and 59 years, had decreased to 50%. Almost 6% of the males fell into the age group 60+ years, compared with fewer than 3% of females. The overall proportionate increase in the older population (to over 4%) was the logical progression of the 'bulge' in numbers created by the shape of the indentured population, (visible in Figures 5.1, 5.2 and 5.3 for 1891), now reaching the higher age groups, due to the natural process of ageing. The population was still skewed at adult ages in terms of sex structure, in that males outnumbered females in all adult age groups, where an excess of females is normally to be expected, and this imbalance was to continue for many more years.

The graphs for 1936 as shown in Figure 5.7 indicate a population in the process of change, with age-groups under 35 years, for both sexes, showing a progressive smooth decrease in numbers with increasing age (with the exception of the first age-group, possibly related to late birth registration as mentioned before). The female graph continues to show relative smoothness above this age but the graph for males reflects quite strongly the effects of indenture in past years.

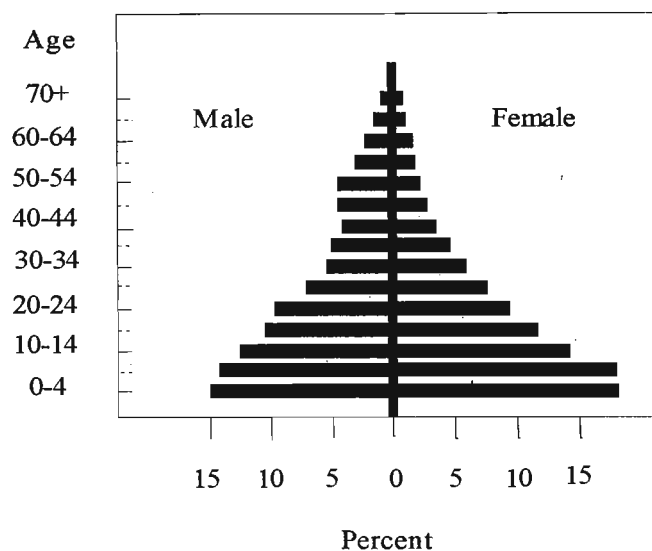
**FIGURE 5.7**  
*AGE-SEX STRUCTURE 1936*



*Based on Table 5.4*

The histogram for 1936 (Figure 5.8) shows a broad base to the pyramid with a smooth progression between all age groups under 45 years. The shape indicates a progressive population, with a prevailing high birth rate and low death rate, resulting in a period of rapid growth. Thus the population in 1936 was reflecting the typical age-sex pattern of a progressive population, with a large proportion of children and young adults (Coale 1964 and 1972).

**FIGURE 5.8**  
AGE-SEX PYRAMID 1936



*Based on Table 5.4*

In terms of the transition model (section 2.3.2), the Indian population could be regarded as entering stage 2 during these years, a period of rapid expansion. The effect of the high fertility rate and the declining or low mortality rate of this stage can be seen in the shape of the pyramid, approaching an almost perfect pyramid shape for younger ages. The effects of the indenture origins can still be seen in the high proportion of males over 45 years of age, causing distortions of the pyramid beyond this level. (This skewness became less marked in the following years but remained a factor of importance until the nineteen-eighties, apparent in the larger numbers of elderly males outnumbering females in similar age groups.) This typical pattern of a progressive population, with a large proportion of children and young adults (Coale 1964), would continue to be found amongst the study population for the next fifteen years, from 1936 through to 1951.

### The 1946 Census Results

Ten years later, results from the 1946 census, shown in Table 5.5, indicate that the original large cohort of young workers from the early years of that century had worked its

way through to the highest age groups. In fact the progressive ageing of the male indentured workers can be traced successively for all census years since 1891, and can be seen working upwards through the various age groups in each successive census. The population was assuming the structure of a young population with an increasing proportion of children and young adults (Table 5.5), similar to that found in many developing countries of the world (see United Nations 1985 and World Population Data Sheet 1995 and 2000). As mentioned above, there still remained a predominance of males at all ages over fifteen years of age, (which raises suspicions of under-enumeration of young females in this census). At the same time, median ages were continuing to fall as the number and proportion of children continued to grow. (These aspects can be clearly identified in the graphs in Figures 5.9 and 5.10 presented later.) The 1946 census figures show the 'bulge' of males as having reached the ages of 55 years and over (Table 5.5), with a fairly regular proportionate progression from one age group to the next for all ages less than 55 years.

**TABLE 5.5**  
*AGE-SEX STRUCTURE 1946 – to nearest 100*

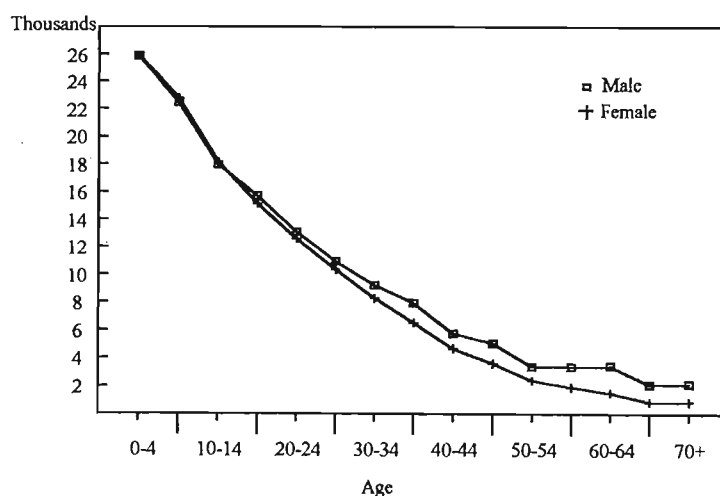
Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	25900	25900	51800	17,4	19,2	18,3
5-9	22400	22700	45100	15,1	16,8	15,9
10-14	18000	18100	36100	12,1	13,4	12,7
15-19	15700	15100	30800	10,6	11,2	10,9
20-24	13100	12600	25700	8,8	9,3	9,0
25-29	10900	10300	21200	7,4	7,6	7,5
30-34	9200	8300	17500	6,2	6,1	6,2
35-39	7900	6500	14400	5,3	4,8	5,1
40-44	5800	4700	10500	3,9	3,5	3,7
45-49	5100	3600	8700	3,4	2,7	3,1
50-54	3400	2400	5800	2,3	1,8	2,0
55-59	3400	1900	5300	2,3	1,4	1,9
60-64	3400	1500	4900	2,3	1,1	1,7
65-69	2100	900	3000	1,4	0,6	1,1
70+	2200	900	3100	1,5	0,6	1,1
Total	148500	135400	283900	100,0	100,0	100,0

Source: *Union of South Africa, Seventh Census, 1946*

This regular pattern is more dominant in the case of females whose structure had undergone less distortion resulting from their indentured origins, and they displayed a regular progression for all age groups from the youngest to the oldest. For both sexes, an increasingly regular progression is to be expected, as the population was taking on an ever more conventional pattern of a typical youthful population (Coale 1964). The distribution of major age groups, as shown in Table 5.12 in section 5.5, indicates this youthfulness for 1946, with 47% of the population being under 15 years of age.

The graphs for both males and females had begun taking on a definite concave form after 1936 as the population achieved greater normality in terms of the proportionate distribution of the age groups. This concave shape is typical of a progressive, rapidly-expanding population, with a large proportion of children, as in Brazil in 1950 (United Nations 1973), and the Blacks and Coloureds of South Africa in 1965 (Mostert *et.al* 1991). It is found amongst nations that are in the second and third stages of the transition model (section 2.3.2).

**FIGURE 5.9**  
*AGE-SEX STRUCTURE 1946*

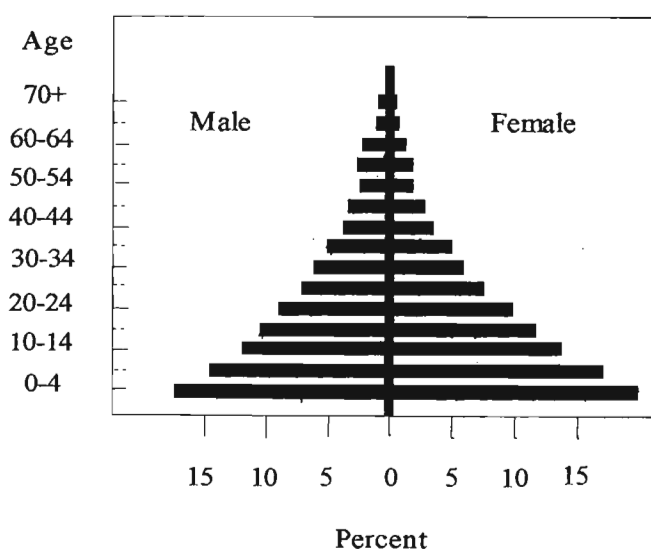


*Based on Table 5.5*

However, Figure 5.9 still displays skewness in ages over 30 years, where males outnumber females by 20% to 40% for ages under 55 years and by twice as much in the elderly years. Following the historical trend of structural development as depicted in the previous graphs, the prominent ‘bulge’ that was visible for ages above 45 years in 1936 (Figure 5.7) had shifted to ages above 55 years in 1946 (Figure 5.9), but its prominence had been eroded by the natural process of death at these higher ages. The developing concave shapes of the graphs in Figure 5.9 for 1946 and Figure 5.11 for 1951 thus establish the Indian population during these years as falling within this expanding stage, with a relatively high rate of growth and a large number of children.

The pyramids in Figures 5.8 and 5.10 for 1936 and 1946 respectively both display imbalances in terms of sex ratios for the older adult age groups, where males outnumbered females, giving a lop-sided appearance to the top of the pyramids, though this was becoming less marked as the years pass.

**FIGURE 5.10**  
*AGE-SEX PYRAMID 1946*



*Based on Table 5.5*

The female population by 1946 had reached its lowest ever median age of 19,4 years while the male population showed a still-falling median age of just under 23 years. This increasing youthfulness of the population could be expected to have a significant effect on other vital rates, especially the birth rate. Such trends can be seen when tracing the historical pattern of mortality and fertility rates (as shown in Chapters 6 and 7).

Another trend of youthfulness in a population is an increasing dependency load. In 1891 dependants at both higher and lower ages accounted for only 32% of the total population. This combined proportion had increased to 45% by 1921 and over the next fifteen years showed a further increase to 47% by 1946 (remaining relatively stable around 50% until 1960), placing a heavy burden of dependency on the workers. This is discussed in more detail in section 5.6.

The population at this time was within the early expanding stage (section 2.3.2) of the transition model, stage two, with fertility at a high level (Chapter 7). Mortality was about to enter a declining phase (Chapter 6), and thus phase two lasted for only a few years in the late 1940's and early 1950's before the population progressed to the late expansion stage, stage three of the transition model (section 2.3.2).

### The 1951 Census Results

The 1951 population structure as presented in Table 5.6, while not showing a good numerical correlation with the census results of 1946 (as discussed in section 3.3.3), signals the change from the early expansion of a stage two population to the late expansion of stage three, with declining fertility (section 2.3.2 and Chapter 7).

At this time children and elderly dependants accounted for nearly 48% and 4% respectively of the total population, a combined total of 52%, representing the dependent population. Nearly 49% of the population was of working age, (15 to 59 years), with males constituting 52% of the total population in 1951 and still predominating in virtually all age groups from the youngest to the oldest.

**TABLE 5.6**  
*AGE-SEX STRUCTURE 1951 – to nearest 100*

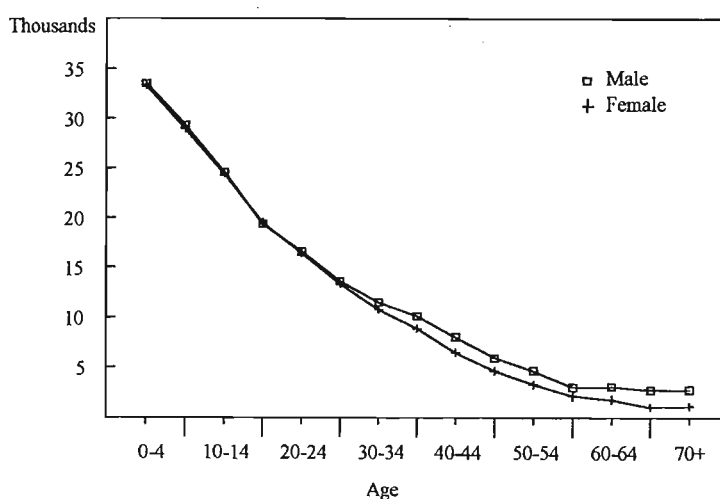
Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	33500	33300	66800	17,7	18,8	18,3
5-9	29300	29000	58300	15,5	16,4	15,9
10-14	24600	24500	49100	13,0	13,8	13,4
15-19	19400	19500	38900	10,2	11,0	10,6
20-24	16600	16500	33100	8,8	9,3	9,0
25-29	13600	13300	26900	7,2	7,5	7,4
30-34	11500	10800	22300	6,1	6,1	6,1
35-39	10200	8900	19100	5,4	5,0	5,2
40-44	8100	6600	14700	4,3	3,7	4,0
45-49	6000	4700	10700	3,2	2,7	2,9
50-54	4700	3400	8100	2,5	1,9	2,2
55-59	3100	2200	5300	1,6	1,3	1,5
60-64	3200	1900	5100	1,7	1,1	1,4
65-69	2800	1100	3900	1,5	0,6	1,1
70+	2900	1200	4100	1,5	0,7	1,1
Total	189500	176900	366400	100,0	100,0	100,0

Source: *Union of South Africa, Ninth Census, 1951*

This phenomenon of male dominance at all ages is a unique characteristic of the study population at this stage. If the recorded totals are accurate, this indicates continuing skewness in the sex ratio long after the effects of an indentured labour force could be expected to have passed. This is largely unexplained in terms of general demographic theory (see section 6.2.2). The median ages calculated for 1951 reflect the youthfulness of the population at this time, 19,6 years for females and 22,6 years for males, which represents historically the lowest median age reached by males (median age is discussed in detail in section 5.7).

An important change beginning to emerge by 1951 can be seen in the first five or six age-groups in the graphs for 1951, with a greater parity in the proportion of the sexes in these age-groups. The numbers of males and females are nearly equal at younger ages, although above the age of 25 years or so, males continue to dominate (partially explained by the relatively high maternal mortality rate of these years – see section 6.2.4). This is well illustrated by the graphs in Figure 5.11 for 1951 (and also in Figure 5.13 for 1960). The shape of the last two graphs presented above, for 1946 and 1951 respectively, represent the closest (in census years) to an overall concave shape that the study population achieves.

**FIGURE 5.11**  
*AGE-SEX STRUCTURE 1951*

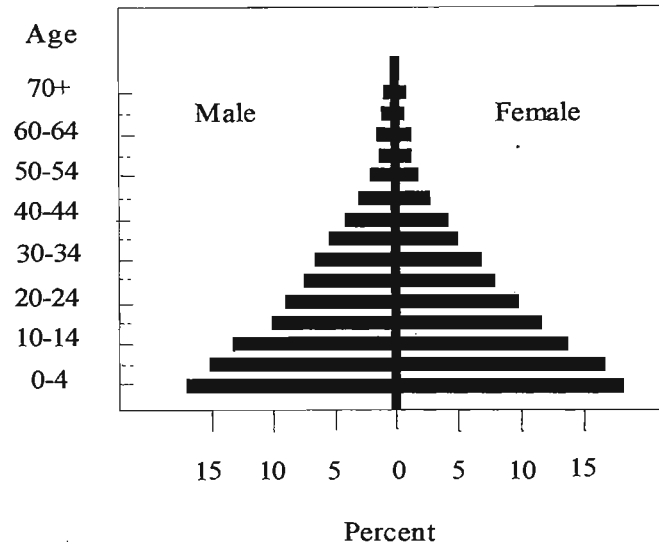


*Based on Table 5.6*

The pattern of high and fairly constant fertility over a number of years, as found in the study population since 1921, translated into an almost perfect pyramid shape being found in Figure 5.12 for 1951. The wide base typical of a progressive population, tapering to a

point with increasing age, as found in many developing nations in the world (United Nations 1973), is apparent in this histogram.

**FIGURE 5.12**  
*AGE-SEX PYRAMID 1951*



*Based on Table 5.6*

Such a pyramid can be regarded as representing a youthful population with the potential for rapid growth, such as was found in Mexico in 1965 (United Nations 1973) and amongst the Coloureds of South Africa in 1965 (Mostert *et.al.* 1991). It is typical of stages two and three of the transition model, that of rapid expansion (section 2.3.2).

The importance of the increasing youthfulness over the mid-twentieth century period must not be under-rated. Even if future birth rates should show a downward trend, and the average family size become smaller, the total number of children reaching maturity and reproductive age in the closing decades of the twentieth century and early decades of the twenty-first century can be expected to cause a noticeable increase in total numbers.

Similarly beyond this time period, as the mid-twentieth century large numbers of children reach the end of their working life, considerable thought and planning will have to be given to the adequate provision of health care, housing and social facilities for the elderly (see section 5.8 for discussion).

### The 1960 Census Results

In 1960 the governmental regime changed from that of the Union of South Africa to that of the Republic of South Africa, but this had little or no effect on the accuracy, validity or availability of census results. After 1951 the population progressed from the late expansion of a stage three population to the low stationary situation found in stage four of the transition model (section 2.3.2). An ageing process was at work (Coale 1964), discernible through the telltale sign of a declining birth rate (discussed in Chapter 7), resulting in fewer children being born per woman and therefore a drop in the proportion of the population represented by children and an increase in the median age. Results of the 1960 census, in which these changes can be seen, are presented in Table 5.7.

**TABLE 5.7**  
*AGE-SEX STRUCTURE 1960 – to nearest 100*

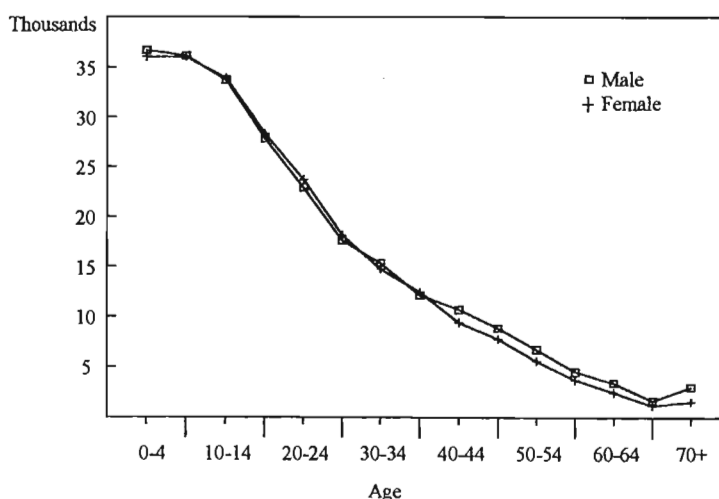
Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	36700	36100	72800	15,2	15,3	15,3
5-9	36200	36000	72200	15,0	15,3	15,1
10-14	33700	33900	67600	14,0	14,4	14,2
15-19	27800	28400	56200	11,5	12,0	11,8
20-24	22900	23700	46600	9,5	10,1	9,8
25-29	17600	18100	35700	7,3	7,7	7,5
30-34	15300	14800	30100	6,4	6,3	6,3
35-39	12100	12500	24600	5,0	5,3	5,6
40-44	10700	9400	20100	4,4	4,0	4,2
45-49	8900	7800	16700	3,7	3,3	3,5
50-54	6800	5600	12500	2,8	2,4	2,6
55-59	4600	3700	8300	1,9	1,6	1,7
60-64	3400	2500	5900	1,4	1,1	1,3
65-69	1700	1200	2900	0,7	0,5	0,6
70+	3000	1600	4600	1,3	0,7	1,0
Total	241400	235400	476800	100,0	100,0	100,0

Source: *Union of South Africa, Census 1960c*

By this time irregularities in the population structure caused by the origin of the population as an indentured labour force were no longer a consideration. Visible and practical effects were mere suggestions in the highest age group, although a degree of skewness remained in the sex ratios at higher ages.

By 1960 the decline in the birth rate that had occurred in the past decade is represented in the graphs in Figure 5.13 by a change in overall shape, with a flattening of the graphs for the first two age cohorts. This indicates that the total number of children born increased only slightly in the past inter-censal period, from 1951 to 1960.

**FIGURE 5.13**  
*AGE-SEX STRUCTURE 1960*



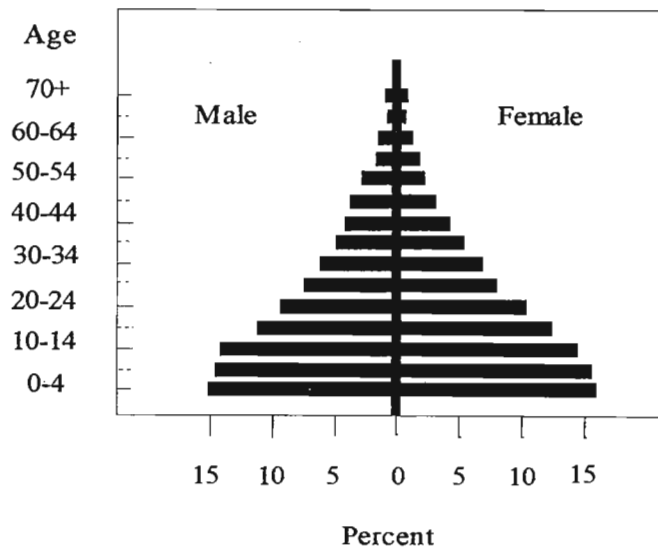
*Based on Table 5.6*

The overall structure was that of a typical youthful, expanding population at the end of stage three of the transition model, on the brink of passing into stage four (section 2.3.2). A change in the shape of the pyramid from that of 1951 can be observed, with the pyramid for 1960 (Figure 5.13), with its slight narrowing of the base, giving the first indication of a decrease in the level of fertility over the previous inter-censal period. This narrowing is

due to a reduction (percentage-wise) in the number of children born in the previous nine years (in particular in the last five years). A continuation of this trend for a further period of years would result in a bell-shaped pyramid similar to that found in Singapore and Japan in 1965 (United Nations 1973), and amongst the Whites of South Africa in 1945 (Mostert *et.al.* 1991).

The population can be regarded at this time as showing a suggestion of 'ageing from the base', and this trend will be apparent through the remaining years under consideration in this study, evident in all the pyramids from 1960 up to 1991.

**FIGURE 5.14**  
*AGE-SEX PYRAMID 1960*



*Based on Table 5.7*

From 1960 onward, one hundred years after the first indentured Indians arrived in South Africa, the population showed changes from the youthful, rapidly expanding structure of stage two of the transition model, to the low stationary stage, stage four of the model (section 2.3.2). The death rate was at a low level and the birth rate birth rate continued its

decline during these later years. Indications of an ageing process at work can be detected as beginning around 1960 and this trend would continue with steady momentum in the years to follow (see Chapters 6 and 7).

The second half of the twentieth century was to be a period of population change almost the reverse of what had occurred in the first fifty years of that century, and with equally dramatic effects. The proportion of children under 15 years of age decreased by over one third in 40 years, from 48% of the total population in 1951 to 30% in 1991. At the same time the proportion of working age, 15-59 years, increased from 49% of the total population in 1951 to 64% in 1991. The proportion of those aged 60 years and over almost doubled during these forty years, from 3,6% to 6% (as shown in section 5.4).

As the concept of smaller families appeared to become socially and economically more desirable (Caldwell 1976), the birth rate continued its decline, while the death rate reached and remained at a low level (Chapters 6 and 7). The population would show a tendency after 1960 to pass from the low stationary (stage four) level of the transition model, to the declining phase of stage five (section 2.3.2). The influence of changes in the birth and death rates on the growth and structure of the population over a period of time can be seen numerically in Tables 5.8 to 5.11 presented later.

### The 1970 Census Results

The irregularity created by the excess of males in the adult population had continued its upward movement into older age groups throughout the 1950's and 1960's, and in 1970 it could be seen as a greater total number of males in the top age groups, which are usually dominated by females (Table 5.8). This skewness in sex composition remained a feature

of the Indian population until the early 1980's when finally the population could be regarded as having attained a normal sex ratio throughout all age-groups.

The 1970 census (Table 5.8) showed a general decrease of numbers and proportions with increasing age, while the first two age groups reflected very similar totals. This indicates clearly the effects of a declining fertility rate (section 7.2) with fewer children being born per woman.

**TABLE 5.8**  
*AGE-SEX STRUCTURE 1970 – to nearest 100*

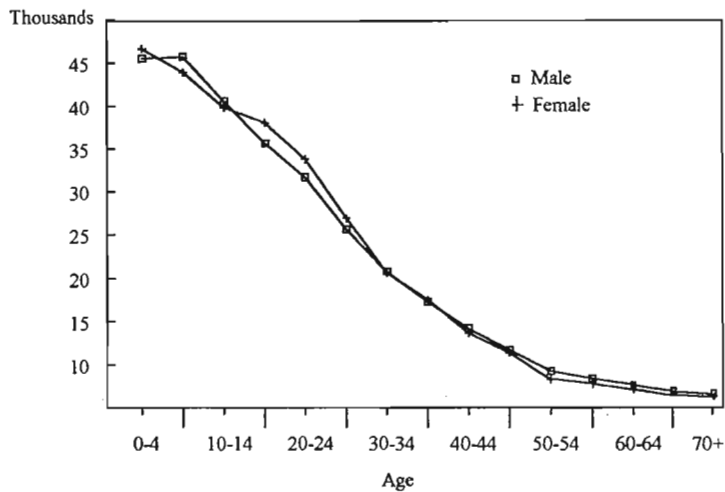
Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	45500	46700	92200	14,4	14,8	14,6
5-9	45700	43900	89600	14,5	13,9	14,2
10-14	40500	39800	80300	12,8	12,6	12,7
15-19	35600	38100	73700	11,3	12,0	11,7
20-24	31700	33800	65500	10,0	10,7	10,4
25-29	25600	26900	52500	8,1	8,5	8,3
30-34	20700	20500	41200	6,6	6,5	6,5
35-39	17300	17500	34800	5,5	5,5	5,5
40-44	14200	13600	27800	4,5	4,3	4,4
45-49	11700	11400	23100	3,7	3,6	3,7
50-54	9300	8300	17600	2,9	2,6	2,8
55-59	7100	6300	13400	2,3	2,0	2,1
60-64	5100	4300	9400	1,6	1,4	1,5
65-69	3100	2600	5700	1,0	0,8	0,9
70+	3000	2600	5600	1,0	0,8	0,9
Total	316100	316300	632400	100,0	100,0	100,0

*Source: Republic of South Africa, Census 1970a*

Irregularities in the balance of sexes by age-groupings, as found in all census results used in this study (discussed previously), continue to be unexplained. The original indentured male excess would be found only in the higher age-groups by 1970. No answers to this anomaly could be found, and questions of adult female under-enumeration therefore must be raised.

A flattening of the graphs for the first few age groups as discerned in the line graphs plotted in Figure 5.13 for 1960 (due to the decreasing fertility rate), can again be noted in Figure 5.15 for 1970, indicating a continuing decline in the number of children per woman. (In the graphs for the following census year of 1980, Figure 5.17, presented later, this flattening is clearly visible).

**FIGURE 5.15**  
*AGE-SEX STRUCTURE 1970*

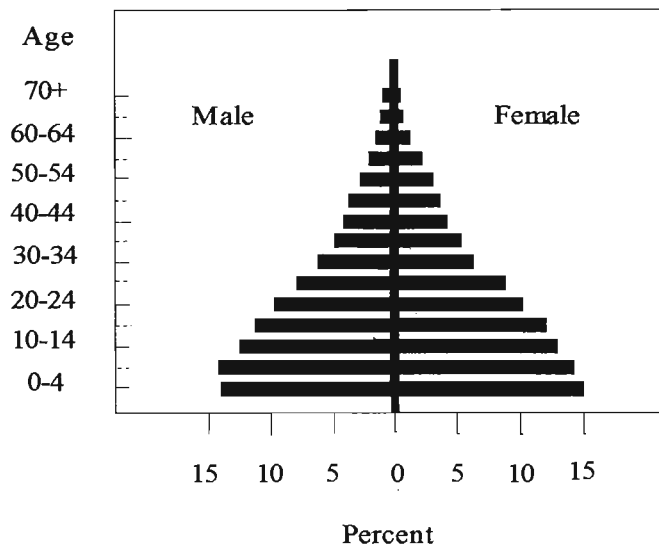


*Based on Table 5.8*

This change in structure is reflected in the histogram in Figure 5.16. The almost perfect shape of the pyramid shows a slight narrowing at the base (notably for males), the visible effect of a past decrease in fertility. (This was more apparent in the histogram for 1960, again raising questions of mis-reporting or under-reporting of young ages in these years). For all other ages, and for both sexes, the expected smooth transition of decreasing numbers from one age-group to the next with increasing age was found. The major unexplained discrepancy of the numerical dominance of males at almost all adult ages for all of the past years had now almost disappeared and was now hardly visible in this form of graphical representation.

The first signs of ageing amongst the Indians had initially become discernible in the 1960 census results. While the younger age-groups were undergoing changes, the effects of an early male-dominated population could still be seen in the highest age-groups in 1970, and this male numerical domination at all higher ages persisted until 1980.

**FIGURE 5.16**  
*AGE-SEX PYRAMID 1970*



Based on Table 5.8

A 1974 field survey amongst the Indian population of the Greater Pietermaritzburg-Durban area in Natal (Sugden 1978), covering 2 000 families, indicated that the sexes were almost evenly balanced with a ratio of 100,2 males to 100 females at that time. Median ages were found to be just over 23 years for females and just under 23 years for males. The slightly lower median age for males observed in that study is partly related to the effects of internal migration by male workers away from the rural areas included in this survey, to urban centres outside the 1974 study area, offering employment opportunities. Most of South Africa's rural Indians were to be found in the 1974 study area, where an excess of females between the ages of 25 and 45 years prevailed.

Between 1970 and 1980 another major change occurred. Over this decade the total number of males in the higher age groups declined. This was in part due to a relatively low birth-sex ratio in the early years of that century (discussed in section 7.3), which resulted in a very small excess of males in the younger age groups, coupled with the normal higher male mortality at virtually all ages (section 6.2.2). This would lead to numerically fewer male survivors than females.

### The 1980 Census Results

The undercount of 'Asians' in the 1980 census (Table 5.9) was estimated to be 8,6% by the CSS and 4,4% by the HSRC, giving adjusted Asiatic populations for the Republic in that year of 821 500 and 783 300 respectively. The total number actually enumerated in this census was 748 611 (RSA, CSS, Report 02-85-02, 1985).

From the 1980 census figures presented in Table 5.9 it can be seen that the Indian population had finally achieved what is termed a 'normal' age-sex structure, with females predominating in almost every age-group (except for the first two, where males outnumbered females due to the higher number of male births (see section 7.3).

At this time females accounted for just over half the total population (50,3%) with a slightly higher proportion (51%) for ages over 45 years. Children under 15 years of age accounted for 37% of the population, while the elderly (60+ years) formed 4,2% of the total, of which 51% were females. Females therefore outnumbered males in 1980 for ages 45 years and above *for the first time* in the recorded history of South African Indians. The positioning of the female curve above that for males for ages over 15 years, as shown in Figures 5.17, 5.19 and 5.21 for the years 1980, 1985 and 1991 respectively, reflects this

excess of females. The population can therefore be regarded as finally having reached sexually-balanced normality in terms of the relative numbers of each sex at all ages.

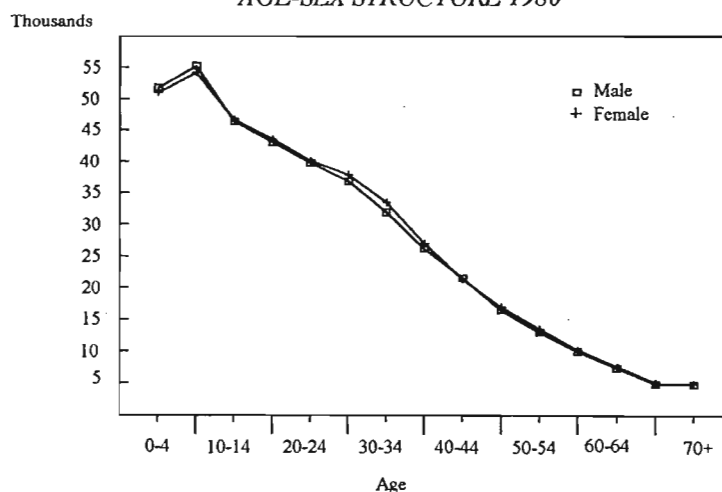
**TABLE 5.9**  
*AGE-SEX STRUCTURE 1980 – Adjusted Totals as Published - to nearest 100*

Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	51800	51100	102900	12,7	12,3	12,5
5-9	55200	54600	109800	13,5	13,1	13,3
10-14	45600	46800	92400	11,3	11,3	11,3
15-19	43100	43000	86100	10,5	10,5	10,5
20-24	39700	39600	79300	9,7	9,7	9,7
25-29	36800	37300	74100	9,0	9,2	9,1
30-34	32900	33000	65900	7,8	8,1	7,9
35-39	26300	26700	53000	6,4	6,5	6,5
40-44	21200	21800	43000	5,3	5,2	5,2
45-49	16500	17400	33900	4,0	4,1	4,1
50-54	12600	13600	26200	3,2	3,3	3,2
55-59	9600	10300	19900	2,4	2,5	2,4
60-64	7200	7700	14900	1,8	1,8	1,8
65-69	5000	5100	10100	1,2	1,2	1,2
70+	4800	5200	10000	1,2	1,2	1,2
Total	408300	413200	821500	100,0	100,0	100,0

Source: *Republic of South Africa, Census 1980a*

In the graph for 1980 (Figure 5.17), a distinct peak can be seen for ages 5-9 years, representative of the extremely rapid decrease in fertility that occurred during the 1970's.

**FIGURE 5.17**  
*AGE-SEX STRUCTURE 1980*

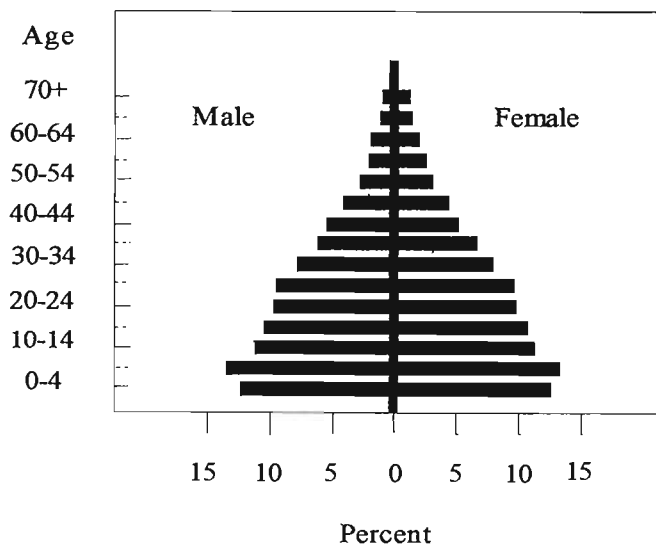


Based on Table 5.9

This has a sequel in the graphs for 1985 and 1991, where the peak occurs at progressively greater ages (Figures 5.19 and 5.21). Such a change in the overall smoothness of the age-sex curves will remain visible for many years to come, moving upwards to higher age-groups in each successive future census.

Although sexual parity had finally been attained by 1980, with a normal balance between the sexes at all ages (the first time in the history of Indian South Africans that this had occurred) the shape of the pyramid was undergoing changes as ageing from the base progressed (Figure 5.18), and the pyramids for future census years would increasingly display a steady progression towards a bell shape.

**FIGURE 5.18**  
*AGE-SEX PYRAMID 1980*



*Based on Table 5.9*

The process of ageing can be traced throughout all years in the second half of the twentieth century, with the elderly increasing markedly, both in number and

proportionately, with concomitant changes in the sex composition of this age-group. In 1960 the proportion of population over the age of 60 years was 3%, of which 60% were males. By 1985 (as discussed below) the population over sixty years of age had doubled to almost 6% of the total, of which males at this time accounted for only 47%, due to greater gains in the life expectancy of females.

### The 1985 Census Results

Results of the 1985 census are presented in Table 5.10 in an adjusted form (for an estimated undercount of 4,6% from the actual count of 821 361), giving an adjusted total of 861 500 (recorded as 861 300 on page xix of the CSS Report 02-85-02 of 1985, with an explanation for such discrepancies, basically due to rounding of the adjusted figures to the nearest hundred, given on page xx of the same publication).

**TABLE 5.10**  
*AGE-SEX STRUCTURE 1985 - Adjusted Totals as published*

Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	45000	43400	88400	10,5	10,0	10,3
5-9	45600	45100	90700	10,7	10,4	10,5
10-14	50200	49000	99200	11,7	11,3	11,5
15-19	45200	45200	90400	10,6	10,4	10,5
20-24	42600	42800	85400	9,9	9,9	9,9
26-29	39400	39400	78800	9,2	9,1	9,1
30-34	36700	36700	73400	8,6	8,5	8,5
35-39	32200	32500	64700	7,5	7,5	7,5
40-44	25600	26500	52100	6,0	6,1	6,0
45-49	20100	21300	41400	4,7	4,9	4,8
50-54	15300	16700	32000	3,6	3,9	3,7
55-59	11200	12600	23800	2,6	2,9	2,8
60-64	7900	9200	17100	1,8	2,1	2,0
65+	11200	12900	24100	2,6	3,0	2,8
Total	428200	433300	861500	100,0	100,0	100,0

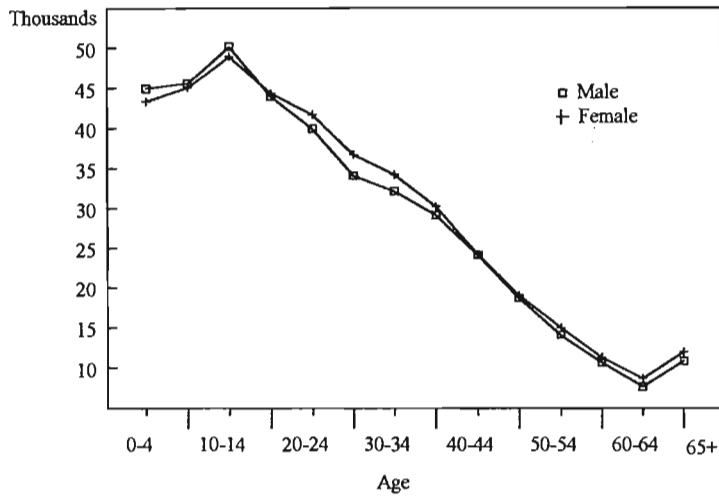
Source: *Republic of South Africa, Census 1985b*

In the five year period 1980 to 1985, the proportion of children under 15 years of age had shown a decrease of between three and five percent, from 37% in 1980 to between 32% and 34% in 1985 (allowing for the estimated undercount in the 1985 census, calculated as 11,3% for the age group 0-4 years alone). The proportion aged 60 years or more increased from 4,2% to 4,8% during this time. Figure 5.19 illustrates the prevailing shape of the age-sex graphs, with the prevailing reduction in fertility rates being reflected in an upward slope of the graph for ages under fifteen years as the number of births proportionately decreased year on year.

The interesting effect of declining birth rates causing a peak in the graphs in the early age groups, as was seen in Figure 5.15 for 1970, can be traced through the graph for 1980 (Figure 17) and can be seen again for 1985 in Figure 5.19, moving progressively upwards to older ages at each consecutive census. Early indications of this impending change were seen in the graphs for 1960 (Figure 5.13) where a levelling-off in the early age groups was visible. This peak will be visible for many years as representing a notable change in the fertility levels of the population.

A distinct change in the shape of the graphs occurred over the last twenty-five to thirty years of study, with the proportion of children aged 0-4 years, of both sexes, being less than the proportion in the next-highest age group, particularly marked since 1974 (RSA, Department of Statistics, South African Statistics 1976-1980, and CSS, Statistical News Release 1982-1993). This trend is reflected in an increasingly convex shape in the graphs of both sexes at census dates in the second half of the twentieth century, and is clearly visible in Figure 5.19 for 1985.

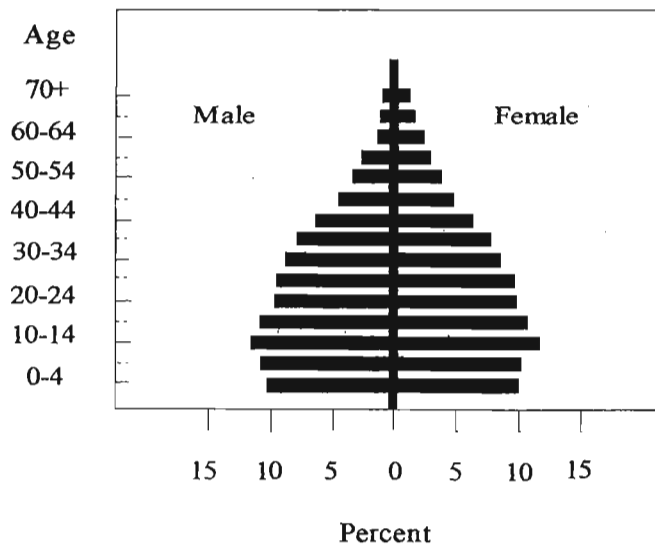
**FIGURE 5.19**  
*AGE-SEX STRUCTURE 1985*



*Based on Table 5.10*

The pyramid for 1985 (Figure 5.20) shows a distinct narrowing of the base which can be related to the continuing decrease in the total fertility rate in the preceding years.

**FIGURE 5.20**  
*AGE-SEX PYRAMID 1985*



*Based on Table 5.10*

The discontinuity of shape at ages 10-14 years in Figure 5.20 is representative of the start of the marked fertility decline some ten to fifteen years earlier, i.e. since the 1970's and represents a population moving further towards an ageing structure (see Coale 1964). The bell-shape shows clearly the characteristics of a population in which the process of ageing has already set in, a regressive population. At the same time a slight increase in the highest age groups, representing the elderly, can be seen. This bell-shape will become more marked in future pyramids should the birth rate remain low.

### The 1991 Census Results

The last census results included and discussed here are those of 1991, presented in Table 5.11. Once again the figures presented are those published as adjusted for undercount which brings them into line with the two previous censuses.

By 1991 the effects of indenture, which had ended some eighty years before, were no longer a consideration. The 1991 census results show the generally accepted normal pattern of age-sex distribution of a population, with males outnumbering females at ages under twenty years, but thereafter females outnumbering males in each higher age group (Table 5.11 and Figure 5.21). A substantial excess of females between the ages of twenty-five and forty-four is apparent and possible reasons for this are discussed in section 7.3 later. Thereafter the expected pattern of an increasing excess of females with increasing age becomes apparent (Figure 5.21).

The proportion of children can be seen to have dropped from 32,3% in 1985 to 30,5% in 1991, while those over 60 years of age increased in proportion by one percent, from 4,8% to 5,8% of the total population, over the same years.

Those of working age (15-59) accounted for almost 64% in 1991, an increase of 5% in the ten years since 1980 (Tables 5.11 and 5.12). For all ages above thirty years, females outnumbered males by proportions ranging from less than one percent at the lower ages to six percent at the higher ages, and by over 25% in the top age-groups. Figure 5.21 clearly shows the excess of females at all ages above twenty-five years.

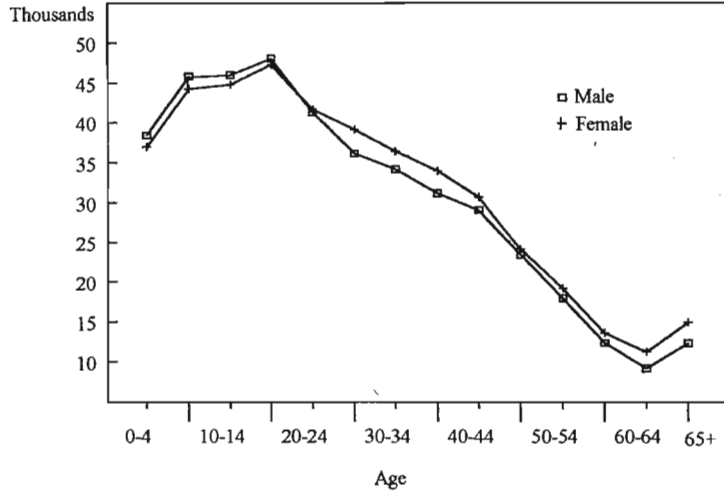
**TABLE 5.11**  
*AGE-SEX STRUCTURE 1991 - Adjusted Figures – to nearest 100*

Age	Number			%		
	Male	Female	Total	Male	Female	Total
0-4	50000	48400	98400	10,2	9,7	10,0
5-9	53200	52200	105400	10,9	10,5	10,7
10-14	48900	48300	97200	10,0	9,7	9,8
15-19	52000	51500	103500	10,6	10,3	10,5
20-24	47200	47000	94200	9,6	9,5	9,5
25-29	42700	43000	85700	8,7	8,6	8,7
30-34	39400	39600	79000	8,1	8,0	8,0
35-39	36500	37000	73500	7,5	7,4	7,4
40-44	32600	33400	66000	6,7	6,7	6,7
45-49	26100	27000	53100	5,3	5,4	5,4
50-54	20300	21700	42000	4,2	4,4	4,3
55-59	14800	16700	31500	3,0	3,4	3,2
60-64	10500	12800	23300	2,2	2,6	2,4
65+	14800	19000	33800	3,0	3,8	3,4
<b>TOTAL</b>	<b>489000</b>	<b>497600</b>	<b>986600</b>	<b>100,0</b>	<b>100,0</b>	<b>100,0</b>

Source: *Republic of South Africa, Census 1991c*

The prevailing low birth rate of 21 per thousand population for the years 1987 to 1991, has had the effect of accentuating the concave shape of the graphs presented in Figure 5.21, the peak or high point reflecting the onset of fertility decline. In 1991 the 0-4 age-group accounted for *proportionately* fewer children than in any previous census year in the history of Indian settlement in South Africa.

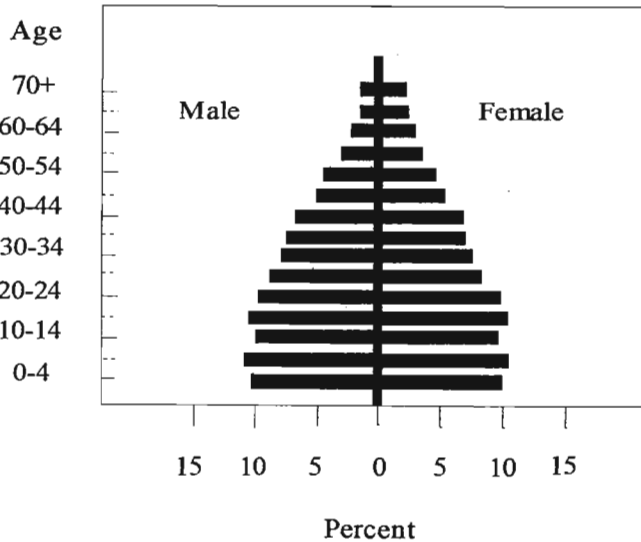
**FIGURE 5.21**  
*AGE-SEX STRUCTURE 1991*



*Based on Table 5.11*

The typical bell shape of the 1991 pyramid (Figure 5.22) is an almost perfect illustration of a regressive population. This shape could be found in the Japanese pyramid for 1965 (United Nations 1973) and amongst the Whites in South Africa in 1965 (Mostert *et.al.* 1991).

**FIGURE 5.22**  
*AGE-SEX PYRAMID 1991*



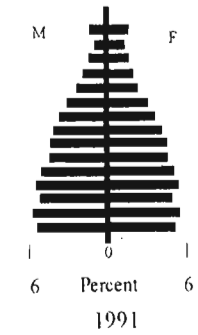
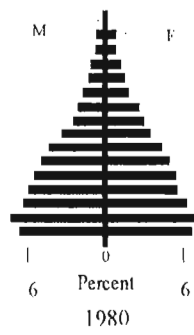
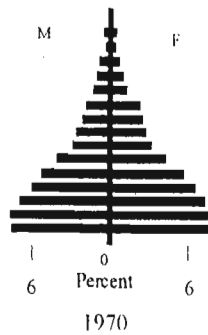
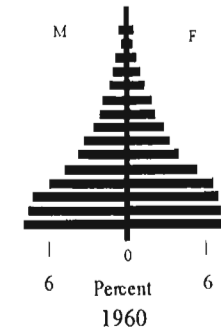
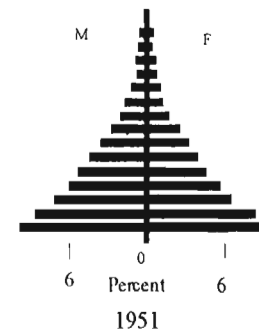
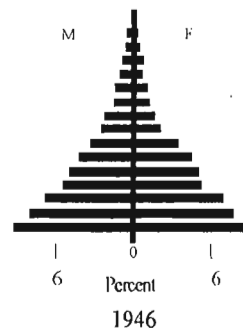
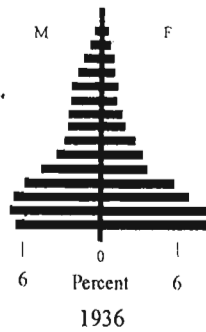
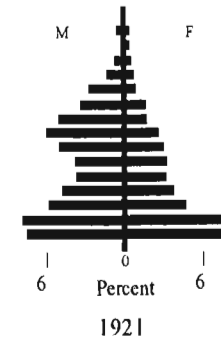
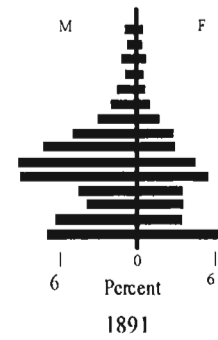
*Based on Table 5.11*

Should this trend continue further it will ultimately yield a roughly rectangular histogram, with a slight sloping at the oldest age groups, representative of long-standing low fertility, as depicted in the histograms for Sweden and the United Kingdom as early as 1965 (United Nations 1973), and in many other developed nations since that date.

Upon analysis and comparison of all the preceding tables, and in spite of known undercounts and other inaccuracies, the population today can be regarded as hovering at the entry to stage five of the transition model, the declining stage (see section 2.3.2), with low birth and low death rates leading to demographic ageing (section 5.8). Figure 5.23, by combining the ten pyramids for the study period, illustrates clearly the changes in population structure that have occurred over the years.

The first two pyramids in Figure 5.23 can not be related to any conventional histogram, being unique reflections of the results of an indenture program. They do illustrate clearly the very unbalanced gender structure of the population in the early years of immigration. The pyramids for the years 1936 to 1951 are typical of many developing populations where fertility is high and fairly constant. The broad bases and steeply sloping sides illustrate the large numbers of children and young people and the small percentage of old people in the population. The pyramids for the years 1960 to 1980 represent transitional populations where fertility was declining, leading to a gradual narrowing of the bases of the pyramids, and an upward movement of the larger cohorts born previously (when fertility was higher), into older age groups. The onset of the typical “beehive” shape can be seen in the pyramid for 1980. The pyramid for 1985 illustrates this shape very clearly, while the 1990 shape is becoming rectangular (with a slight sloping at the oldest age groups), indicating an ageing population.

**FIGURE 5.23**  
POPULATION PYRAMIDS  
(Census Years)



### 5.7 POPULATION STRUCTURE BY THREE MAJOR AGE GROUPINGS

In Table 5.12 below, the population has been grouped into three major categories, namely children under fifteen years, the working-aged population between 15 and 59 years, and the elderly of 60 years and over. Changes in any of these groups can have significant repercussions on a wide variety of social and economic factors (see Woods 1979, Day 1983, and Ferreira *et.al.* 1987).

The historical pattern of structural change can be discussed in two phases, the period before 1951 and the years thereafter. The early period covers the years during which a normalisation of population took place to overcome the imbalances of age and sex composition caused by the population's indentured beginning. Once these imbalances had been addressed by the continuing shaping process of the birth-death relationship, (with these structural imbalances no longer having a significant effect on the fertility rate, in particular), the population could be related to transition theory (section 2.3.2).

**TABLE 5.12**  
*POPULATION BY AGE GROUPS - % by Census Years*

Year	Age		
	0-14	15-59	60+
1891	30	68	2
1904	32	67	1
1921	42	55	3
1936	46	50	4
1946	47	49	4
1951	48	48	4
1960	45	52	3
1970	41	55	4
1980	37	59	4
1985	34	61	5
1991	30	64	6

*Based on Tables 5.1 to 5.11*

It is possible to understand, from Table 5.12, the relationships between the various age categories and the changes that have occurred over the years. It can be seen that the

proportion of working age decreased from 68% in 1891 to 48% in 1951, while at the same time the proportion of children increased considerably. This latter increase took place at a steady pace, from just under 30% of the population in 1891 to a high of 48% in 1951, when almost half the population was too young to work. Over the same period the elderly, over 60 years of age, increased from 2% to 4% (Table 5.12). The population structure in 1951 indicated a demographically youthful population, typical of stages one, two and three of the transition model (section 2.3.2) with high birth rates, and death rates slowly declining from a high to a low level, and a large proportion of children. At this date 52% of the population was too young or too old to be regarded as economically active.

In the second half of the twentieth century the proportion of children began a steady decline as the fertility rate decreased, representative of a population passing through stage three of the transition model, the late expanding stage, to stage four of the model, the low stationary stage (section 2.3.2). The proportion of children decreased by over one third in forty years, from 48% of the total population in 1951 (Table 5.12) to 30% in 1991 (this proportion was last found one hundred years earlier, in 1891). Tracing the proportions of corresponding age-groups successively through the census years of 1960, 1970, 1980, 1985 and 1991 (Tables 5.7 to 5.11), the decreasing proportions in the younger age cohorts in the second half of the twentieth century can be clearly seen.

Over the same years, 1951 to 1991, the population of working age increased their proportion from 48% to 64% of the total population. The proportion of *young* adults (15-35 years of age) increased by only 2% between 1970 and 1991, but the proportion of *older* adults (35-59 years) increased from 19% to 27% of the total population over these same twenty years, indicative of an ageing population. This is discussed in more detail in

section 5.11. At the same time the proportion of elderly, sixty years and over, showed a smaller, though steady, increase from 4% to 6% of the total population.

By 1991 the proportion under 15 years of age was the same as that recorded in 1891 (30%) while the proportion of working age was just 4% lower than 100 years earlier, and the elderly accounted for 4% more than a century ago. These changes will be reflected in future growth patterns of the population and will play a significant part in future structural patterns of this population. The significance of the data in Table 5.12 is perhaps better understood when discussed as dependency ratios (section 5.9 below).

#### **5.8 SEX RATIOS FOR THE TOTAL POPULATION**

Another area of structural change is in the sex ratio. In the nineteenth century and the early part of the twentieth century, males far outnumbered females. This was directly related to the original indenture patterns with the average male-female ratio of these early workers being 182:100 (sections 4.5 and 4.6). The 1891 census recorded a ratio of 167 males for every 100 females, i.e. 63% of the population were males, but by 1921 this had dropped to 143:100, with males forming 59% of the population. In 1936 there were 119 males for every 100 females. Since 1936 this ratio has continued its general downward trend with the proportion of males decreasing fairly steadily from 54% of the total population in 1936 to 49% in 1980, giving a sex ratio of 96 males to every 100 females in 1980. It remained at this level for the remaining years of study up to 1991 (and was still at this level in 1996).

A comparison with countries classed as 'developed' by the United Nations, (with a significant proportion of their populations in the higher age groups), reveals that the local

rate was a little higher than the ratio of 93 males to 100 females found in most of such countries in 1985 (Population Reference Bureau, World Population Data Sheet 1985).

## 5.9 DEPENDENCY RATIOS

While not all people in the so-called working ages participate in economic activities, and not all persons outside these ages are dependants, the ratio of persons in dependent age groups to those of working age provides a useful approximation of a population's dependency burden (United Nations 1973). Based on the eleven census results covered in this thesis, dependency ratios for the population were calculated at three levels: - youth dependency, old-age dependency, and total dependency, as shown in Table 5.13. As was the case for age structure discussed in section 5.7, dependency ratios have also exhibited an up-and-down movement in the last one hundred years.

**TABLE 5.13**  
*CALCULATED DEPENDENCY RATIOS 1891-1991*

Year	Dependency Ratio		
	Youth	Old-age	Total
1891	0,44	0,03	0,47
1904	0,48	0,02	0,50
1921	0,76	0,06	0,82
1936	0,92	0,08	1,00
1946	0,96	0,08	1,04
1951	1,00	0,08	1,08
1960	0,84	0,05	0,90
1970	0,75	0,07	0,82
1980	0,63	0,07	0,70
1985	0,56	0,08	0,64
1991	0,47	0,09	0,56

*Based on Tables 5.1 to 5.11 above*

The youth dependency ratio can be seen to have risen steadily in the first fifty years of the twentieth century, reaching a peak in 1951 with one child dependant for every adult of working age (whether these adults were working or not). The actual dependency burden of

the labour force was in fact much greater than that suggested by these figures, as there were few females in the labour force at this time (see Sugden 1978), and thus a smaller number of earners than these figures imply.

An analysis of Table 5.13 indicates that between 1936 and 1951, the economic burden of dependency fell on half the total population. Allowing for the fact that between 44% and 48% of people of working age were females, with an estimated economic activity rate at this time of below 20% (Sugden 1978), the dependency burden during these years weighed heavily on little more than 30% of the population. Most of this burden was youth dependency, as prior to 1951 the fertility rate remained high.

A decline in fertility since the 1950's caused a progressive decline in youth dependency (and also in the total dependency ratio) in the following years. After 1951 youth dependency began to fall. This decrease was extremely rapid, being over 10% for every ten years up to 1980. Between 1980 and 1991 this decrease was 25%, reflecting the low fertility rates prevailing during this period, and reflecting a 7% drop in the *proportion* of children in the population.

Old-age dependency has in general followed a slowly increasing pattern. From a low level of 0,03 (three aged dependants, over 60 years of age, for every hundred persons of working age) in 1891, the ratio rose to 0,08 in the years between 1936 and 1951 as most of the original indentured workers reached retiring age. It hovered just below this level for most years until 1985 (although the 1960 census results show a slight downward fluctuation), and then increased to 0,09 in 1991, as the proportion of elderly in the population began to increase. This upward trend is likely to accelerate in the twenty-first

century as the large number of people of working age at the end of the twentieth century begin to reach retirement, while the number of new entrants to the labour force remains proportionately small due to a low fertility rate (see Hofmeyr and Mostert 1989). This implies that the age structure will become economically less favourable as a result of a reduction in the proportion of economically active adults (see Hayes-Bautista *et.al.* 1988).

The total dependency ratio reached a peak of 1,08 in 1951 and thereafter began to decline, reaching 0,56 in 1991, almost the same level as 100 years before (it reached 0,46 in 1996). This decline can be largely attributed to the decline in the youth rate which more than offset the gains by the old-age group and this is reflected in the slightly lower dependency rate for Indians (0,46) than for the demographically 'older' White population (0,47) in 1996 (at which time comparable values, published in the 1996 census, were 0,59 for Coloureds and 0,69 for Blacks). An important aspect in future years, assuming the continuance of the present trend, will be the effect of an increasing median age, with proportionately fewer new entrants to the labour force each year. A smaller number of workers will have to provide for an increasing number of dependants in the higher age brackets.

#### **5.10 MEDIAN AGES**

Median ages have followed two opposing trends in the past century. Both sexes showed a decline in median age in the first half of the twentieth century, when the population moved from a high stationary growth phase to the expanding phase of stage two of the transition model, followed by stage three of the model, the late expanding stages (section 2.3.2). Between 1891 and 1960 the median age of the male population fell from 27 to 22 years, the lowest level reached by males during the years being studied (Table 5.14). The

female median age, always slightly lower than the male median age, did not show such changes and declined only slightly from 21 in 1891 to 19 in 1946 – its lowest level. The changes that occurred in the median ages, calculated from census data for the years 1891 to 1991, can be traced in Table 5.14.

The second half of the twentieth century saw a reversal of the earlier trends, with a fairly rapid increase in median ages of both sexes. The male population regained the five year decrease in its median age, which had taken seventy years to occur, in the thirty years between 1960 and 1991. The female population had lost only two years between 1891 and 1946 before showing a rapid gain of six years in the 45 years between 1946 and 1991. (However by 1996, the male median age for males had dropped slightly to 26 years while the female median age had risen to 27 years, a reversal of roles reflecting perhaps for the first time the generally accepted greater longevity of females.)

**TABLE 5.14**  
*CALCULATED MEDIAN AGES 1891-1991*

Year	Median Age	
	Males	Females
1891	27	21
1921	28	20
1936	24	20
1946	23	19
1951	23	20
1960	22	21
1970	23	23
1980	26	25
1985	26	26
1991	27	26

*Based on Tables 5.1 to 5.11 above*

These changes in the median age took place as fertility continued to decline in the presence of low mortality rates, resulting in an ageing population. In 1991, the median age for males was 27 years and for females 26 years - a smaller difference than 100 years

before. These ages were between three and four years lower than that of Whites in 1991 (which was 30 years for both sexes combined, calculated from the 1991 census results), the demographically oldest population group in South Africa.

### **5.11 AGEING OF THE POPULATION**

Demographic ageing of a population is defined by Hofmeyr & Mostert (1989: 1) as “an increase in the proportion of persons aged 65 and over with a resultant increase in the median age: the age structure is no longer stable”.

The four population groups in South Africa find themselves currently at different stages of demographic development. In 1985, the Whites were the most advanced in the ageing process, typified as demographically old, with a median age of 29,5 years (Hofmeyr and Mostert 1989) and this had increased to 33 years by 1996 (Population Census 1996). The youngest population group was the Blacks, with a median age of 18 years in 1985 (21 years in 1996). The Coloureds, with a median age in 1985 of 21 years (23 years in 1996), were only slightly behind the Asian group, which had a median age of 23 years in 1985 (Hofmeyr & Mostert 1989), increasing to 27 years in 1991 and 1996 (calculated from the 1991 and 1996 census results). The rates of transition are different for each of these groups and conform to different identified groups of countries (United Nations 1988b). Whites show a Western pattern and Blacks thus far correspond to the developing nations. The Coloured and Asian groups show an East Asian pattern (Hofmeyr and Mostert 1989).

The transition from a youthful population to an ageing population is a continuous process for a population, historically spanning well over a century (Lesthaeghe 1983). Age

structures of populations change as birth cohorts of different sizes work their way through the population (reflecting past fluctuations in the number of births). It is the fall in the birth rate that brings about the ageing of the population (not the fall in the death rate). This can be related to stages three to five of the transition model. From a period of high fertility and declining mortality (early expanding stage), the population passes through a period of declining fertility with low mortality (a low stationary stage), to the declining stage with low or fluctuating fertility and low mortality (section 2.3.2).

In the case of the Indians being studied, a period of normalization in terms of both sex ratios and age composition took place after their introduction into South Africa in 1860, and this population only reached the high stationary stage (although neither the death rate nor the birth rate ever attained an untoward high level) in the late 1930's and early 1940's (see Figure 5.23).

However after 1951, the median age of the population began to increase as fertility declined and in the following thirty-five to forty years they became the *most rapidly ageing* population group in the country, a remarkable and noteworthy phenomenon. In comparison, Taiwan, China and Thailand achieved this transformation in the shorter period of a little over thirty years, illustrating the rapidity with which eastern populations appear able to effect population transition (Sarre and Blunden 1995).

Although the Indian population is undergoing an ageing process, the very sharp decline in the proportion of children in the last few decades has not yet been reflected in a simultaneous increase in the proportion of elderly (Table 5.13), and the less marked ageing of the male population is related to mortality differentiation between the sexes,

which is accentuated with increasing age. Signs of ageing of the labour force are seen in the decrease in the proportion aged 15-39 years, from 75% in 1960 to around 70% in 1991, while the older section, 40-59 years of age, has increased its proportion from 25% to 30% (Hofmeyr & Mostert 1989).

## **5.12 SUMMARY**

The age-structure of a population is directly determined by demographic factors, i.e. fertility, mortality and migration. Economic and social factors affect the shape of the age distribution only to the extent that they cause changes in births, deaths or migration (Hofmeyr and Mostert 1989).

The picture that has emerged from the above analysis of the structural patterns of the Indian population of South Africa over time is one of rapid change within the twentieth century, from a progressive to a regressive population or, within the contextual framework of this thesis, a passage from stage one to the onset of stage five of the transition model (section 2.3.2).

In the nineteenth century both the age- and the sex- structure were considerably skewed due to the selective settlement patterns that occurred in the days of imported labour. The sex ratio fluctuated widely with each boatload of new arrivals, but never even vaguely approached sexual parity. Such domination by young males is not uncommon in migrant populations (United Nations 1973). This phenomenon occurred in all indentured Indian populations world wide in the nineteenth century, and is determined by the reasons for their emigration and the conditions under which they settled or were indentured (Jayawardena 1968, Saunders 1984, and Marks and Richardson 1984). Once the practice

of indenture in South Africa was permanently halted in 1911, the natural progression of births over deaths began to exert an influence on the structure of the local Indian population. This is well illustrated in Figure 5.23 in which the various population pyramids for the available census years are displayed on one page. The changing structure of the population is clearly seen in the changing shape of the pyramids.

Perhaps the most interesting and significant feature of the analysis presented in this chapter has been what could be termed 'the rise and fall of the population', as has become apparent in the foregoing discussion. In the 100 years between 1891 and 1991, and based on census results, several significant phenomena have been seen to occur.

The proportion of children (under 15 years of age) was 30% in both 1891 and 1991. However, in the intervening years, this proportion had risen to 48% in 1951. The working-aged population (15-59 years) was 68% in 1891 and 64% in 1991. However this proportion had dropped to 48% in 1951. In both these cases, an increase that took the population sixty years to achieve was erased in forty years.

Concomitantly with changes in the age structure have come changes in the median age of the population, also following the seesaw pattern. Male median ages went from 27 in 1891, to 22 in 1960, and back to 27 in 1991. Female median ages changed from 21 in 1891 to 19 in 1946 and rose to 26 in 1991. This pattern was again repeated in the youth dependency rate, which climbed from 0,44 in 1891 to 1,00 in 1951 (i.e. one child dependent for every adult of working age) and subsequently declined to 0,47 in 1991. Old-age dependency, however, has shown a fairly steady overall increase from 0,03 in 1891 to 0,09 in 1991, (with an unexplained decrease in 1960). This consistent increase in

the number of elderly dependants, however, has only partially offset the positive economic effects of the decrease in youth dependency. Although the number of elderly is still relatively small, this trend will continue over future years (Ferreira *et.al.* 1987, Hofmeyr and Mostert 1989, and Mostert and Lötter 1990), placing an increasing burden of old-age dependency on social and economic facilities for the aged in the near future.

The age structure of a population has an impact on consumption levels and patterns, since people at different ages have different needs. The aged make heavy demands on the health resources of a community, and also on the social and economic services of society, and it is to be expected that with the ageing trend visible in the study population, there will be increasing pressure on health care delivery, community and institutional housing, pensions and welfare services and general support services for the elderly in future years. This situation will require careful planning in the near future in terms of housing and health care as well as economic support for the elderly as their numbers increase rapidly over the first few decades of the twenty-first century.

The ageing of the population has resulted in an upward shift in the median ages of the study population, and the Indians are now the second 'oldest' of the four major population groups in South Africa with a median age of 27 years, surpassed only by the White population with a median age of 33 years (Population Census 1996).

The increasing proportion of adults in the productive, working age groups (15-60 years of age) since 1970, and more particularly since 1980, has not yet been accompanied by a significant increase in the proportion of elderly (in 1996 those aged 65 years or over accounted for 3,9% of the Indian population as against 10,5% for Whites – Population

Census 1996). Thus the *apex* of the histograms presented above still represent a demographically young population. However, the low percentage of children under fifteen years of age (27,7% in 1996 as against 30% in 1991), plus a low percentage of aged persons, places the Indian population well in the 'maturation' stage of structural development. Such a situation usually precedes a significant increase in the proportion of elderly persons (United Nations 1988b).

## CHAPTER SIX

### MORTALITY

#### 6.1 INTRODUCTION

For many years it has been generally accepted that registration of the bare facts of death is the most reliable of all vital data. Death is usually accompanied by a number of cultural and religious ceremonies, and the issuing of a burial permit, a requirement in most developed and many developing countries, particularly in urban areas, is dependent upon registration of the death (United Nations 1955b).

Among the components of population change, mortality has historically played an important role in determining the growth of a population. In the past, dramatic decreases in mortality rates were not simultaneously accompanied by similar decreases in fertility, and populations experienced explosive increases in numbers. Declines in mortality have been largely a result of public health measures, modern advances in medical science, and improved living conditions (Stolnitz 1955 and 1956). Mortality levels world-wide started to fall in the second half of the nineteenth century, but rapid declines did not occur until the twentieth century (Sarre and Blunden 1995). According to the theory of the epidemiological transition conceived by Omran (1971), it is by controlling infectious diseases that populations are able to progress from an age of 'pestilence and famine' to an age of 'degenerative and man-made diseases' (cardio-vascular diseases, cancers, alcoholism, traffic accidents, suicides). The discoveries and spread of simple medical techniques (vaccinations, antibiotics, DDT) in the post World War II years allowed considerable advances to be made against infectious diseases throughout the world, irrespective of levels of economic development, resulting in increased life-expectancy.

Meslé and Vallin (1996: 17) note that there appears to be some advantage in not being subjected to modernisation with its accompaniment of 'man-made' diseases. But they also note that "more and more countries in tropical Africa seem to be missing out on the phase of rapid progress (in increased life expectancy) experienced by other third world (sic) countries who have trodden the path of epidemiological transition before them". They question whether this could be due to a fall in their socio-economic standing or the unexpected upsurge in infectious disease such as the resurgence of tuberculosis, the increased resistance of malaria and the sudden appearance of AIDS on the world scene, the African AIDS epidemic being described as "a contemporary health crisis of staggering proportions" by Caldwell (2000: 117). The past and present incidence of HIV/AIDS amongst the study population could not be established as it is not a notifiable disease, but the general impression is that it is of low incidence amongst this section of the South African population. However, in *The Daily News* (November 11 2001) a worker in an AIDS support group in Durban noted that, based on the number of cases seen weekly, "AIDS had increased steadily in the Indian community in the last few years".

The demographic transition has in many cases come to mean fertility decline only, and the other important transition, that of mortality, has received less attention. This is in part due to the fact that reasons for mortality reduction are easier to find and explain. However, Kirk (1996: 368) also attributes this to the fact that "... mortality decline is not often afforded a place as a *cause* of fertility decline", due to mixed results in efforts to establish a direct close connection. A decline in mortality can initially lead to population rejuvenation while at a much later stage population ageing can occur, reflected in changing population structures over time. With the general world-wide moderate levels of mortality today, however, it is generally accepted that it is fertility, which has become the

decisive factor in population growth (United Nations 1973), both in developed as well as developing countries.

In this chapter various measures of mortality are used to compile a comprehensive picture of mortality trends amongst the study population. The unifying historical measure has had to be the crude death rate, as for many years suitable statistics were not available for the calculation of more sophisticated measures. The pattern of death rates is examined in detail in section 6.2.1 for the 130 years covered by this study and comparisons are made with other population groups in South Africa as well as with overseas countries, both developed and developing. For the latter half of the twentieth century, when more detailed basic statistical information became available for the Indian population, measures such as infant and maternal mortality rates have been calculated and assembled and are analysed and discussed in sections 6.2.2 and 6.2.3 of this chapter. The chapter closes with a discussion of life expectancy.

## **6.2 MEASUREMENTS OF MORTALITY**

As in the case of fertility, mortality is one of the significant dynamic elements of demography. Its measurement relies on a series of techniques, from a simple expression of the number of deaths per thousand of the population, to comprehensive analysis of death by age and sex. Barring natural disasters, the outbreak of disease or war, or the occurrence of widespread famine, death rates usually follow a fairly regular and predictable pattern in modern times.

The basic measure used in the following analysis of mortality among the study population will, of necessity, be the crude death rate. Apart from the influences of age- and sex-

structure of the population, many other complex and interacting economic, cultural and social factors have an important impact on the health and mortality levels of a population. More sophisticated demographic measures such as age-specific death rates and computations of expectation of life at birth, are not influenced by the age or sex structure of the total population, to any appreciable degree. These sophisticated measures, however, are only suitable for populations with a well-controlled and reliable method of data collection, so that interpretations of census enumerations and other vital statistics can be approached with confidence. The age-specific death rate and expectation of life for the study population has been included in this section for those recent years when the necessary basic data became available for the Indian population.

#### **6.2.1 CRUDE DEATH RATES**

The crude death rate is merely the number of deaths per thousand of the total population at that time. It is the most widely available index of mortality but is, in itself, not sufficient for any accurate, detailed investigation of mortality, especially for comparative purposes, where differences in the age and sex structure of the populations can cause misinterpretation of the observed trends. Meslé and Vallin (1996) use the example of Venezuela and Germany to illustrate this point. Both had fairly similar expectations of life (72 and 76 years respectively) but the crude death rate was 4.7 in Venezuela and 11.6 in Germany, due to the different population structures. However, the crude death rate is of use where suitable basic data required for the calculation of other measures, are lacking.

Before 1872 there were no accurate records kept in terms of both the total number of persons and the total number of deaths occurring amongst the study population, upon which to base reliable calculations of death rates. Therefore estimates for the early years

of settlement are to be treated with caution. It was not until the appointment of a Protector of Indian Immigrants under Law 12 of 1872 of the Colony of Natal, that data were collected and assembled regarding the number of deaths by age and sex, and reasonably reliable measures could be made. However, a fluctuating and unstable population during the early years of Indian settlement in South Africa makes it advisable to treat this data with caution.

The recorded death rate amongst the early immigrants was relatively high considering the fact that there were very few elderly people, a small number of infants and children, and a large majority of able-bodied males. For most of the nineteenth century and the early twentieth century the death rate for Indians averaged fifteen per thousand population (Table 6.1), compared with under eleven for the White population prior to 1918 (CSS Report No. 07-03-21, 1982).

**TABLE 6.1**  
*CRUDE DEATH RATES 1875-1904*

Year	Death Rate	Year	Death Rate
1875	13	1890	16
1876	14	1891	16
1877	15	1892	16
1878	14	1893	13
1879	11	1894	13
1880	14	1895	14
1881	17	1896	15
1882	17	1897	15
1883	15	1898	14
1884	17	1899	15
1885	16	1900	16
1886	13	1901	15
1887	14	1902	20
1888	17	1903	21
1889	17	1904	18

Source: *Colony of Natal, Protector of Indian Immigrants, Annual reports, 1875-1904*

This could in part be due to the fact that while not all births were registered with official departments, and the total number of 'free' Indians could only be estimated, thus causing under-enumeration of the total Indian population during these years, it was necessary that all deaths be recorded for burial purposes.

Although the provision of free medical treatment to the indentured labour force and their dependants was one of the conditions of indenture, widespread, though unconfirmed, reports indicated that this was not always the case. Workers in remote rural areas were believed to have suffered from neglect of medical conditions (Brain 1985).

In 1872 the crude death rate was estimated to be 17,2 per thousand. This somewhat unexpectedly high figure was in part due to an elevated infant death rate (section 6.2.3), prompting the Protector to comment on this fact in his annual report of 1898 :-

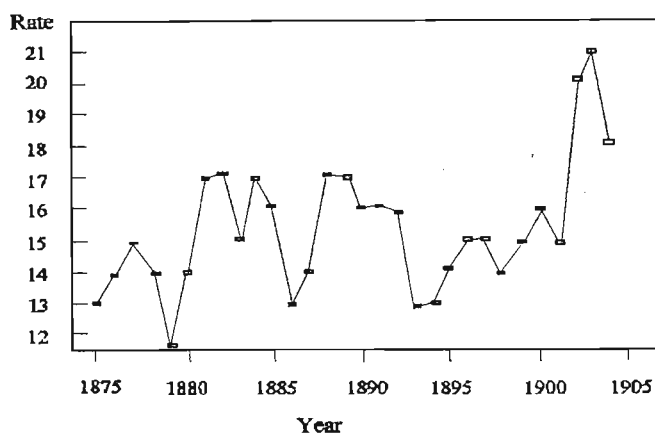
"The mortality amongst children under 10 years of age is still excessive and is due in great measure to the carelessness, particularly of Free Indian parents, in not presenting their children for medical treatment until many of them are almost in the last stages of disease."

He touched on this subject again in 1900, commenting that

"The mortality amongst young children is still excessive ... and will continue to be so unless the parents can be induced or compelled to take more care of their children and provide them with suitable clothing for the winter months."

The crude death rate towards the end of the nineteenth century hovered between 13 and 17 per thousand population for most of the years up to the early 1890's, as shown in Table 6.1 and Figure 6.1.

**FIGURE 6.1**  
*CRUDE DEATH RATES 1875-1904*



*Based on Table 6.1*

In the latter part of the nineteenth century a slight decrease to around 14 or 15 was recorded (Protector's Annual Reports 1875 - 1904). During this time, from 1891 to 1900, the death rate in India, which had a balanced age-sex structure, was estimated by British and Indian officials as between 41 and 45 deaths per thousand population, although this is felt by some researchers to be understated (Jain 1954a). (A cautious comparison of crude death rates indicates that the death rate amongst the Indians in the Colony of Natal was in fact half that of the rate in India during the same period.)

The local Indian death rate during the late eighteenth and early nineteenth centuries was comparable with that of developed countries such as Denmark, Sweden, the United Kingdom, Netherlands and Switzerland in the early years of the twentieth century (United Nations 1973). This gives a somewhat false picture, as it must be borne in mind that the crude death rate does not take into account the age-sex structure of the population. In the case of the Indians of Natal, the population was heavily dominated by healthy, able-bodied young males (20-35 years of age) during the early years of settlement, and this age

group would have relatively high survival rates. The elderly, and infants and children, who have somewhat higher death rates than the population of working age, were poorly represented amongst the study population, due to the nature and shape of the population structure, related to the patterns of immigration. These structural anomalies of the South African Indian population at this time make comparisons of its vital rates and structure with those of other countries of limited value.

While the crude death rates must therefore be treated with caution, it is unlikely that death rates for all ages would be as high as those found in the 'mother country' of India. The indentured Indians were able to benefit from the higher standards and availability of medical and health-care and disease control to be found in Natal, relative to those of India (see Preston 1985, and Stolnitz 1955 and 1956), which would serve to reduce mortality amongst the indentured population. As the population began to stabilise and assume a more balanced age-sex structure, it could be expected that the crude death rate would tend to rise. This increase would be due to the presence of greater proportions of people in the lowest (in particular) and higher age groups, where deaths are universally more numerous (United Nations 1973). This was found to indeed be the case, as is seen in Figure 6.1 after 1900.

The death rate rose to around 20 per thousand in the early twentieth century, which was still considerably below that found in India at that time, but representing a more realistic level than the low of 14 or 15 found a couple of decades before. In India during the period 1881-1900 death rates were estimated to be between 41 and 44 per thousand population (Jain 1954a), so the South African Indian population reflected only half this rate.

Comparable rates for these same years in European countries (which today are classed as *old* populations) such as Denmark, Ireland, Austria, and France hovered between 16 and 18 deaths per thousand (United Nations 1973). Thus the indentured Indians appeared to show a mortality level more in keeping with a Westernised society than with the prevailing conditions found in the homeland of India. However it must still be borne in mind that they were mostly healthy young working men, with young families, and with some access to Western standards of medical and health care. Therefore mortality levels could be expected to bear some resemblance to those found in similar age groups in the developed countries. The demographic structure of Indians in Natal at this time (see Chapter 5) would have had the effect of reflecting overall low crude death rates.

In the early years of the twentieth century, many aspects of data collection for the Indians were unfortunately neglected by official bodies and substantial gaps occur in the continuum of records. However the overall general trend can still be traced using what data are available. Estimates of crude death rates for the period 1911-18 were calculated from data from the Union of South Africa publications, Statistics of Population No.3, 1918 and the Official Statistical Yearbook of 1919. The crude death rate for the years 1927-1936 were calculated in a similar manner using census data from the Union of South Africa, Sixth Census 1936. These estimates are included with recorded data in Table 6.2.

It can be seen from this table that in the second decade of the twentieth century, estimated local Indian death rates averaged 14 per thousand population for the first six years (Union of South Africa, Official Statistical Yearbook 1919), but then increased fairly steeply for 1917 and 1918 to reach 28 per thousand (Table 6.2).

**TABLE 6.2**  
*CRUDE DEATH RATES 1911-1991*

Year	Death Rate	Year	Death Rate	Year	Death Rate	Year	Death Rate	Year	Death Rate
	(Est.)		(Est.)	1938	14	1956	2	1974	7
1911	15	1927	14	1939	14	1957	9	1975	7
1912	13	1928	13	1940	14	1958	8	1976	7
1913	15	1929	13	1941	14	1959	8	1977	6
1914	13	1930	14	1942	14	1960	8	1978	6
1915	15	1931	14	1943	17	1961	7	1979	6
1916	12	1932	15	1944	16	1962	8	1980	6
1917	28	1933	19	1945	15	1963	7	1981	6
1918	28	1934	14	1946	14	1964	7	1982	6
		1935	15	1947	12	1965	8	1983	6
		1936	15	1948	13	1966	7	1984	6
				1949	12	1967	7	1985	6
				1950	12	1968	7	1986	5
				1951	10	1969	7	1987	6
				1952	9	1970	7	1988	6
				1953	9	1971	7	1989	6
				1954	9	1972	7	1990	5
				1955	9	1973	7	1991	5

Sources: *The 1911-18 estimates are based on Colony of Natal publications, Statistics of Population 1918 and the Official Statistical Yearbook 1910-1918. Estimates for 1927-36 were calculated from the Union of South Africa, Sixth Census, 1936. Data for 1938-60 come from the Union of South Africa Publication "Union Statistics for 50 years". From 1961-1991 data were obtained from the relevant Republic of South Africa Census Reports (which covered intercensal years).*

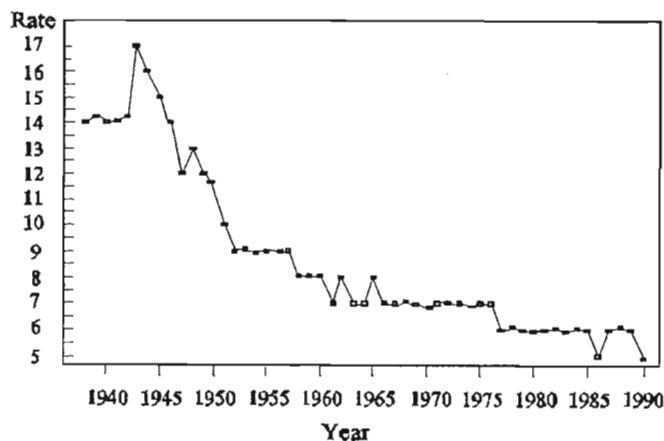
Much of this increase was in line with a world-wide trend of increased mortality at this time, due to both wartime conditions (World War I, 1914-1918) and a virulent influenza epidemic at the end of the war years (the death rate for White South Africans rose from 10 to 17 during this time – RSA Department of Statistics 1976b).

For the period 1927 to 1936, the average of 14 deaths per thousand population continued, with the exception of 1932 when the rate rose to 19 per thousand due to a malaria epidemic amongst the Indian population of Natal (Union of South Africa, Sixth Census 1936). From 1938 the death rate became stable at around 14 per thousand for a period of eight years (allowing for a slight increase during the years of World War II), comparing favourably with similar rates found in many parts of Europe, e.g. Italy, Belgium and

Austria 14 per thousand, Portugal 16 per thousand, for the same period (United Nations 1973). During the same years the average rate for South African Whites was under 10 per thousand (Union of South Africa, Sixth Census 1936 and Seventh Census 1946).

At this stage, any comparison with transition theory should be made with caution as the study population was experiencing a period of structural normalisation during these years, which had the effect of slightly increasing mortality rates. None-the-less, the population underwent expansion over this period, as the increase in mortality was offset by an increase in the fertility rate (see Table 7.2 in Chapter 7) during these years of structural change. With the crude death rate at 14 per thousand and the crude birth rate averaging 40 during the period 1939-48 (see Chapter 7), the population could, theoretically, be regarded as reaching stage one of the transition model during the years *after* 1938, with both mortality and fertility rates being at high and stable levels. However, this period of stability did not last long, a matter of eight or nine years only. After World War II the death rate of Indians began to decline and this decline continued steadily for the next fifty years, clearly seen in Figure 6.2.

**FIGURE 6.2**  
*CRUDE DEATH RATES 1938-1991*



*Based on Table 6.2*

Between 1940 and 1990, the crude death rate decreased by 64%, from 14 to five per thousand population. The period of most rapid mortality decline was a relatively short one, (excluding the war years), from 1946 to 1952, during which it dropped by 36% from 14 to nine per thousand in these six years. At the same time the crude birth rate remained stable at the high level of between 37 and 38 (see Table 7.2 in Chapter 7). This then represents the stage two period of transition, the time of early expansion. (This period of expansion is not to be confused with the expansion that occurred in the first few decades of the twentieth century, as discussed above, related to structural changes and normalisation of the population, and which is not related to the framework of transition theory).

Declines in mortality levels can be ascribed to a variety of factors (Davis 1956), but one of considerable importance is that of reductions in infant and child mortality. Here medical technology and health education have played major roles world wide (Preston 1975). The discovery of penicillin and the development and widespread use of antibiotics from the 1940's onward resulted in a dramatic reduction in epidemic and contagious diseases (see section 6.1). Other medical developments have increased the longevity of older adults (Kirk 1996).

Oeschli and Kirk (1975: 395) postulated that "a country that has achieved enough social and economic modernisation to produce a death rate of ten per thousand or less ought to be at least on the brink of a natality decline". Their study referred to populations over one million persons, but appears to have relevance to the smaller population being investigated here.

The death rate amongst South African Indians reached ten per thousand in the early 1950's (Table 6.2) and the birth rate began a steady decline shortly thereafter, as can be seen in Table 7.2. A further observation in Oeschli and Kirk (1975: 401) notes that "Since the crude death rate is strongly influenced by the age distribution of the population, a death rate of ten or less is only possible in a very young population which, typically, accompanies rapid population growth". Again, this was found to apply to the study population, which in the early and middle 1950's (Table 5.14) had a median age of 22 years (both sexes combined) with 48% of the population being under 15 years of age in 1951 (Table 5.12), and a rapid growth rate of around 5% for the same period (Table 4.4). Thus the propositions of Oeschli and Kirk (1975), relating the importance of death rates to ensuing fertility decline, can be seen to be applicable to the study population, even though it numbered less than one million.

After 1952 the decline in mortality continued slowly but steadily and reached a low value of five deaths per thousand population in 1990 and 1991 (Table 6.2), the lowest rate among all population groups in South Africa. The crude death rate for Whites hovered around 8 per thousand (an older population with a greater proportion reaching the end of their life span) while the rate for Coloureds (a young population) was 9 per thousand in 1980 and decreased to just under 8 per thousand in 1990 (RSA, CSS, South African Statistics 1988-1993).

Since the Indian fertility rate was, by the early 1950's, exhibiting signs of decrease, (see Tables 7.2 and 7.3 in Chapter 7), the population at this date could be regarded as entering the late expanding stage of the demographic transition model, with low mortality and declining fertility. At the same time the life expectancy of Indians was rising, while the

infant mortality rate was showing an overall decline similar to that occurring in the crude death rates (see Tables 6.4 and 6.6 in sections 6.2.3 and 6.3). Bulatao and Elwan (1985: 1) contend that “A way of representing mortality decline in terms of transition theory is by changes in life expectancy at birth, while changes in infant and child mortality may also reflect this transition”. These rates are discussed in sections 6.2.3 and 6.3 below. The decline in the South African Indian crude death rate since 1945 (disregarding the elevated rates during World War II) has been well illustrated in Figure 6.2 (above).

The low death rate in 1990/91 of five deaths per 1 000 population placed the South African Indians amongst those nations which had the lowest death rates in the world at that time (World Population Data Sheet 1995), and the lowest amongst the population groups in South Africa. For many years of the twentieth century the population has been one of youthful structure (see Chapter 3). As it entered an ageing phase towards the end of that century, (see section 5.8), it can be expected that, within the first few decades of the twenty-first century, the crude death rate will start to increase slightly, not due to morbidity factors, but rather related to the changes occurring in the overall age-sex structure of the population. With greater numbers then falling into the old-age categories, at the end of their natural life-span, a rise in the number of deaths occurring in the population can be expected.

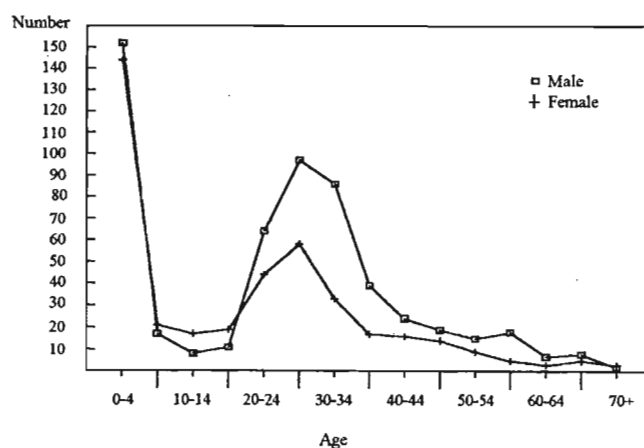
### **6.2.2 DEATHS BY AGE AND SEX**

The incidence of death varies greatly with age, but under conditions found in developed nations, where overall mortality is at a low level, death rates at each age are usually higher for males than for females. Expectation of life at birth is almost universally higher for females than for males in countries and populations of low mortality (United Nations 1973).

Statistics of death by age are not readily available for the study population during the early years under consideration. However, it has been possible to include a reasonable assessment of the situation in 1900 from analysis of data included in the Colony of Natal Blue Book for that year, which record the cause of death by age and sex. These results are presented in Figure 6.3, where the graphs are based upon actual numbers recorded year by year. The smaller irregularities in the overall shape of the graphs can in part be linked to the unbalanced age and sex structure of the population prevailing at this time, as well as to the accuracy of data collection, but the major discontinuities require explanations.

Apart from the expected peak for infants, a second high point can be observed in Figure 6.3 for both males and females in 1900 for ages between twenty and thirty-four, reflecting the large number of people in these age groups, while the number of deaths at older ages decreases sharply. This can be related directly to the age composition at this time, when amongst both males and females there were very few children or elderly people, the majority being between the ages of 20 and 40 years, due to the immigration patterns of the population in this country.

**FIGURE 6.3**  
*NUMBER OF DEATHS 1900 - by Age and Sex*



Source: *Colony of Natal Blue Book 1900*

For certain mid-twentieth century years it has been possible to assemble comprehensive data on the number of deaths by age and sex from publications of the Central Statistical Services of the Union and then the Republic of South Africa. This provides interesting analysis as it is representative of the time of maximum population growth of the population. It also covers the period when the population was undergoing change from high fertility and relatively high death rates (the high stationary stage of the transition model) to a time of high fertility but declining mortality (the early expanding stage). The low stationary stage, with declining fertility levels, is represented by the period 1974-79. Available data covering these periods appears in Table 6.3.

It can be seen from Table 6.3 that between 1941 and 1945, the greatest proportion of deaths occurred in the age group 0-5 years of age. This proportion tended in general to remain within fairly narrow bounds over the fifteen-year period 1941-1955 for both males and females, with 35% of male deaths and 40% of female deaths (37% to 38% of the total number of deaths) occurring within this age group, where the risk of dying is generally high.

**TABLE 6.3**  
*NUMBER OF DEATHS BY AGE AND SEX – selected years*

Age	1941-1945		1946-1950		1951-1955		1974-79	
	Male	Female	Male	Female	Male	Female	Male	Female
0-4	4050	3720	3850	3360	3450	3010	1970	1550
5-9	380	390	360	390	250	290	180	130
10-14	210	280	210	250	150	170	150	120
15-19	370	520	310	410	200	270	270	150
20-24	470	590	420	460	220	300	390	210
25-34	650	850	610	680	460	490	860	440
35-44	600	600	650	590	580	580	1440	630
45-54	940	580	800	600	900	600	2310	1350
55-64	1620	790	1340	710	1200	700	2790	1940
65+	1970	930	2320	1090	2710	1260	3580	2990
Total	11260	9250	10870	8540	10120	7670	13940	9510

Source: *Republic of South Africa, Central Statistical Services, South African Statistics 1972, 1980 and 1982*

However during these years the *total number of deaths* dropped by 15% for males and 19% for females in this age group, while the *total number of children* in this age group increased by around 80%. This is indicative of the great improvements that took place in the care of infants and young children (reflected in the 28% drop in the infant mortality rate during these mid-century years – see section 6.2.3).

Prior to 1955, for all ages between five and fifty-four years, the number of female deaths was greater than the number of male deaths in the same age group. While this may be understandable for the reproductive years of 15-49, when the relatively high maternal mortality rate prevailing at the time would have had an influence on female mortality (see section 6.2.4), this is an unexpected finding for the young ages of five to fifteen years. However, numerous instances of higher female than male mortality at particular ages were found in developing countries such as Mauritius, Costa Rica, Mexico, Ceylon, India and Pakistan in the mid-century years, duplicating the situation found in Europe before 1930 (United Nations 1973). While no entirely satisfactory explanation for this occurrence was to be found, an interesting theory for explaining this phenomenon was put forward in the United Nations publication *Determinants and Consequences of Population Trends* of 1973 on page 115. In several developing countries, such as Ceylon, India, Pakistan, Mauritius and Taiwan, in the 1950's, 1960's and early 1970's, recorded death rates for ages 1-4 years (in particular) were found to be higher for females than for males. The reason for this is not fully understood, but it has been suggested that parental preferences for male children may result in neglect of females. As mentioned later in section 7.3, historically boy babies are preferred over girl babies in India, and the concept of neglect is not far-fetched. It is uncertain whether this concept has ever applied in South Africa. However, calculations undertaken by the author for the census years 1946 and 1951,

based on census totals and recorded deaths (RSA, Department of Statistics 1976b), *do* indicate that female death rates in the 5-9 and 10-14 year age groups were between 20% and 40% higher than those for males. By the 1970's, however, this anomaly had disappeared.

For the child bearing ages of 15 to 34 years, female deaths *decreased* in real numbers between the years of 1941 and 1955, even though the total numbers in these age groups *increased*. This is a reflection of the improving maternal care during that time, when maternal deaths dropped by over 30% (see section 6.2.4). In 1946 female deaths in these age groups was 20% higher than that for males (although there were more males than females in these age-groups), while in 1951 it was only 9% higher. By the late 1970's female deaths in this age group were only half the number for males, although at this stage females outnumbered males of this age.

For ages 35-44 years, the number of deaths between 1941 and 1945 was almost equal for males and females. However, the male death rate still reflected a slightly lower level than that for females, as the relatively high maternal mortality rate was still having an influence on the female death rate within this age category during these years (see section 6.2.4).

At ages above 45 years, the expected trend of female advantage in mortality was found. These older age groups, up to the middle years of the twentieth century, were still reflecting the effects of ageing of the original, male-dominated population with the number of males outnumbering females, which had the effect of adding extra emphasis to the normal pattern of deaths by age. This factor adds to the caution with which the data for older ages must be approached during these years.

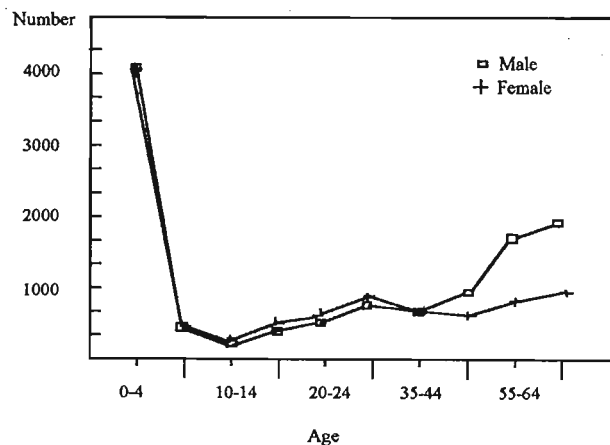
From Table 6.3 above, the increase in the proportionate share of deaths for those aged 65 years and over is evident for both males and females. The proportion of deaths in this age group between the years of 1941 and 1955 increased by 82% for females, from 10% to 18% of all female deaths, and by 65% for males, from 17% to 28% of all male deaths during this time. This is in large part due to the ageing of the original indentured workers and their wives during these years and is not a reflection of increased morbidity amongst this age group. In the 1970's aged females deaths accounted for 31% of all female deaths, while for males a similar proportion was 26%. This can be related to the greater longevity of females and therefore a greater number of females than males at these highest ages.

Perhaps the most dramatic change occurred in the twenty years from the 1950's to the 1970's, particularly with regard to the relative proportions of total deaths in the oldest and youngest age groups.

The proportion of deaths represented by infants and children under five years of age fell by more than half over this time period of twenty years, by 57% for males and 58% for females. This was not only a proportionate decrease, which was affected to some extent by changes in the age structure of the population, but *a real decrease in numbers* by some 43% for males and 49% for females. Adults aged 45 years or more showed a dramatic increase in the *number* of deaths between the early 1950's and the late 1970's, which is a reflection of the considerable changes in population structure that took place over these 25 to 30 years due to ageing of the population. The number of deaths for this age group during this time increased by 80% for males and by the considerable amount of 145% for females.

The pattern of deaths by age and sex underwent changes over the years as medical and health-care facilities available to, and used by, the Indian population improved, but these changes were affected also by changes in the population structure. The structure was changing from one of youthful domination to a state of ageing from the base, with relatively fewer children being born (see Chapter 5). Figures 6.4 to 6.6 below present, in graphical form, the number of deaths by age and sex for those years detailed in Table 6.3. By 1936 the artificial effects of the indenture origin of this population were disappearing (see Chapter 5) and as seen in Figure 6.4, by 1941 the pattern of deaths had begun to take on a more regular distribution.

**FIGURE 6.4**  
*NUMBER OF DEATHS 1941-1945 - by Age and Sex*

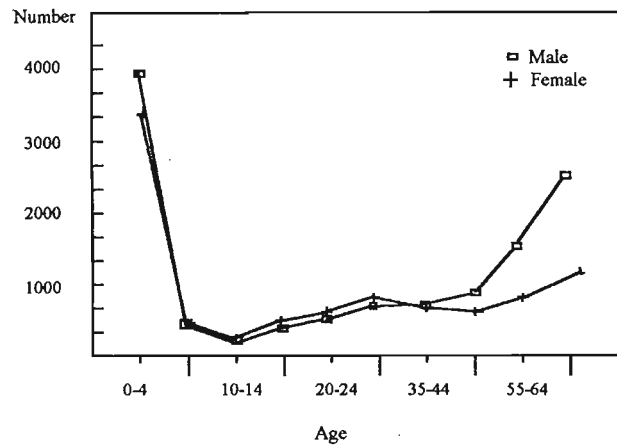


*Based on Table 6.3*

The peak in the number of deaths occurring at ages 20-39 years in 1900 (Figure 6.3) had moved upwards to ages above 50 years by 1941 (Figure 6.4). This distortion of the death-by-age curve was to remain visible for many years, until finally the last remnants of the early settler patterns were left behind in history. The feature of a secondary peak in the mortality pattern for higher ages remained for several more years as the original settlers

began to reach the end of their life-span. This pattern can be seen reaching the top age groups in Figures 6.5 and 6.6. The relatively high level of maternal mortality throughout the period 1941 to 1955 is reflected in the number of female deaths in the childbearing years being higher than that for males of the same ages.

**FIGURE 6.5**  
*NUMBER OF DEATHS 1946-1950 - by Age and Sex*

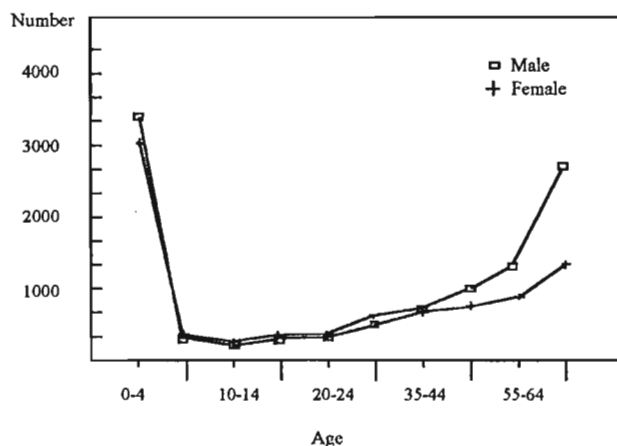


*Based on Table 6.3*

By the 1950's a more normal age-at-death distribution was becoming apparent for all ages as the population structure became more balanced (Figure 6.6). The curve for deaths by age for the period 1950-55 (Figure 6.6) began to assume the fairly typical U-shape representative of a youthful population (United Nations 1973), with a large number of deaths at very young ages (due to the prevailing high level of infant mortality).

The number of male deaths at all adult ages between 15 and 44 years was virtually the same as the number of female deaths for comparable ages, though the number of people in each age group varied with sex, giving a slightly higher female mortality at this stage. However there still remained an excess of males at older ages and this is reflected in the mortality patterns for the higher age groups for both sexes in Figures 6.4 to 6.6.

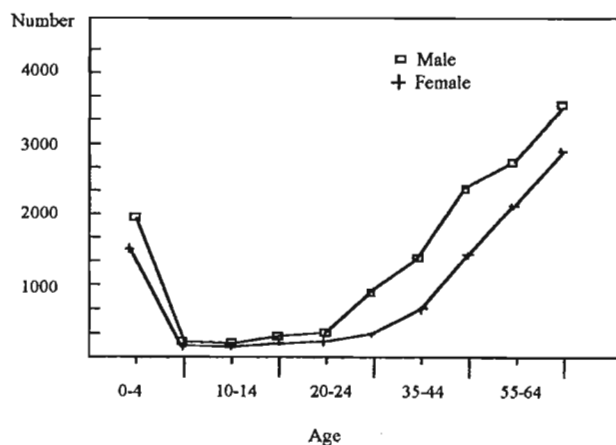
**FIGURE 6.6**  
*NUMBER OF DEATHS 1951-1955 -by Age and Sex*



*Based on Table 6.3*

In the mid- 1970's, a drop in fertility amongst the Indian population (sections 7.2.1 and 7.2.2), a declining infant mortality rate (section 6.2.3), and the start of ageing amongst the population (section 5.8), resulted in numerically fewer deaths at young ages and a greater number of deaths at older ages. Thus the pattern of deaths for the years 1974 to 1979, as depicted in Figure 6.7, varies considerably from those illustrated in Figures 6.4 to 6.6.

**FIGURE 6.7**  
*NUMBER OF DEATHS 1974-1979 - by Age and Sex*

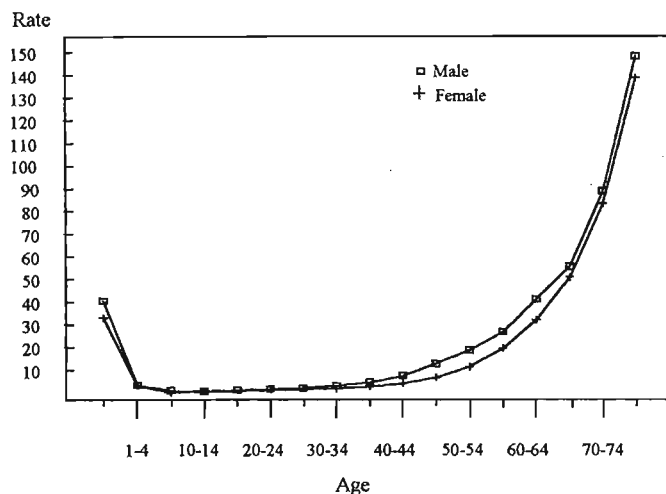


*Based on Table 6.3*

During the years 1974 to 1979, deaths occurring at age 55 years and older accounted for 46% of male deaths and 52% of female deaths (during which years both males and females of these ages accounted for just under 7% of the population). At the same time the proportion of child deaths under 5 years of age accounted for just 14% of male deaths and 16% of female deaths. Thus in the twenty five year period between 1951/55 and 1974/79 the patterns of mortality had undergone significant and notable changes. These changes, as explained above, can be directly related to changes in age structure of the population as it began to establish its position within stage four of the transition model, the low stationary stage.

A different perspective is presented in Figure 6.8 below (based on statistics obtained from RSA, CSS, Statistical Reports 1969 to 1971) which shows the pattern of *mortality rates* by age and sex for the years 1969 to 1971, i.e. late twentieth century. This graph shows the typical shape found to occur in areas of increased life expectancy (United Nations 1973). As can be expected the rates (the number of deaths per thousand population in that age group) are greatest at the beginning and end of life. The general pattern of higher male than female death rates at all ages is becoming apparent. This pattern is typical of populations with a balanced age-sex structure, and indicates that the Indian population, by this date, had largely overcome its unbalanced beginnings in this country. However, further investigation suggests some interesting detail. In a 1974 study which analysed 75% of the Indian population at that date (Sugden 1978), it was found that male mortality between the ages of 30 and 50 years was over one-and-a-half times that of females of the same age, even though population numbers did not reveal this disparity.

**FIGURE 6.8**  
*AGE-SEX MORTALITY RATES 1969-1971*



Source: *Central Statistical Services, Statistical Yearbooks 1969 to 1971*

Two factors that are likely to be contributing to this excessively high male death rate during the adult years are the high incidence of fatal automobile accidents in this country - one of the highest rates in the world - and the fact that South African Indian males have a higher death rate from hypertension than do females (RSA, Department of Statistics 1974b, 1976b, 1982). Both these factors were given recognition by the United Nations in the early 1970's as trends affecting mortality rates in developed, and to a lesser extent developing, countries (United Nations 1973).

Age-specific death rates for developed countries tend to indicate the largest percentage differences between the sexes as tending to occur at ages 20-29, owing to the greater risk of accidental death to which young men are exposed. Such a pattern is not clearly visible in the data for the period 1969 to 1971 (Figure 6.8), where the greatest differences in rates occur for ages 40 to 65 years (the age group of hypertension and cardiac problems - United Nations 1973). "In South Africa, hypertension is the most prevalent reported chronic disease, with levels varying between the different race groups" (South African

Health Review 1996: 29), with rates in both urban and rural districts being remarkably similar. The urban Indian population holds the unenviable position of having the highest rate of 53 deaths per 100 000 population per annum from this cause, followed by the Coloureds with a rate of 35, the Africans with 28 and the Whites with a rate of 12. Another high statistic is that of death from diabetes and its related complications, with the urban Indian rate of 90 being more than twice as high as that for the next group, the Coloureds (43), followed by Africans (28) and Whites (15). In the South African Health Review of 1999 it is noted that fatal road traffic collisions and suicides are the leading causes of 'non-natural' death in South Africa. The total South African traffic death rate is 11,7 per 100 million kilometres travelled, which puts it in the top ten in the world. In 1994 a survey in Cape Town put the rate at 24 traffic deaths per 100 000 population, a figure almost double the rate in the United States (South African Health Review 1996).

Yet the overall trend in the patterns of death rates by age and sex of the study population do indicate an approach to the structure and character of populations in the developed countries of the world (see United Nations 1989, 1993, 1995). In the South African Health Review of 1996 it is noted that "the morbidity and mortality profiles of Whites and Indians is characteristic of more developed societies as degenerative diseases gain prominence. Those of Africans and Coloureds reflect the situation of less developed societies with a prominence of 'social diseases' – tuberculosis, measles, deficiency and gastro-intestinal diseases".

### **6.2.3 INFANT MORTALITY**

"The incidence of mortality during the first year of life has been considered one of the most sensitive indicators of the general level of living, being especially responsive to changes in environmental and social conditions" (United Nations 1973: 123).

This view is upheld by Meslé and Vallin (1996) in their discussion of life-expectancy. However, the basic statistical requirements for the calculation of this measure (especially regarding age at death) were not available for the study population during their early years of settlement in the nineteenth century. In certain years some statistics were collected from various registration points and hospitals (and published in the Colony of Natal Blue Books), from which it has been possible to isolate infant deaths, though the reliability and accuracy of these figures is unknown. The problem is further compounded by the fact that some recorded deaths occurred among infants that were born in India and came to Natal with their parents.

However it appears that the infant mortality rate at the turn of the twentieth century was of the order of 103 to 108 deaths per thousand live births. At first sight this compares very favourably with the rate for India of 232 deaths per thousand live births, but around that time India was suffering from famine and the aftermath of disease, which served to raise the infant death rate during those years (Jain 1954a). In the early twentieth century, infant mortality levels were around 210 deaths per 1 000 live births in India, which was still almost twice that found amongst the South African Indian population.

The higher infant mortality rates to be found in India, estimated at close to 200 in the first half of the twentieth century, over 100 in the mid 1960's and 74 in 1995 (Jain 1954a, United Nations 1973 and 1995), have their origins in the social, economic, cultural, religious and health background of that country (Jain 1954a). The same cultural and religious beliefs accompanied the Indian workers to South Africa, but the social and economic conditions that prevailed in this country were those of a Western society. The improved levels of health care available, though not always applied or utilised (see section

6.2.1 page 160), found a reflection in significantly lower mortality rates at all ages amongst the indentured population in general, but particularly amongst infants and small children. It must be remembered, however, that the calculated mortality rates for South African Indians in the nineteenth and early twentieth century were based on very small numbers and the true values, free of distortion caused by size and structure, could be as much as thirty to forty percent higher (Colony of Natal, Reports of the Protector of Indian Immigrants 1874 - 1911). However, the somewhat better (though not ideal) health care facilities that were available to the indentured population, compared with the scanty or non-existent medical facilities that existed at that time in much of India's remote and poor hinterland and overcrowded urban areas (Jain 1954b), could have had an important influence on survival.

The South African Indian infant mortality rate continued its downward trend and by 1940 had reached 90 (Table 6.4). During the 1940's the rates in most European countries were around 40 or 50 per thousand live births (United Nations 1954). At that time White South Africans had a rate of 50 per thousand live births and Coloureds 157 deaths per thousand live births (RSA, Department of Statistics, 1982). The rate for South African Indians in 1950 of 69 infant deaths per thousand live births, was half that of India for the same year, and comparable with that found in Japan in the early 1950's (United Nations 1954). However, it was still about twice the rate prevailing in developed countries such as Holland, Sweden and Australia during the mid-century years (United Nations 1954), and higher than the 1950 rate of 36 for South African Whites (RSA, Department of Statistics 1982).

**TABLE 6.4**  
*INFANT MORTALITY RATES - 1938-1989/90*

Year	Rate	Year	Rate	Year	Rate	Year	Rate
1938	95	1951	63	1964	56	1977	28
1939	91	1952	64	1965	56	1978	23
1940	90	1953	66	1966	45	1979	25
1941	88	1954	60	1967	47	1980	20
1942	88	1955	63	1968	45	1981	19
1943	97	1956	67	1969	38	1982	18
1944	90	1957	68	1970	36	1983	20
1945	83	1958	65	1971	36	1984	16
1946	81	1959	61	1972	41	1985	16
1947	74	1960	60	1973	37	1986	14
1948	77	1961	59	1974	32	1987	19
1949	68	1962	61	1975	35	1988	17
1950	69	1963	56	1976	33	1989/90	12

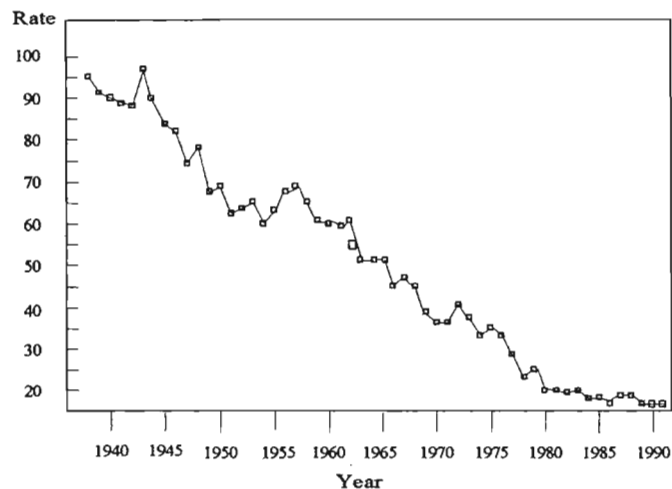
Source: *Union of South Africa, Union Statistics for 50 Years 1910-1960. Republic of South Africa, Department of Statistics, 1982 and Central Statistical Services, South African Statistics 1989 and 1991*

The decline in Indian infant mortality in South Africa in the last half of the twentieth century was impressive (Table 6.4). In 1940/41 the rate was calculated as 90 per thousand live births (from statistics in RSA, Department of Statistics 1982), dropping by 30% to 69 per thousand in 1950. It continued its downward trend over the next ten years, following world-wide improvements in maternal and infant care (United Nations 1973). Between 1950 and the early 1960's it fell from 69 to 60 deaths per thousand live births (Table 6.4 and Figure 6.9). Comparable infant mortality rates for some developing countries in the early 1950's (when rates for the study population were around 63) were Mauritius 61, Malaysia 58, and Ceylon 54 (United Nations 1954, 1966). In the developed countries the infant mortality rate in the early 1960's was lower than the South African Indian rate of around 59, with values of 44 in Hungary, 42 in Spain, 40 in Italy and under 30 in Australia, France, Japan, Netherlands, Norway and England (United Nations 1962, 1973).

Figure 6.9 depicts the year-by-year general downward trend in the infant mortality rate of the study population over the years since 1938 (when reliable data became available). The

period 1955 to 1963 appears to form an irregularity in the overall progression. This may rather be a fault of incomplete or late registration of births and infant deaths over the previous ten or twelve years (see section 3.3.3), being reflected in rather low infant mortality rates during the late 1940's and early 1950's.

**FIGURE 6.9**  
*INFANT MORTALITY RATES 1938-1991*



*Based on table 6.4*

The downward trend in the infant mortality rate continued over the next decade and reached 36 deaths per thousand live births in 1970 (22 per thousand for Whites, but a high level of 133 per thousand for Coloureds at this time - RSA, Department of Statistics 1974b). This represents a further decrease for Indians of 30% during the 1960's.

The decrease continued for some further years, with Indian infant mortality falling from 36 per thousand in 1970 to 24 per thousand in 1980 (a decrease during this decade of 33%). Comparable figures are 18 deaths per thousand births for South African Whites and 62 deaths per thousand births for Coloureds in 1980 (RSA, CSS, Statistical Yearbooks 1970-1988).

Comparatively, the infant mortality rate of Whites in South Africa dropped by 28% between 1970 and 1984, from 18 to 13 deaths per thousand live births, while that for Indians dropped by 53%, from 36 to 17 deaths per thousand live births, over the same time period. Infant mortality amongst South African Indians reached twelve deaths per thousand live births in 1989/90, a further decrease of 30% since 1980 (RSA, CSS, Statistical Yearbooks 1988-1993).

The overall picture for the fifty-three years between 1938 and 1991 shows an impressive reduction of 87% in the infant mortality rate. This is of the same standard as the decline experienced between 1906 and 1960, i.e. over a period of 54 years, in all of the developed countries of Europe (United Nations 1973).

However, some developing countries have experienced equally spectacular declines of almost the same order in the shorter period of 25 years, between the years of 1935 and 1960. In Ceylon the infant mortality rate declined by 70% over these 25 years, in Malaysia by 61% while in Mauritius the decline was 60% over this period of time. These declines are related to advances in, and availability of, modern medical technological knowledge in countries previously ignorant of such developments (United Nations 1973).

The rate of infant mortality amongst South African Indians in the closing years of the twentieth century compared very favourably with rates found in developed nations in 1995 (United Nations 1995) and with that of the White population of South Africa. Future declines in the infant mortality rate of Indians can be expected to be slow, as the present rate is already at a low level.

#### 6.2.4 MATERNAL MORTALITY

When the number of deaths by age and sex for males and females between the female reproductive ages of 15 and 49 years are compared (Table 6.3), it is seen that female deaths outnumber those of males, especially for ages 15-35 years, in the years before 1960. This is in spite of the fact that before 1960 there were more males than females in these age groups (Chapter 5). This suggests that a contributing factor to female deaths during these years can probably be found in a study of maternal mortality, for which reliable data are available only since the middle of the twentieth century, when comprehensive data for the Indian population began to be assembled (Table 6.5).

**TABLE 6.5**  
*MATERNAL MORTALITY RATES 1950-1989*

Year	Rate	Year	Rate	Year	Rate	Year	Rate
1950	3,2	1960	2,3	1970	0,9	1980	0,0
1951	2,7	1961	1,6	1971	1,0	1981	0,1
1952	3,0	1962	1,3	1972	0,7	1982	0,1
1953	3,3	1963	1,3	1973	0,6	1983	0,2
1954	2,8	1964	1,2	1974	0,7	1984	0,1
1955	2,4	1965	1,5	1975	0,6	1985	0,2
1956	2,5	1966	0,9	1976	0,3	1986	0,2
1957	2,0	1967	1,0	1977	0,5	1987	0,0
1958	2,5	1968	1,1	1978	0,4	1988	0,1
1959	1,7	1969	1,0	1979	0,5	1989	0,1

Source: *Republic of South Africa, Central Statistical Services, South African Statistics 1989 and Department of Statistics, 1982*

Before 1954, available data indicate that the maternal mortality rate averaged a little over three deaths per thousand births. Since that date a declining trend is evident, and between 1960 and 1970 the rate stayed below two deaths per thousand births (RSA, Department of Statistics 1974b). By 1972 the maternal mortality rate had dropped to less than one maternal death per thousand births (Table 6.5). By the same token the *number* of female deaths in the reproductive years fell to considerably less in total than the number of male

deaths over the same age group (25-49 years), even though the number of females exceeded the number of males of these ages.

Since 1980 this figure has fallen to 0,2 or below in all years, and since 1988 has stood at just under 0,1 maternal deaths per thousand births (RSA, CSS, South African Statistics 1995). This is comparable with the rates found in most developed countries in the rest of the world some twenty-five years earlier, e.g. in 1965 Denmark had a maternal mortality rate of 0,1 deaths per thousand births and in Belgium at that time the rate was 0,2. This rate is basically indicative of the availability and standard of medical and health services (United Nations 1973).

### 6.3 LIFE EXPECTANCY

The expectation of life at birth is a more sophisticated indicator of differences in mortality, as it is not affected by age structure. Meslé and Vallin (1996) point out a close correlation between life expectancy and infant mortality. Its calculation does, however, require detailed data, which were not available for the study population until the middle years of this century. Available data is presented in Table 6.6.

**TABLE 6.6**  
*LIFE EXPECTANCY*

Year	Male	Female
1945-47	50,7	49,8
1950-52	55,8	54,8
1959-61	57,7	59,6
1969-71	59,2	63,2
1974*	60,2	64,2
1984-86	64,1	70,7
1985-90	64,5	71,2

Source: *Republic of South Africa, Central Statistical Services, Statistical Yearbook 1993 and \*Sugden 1978*

For the period 1945-1947, life expectancy for South African Indians has been calculated as 50,7 years for males and 49,8 years for females (RSA, CSS, Statistical Yearbook 1993). These values are comparable with those of Australia for the years 1891-1900 and of Switzerland for the period 1901-1910 (United Nations 1973). During the next five years, life expectancy for the study population rose by five years, for each sex, to stand at 55,8 years for males and 54,8 years for females in 1950-52. At this stage the life expectancy of males was slightly higher, possibly related to a relatively high rate of maternal mortality during the 1940's and early 1950's (see section 6.2).

From 1960 onwards however (Table 6.6), female life-expectancy has outstripped that of males by an increasing margin (but as mentioned earlier this is not solely due to improvements in health care – see section 6.2.2). From 1959 to 1986 the life expectancy of male South African Indians increased by 6,4 years while that for females increased by 11,1 years during this 27-year period. In 1974 life expectancy was calculated to be 60,6 years for males and 64,2 years for females (Sugden 1978).

From Table 6.6 it can be seen that male life expectancy increased fairly regular over the period 1959 to 1986. For the period 1984-1986 the expected life spans were 64,1 years for males and 70,7 years for females, while between 1985 and 1990, life expectancy stood at 64,5 years for males and 71,2 years for females - a considerable increase over comparable figures from forty years earlier. The values of 64,5 and 71,2 for Indians are similar to those of White South Africans in the 1960's (RSA, Department of Statistics, Statistical Report 1988, and CSS, Statistics in Brief, 1991). In North America, Australia, the Soviet Union (now the Russian Federation) and most European countries, life expectancy at birth is six to eight years greater for females than for males (United Nations 2000). This

situation became apparent in the study population in the 1980's. Prior to this there was only a small difference (two or three years) between the sexes for the years 1960-70, while in the 1940's and 1950's female expectation of life was about one year less than that of males (Table 6.6). The average gain in life expectancy over the forty years from 1945 to 1986 was considerable, particularly for females, who increased their longevity advantage over males by five years during this time. Females gained an expected 21 years of life over this forty year period while males gained the lower amount of 16 years for the same period. Similar gains took about 65 years in European countries such as Denmark, Netherlands, Switzerland and Sweden (United Nations 1973).

The above results provide interesting indications of advances and diffusion of medical knowledge and health care made since 1945 (Preston 1975, and Meslé and Vallin 1996). Current levels of life expectation among the study population are slightly below those that were found in most European countries, North America, Australia, New Zealand and Japan in the 1970's (United Nations 1973). Further gains are likely as the local population continues to follow the patterns found in developed areas. In Northern and Western Europe the average life expectancies in 1995 were 73 years for males and 80 years for females while North America had values of 72 years for males and 79 years for females (United Nations 1995). India in 1982 had a (combined sexes) life expectancy of 55 years (Sarre and Blunden 1995) which had risen to 60 years by 1995 (United Nations 1995).

Referring to the work of Bulatao and Elwan (1985) into the relationship between increase of life expectancy and fertility decline, it appears that their postulated conditions necessary for fertility decline to commence were in place amongst the study population by 1950. The expectation of life at birth for South African Indians had had stayed above 50

for at least five years and finally reached the postulated critical level of at least 53. This requirement having been met, heralding a decline in the fertility rate, coupled with declining mortality rates, placed the Indian population during the 1950's and 1960's in the late expanding stage of the transition model, stage three, with low mortality and declining fertility.

Increases in life expectancy are closely related to economic progress, education and advances in medical technology (Hofmeyr and Mostert 1989). In respect of the first two conditions, considerable changes occurred in the second half of the twentieth century amongst South African Indians. Both male and female life expectancies showed considerable gains during that time. However, the life expectancy of Indians in South Africa is still some years behind that of the developed nations of the world and a further increase can be envisaged for the future. Sarre and Blunden (1995: 122), note that

“One of the most significant aspects of the improvements in mortality has been the continuing improvement in life expectancy at older ages. This is a major factor contributing to the ageing of the population. Improvements in life expectancy are projected to continue and there seems no reason why life expectancies of around 80, already found in some countries for women, should not be rapidly achieved for both sexes.”

At the end of the 1980's the United Nations adopted new mortality assumptions for their world population projections in order to allow for the new prospects made possible by the success of the fight against cardio-vascular diseases and allowing for the negative effect of the AIDS epidemic in the countries most affected (the epidemic of HIV in South Africa is one of the fastest growing in the world – South African Health Review 1999: 302). The generally accepted upper limit of life expectancy has subsequently been raised to 85 years in most developed countries instead of the current 77,5 years and to around 60 years in most African countries over the next twenty-five to thirty years (Meslé and Vallin 1996).

#### 6.4 SUMMARY

Mortality amongst Indian South Africans has never been excessively high, possibly due to the availability of health education and Western-style medical care in South Africa. In the early years of settlement, and for some considerable years thereafter, a distorted age-sex pattern was to be found which caused the crude death rate to be somewhat unrepresentative of the true situation. In the nineteenth century the crude death rate for Indians in South Africa stood in most years at under seventeen (low for that time period), due to the preponderance of young males in the population. Once the population began to assume a more balanced age-sex structure, the death rate rose slightly to become more representative of the true situation, but still remained at a low level compared to the prevailing rates in India. However, at no stage has the Indian population in this country shown the high death rates found in the Indian sub-continent.

The crude death rate stabilised at around 14 in the late 1920's and remained more or less steady until the mid-1940's. Thereafter a steady decline became apparent, reaching a low of five deaths per 1 000 population in 1990/91. This placed South African Indians amongst those populations of the world having the lowest death rates (mostly those countries with 'maturing' populations such as Mexico, Venezuela, Singapore, and Taiwan). However, this pattern is likely to change due to the ageing of the Indian population. An increase in numbers reaching the end of their life-span will result in a numerically higher total number of deaths for the population and a change in the overall distribution of these totals by age.

Before 1920, transition theory has no application to this population as it underwent some years of change in structural development. However, between 1920 and the mid-1940's

mortality appears to have stabilised, and the population can be regarded as having a mortality pattern that places it within stage one of the transition model, the high stationary stage, during these years. The passage to stage two of the model, with declining death rates, can be regarded as having begun in 1946. There was initially a period of rapid mortality decline between 1946 and 1952, the rate falling by 36% in these seven years. At this time fertility was still at a high level, a decline only becoming visible after 1950. These years, 1946 to 1951/2, thus represent the period of early expansion of this population. After 1950 both the mortality and (especially) fertility rates displayed a steady decline, the late expanding stage of transition theory.

The decline in the crude death rate was assisted by significant decreases in the infant mortality rate over a period of time. In the 1940's, when the infant mortality rate in developed countries was of the order of 40 to 50, the local Indian rate was hovering around 90. Throughout the 1950's it remained in the sixties, but after 1960 a steady decline started. The present infant mortality rate of under twelve infant deaths per thousand live births, while still having the potential for a further decrease, compares favourably with those found in developed nations in the latter part of the twentieth century, namely Portugal (9), Spain and the United States(8), the United Kingdom, Canada and New Zealand (7), Denmark and Norway (6) (World Population Data Sheet 1995).

Female advantage in mortality is to be found amongst the study population at all ages, while maternal mortality showed a marked decrease after 1970 and is of low incidence. The pattern of deaths by age has changed greatly over the 130 years of study, in line with structural changes in the population, with current developments reflecting an increase in

the proportion of deaths amongst the highest age-groups, as the population ages. Life expectancy amongst the study population rose steadily in the second half of the twentieth century and stood at 64 years for males and 71 years for females in 1990. These values can be expected to increase further, in line with world-wide trends.

## CHAPTER SEVEN

### FERTILITY

#### 7.1 INTRODUCTION

"Everything affecting the demographic character of a population - its size, rate of increase, geographical distribution, age and sex structure, life expectancy and family composition - must work through one of three demographic variables: fertility, mortality and migration. Of these, fertility is the major dynamic element" (Day 1983: 2).

Fertility is more difficult to predict than other population trends, being influenced by many social, economic, political and psychological factors (Caldwell 1976). Short-term variations are fairly common, related to these factors, but many such apparent fluctuations may result from shortcomings in the data. The number of births in a population is determined partly by demographic factors (such as the composition with respect to age and sex, the number of married couples related to age, the duration of marriage, the number of children already born into the family), and partly by many other factors in the economic and social environment, interrelated in complex ways. Comprehensive investigations relating fertility to differing influences have been undertaken by several researchers. Bulateo and Elwan (1985) related fertility decline to expectation of life; Oeschli and Kirk (1975) studied the relationship between economic well-being, infant mortality and fertility levels; Knodel (1985) undertook a comprehensive study of fertility decline in Thailand, (section 2.3), considering a wide variety of factors, including cultural aspects; Beaver (1975) applied similar techniques in his study of fertility in Latin America; and Drèze and Murthi (2000) investigated the importance of education (particularly female education) and child mortality in fertility decline in India, finding a "highly significant" correlation.

Advances in methodology and analytical techniques now permit the measurement of fertility levels over wide areas with reasonable precision, but do not provide a sufficient basis, in fact or in theory, for the accurate evaluation of future trends. The major determinants of future developments lie in the responses of peoples and governments to changing circumstances. Fertility decline is not just a by-product of economic growth. It depends on improvements in the specific conditions that are conducive to changed fertility goals and that help parents realise these goals (this is comprehensively discussed in section 2.3.6). Saare and Blunden (1995) and Bourgeois-Pichart (1985) have variously expressed concern at the continued decline of fertility in many industrialised countries to below replacement level.

Various sophisticated demographic measures can be used to study the picture of fertility for a population, but these measures require reliable and comprehensive records of the various population statistics being investigated. Restricted availability of data for the population being studied here, especially in the early years of investigation, limits reliable investigation to basic measures.

This chapter presents the available and calculated fertility data for Indian South Africans by examining, in sections 7.2.1 and 7.2.2, the crude birth rates and the general fertility rates for all the years under consideration. Other more sophisticated measures such as the age specific fertility rate and total fertility rate are discussed in sections 7.2.3 and 7.2.4 for those (later) years when data became available. A discussion of sex ratios at birth, a highly stable characteristic of a population, concludes this chapter.

## 7.2 MEASUREMENTS OF FERTILITY

The crude birth rate (CBR), being an indication of the number of live births per 1 000 population (of both sexes), is possibly the most universally available fertility statistic for comparative purposes. However, it does not take into account the age and sex structure of the population being examined and therefore gives no indication of distortions that could be introduced by variations in either of these basic factors. Only the effect of the *size* of the population on the number of births is accounted for. Any comparison of crude birth rates between populations must therefore be treated with caution.

In the case of the Indian population being studied here, and particularly during their early years of settlement, significant imbalances in age and sex structure were introduced by the indenture programme which led to the original introduction of Indians into South Africa. Therefore the crude birth rate at that time does not reflect the true fertility during those early years.

A more accurate measure of the fertility of a population is given by the general fertility rate (GFR), i.e. the number of births per 1 000 women of childbearing age, usually accepted as 15-49 years of age. This requires reliable and fairly detailed age and sex data and therefore its calculation has not always been possible for the study population in all years. Where such calculations have been undertaken, with reasonable confidence in their accuracy, they will be included in this chapter.

Possibly the most accurate and reliable indication of fertility is given by the total fertility rate (TFR), which is the sum of age-specific fertility rates (ASFR) for the fertile years. This measure requires more accurate and detailed records of births by age of mother, such

records being only relatively recently available for the study population. Where such values are available from secondary sources they have been included in this thesis, with due acknowledgement.

### **7.2.1 CRUDE BIRTH RATES**

Crude birth rates for South African 'Asians' have been officially available since 1938. This group, previously referred to in official publications as 'Asiatics', has historically been largely composed of Indians (see section 4.3.1). Prior to this, in the early years of settlement, statistics were collected by the Protector of Indian Immigrants (this office being established in 1872) for those Indians who fell within the jurisdiction of that body. An annual crude rate was included in the annual statistical report issued by that department. These figures thus did not necessarily reflect the trends amongst the independent settlers, i.e. those that had paid their own fares, while those that had completed their periods of indenture and had remained in the country were also not generally included. Some estimates concerning these settlers were made periodically by officials related to the immigration program, such as the office of the Protector and that of the Immigration Agent. Since it was found to be impossible to locate any reliable data concerning independent and free settlers in the early years of settlement, cautious use has been made of available data, with some reservations as to reliability and relevance.

An important factor to consider when studying crude birth rates is the age-sex structure of the population, as this can distort the true situation. The population structure caused by the indentured nature of immigration of the Indians had the effect of reflecting low crude birth rates for many years. The overall sex ratio in the early years of settlement varied from 210 males for every 100 females in 1878 to 213 in 1898. Due to the absence of detailed age

and sex breakdowns of the population for these years, no calculation of the true fertility of the population, reflected by the general and age-specific fertility rates, is possible. It is therefore necessary to make use of the crude birth rate as the only available indication of natural growth and fertility characteristics of the population during these years. Caution must be exercised in any such analysis and comparisons of such rates must be carefully assessed in terms of the age and sex structure of the populations at the time of comparison.

Prior to 1878 no records exist of the number of births occurring within the Colony and thus no calculation of the crude birth rate could be made. In subsequent years, estimates were made by the office of the Protector on an annual basis and are included in Table 7.1. Since the numbers and composition of new immigrants fluctuated widely year to year in response to social and economic factors in both South Africa and in India, the available figures yield an erratic picture. In addition, these calculations are based on a very skewed population structure and therefore should be regarded as no more than an indication of conditions at that time.

**TABLE 7.1**  
*CRUDE BIRTH RATES 1878-1904*

Year	Birth Rate	Year	Birth Rate
1878	26	1891	25
1879	17	1892	24
1880	12	1893	26
1881	12	1894	28
1882	16	1895	28
1883	22	1896	28
1884	25	1897	21
1885	32	1898	19
1886	26	1899	24
1887	29	1900	22
1888	28	1901	30
1889	27	1902	30
1890	22	1903	32
		1904	31

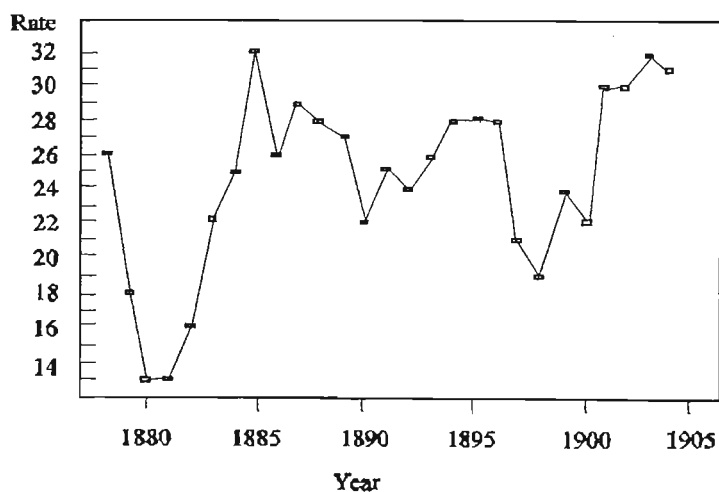
Source: *Colony of Natal, Annual Reports of The Protector of Indian Immigrants*

In 1878 the birth rate amongst the indentured population appeared to be around 26 births per thousand population (Table 7.1), dropping over the next few years to under 20 per thousand (affected by the considerable numbers of newly indentured male labourers arriving during these years). The number of births began to rise steadily again during the early 1880's and birth rates averaged around 27 births per thousand population in the second half of that decade, as shown in Table 7.1.

It must be borne in mind that the population during these early years was heavily dominated by male workers and the proportion of females of child-bearing age was at most 22% or 23% of the total (based on the recorded sex ratios of immigrants during these years). This imbalance would have caused a masking of the true fertility amongst the population. This is readily apparent when comparisons are made with the prevailing birth rate in India during these years (in Jain 1954b: 904, the birth rate in India is given as 49 for the period 1881-90 and 46 for the years 1891-1900).

The erratic picture of births in these early years is well illustrated in Figure 7.1.

**FIGURE 7.1**  
*CRUDE BIRTH RATES 1878-1904*



During the early 1890's the birth rate averaged 25 per thousand population, falling to a mean of 22 per thousand towards the end of the nineteenth century (Protector's annual reports for these years). This however gives a misleading picture and highlights the dangers of comparing crude rates, as during this latter period there was again considerable immigration, with over two thirds of the immigrants being able-bodied working males. This resulted in an overall sex ratio in excess of 200 males per hundred females during most of these years. This situation had the effect of depressing the crude birth rate.

Towards the end of the nineteenth century the birth rate began to reflect a steadier pattern (although deviations still occurred in years of high immigration, such as the early 1890's, as detailed in Table 4.1 and section 4.5.1). Around the time of the 1904 census the birth rate was estimated to be in the lower thirties (Protector's Annual Reports, 1902-1905). However at this time only 35% of the Indians in the Colony were still under indenture contracts and obliged to report all births to the Protector. In addition 87% of all Indians in Natal were in rural areas, where the registration of births assumed less importance. This stresses the need for caution when making use of these early statistics, as it is highly probable that there was gross under-reporting of births throughout this period, and the true birth rate was somewhat higher than that shown by the data.

A comparison of local birth rates with those of India during the nineteenth century shows considerable differences which can in large part be attributed to the male dominance of the indentured population of Natal. While this comparison must be treated with caution, it is nevertheless of interest to see the effects of structural distortion on this rate. In the 1880's the local population showed an average crude birth rate of 25-27 per thousand, while that of India was estimated to be almost double, at 49 per thousand - a considerable

difference (Jain 1954b). In the 1890's the same pattern was found - 25 per thousand locally and 46 per thousand for India. This underlines the problem of comparing crude rates, which are greatly affected by variations in age and sex structure.

In the early years of the twentieth century the local population was still reflecting the imbalance in its structure with birth rates of around 30 per thousand, compared with 48-49 per thousand for India, though the difference was becoming smaller as the local population began to achieve a more normal sex structure. The local birth rate continued to rise during the first third of the twentieth century, for which period official birth and death rates for the Indians do not appear to be rigorously recorded (Table 7.2). The start of this increase can be postulated to have been after the indenture of male workers ceased in 1911. With no new arrivals and considerable repatriation of time-expired workers, the population could begin to slowly assume a more normal age-sex structure and reflect the true conditions of fertility. This normalisation was assisted in a small way by the permitted immigration of a limited number of young females for the express purpose of helping to redress the imbalance of the sexes.

It has been possible to fill in some gaps in official statistics with calculations based on recorded data as presented in various official publications. From birth registrations for Indians obtained from an official publication covering the period 1911 to 1918, (Union of South Africa, Statistics of Population No.3, 1918), and from estimates of population during this period from the same source as well as from the Official Statistical Yearbook of the Union of South Africa 1919, it has been possible to estimate birth rates for this period (Table 7.2). These rates appear to fit in well with the preceding values, as well as with those recorded at later dates. A similar method was followed for the period 1927 to

1936 (for which basic data were available from the Union of South Africa, Sixth Census 1936), yielding acceptable results in this case also. These estimates have been included in Table 7.2 together with available official data, to present a fairly comprehensive picture of the situation during these years.

**TABLE 7.2**  
*CRUDE BIRTH RATES 1911-1991*

Year	Birth Rate	Year	Birth Rate	Year	Birth Rate	Year	Birth Rate	Year	Birth Rate
	(Est.)		(Est.)	1938	37	1955	34	1973	32
1911	33	1927	37	1939	39	1956	31	1974	30
1912	38	1928	40	1940	39	1957	31	1975	28
1913	39	1929	39	1941	39	1958	30	1976	27
1914	40	1930	38	1942	40	1959	32	1977	25
1915	39	1931	39	1943	41	1960	30	1978	25
1916	40	1932	35	1944	41	1961	30	1979	25
1917	35	1933	35	1945	39	1962	30	1980	25
1918	33	1934	36	1946	37	1963	30	1981	25
		1935	37	1947	40	1964	32	1982	25
		1936	38	1948	39	1965	32	1983	25
				1949	37	1966	31	1984	25
				1950	38	1967	30	1985	24
				1951	35	1968	32	1986	22
				1952	35	1969	34	1987	21
				1953	35	1970	32	1988	21
				1954	34	1971	33	1989	21
						1972	33	1990	21
								1991	21

Sources: *Estimates for 1911-18 were calculated from data in Colony of Natal Statistics of Population 1918 and the Official Statistical Yearbook 1910 - 1918. The period 1927-36 is calculated from data in the Union of South Africa Census 1936. Data for 1938-60 come from "Union Statistics for 50 years". For 1961-1991 data were obtained from the Republic of South Africa Census Reports (which cover the inter-censal years) and Central Statistical Services, South African Statistics 1982-1995.*

However there still remain some years where even educated estimates have not been possible due to a complete lack of pertinent data. This lack has affected even official publications, such as *Union Statistics for Fifty Years, 1910-1960*. Information on birth and death rates for the Indian (Asian) population is presented in this publication only for the years 1938 to 1960. It thus appears no records are available for the missing years. This

lack of recorded data for many early years of settlement proved frustrating and restrictive, but every attempt has been made to assemble as comprehensive a picture as possible.

The steady increase in the birth rate observed in the first decade of the twentieth century continued through the next ten years to reach values estimated to be well into the middle and upper thirties. In fact the rate hovered around 38/39/40 for many of the years between 1928 and 1950, occasionally taking slight, unexplained dips (possibly related to under-registration of births). With the preponderance of males in the population in the early years of settlement, the earlier 'moderate' rates probably concealed the true high fertility of Indian women. Thus the years before 1930 must be regarded as a period of normalisation of the population structure and therefore fall outside any comparison with stages of the transition theory (see section 2.3.2).

In the 1930's and 1940's the crude birth rate remained steady in the high thirties (at this time it was 26 for White South Africans), reaching a maximum of 41 births per thousand population in 1943 and 1944, as shown in Table 7.2 and Figure 7.2. Comparatively, this is somewhat higher than the levels found in European nations sixty or more years earlier, with Finland, Great Britain and the Netherlands having a rate of around 35 births per thousand population, and Norway, Belgium and Denmark 31-32 births per thousand in the 1880's (United Nations 1958), but shows a closer relationship to the situation found in India during the 1940's (Ghosh 1956), with estimated CBR's of between 40 and 45 (Jain 1954b).

While the birth rate of South African Indians has never reached the high levels found in some developing countries (such as India, as quoted above), the 1930's and early 1940's

represent the attainment by the South African Indian population of stage one of the transition model – the high stationary stage, with high but stable levels of both mortality and fertility. By 1946, however, mortality began to decline, and the population progressed to the early expanding stage, with fertility remaining high until around 1950.

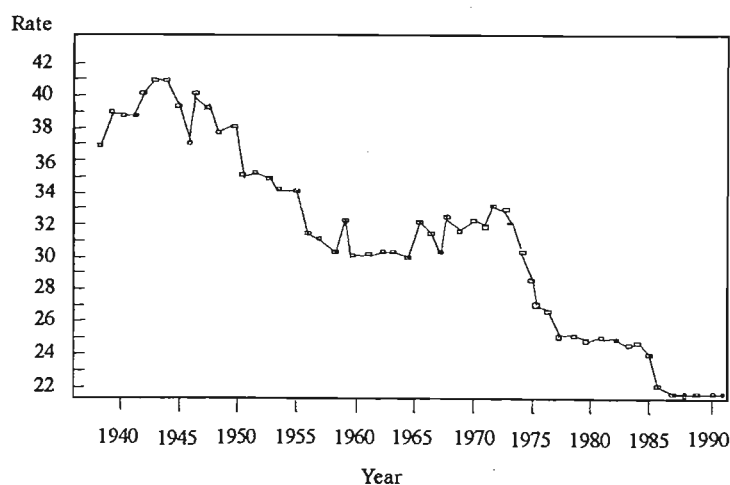
Reference is made here to the work of Bulatao and Elwan (1985) regarding the level of life expectancy required before a decline in fertility can be expected to occur. They postulate that a life expectancy of 53 years may be taken as a threshold below which no fertility decline has started, with this life expectancy corresponding to an infant mortality rate ranging from 90 to 130 (depending on the model life table used). Rapid fertility decline requires a life expectancy of 56 years. These authors also included the total fertility rate as an indicator of the start of fertility transition. A decline over five years of at least 0,7 points in the TFR was taken to show the start of fertility decrease while a steeper drop of 1,0 points in five years was taken to indicate rapid fertility decline (Bulatao and Elwan 1985). A further reference can be made to the work of Oeschli and Kirk (1975) regarding the attainment of a death rate of ten per thousand or less indicating a population on the brink of a fertility decline. At this time of high fertility amongst Indian South Africans, their life expectancy, available for the period 1945-47, was of the order of 50 years (Table 6.6) while infant mortality was around ninety in the 1930's and early-to-middle 1940's (Table 6.4). (The total fertility rate could not be determined before 1950.) After 1947 the death rate began a steady decline which continued for many years.

Thus it appears that before 1947, the population could be regarded as still being at the stage one level of the transition model, with steady high fertility rates and high mortality rates. After this date the falling mortality rate, together with an increasing life expectancy

indicated that conditions were ripe for a movement to stage two of the transition theory, that of rapid expansion (section 2.3.2).

By 1952, with the mortality rate having declined by 29% in five years to below ten per thousand, the expectation of life had risen to 55 years (the female expectancy being one year less than that of the males), while infant mortality had dropped to 65. Fertility by this date began to show a steady decline, which decline had become discernible in the very late 1940's. This was to result in the population conforming to the requirements of stage three of the transition theory, the late expanding stage, in the early 1950's, with high, though falling, birth rates and low (and still falling) death rates. Thereafter, as can be clearly seen from Table 7.2 and Figure 7.2, the crude birth rate of Indians in South Africa showed a steady downward trend throughout the fifties, to reach around 30 per thousand by 1957 (the Coloured population of South Africa only reached this level in 1974). The mortality rate at this time was still showing a decline, but at a slower rate.

**FIGURE 7.2**  
*CRUDE BIRTH RATES 1938-1991*



*Based on Table 7.2*

Throughout the 1960's and early 1970's while the birth rate hovered around 30 per thousand, the mortality rate was slowly declining. This could be regarded as the threshold between the late expanding and the low stationary stages (stages three and four of the model – see section 2.3.2). The birth rate then continued to decline (Figure 7.2) to 21 births per thousand population by 1991 (by comparison the White CBR was around 21 per thousand in the mid-1970's and stood at 17 per thousand in 1980). This represents a decrease in the Indian birth rate of 50% over the past 50 years, with a 29% decrease occurring in the 20 years since 1970 (RSA, CSS, Statistical Year Books, 1973 and 1980-1993).

The overall downward trend after 1945 is clearly visible in Graph 7.2. That this was a real decrease (and not related to skewed population structure as found historically in the early years of settlement) is borne out by a similar drop being found in the general fertility rate. (The GFR declined from 175 in 1946 to 132 per thousand in 1960, to 88 in 1985, and to 80 births per thousand women aged 15-49 in 1990 – see section 7.2.2).

The decline in the birth rate was not a continuous process but followed a stepped pattern, with significant declines being followed by periods of relative stability, or 'stalls'. These lasted for periods of between four and eight years before further declines took place. This phenomenon was noted by Bulatao and Elwan (1985: 22) when studying fertility and mortality transition patterns. They defined 'stalls' as at least three years of constant or rising fertility rates and identified this occurrence in such countries as Costa Rica, Korea, Trinidad and Tobago, Mauritius and Taiwan. They found that the causes varied but included social factors such as an increase in marriages (related in part to the age structure of the population), preference and desire for sons, failure in the delivery of contraceptives

and a decline in the initial impulse that generated the desire. However they admit that the exact reasons are unknown.

Between 1965 and 1970 the crude birth rate of the world was estimated to be 34 per thousand population. A comparison with other areas, both developing and developed, at that time indicate with that Southern Africa as a whole had a CBR of 41 per thousand and South Asia (including India) 44 per thousand, while Europe averaged 18 per thousand and North America 19 per thousand (United Nations 1973). The rate for South African Indians was around 31-32 per thousand during these years (Table 7.2), which was slightly higher than the preceding five years, possibly related to late registration of births during the previous eight to ten years. No official explanation of this irregularity was available.

In subsequent years a declining trend in the local Indian CBR became apparent. The average birth rate was 28 per thousand for the period 1975-79 and 25 per thousand for the years 1980-85. A low, apparently stable level of 21 per thousand has prevailed for all years since 1987 (Table 7.2). Whether the birth rate will continue to fall to even lower levels is not known. However in the southern Indian state of Kerala, the birth rate in 1997 had fallen to 13 per thousand population, below replacement level, following an intensive education and health campaign (Zachareck 1984). The local Indian rate in 1991 (Table 7.2) was equal to the rates that were prevailing in most countries of Europe and in North America, Australia and Japan in the 1950's and 1960's (United Nations 1973). However, the rates in these countries had dropped to well below 20 per thousand by 1995, at which time the local Indian birth rate of 21 births per thousand population was on a par with that of Sri Lanka (United Nations 1995).

### 7.2.2 GENERAL FERTILITY RATES

Due to a lack of statistics it has not been possible to calculate accurate fertility rates for the population for most of the early years of settlement. The first official census of the Colony of Natal that gave the age breakdown of the female population took place in 1891, and a reasonably accurate rate of fertility could be calculated from this base. Before 1891 general estimates can be made based on the fact that most male immigrants were in the young adult age group of 20-35 years and it is reasonable to assume that the women who accompanied them were within the childbearing ages of 15-49 years of age. Based on this premise, and using data (where available) on the number of adult females residing within the Colony and the number of births occurring within the Colony, obtained from reports of the Protector of Indian Immigrants for the relevant years, it has been possible to estimate the general fertility rate in the 1880's as varying between 110 and 120 births for every thousand females of childbearing age.

These figures appear to be considerably on the low side and it is felt that they should not be taken as truly representative of the situation. The true situation would most likely show a considerably higher level, but the lack of suitable data makes accurate estimates impossible. The issue is further complicated by the inclusion of females who entered the Colony during the years under consideration, those born in the Colony since 1860 and the exclusion of those who left with their families during these years to return to India (see section 4.5.1).

From the Census results of 1911 (Union of South Africa, First Census 1911), the calculation of a general fertility rate was not possible from the basic recorded data due to the inclusion of Indians in a general 'Coloured' race group. Problems were also

encountered in obtaining accurate and reliable data for many years between 1918 and 1936 as no comprehensive records of Indian births or sex- and age- structure were kept, so a considerable gap of information on fertility exists for this period. However it is apparent that during this time the general fertility rate was climbing to its maximum level of 175 births per thousand women of childbearing age in 1946 (Table 7.3).

The mid-century period of the late forties and early fifties appears to be of considerable importance in terms of the transition model. It marks the transition from the high fertility and high mortality of the high stationary stage of the model in the years between about 1938/9 and 1946, to the rapid expansion of a population in stage two of the transition model, with fertility remaining high and the death rate declining between 1946 and 1952. Thereafter, decreasing fertility, with a consequent slowing of growth, placed the study population into stage three of the transition model, the late expansion stage (section 2.3.2).

In the last fifty years of the twentieth century, census and other statistical data collection in South Africa progressively improved and expanded and can today be used with greater confidence. Available data on the general fertility rates prevailing in census years are shown in Table 7.3 and Figure 7.3.

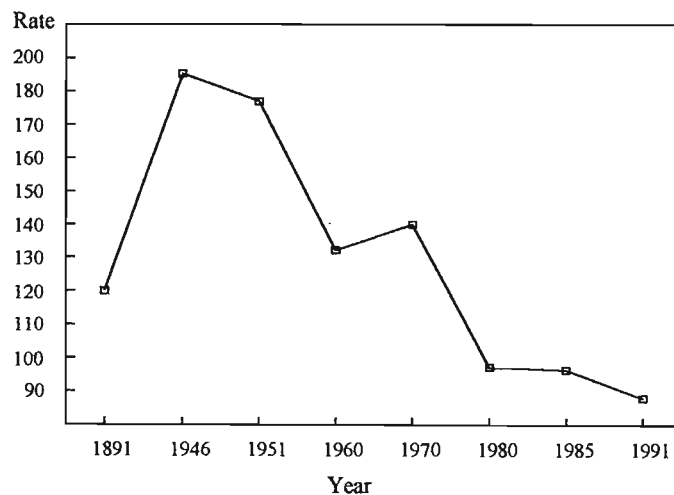
**TABLE 7.3**  
*GENERAL FERTILITY RATES*  
*(per 1000 women aged 15-49)*

Year	Rate
1880's (est.)	115
1891	116
1946	175
1951	162
1960	132
1970	130
1980	91
1985	88
1991	80

Source: *Colony of Natal, Reports of the Protector of Indian Immigrants, 1880-1889*  
and data for the years 1891 to 1991 from the relevant Census publications

In the 1980's, general fertility rates for South African Indians, (between 85 and 90), became comparable with those found thirty years earlier in developed countries such as Australia, Switzerland and the United States in the period 1950-54, and those of Canada and New Zealand during the period 1955-57. Further decrease continued to a level of 80 births per thousand women of childbearing age in 1991 (Table 7.3), comparable with the rates of France (80), Norway (76) and Denmark (73) some forty years ago in the early 1950's (United Nations 1973).

**FIGURE 7.3**  
*GENERAL FERTILITY RATES - Census Years*



*Based on Table 7.3*

Indications are thus that the Indian population of South Africa, well set on the road to socio-economic development and modernisation, is following the demographic trends observed in the developed countries of the world, where low, stable levels of fertility are to be found.

### 7.2.3 AGE-SPECIFIC FERTILITY RATES

Age-specific fertility rates indicate the number of live births per thousand women in a specific age group, covering the generally accepted childbearing years of 15-49 (sometimes the last age group of 45-49 years is omitted in developed countries). Universally, levels of fertility have been found to be closely related to age at marriage (see United Nations 1973, Schultz 1973, Cain 1982, Preston 1985, and Van de Kaa 1996).

Accurate results concerning the age-specific aspect of fertility are based on advanced techniques of data collection, which in the case of the study population were only undertaken in the second half of the twentieth century. Available data are presented in Table 7.4. From this table and Figure 7.4 it can be seen that the pattern and rate of reproduction underwent notable changes during those years.

**TABLE 7.4**  
*AGE-SPECIFIC FERTILITY RATES*  
*(per 1 000 women in the age group)*

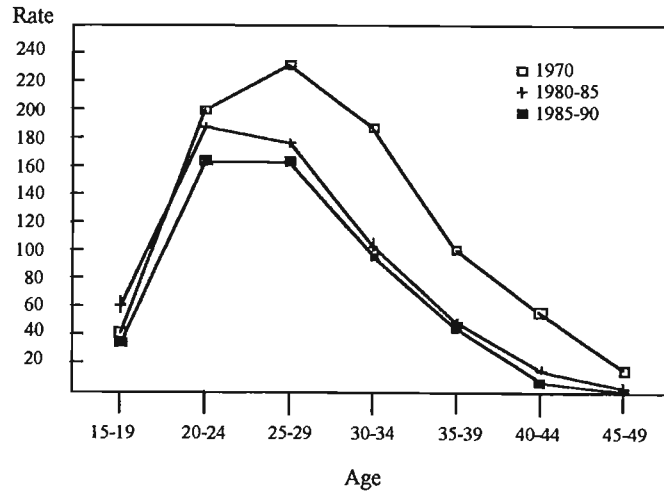
Age	1970	1980 - 1984	1985-1989	1990
15-19	41	54	37	32
20-24	200	182	159	144
25-29	233	165	157	154
30-34	187	99	89	88
35-39	103	46	39	36
40-44	50	13	10	11
45-49	12	2	1	1

Source: *Republic of South Africa, Central Statistical Services, Statistical Year Books, 1973, and 1980-1993*

The values in the youngest and oldest age-groups during the years shown in Table 7.4 were higher than comparative rates found in developed countries such as Japan, Switzerland and France during 1965 (United Nations 1973). This indicates a wider age-spread of family-building years amongst South African Indians than is found in the aforementioned countries, although this spread became restricted in the later years.

The overall pattern of Indian fertility in 1970 exhibited 'late-peak' characteristics with the peak of maximum fertility occurring at ages 25-29 years. This pattern underwent changes in the next decade with the period of maximum fertility occurring at younger ages. The pattern for the years 1980-85 shows the highest fertility rates occurring in the age group 20-24. This latter pattern was again repeated for the next five-year period of 1985-90, but the difference in the fertility rates between the consecutive age groups of 20-24 and 25-29 had decreased considerably (Figure 7.4). Age patterns of fertility are closely related to age at marriage (see above), and amongst the Indians this showed a slight increase in the second half of the twentieth century (RSA, Statistical Yearbooks 1964-1993).

**FIGURE 7.4**  
*AGE-SPECIFIC FERTILITY RATES*



*Based on Table 7.4*

This can in part be explained by the fact that traditionally girls in developing countries received less education and were expected to assume domestic duties and to marry early. The local Indian population, however, following trends in most Western societies, increasingly shows greater numbers of females receiving higher education and thereafter

entering the workforce for some years, thus delaying marriage and child-bearing (see Blacker 1959, Caldwell 1971, Cook and Repetto 1982, Presser 1985, Lötter and van Tonder 1975). It could therefore be expected, if these trends were to continue, that the proportion of births at the lower ages might well show a further slight decrease in future years with a proportionate increase in the higher age groups. However, economic conditions must be considered as an influencing factor, as future lack of job opportunities for females may lead to a tendency for earlier marriage and family building, causing changes in the present pattern of fertility. This tendency is shown in du Plessis (1996: 34) where she found that differences in age at first birth accounted for a significant proportion of the variation in fertility across the four race-groups of South Africa – Blacks had an average age of 20,4 years of age at first birth and a TFR of 4,6; Coloureds had figures respectively of 21,1 and 3,9; for Indians the figures were 22,2 and 2,7 while for Whites they were 23,4 and 2,0 respectively.

For the years under discussion, particularly for the period 1985-90, as depicted in Figure 7.4, the pattern of Indian fertility may be regarded as approaching the 'broad peak' type, with births being spread more evenly amongst two or more age groups, as was found in Australia, Canada, New Zealand and the United Kingdom in 1965 (United Nations 1973). Fertility decline in the age group of 29-34 years shows a desire to stop reproduction at an earlier stage of the reproductive years (Lötter and van Tonder 1975). This again reflects a trend in the study population towards those population characteristics found in present-day developed countries, and such changes are related not only to socio-economic development but also to cultural change (Goldscheider and Uhlenberg 1969, Jiobu and Marshall 1977, and Mostert and Lötter 1990).

#### 7.2.4 TOTAL FERTILITY RATES

The sum of the age-specific birth rates provides another rate, the total fertility rate (TFR), giving approximately the average number of children born per woman in the fertile years. This has been found to be the most descriptive index of trends in fertility (Lötter and van Tonder 1975), taking into account the age structure of the female population. Calculation of this rate relies on the same availability of data as that of age-specific rates, and thus is only available for the study population since the middle of the twentieth century, when such data began to be assembled (Table 7.5).

**TABLE 7.5**  
*TOTAL FERTILITY RATES 1950-1990*

Year	Rate
1950-55	6,1
1955-60	5,4
1960-65	4,7
1965-70	4,1
1970-75	3,6
1975-80	2,9
1980-85	2,7
1985-90	2,5
1990	2,3

Source: *Reproduced from Table 11 page 52 in Hofmeyr and Mostert 1989*

Hofmeyr and Mostert (1989) estimated the TFR to have fluctuated around the 7,0 level in the thirties and early forties. A decline of 48% then occurred over a period of 25 years, from 6,3 in 1950 to 3,3 in the mid- 1970's. At this time the TFR in India was 4,9 and in Pakistan 6,3 (Lötter and von Tonder 1975 note that Indians in S.A. are exposed to many more factors associated with a fertility transition trend than is the case in India). The decline in the local TFR continued with a value of 2,7 being recorded for the period 1980-85, and 2,5 for 1985-90. The TFR in India had fallen to around 4 at this latter date while that for Pakistan had decreased slightly to just under 6 (Basu and Amin 2000). A further

decline in local rates is also predicted. Mostert and Lötter (1990) calculated that the total fertility rate per woman dropped from 2,8 in 1986 to 2,3 in 1990 (an 18% drop in four years) and expected it to reach replacement level (around 2,1) by 1995.

Using the criteria mentioned on page 68 in Bulatao and Elwan (1985) of moderate declines in fertility being those which exceed 0,7 over any five year period, and taking into account the way in which local available data have been presented, it appears that Indian fertility has shown a continuing modest to substantial decline over the period 1950 to 1965 (Table 7.5). Since life expectancy reached the threshold level of 53 years around 1950, together with five-year declines of 0,7 in the TFR, it can be postulated, using the criteria of Bulatao and Elwan, that the fertility decline started in the early 1950's. (Although no reliable TFR is available before 1950, the pattern shown by the CBR parallels that discussed above).

### **7.3 SEX RATIO AT BIRTH**

A brief discussion of the sex ratio at birth, i.e. the number of male births per 100 females born, is included in this section as an indicator of possible future population structural trends. It is a highly stable characteristic of a population but, like any average measure, it relies on sufficient numbers being included in the analysis to give accurate and meaningful results. The reasons for variations in this measure are not fully understood and can not be fully explained, but factors such as the average age of parents, birth order or a more complex system of causes are considered relevant by researchers in this field (United Nations 1973). In many developed countries there has been a slight upward trend of male preponderance at birth since 1950 with prevailing ratios of between 104 and 106

males born for every hundred female births (United Nations 1973). Available data for the study population are presented in Tables 7.6 and 7.7.

In the nineteenth century the number of registered births for the Indian population was under 2 000 per year. Considerable fluctuations were found in the birth sex-ratio, from around 110 male births for every 100 females born in some years, to a low of 94 in other years, as shown in Table 7.6. This fluctuation is probably related to the low numbers involved and the poor collection of data at this time. The average for the latter years of the nineteenth century (Table 7.6) was 104 males born for every 100 female births, which is within the generally accepted normal range of between 104 and 106 male births per 100 female births (United Nations 1973).

**TABLE 7.6**  
*SEX-RATIO AT BIRTH 1885-1918 - Male births per 100 female births*

Year	Sex Ratio	Year	Sex Ratio	Year	Sex Ratio
1885	107	1893	106	1911	107
1886	97	1894	103	1912	98
1887	100	1896	101	1913	98
1888	106	1897	105	1914	99
1889	106	1898	108	1915	102
1890	94	1899	110	1916	104
1891	103	1900	103	1917	96
1892	103	1904	105	1918	104

Source: *Colony of Natal, Reports of The Protector of Indian Immigrants 1885-1904* and *Union of South Africa, Statistics of Population 1918*,

The sex ratio at birth over the first two decades of the twentieth century averaged 101, but showed rather wide variations year to year as depicted in Table 7.6, probably related to the poor level of birth registration prevailing during these years.

Between 1940 and 1980 the birth sex ratio hovered around the relatively low level of 102, with year to year minor fluctuations. The average since 1980 is 103 male births per 100 female births (Table 7.7), a slightly lower value than that quoted above for developed nations, where the rate averages between 104 and 106 male births per 100 female births, as discussed above.

**TABLE 7.7**  
*SEX-RATIO AT BIRTH 1938-1991*

Year	Ratio	Year	Ratio	Year	Ratio	Year	Ratio
1938	106	1951	100	1964	103	1977	102
1939	103	1952	100	1965	102	1978	102
1940	99	1953	101	1966	98	1979	101
1941	100	1954	99	1967	100	1980	104
1942	100	1955	100	1968	100	1981	102
1943	102	1956	102	1969	100	1982	105
1944	101	1957	102	1970	104	1983	103
1945	104	1958	104	1971	105	1984	102
1946	103	1959	106	1972	102	1985	103
1947	101	1960	102	1973	101	1986	102
1948	104	1961	102	1974	102	1987	105
1949	105	1962	102	1975	102	1988	103
1950	103	1963	100	1976	101	1989	105
						1991	102

Source: *Union of South Africa, Union Statistics for 50 Years and Republic of South Africa, Central Statistical Services, Statistical Yearbooks, 1974 to 1991*

A factor to be considered is that of the position of girl babies amongst the Indian population. Historically the position of females in Hindu society in India was extremely grim. A report on page 23 of the *Daily News*, 16 October 1997 states that "If a boy is born, there is happiness. If a girl is born there is sorrow". Female infanticide was banned in India by the British in 1870, but the practice persisted for many years. While there is no evidence to indicate that this practice ever found its way to South Africa, it is a fact that must be borne in mind when dealing with sex ratios at birth, particularly in the early years of settlement, as general sex ratios amongst the population could be influenced by this aspect (Jain 1954a and United Nations 1973).

World wide, the *overall* sex ratio of a population (which covers all ages) is 95 males to every 100 females but in India this ratio is almost 108 (*Daily News*, October 1997). In 1991 (by which date no trace of the imbalance caused by indenture remained in the local Indian population) the *overall* sex ratio for the Indian population of South Africa was 98 males for every 100 females (see Table 5.11 in Chapter 5).

#### 7.4 SUMMARY

The comprehensive, historical picture of fertility presented in this chapter assists in an understanding of the demographic behaviour of the study population and its social structure generally. Various measures have been used to create an historical picture of change and development in this respect and a comprehensive array of data, depending on availability, has been assembled.

The crude birth rate amongst Indian South Africans has been declining since the late 1940's and today stands at the relatively low level of 21 births per 1 000 of the population, a level that is only a little above that prevailing in many developed countries of the world. That this is a real and significant reduction is borne out by similar reductions in other, more sophisticated measures of a population's fertility, such as the age-specific and total fertility rates.

Indian fertility declined without any vigorous family-planning program being established in South Africa. A controversial state-sponsored family planning program was begun in 1974, available free to any woman who sought the services. The use of this service increased continuously after that date, even in the somewhat hostile surrounding related to

the political climate surrounding fertility control. The TFR for *all* population groups has declined since 1974 (Kaufman 1997). The reasons for this decline are linked to exposure to factors that tended to weaken pro-natalist cultural forces (high fertility and large families), bringing pressure to bear on institutions such as the extended family that may find high fertility functional and, generally, bringing about a reorientation and re-defining of fertility ideals (Mostert and Lötter 1990). Large-scale urbanisation, compulsory schooling, increasing female participation in the labour market, cultural change, and opportunities for social mobility and economic progress are recognised processes that contribute in various degrees to fertility reduction (see variously Caldwell 1982, Bulatao and Lee 1983, Bulatao and Elwan 1985, and Robinson 1992). Presser (1985) also sees postponement in age at first birth, and the changing context of child rearing that this has generated, as important links in the convergence to low fertility in industrialised countries. Preston (1985) identifies three principal sets of factors that influence fertility change: economic factors, contraceptive technology, and values (which broadly cover social factors). The population structure that is detailed for various census years in Chapter 5 is a result of fluctuations in the birth rate rather than changes in mortality rates, particularly in the second half of the twentieth century.

The birth sex-ratio found amongst the study population tends to be slightly lower than the world average and this will have added some slight weight to the normal excess of females found in the higher age groups due to their longer life expectancy. Another area of change discussed above has been in the pattern of childbearing. In 1990 this showed the characteristics of the 'broad peak' type, with 64% of births occurring between ages 20 and 29 years, while in 1970 the same age group accounted for the smaller proportion of 52% of births, with a greater spread in the higher and lower age-groups.

Relating the data assembled above, and the changes within these data that have been observed over time, to the concept of the transition model (section 2.3.2), several interesting factors emerge. While the early years of settlement provided a unique population structure that in no way could be expected to conform to any recognised demographic pattern, it appears that early exposure to Western cultural ideals and an opportunity for economic and social betterment played a part in keeping the birth rate of the immigrant population at levels somewhat below those prevailing in India (Goldscheider and Uhlenberg 1969, Preston 1975, and Caldwell 1982). The increase in fertility during the first forty years of the twentieth century was closely related to a normalisation of population structure, with the number of females in the childbearing years increasing consistently over a period of years. The maximum birth rate reached by the study population was 41 births per thousand population and this was maintained for only a few years in the late 1940's before beginning to decline.

As a result of the lengthy period of adjustment required by the population to overcome its unbalanced age-sex structure, application of the transition model can only begin several decades after the first immigrants arrived in this country. From the late 1930's to the mid 1940's however, for a period of some eight years or so, the population exhibited the classic high fertility of a stage one population, the high stationary stage (section 2.3.2). With mortality rates starting to fall in the mid- 1940's, the population passed into the second stage of rapid expansion. With a declining trend apparent in the fertility rate in the very last years of the 1940's, and mortality rates well on their way to low levels, the late expanding stage of the transition theory could be determined. Between 1950 and 1970 a decline of 33% took place in the TFR, followed by another 36% drop in the next twenty

years. The population thus passed through the late expanding stage and entered the low stationary stage of the transition model during these years (section 2.3.2).

The birth rate became stable for the years 1987 to 1991 at 21 births per thousand population with a general fertility rate of 80 births per 1 000 women of child-bearing age. The total fertility rate per woman dropped to 2,3 in 1990 and was expected to reach replacement level of 2,1 before the end of the nineteenth century (basic census and other data by (previous) racial groups after that date makes this difficult to determine). By 1991 the rate of growth had declined to a level of 1,7% (Table 4.4 and section 4.8) and the population could be regarded as hovering on the divide between the low stationary stage and the declining stage of the transition model (section 2.3.2).

This decline in fertility in recent years amongst South African Indians has followed the somewhat dramatic change that occurred after the middle 1960's in Europe, where fertility rates are now below replacement level (Gillis *et.al.* 1995). In spite of a great deal of research into fertility decline, the reasons for it are still not fully understood. Any explanation of the decline in fertility has to include a range of factors such as rising standards of living, rising levels of literacy and education, and falling infant and child mortality. Sarre and Blunden (1995) regard the growing literacy of women and the availability of mechanical contraceptives as of particular importance.

Factors which may affect birth and fertility rates include aspects influenced by cultural norms, such as variations in the number of marriages, in marital fertility and the age at marriage (van de Kaa 1996). Other factors include changes in the age and sex composition of the population (not borne out in recent years in the study population except in so far as

an ageing trend can be observed); education as regards the benefits of smaller families (Preston 1985, and Drèze and Murthi 2001) and a smaller desired family size (which may be an important factor in the study population – see Lötter and Von Tonder 1975, Von Tonder 1984 and du Plessis 1996); economic factors such as more women entering the work force (which trend has been found amongst Indian women in census results of the past two decades); and better standards of living, with low death and infant mortality rates ensuring the survival of more children than in past years (Kirk 1996, Drèze and Murthi 2001). It is also possible that the desire to assimilate and be acceptable in South African society may have forced the pace of change and the necessity to adopt Western norms (Schultz 1973, and Ritchey 1975), such as the education of woman, smaller families and women in the work force (discussions around these factors and their possible significance are contained variously in works by Day 1968, Goldscheider and Uhlenberg 1969, Jiobu and Marshall 1977, Oshima 1983, Preston 1985, Goodkind 1995, Maharaj 1995, and Drèze and Murthi 2001). Lötter and von Tonder (1975: 29) noted that there were “... indications that new values orientations are developing with regard to fertility, particularly amongst the younger women who have progressed comparatively far at school. The progress made by Indian women in the field of education can be described as ‘dramatic’. The number of working Indian women more than doubled between 1960 and 1970, from 11 000 to 26 000, though the population rose by only one third”. Any critical analysis of the validity of the existing situation and trends amongst the study population must include an awareness of the fact that one is dealing with a minority group of less than one million in total in which changing norms may perhaps be disseminated amongst the population relatively rapidly (see Jiobu and Marshall 1977, Bulatao and Elwan 1985, Kirk 1996 and Montgomery and Casterline 1998).

The results of a 1981 fertility survey (Von Tonder 1985) showed that the diffusion and acceptance of the use of contraceptives had become widespread at all levels of education, with 61% of ever-married women with six or less years of education and 64% of those with twelve years or more education availing themselves of this facility. In addition this HSRC report recorded that 66% of ever-married Christian women, 63% of Hindu's and 59% of Muslim women used family planning, and this occurred over all the years of child-bearing.

Such factors and their influence must be borne in mind when assessing the overall demographic importance of changes in the birth and fertility rates of the numerically small, minority group of South African Indians (although no recorded, meaningful or direct measures of these factors are available for the study population). Goodkind (1995: 54) in a study of the role played by cultural beliefs in the timing of births amongst Chinese Malaysians noted that "... many ethnographic and socio-cultural issues have been resuscitated and enriched when attention has turned from fertility levels to birth seasonality, birth intervals and birth timing". In the words of Goldscheider and Uhlenberg (1969: 361 and 370)

"Minority group identification is often treated as an indicator of social class .... and it is the social, demographic and economic characteristics which minority group membership connotes that determine fertility levels, trends and differentials.... The struggle to advance up the educational and other social and economic scales appears to be harder for minority group members. A minority group cohesion and integration is important to fertility trends within the group."

## CHAPTER EIGHT

### SUMMARY AND CONCLUSION

South Africa has often been called a microcosm, which term can also be applied to its demographic composition and trends. A unique element of this microcosm is the group of people with their origins in the Indian sub-continent. The objective of this thesis has been to investigate the historical, demographic evolution of the South African Indian population from an unbalanced, male-dominated indentured population, through a period of rapid expansion and normalisation of population structure, to an ageing, demographically maturing sector of the population of this country. The analysis has been undertaken within the framework of demographic transition theory.

The first Indians arrived in South Africa in November 1860. They came under indenture contracts as labourers, mainly for the sugar-cane industry of the Colony of Natal, to alleviate a critical labour shortage. Many of these immigrants remained in the colony after their indenture contracts had expired and, together with a small number of independent settlers, comprising both traders and professional men, formed the basis of permanent Indian settlement in South Africa.

In spite of the scarcity of detailed data for the first fifty years or so of their settlement in this country, and known shortcomings in certain census counts and classifications, an extensive assemblage of the historical demography of Indian settlement in South Africa has been presented in the foregoing pages. The body of this thesis has provided a detailed analysis of the population structure and its major determinants, i.e. mortality and fertility.

Changes in these vital rates and the consequences of these changes have been traced over time, and a detailed picture of the historical demographic progression of the Indian population of South Africa has been presented. The picture of the Indian population that has emerged in these pages is one of rapid structural change within the twentieth century, from a progressive to a regressive population.

In the analysis presented in this thesis it has been shown that *remarkable and rapid demographic changes* have occurred in this study population over the one hundred and thirty years under consideration. Since 1860, progress has been made from an artificially induced, badly skewed structure, in terms of both age composition and the balance of sexes, through a period of a youthfulness, with a rapidly expanding population, to an ageing one that resembles those populations found in developed Western countries, in terms of demographic structure and vital rates. This development, as interpreted by the demographic transition model, is a continuous process which in many countries in the past has usually spanned well over a century. In the case of the Indians being studied, a period of normalisation in terms of both sex ratios and age composition had to take place before the population could be regarded as having a reasonably balanced structure.

The South African Indian population underwent a period of rapid expansion in the late 1940's and early 1950's as the age structure approached a state of youthfulness, although skewness relating to the low proportion of females remained in the middle and higher age-groups until 1980. However since the late 1950's, they have become the *most rapidly ageing* population group in South Africa, (although not the oldest - the Whites have a higher median age). This is a remarkable and noteworthy phenomenon. This propensity for rapid change amongst Asian populations is noted by Kirk (1996) who recorded the fact

that the average number of children per family in Bangladesh dropped by over 50% in only 25 years, from around seven to 3,3 children, after the cautious introduction of a family- planning programme by the government.

The body of this thesis has provided the demographic details and background within which this ageing occurred and enables this process to be assessed and evaluated. Adjustments and changes that historically have taken scores of years to occur in many European countries have been encapsulated in a surprisingly short time-span in the study population.

Away from the cultural and social environment of their mother country, the early Indian settlers were exposed to prevailing Western standards, practices and ideals in their new land (Carter 1997, Chakravarti 1971, and Clarke *et.al.* 1990). For the indentured Indian labourers, adjustment to local conditions was an urgent priority in their quest for cultural and social integration into South African society, for a place in the society and economy, higher social prestige and brighter economic prospects. The chief agents in this process have been the adoption of the English language and progress in higher education (Maasdorp 1968, Maharaj 1995). Education has always received considerable attention in the Indian community and has possibly been seen as a way to raise their income and economic status within the group and the country and the key to access a wide range of employment opportunities. In the face of discriminatory legislation the Indian community was forced to rely heavily on education to raise itself, and succeeded in making considerable progress in this direction. In 1960 38% of the community was illiterate and less than 20% had more than 8 years schooling. By 1992 these figures had changed to 17% and 57% respectively. Impressive gains were made in the field of female education,

with most girls now being educated beyond the primary level and an increase in the number with higher education qualifications. Since education was mostly conducted in English, this became the chosen language spoken in many Indian homes (in 1996, 84% of rural homes and 94% of urban dwellers gave English as their home language). English was perceived as the key to advancement, progress and social mobility, related to the more sophisticated Western culture. The Western-style education made large-scale social and cultural changes within the community inevitable. Improved job opportunities were foreseen as a result of English education, and individualism and equality between the sexes followed.

Urbanisation and economic opportunities played important roles in the changes that occurred in traditional cultural values and the modernisation of this population (Clarke *et.al.* 1990). The impact of large-scale urbanisation on the ethnic identities of Indians was profound. Western values and norms became part of their lives. Religion has to some extent perpetuated and maintained an ethnic identity but has had to co-exist with a Western way of life, resulting in some tensions. Christianity increased from 12,5% in 1980 to 19% in 2001 while Islam showed an increase from 19% to 22% over the same period. Hinduism decreased from 63% of the population to 50%. Exposure to a Western style of living has in many instances led to “the dissolution of ethnic and racial identity and the emergence of a multiracism” amongst the Indians (Maharaj 1995)

Historically, the high fertility levels found in India in the past were supported by cultural norms, which today still influence fertility levels in the countries of origin of most local Indians, i.e. India and Pakistan. Apart from large-scale urbanization and economic progress, South African Indians were exposed to other factors that tended to put pressure

on and weaken pronatalist cultural values relating to the desirability of large families and many sons, which brought about a re-orientation of fertility ideals. These factors included near eradication of illiteracy (by 1996 only 6% of the Indian population had received no schooling), large scale urbanisation (97% were classed as urban in 1996), women entering the labour market, close contact with other cultures, opportunities for social and economic mobility and betterment, and low maternal and infant mortality (Goldscheider and Uhlenberg 1969).

The analysis presented here, of the changes that have taken place in the patterns of fertility and mortality, and the effects of these changes on the population structure over time, has been undertaken within the framework of the demographic transition model. This model is based on the theory that historically populations pass through several stages as they progress from a state of high fertility and high mortality to a structure now found in most developed nations of the world, with low and stable fertility (only slightly above, or nowadays slightly under, replacement level), and low mortality – an ageing population (Chapter 2). The relevance of this model to the study population has been investigated in detail and a discussion of this is presented in the following paragraphs.

Stage one of the transition model, the high stationary stage, identifies a population with both fertility and mortality rates at high levels. Death rates amongst the study population have never been excessively high, due to the standard of medical and health care available in their country of adoption, while recorded fertility in the early years of settlement was low, as the population displayed unbalanced sex ratios due to the nature and type of immigration that took place. The general framework of the transition theory therefore could only be applied once normalisation of the population structure had taken place.

In the nineteenth century, immigration and emigration were actively taking place under the indenture agreement between India and the Colony of Natal, and this kept both fertility rates and mortality rates fluctuating widely. Crude birth rates varying between 12 and 32 per thousand were recorded during this time, together with crude death rates of between 11 and 17 per thousand, illustrating the inherent dangers in the use of crude rates among a structurally unbalanced population. Clearly, during this period of wide fluctuations of vital measures, it would be of little use to attempt to fit any demographic model to the population, as circumstances had given it a structure entirely and uniquely its own.

The first few years of the twentieth century for which data are available for Indians show the beginnings of an *increase* in both the birth and the death rate. The structure of the population was changing and entering a period of normalisation in that both the sex ratio and the age structure were becoming more balanced for ages under forty years. The birth rate was in the thirties while the death rate approached the twenties. By 1911, at which time immigration of indentured workers was finally halted, the estimated crude birth rate was 33 per thousand (and increasing) and the estimated death rate was 15 per thousand.

Over the next fifteen years the crude birth rate continued to climb to an average of just below forty (which was probably a truer reflection of actual fertility), while the death rate remained relatively stable. The difference between these two rates was 18 in 1904 and 1911, while in 1936 it had risen to 23. These figures, however, must be treated with caution, since they are based on crude measures and unconfirmed accuracy of data collection during these time periods. (Stage one of the transition model was thus not applicable for the first sixty or seventy years of Indian settlement in this country.)

However, by the late 1930's both fertility and mortality appeared to have reached relative stability at levels that represented 'highs' for this population. Thus between 1938 and the mid-1940's, the population could be regarded as being representative of stage one - the high stationary stage - of the transition model.

Stage two of the transition model, the early expanding stage, identifies the birth rate as being high, with a declining, though still high, death rate. In the mid- 1940's the crude death rate was on the threshold of a future decrease. Although the birth rate would take a few more years for such a trend to be established, the death rate was to undergo a rapid downward shift in values. This led to a period of very rapid growth as fertility levels remained high for some years. Population numbers (based on census returns) increased by over 29% during the six-year period 1946 to 1951. This places the population within stage two of the transition model for these years – the early expansion stage.

After 1951 the crude birth rate began a relatively slow decline, averaging a decrease of 1,4% per annum until 1974. Thus from 1952 to 1974 the population can be placed within the third stage of the transition model, that of late expansion. Fertility then appeared to remain steady for a period of some five years before continuing to decrease, at a slightly slower rate. It reached 21 births per thousand population for all the years 1987-1991, with the general fertility rate dropping to 80 births per thousand women of child-bearing age during this period. The crude death rate declined by an average of 2,5% p.a. between 1951 and 1960, at which date it could be classed as low, with a value of eight per thousand population. This decline continued more slowly at an average rate of 1,3% p.a. for the years 1960 to 1980. Since 1980 the death rate has remained virtually steady at around five to six deaths per thousand population.

High fertility over a period of time leads to a large proportion of children and a small proportion of adults, resulting in a demographically young age structure - a progressive population, as found amongst the study population in the first half of the twentieth century. Low fertility over several decades, however, leads to a small proportion of children and a larger proportion of adults, bringing about ageing from the base of the age-pyramid, a regressive population, as found amongst the South African Indian population in recent decades.

The progression from stage three (late expanding) to stage four (low stationary) appears to have taken place around 1974 and lasted for a period of about ten or twelve years. After 1987 growth of the population appears to have remained at a fairly static level of 1,5% per annum. Since 1987 it can be regarded as teetering on the edge of the declining stage, stage five, with a proportionately small number of children and an increasing number of the elderly - an ageing population.

Although it is tempting to explain the increase in the proportion of aged persons as a result of declining mortality, such a trend does not significantly affect the overall age structure. Improvements in medicine, public health measures and living conditions influence all age groups (Kirk 1996). Declines in mortality generally affect the child age-groups first and lead to population rejuvenation, while at a later stage is found population ageing. Where fertility and mortality decrease significantly, the effect of declining fertility tends to be greater than that of declining mortality (Kirk 1996).

In the second half of the twentieth century the study population can be regarded as having passed from stage three of the transition model (the late expansion stage) to stage four,

with declining birth rates and fairly low death rates – the low stationary stage. Due to the relative rapidity of the fertility transition experienced by this population group, it has passed through the various stages of demographic transition at a much faster pace than that experienced by the White population of South Africa (the only other population group to have reached the declining stage).

At the end of the study time-frame, in 1991, the four population groups previously identified in South Africa (i.e. Asian, Black, Coloured and White) were at different stages of demographic transition. The Whites were the most advanced in this transition, past stage five of the model and possibly showing stage seven characteristics, with a fertility rate at or below replacement level. They may be typified as demographically old, with a median age of around 30 years. The Asian population (of which Indians comprised around 97%), together with the Coloured group, occupied an intermediate position, in terms of age structure, between that of the White population group, the most advanced in the ageing process, and the Black population, where population ageing had scarcely begun.

Of the four previously recognised population groups in South Africa, the Asian (Indian) population group was the *most rapidly* ageing segment in the South African context and could be regarded as having entered the early years of stage five of the transition theory. The proportion of the population aged 65 years and over is expected to increase to 14-15% by the year 2035, second only to the Whites who are expected to have 17-18% of the population falling within this age group by 2035 (Hofmeyr and Mostert 1989). Although an increase in the number of people over 65 years of age can be viewed as an increase in the dependency burden of a population, it is not unreasonable to assume that as life expectancies improve, the length of a productive and active life can also be increased.

Policy response to ageing populations can include changing retirement ages, thus expanding the length of active life (Meslé and Vallin 1996). This situation will shortly have to be addressed by Indian South Africans if present observed trends in population change and development continue past the low stationary stage to the declining stage of transition theory. Trends in ageing have important implications for social security provisions, health services, provision of leisure facilities and other services to older people. Increasing longevity presents a challenge in the sphere of health and medical services, as the greater healthcare needs of the aged, compared with other segments of the population, are coupled with soaring medical costs.

Indians in South Africa have been perceived as a relatively homogenous and cohesive group. Under the apartheid system the people of South Africa were identified as members of a particular racial group rather than as individuals with common interests, aspirations and associations (Carrim 1993, Moodley 1975). The South African government in the past treated the Indian community as a homogenous entity, overlooking the great variations in religion, language, customs, class and culture. However religious and cultural beliefs did serve to divide this sector of the population, although they shared a common legal and political status and generally the same aspirations and fears. The distinct culture, religion and language of Indians served to further divide them from the White ruling group and the African masses. Maharaj (1995) considers that exposure to a Western style of living has in many instances led to the dissolution of ethnic and racial identity and the emergence of a multi-culturalism amongst South African Indians. Their adjustment of fertility and their rapid progression through the stages of the transition model could be representative of their cultural assimilation into the Western aspects of the multi-ethnic society in which they live and their desire and determination to achieve security and upward mobility.

Perhaps playing an important part in the transition process is the fact that the Indians of South Africa have in the past represented a small (under one million persons), effectively closed, population able to respond more quickly and actively to the dissemination of changing ideas and ideals perceived as desirable. The racial segregation that occurred during the years under the government policy of apartheid promoted the social, residential, educational and economic isolation of the population and served to keep them turned inwards on themselves as a closed population.

Since 1989 South African society has committed itself to a process of social and political reform. South Africa has undergone fundamental political change resulting in the displacement of the apartheid regime by a new democratic order. Racially discriminate rules began to be removed from the statutory books after 1990 – the Group Areas Act, Population Registration Act, Land Acts and Separate Amenities Act. The destruction of apartheid and the freedom from domination and oppression is likely to benefit the Indian community as equal citizens in the new democracy. The current trend in the world economy today is towards globalization, the process of increasing economic integration and growing economic interdependence between countries in the world. Allowing for the negative effect of the AIDS epidemic (generally regarded as of low, though increasing, incidence amongst the Indian population group), South African Indians will once again have to show their adaptability to changing circumstances in their country and to the world position of South Africa in the global economy.

South African Indians can now be looked upon as a *demographically mature* population group, with low birth and death rates, an increasing median age, and a slow rate of growth (a little over 1,5% per annum), indicating an *ageing population*. This study has shown that

they have left their demographically unbalanced origins far behind and today stand amongst the demographically advanced populations of the world. Their population structure today is characterised by a relatively low percentage of children under 15 years of age and a low percentage of aged persons, with a high percentage in the productive age group 15-59 years, particularly of ages 40-59 years. This increase in the proportion of adults is generally referred to as 'maturation', typical of the early phases of population ageing. With the number of new workers entering the labour force being proportionately lower than in preceding years, (even with increasing female participation rates), the economic burden of old-age dependency will have to receive serious attention in the near future.

The rapid progression of the study population through several recognized stages of demographic transition has been examined and discussed in the foregoing pages. The demographic transition theory has proved its value in providing a framework within which the historical patterns and changing structure of the population could be analysed on a systematic basis. Once a period of approximately thirty years was allowed for the population to have overcome the specific and unique circumstances of their settlement in South Africa, the structure of the population remained at the initial high stationary level for only a short time. It then passed rapidly through stages two, three and four. In a period of no more than forty years, the Indian population changed from the rapid expansion characteristics of stage two, to fitting the stage five profile of the transition model, with the characteristics of an ageing population.

The historical changes in the population structure of Indian South Africans that have been identified, examined and discussed in the body of this thesis can be attributed to a

combination of several factors. These include *adaptability* to the Western-style environment in which the early settlers and their descendants chose to live, the *desire* for economic and social betterment and the *ability* to realize this desire (Cumpston 1957, Bhana and Brain 1990). Should the Indians of South Africa continue to follow the observed trend of ageing populations with more people living to very advanced ages, as found in Europe and other developed countries, they will have to again evince the adaptability that has been characteristic of their development over the 130 years examined in this study, in order to meet the challenges that such future circumstances will pose.

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