MAURITIUS

Ministry of Economic Planning and Development

CENTRAL STATISTICAL OFFICE

1983 Housing and Population Census of MAURITIUS

ANALYSIS REPORT

VOLUME VIII — Rodrigues : A Population Profile

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FOREWORD

This report is the eighth of a series of analytical reports prepared by a team of eight Statisticians and Demographers from this Office and the Ministry of Health. This team has been working under the supervision and guidance of Dr. K. V. Ramachandran, Regional Adviser at the United Nations Economic Commission for Africa.

The report is an attempt to analyse demographic and socio-economic data from the 1983 Census of Rodrigues. It is the first time that such a comprehensive analysis is being carried out; although similar data were collected at the 1972 Census and basic tables were published, no analysis had been undertaken. For the 1983 Census a report containing basic tables for the island was published in June 1985. In the present report an analysis is attempted using not only the published data but also additional tabulations that were produced later to help a deeper understanding and better interpretation of the data being analysed. The topics include evaluation of age and sex data; education; economic activity; households and housing; nuptiality and fertility; health, morbidity and mortality; and population distribution and migration. For the island of Mauritius similar analysis has been undertaken but the results have been presented in separate reports for each topic because of the larger volume of material to be presented. The main advantage of presenting all topics in the same volume for Rodrigues is that all census inputs necessary for planning and policy making are contained in one place, making it easy to study the implications of policy decisions on interrelationships between the different characteristics.

Analysis of census data cannot claim to be the main activity in the planning process, particularly when as in this case, it has been hampered by the delayed production of such tables as were finally made available and the non-production of many others that would have been useful. But it cannot be denied that planning is basically for the people, and the socio-economic characteristics of the population and their inter-relationships, which can be exhaustively captured only in a census, are not only useful indicators of the success or otherwise of development plans, but also act as pointers towards possible future policy options. The present analysis has not been restricted to the census data only, but has incorporated relevant information from other sources, such as vital registration and the educational system, in an attempt to check the reliability of the different sources and at the same time do as comprehensive a study as possible.

I should like to express once again my thanks to the analysis team and their staff for all the efforts that were put into the preparation of this report. My thanks also go to the United Nations Fund for Population Activities and to the United Nations Economic Commission for Africa for financial and technical assistance. Finally, the census team and myself are most grateful to Dr. K. V. Ramachandran for his excellent guidance and supervision.

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C O N T E N T S

CHAPTER 8 : POPULATION DISTRIBUTION AND MIGRATION

LIST OF TABLES

LIST OF FIGURES

LIST OF MAPS

Chapter I

INTRODUCTION

1.1 Historical evolution of population

The island of Rodrigues is the main outer island of the State of Mauritius. It has a land area of 104 sq. km. and lies 560 km E.N.E of Mauritius between latitudes 19°40' and 19°46' South and longitudes 63°20' and 63°30' East. The population at the end of 1987 is estimated at around 37,000.

The existence of the island was most probably known to Arab and Indonesian sailors since the 13th or 14th Century, but its discovery in 1507 is attributed to the Portuguese who however did not occupy the island. The Dutch followed by the French and British visited the place in the early 15th Century, but again none of them settled there. It was only in 1691 that a group of eight French Protestant refugees who had fled religious persecution in Holland came to the island with permanent settlement as the aim. However they left the island two years later because of several cyclones and the relative isolation they suffered. The island was then unoccupied until 1725 when the Superior Council of the Isle de Bourbon (present Réunion Island) took possession of Rodrigues in the name of the king, and the French India Company. Several French officers were sent there but the island had no permanent inhabitants until 1760 when a small settlement, including a number of slaves, was made. The British took possession of the island in 1809 and used it as a base to conquer Mauritius from the French in 1810. In 1814 when the island officially became a British possession the population consisted of 22 farmers and 82 slaves of whom 24 had been born on the island.

The population of Rodrigues grew very slowly during the 19th Century and numbered only 3,300 at the census of 1901. The growth rate has been faster since the beginning of this Century, so much so that even in 1934 when the population stood at about 9,000 concern was expressed as regards its large size. This concern was triggered by the natural and physical constraints which were hampering the progress of the island: the limited land area would sooner or later be absorbed completely in producing food for the island only, and there would be no surplus for export to Mauritius; the difficulty of the terrain made it difficult to install infrastructures, particularly roads and reservoirs, whilst the limited market for export produce stood in the way of economic development which was not keeping pace with population growth.

The solution proposed to check the growth of the population was emigration, although no active moves were made to encourage it. During the second World War about 100 families emigrated to Reunion and many others to Mauritius.

About 1,000 Rodriguans also served in the British army. After the war population growth continued and the administratinn had to find new ways and means of increasing agricultural production to satisfy the needs of the people. Terracing of land and rearing of animals were given particular attention.

The high growth rate continued after the war mainly as a result of high fertility which persisted up to the late seventies. It is only recently that family planning services, introduced in 1964 by Action Familiale and in 1967 by the Mauritius Family Planning Association, are showing some signs of success with the crude birth rate falling from 43 during the seventies to 35 in 1983 and 24 in 1987.

At the 1983 Census the population in Rodrigues stood at 33,000, representing about 3.3% of the total population of the Mauritius group of islands. Although of mixed origin Rodriguans can be classified into two distinct groups: those descending from the small group of French families who first settled on the island, and then the descendants of the African and Malagasy slaves who were brought to work on the plantations until their emancipation in 1839. About 95% of the population are Roman Catholics whilst an additional 2% are of other Christian faiths.

1.2 Land, climate, flora and fauna

Soil. The island of Rodrigues is of volcanic origin with a hilly ridge stretching almost right across from South-West to North-East and steep valleys descending abruptly to narrow strips of flat land all around the coast. The soil is composed mainly of basalt with coral on the eastern and western coastal plains. Only about a quarter of the total land area of 10,400 hectares is suitable for cultivation. According to a land suitability map prepared by the FAO in 1975, about 225 hectares (2.2%) were highly suitable for mixed cropping, 382 hectares (3.7%) moderately suitable, and 3,099 hectares (29.8%) conditionally suitable, whilst 3,039 hectares (29.2%) were suitable for productive forestry and rangeland, and 3,655 hectares (35.1%) for protective forestry, and soil and water conservation. A later, more detailed, study by the Mauritius Sugar Industry Research Institute (MSIRI) and ORSTOM estimates that 2,000 hectares have an immediate agricultural potential and 2,100 hectares are cultivable on condition that soil erosion is kept under strict control.

Climate. The climate is tropical with a summer season extending from November to April and winter from May to October. The temperature varies from 15°C in August to 32°C in March. During the summer months, particularly from November to April, the island is often visited by cyclones which, whilst causing much damage to foodcrops, houses and infrastructures also bring about 50% of the much needed rainfall. The annual rainfall varies between 1,100 and 1,800 mm but the extreme seasonal variations do not permit its optimum use, too much being available at some periods of the year and none at others. Furthermore, the violence of tropical and cyclonic rain coupled with the hilly topography causes most of the rain that does fall to flow quickly to the sea taking away most of the topsoil with it.

Flora and fauna. The luxuriant vegetation and tropical forests which covered the island before human settlement have been undergoing a slow degradation as land was being cleared for agriculture. This degradation has been accelerated during the last few decades when repeated droughts have made the soil more vulnerable to erosion. Only 75 hectares of natural forests are left and 225 hectares have been replanted with imported strains. Afforestation programmes undertaken during the 1975-80 plan period to cover 1,000 hectares have not met with much success. The main causes of the degradation are due to illegal cutting for firewood and overgrazing.

Both local and international conservation circles are concerned about the sad consequences to which human occupation of the island has led. It was estimated at the beginning of this decade that out of 36 species of indigenous plants at least 9 have disappeared and 12 are threatened whilst only 2 out of the 12 indigenous brid species are left. Government has decided to transform 2 small islands near the Rodrigues coast into natural reserves for the flora and fauna by restricting access to them. Both islands are the last refuge of some birds which have disappeared from the main island.

1.3 Economy

Agriculture and livestock. Agriculture has been the backbone of the Rodriguan economy ever since the island was first settled. However, the scarcity of cultivable land, and the inexorable degradation of such land as is available by overgrazing, frequent droughts, cyclones and erosion, which are particularly devastating in view of the peculiar topography and acute deforestation, have caused the output of agricultural activities, including livestock production, to dwindle over the past few decades. Such activities have also suffered some neglect in the seventies when a large proportion of agricultural labour was absorbed by Government for labour intensive public sector works. Non-ownership of land by the farmers may have been an added disincentive to invest in land improvement and efficient means of agricultural production. In fact Government owns 90% of the land which is leased in plots of about one hectare to individual families. Until recently the leases were renewable on a yearly basis, but the duration has now been increased to ten years. This coupled with recent efforts to control soil erosion by terracing, afforestation and prevention of overgrazing; harness surface and underground water for irrigation as well as domestic purposes; and provide incentives in the form of farm inputs and credit to farmers, will go a long way towards improving and diversifying agricultural production in Rodrigues, and reducing its almost complete dependence on the main island. At the same time, the improvement of the genetic pool of livestock, the strengthening of veterinary services, and the introduction of modern farming techniques are expected to give a new impetus to livestock production.

Fishing. Fishing, which has been a major economic activity after agriculture and livestock production, has suffered the same fate as the latter sectors during recent years. The reasons, however, are different. The catch has been declining over the years, in spite of an extensive continental shelf, because of irrational exploitation within the lagoons and the consequent reduction of the fish population to a low level. Efforts are now being made to investigate possibilities for off-shore fishing and at the same time train fishermen in modern fishing techniques.

Manufacturing. The manufacturing sector in Rodrigues is not well developed and is restricted mainly to basket and hat making at the household level. It is expected that the sector will develop beyond the rudimentary

stage in the coming years, particularly with the extension of the electricity network. Government proposes to motivate both foreign and local entrepreneurs to set up industries in Rodrigues, by providing credit and infrastructural facilities and giving technical support to handicrafts.

Tourism. The island has an untapped tourism potential that is awaiting the availability of facilities such as roads, water and electricity to be developed.

Human resources. The population of Rodrigues is relatively young, with 58% being under 20 years of age, so that the demand for gainful occupation is going to increase in the years to come. However, apart from the climatic factors and the system of land tenure, the economic development of the island has also been hampered by a lack of trained manpower, most educated Rodriguans preferring to work in Mauritius or to emigrate. Hence the economic development of the island also depends to a large extent on: population control measures to contain the population within such limits as can be sustained by the land; training programmes to equip young Rodriguans for the challenge of development; and right incentives to encourage them to stay and participate in the development process.

1.4 External communications

Sea transport. A regular sealink has been established between Rodrigues and the main island since the late fifties by the M.V. Mauritius. The growing inter-island trade necessitates putting into service a larger vessel, but this cannot be done until the harbour is dredged and appropriate facilities provided, possibly during the next one or two years.

Air transport. An airport with a one kilometre runway was built in the early seventies and currently assumes a daily flight between the islands of Mauritius and Rodrigues. The service which was provided until recently by a 12-seater plane has now been reinforced by a 45- seater plane.

1.5 Administration

Up to 1976 the various services in Rodrigues were co-ordinated by the Prime Minister's Office in the island of Mauritius. At the beginning of 1977 a ministry was created for Rodrigues and the Outer Islands, and this ministry is assuming the responsibilities which rested with the

various other ministries at one time. The ministry itself is in the island of Mauritius but it has an Administrative Secretary in Rodrigues who manages and directs the services on the spot.

The administration suffers from a lack of qualified personnel willing to work in Rodrigues for reasonably long periods. There is a tendency among young educated Rodriguans to leave the country after completing their education, in search of better opportunities elsewhere, whilst qualified and trained Mauritians are relunctant to accept secondments in Rodrigues.

1.6 Infrastructure and services

Roads. Rodrigues has only 85 km of tarred roads, the main one running across the central ridge of the island. Most other roads are dirt roads or tracks, and their poor condition resulting in part from the steep gradients of a difficult terrain make them unsafe for travelling by standard means of transport. A programme of road construction and upgrading is under way and will cover the main agricultural areas as well to facilitate marketing and distribution of products.

Water supply. Only about 50% of the population has access to piped water whilst the remaining half has to depend on wells, springs and rivers. Even the piped network is affected by a progressive drying out of rivers and springs. Furthermore the quality of the water, which is not treated, leaves much to be desired and is often responsible for infections of gastro-enteritis among the population. The current water development programme gives priority to the capture and storage of water for both domestic and irrigation purposes.

Electricity. At present about 75% of households have electricity in their homes. There is a programme to increase the production of electricity using both thermal and aero-generators and to extend the network to the whole island.

Health. The health services are concentrated in a 104-bed general hospital at Crève Coeur and two health centres at Mont Lubin and La Ferme. Four additional health centres equipped to provide primary health care services have recently been constructed or accommodated at Rivière Cocos, Roche Bon Dieu, Baie aux Huitres and Port Sud-Est.

Education. Since a long time the task of educating the population of Rodrigues has rested with the Roman Catholic Church which still continues to run five primary and one secondary schools. There are in addition five Government primary schools and one Government secondary school. The level of enrolment, although lower than in Mauritius, is improving fast.

Chapter 2

POPULATION : AGE AND SEX DATA

2.1 Population count

2.1.1 Historical background of census taking

The first census to be taken in the island of Rodrigues was in 1851. That year, the authorities decided that the provisions of the Census Ordinances for the island of Mauritius, should also be applied, as far as practicable, to the several other dependencies. It is worth mentioning that census taking in the island of Mauritius dates back to the 18th century, when in 1735, the first complete census of the island, then known as Isle de France, was taken under the administration of the French Governor Mahé de Labourdonnais.

Since 1851, censuses have been taken in both Islands every ten years up to 1931. Because of World War II, the next census was taken in 1944 followed by another in 1952. The ten-yearly programme was subsequently resumed with a census in 1962 and another in 1972. The present census was originally planned for 1982 but had to be postponed to 1983 because of parliamentary elections held in June 1982. Table 2.1 presents the evolution of the population of the island of Rodrigues as enumerated at each of the censuses since 1851. The course of population growth in the island of Rodrigues has been a very rapid one. With an enumerated total of 495 in 1851 and growing at an average annual rate of 3.78 per cent the population reached 3,162 in 1901. The next fifty one years revealed a still fast growing population which reached 13,333 in 1952. Thus, during the period 1901 - 1952 the population had increased by more than four-fold. The population censuses conducted after 1952 reveal that the rate of growth remained high so that during the short-interval of 31 years from 1952 - 1983, the population increased by more than two and a half fold, from 13,333 to 33,082.

The evolution of the sex-structure of the population will be studied by calculating the sex ratios (males per 100 females) of the population. The sex ratio started at a very high figure of about 200 at the middle of the 19th Century and then decreased steadily to 100.5 in 1921. The high ratio during the period 1851 - 1921 is attributable to the preponderance of males among the early immigrants. From 1921

Table 2.1 - Population increase in intercensal periods, 1851 - 1983

Census date	Population enumerated at census			Density per sq. km.	Intercensal increase	Average annual rate of increase %
	Both sexes	Male	Female			
20th Nov. 1851	495	327	168	5	-	-
8th Apr. 1861	693	464	229	7	198	3.42
11th Apr. 1871	1,108	693	415	11	415	4.80
4th Apr. 1881	1,431	812	619	14	323	2.59
6th Mar. 1891	2,068	1,154	914	20	637	3.75
1st Apr. 1901	3,162	1,685	1,477	30	1,094	4.34
31st Mar. 1911	4,829	2,523	2,306	46	1,667	4.33
21st May 1921	6,584	3,300	3,284	63	1,755	3.15
26th Apr. 1931	8,202	4,033	4,169	79	1,618	2.22
11th Jun. 1944	11,885	5,740	6,145	114	3,683	2.89
30th Jun. 1952	13,333	5,947	7,386	128	1,448	1.45
30th Jun. 1962	18,335	9,062	9,273	176	5,002	3.24
30th Jun. 1972	24,769	12,270	12,499	238	6,434	3.05
2nd Jul. 1983	33,082	16,552	16,530	318	8,313	2.67

onwards, the sex ratio fluctuated roughly between 93 and 101, except in 1952 when the sex ratio was at a low of 80.5 when a large proportion of the male adult population was on war service abroad. The sex ratio of the population has steadily increased over the last two decades, from a figure of 97.7 in 1962 to 98.2 in 1972 and further to 100.1 in 1983.

2.1.2 Evaluation and analysis of census data

Although there is a long established tradition of census taking in the island of Rodrigues, there has never been any systematic evaluation or analysis of data collected during past censuses. This is the first time that a comprehensive analysis of census data from Rodrigues has been undertaken. However, because of the small size of the population, the exercise has been a very risky and hazardous enterprise and at times it was very difficult to arrive at some definite and precise interpretation of the data.

2.2 The 1983 census

2.2.1 Introduction

The 1983 Census was the fourteenth census of the Island of Rodrigues and was taken according to provisions laid down in the Statistics Act 1951. The count was made on a "de facto" basis. All persons alive at midnight on the night of 2 - 3 July 1983 were enumerated, irrespective of whether they were residents or not. Generally speaking, persons were enumerated in the households, whether private or institutional, in which they were present on census night. A list of such households had been compiled at the Housing Census taken about three months earlier.

2.2.2 Census cartography

A detailed census mapping exercise was undertaken in October 1982 in order to provide various base maps and census enumeration maps to fieldstaff before they went on the field. This was necessary to ensure that no fieldworker trespassed into the territory of another or missed any assigned area. The exercise involved an update of old maps, preparation of base maps, delineation of areas on the field, and finally the preparation and reproduction of both enumeration area maps and supervision area maps.

At the previous census in 1972 the island of Rodrigues had been divided into 12 enumeration areas of about 500 households each. These areas were further subdivided in 1983, not only to enable better control and supervision of the fieldwork but also to meet certain specific needs in town and country planning and to provide clusters of roughly the same size for future sample surveys. Thus, for the 1983 census, there were about 100 smaller enumeration areas each containing roughly 80 households.

2.2.3 Housing census

The housing census was conducted from mid-March to the end of April 1983 and involved the enumeration of all buildings, including those under construction and not inhabited, all housing units within the buildings and all households within housing units. Information was collected on the characteristics of buildings, the amenities existing in the housing units, the number of male and female members in each household and the number of rooms they occupied. All commercial and industrial establishments were also enumerated and details of industrial activities and persons engaged were asked for those establishments employing less than ten persons. The fieldstaff consisted of 3 Supervisors, 25 Chief Enumerators, all working under the supervision of a Chief Supervisor who, however, did not work full-time there. The Chief Enumerator, with the help of his Supervisor, had to enumerate all buildings at the Housing Census and supervise and control the work of about 7 Enumerators at the Population Census.

As soon as the housing census questionnaires were completed they were sent by air to the census office in Mauritius for editing and coding. The questionnaires were then sent to the Data Processing Division for the preparation of address slips for each household. These address slips were stuck on to the population census questionnaires before the latter were despatched to Rodrigues.

2.2.4 Population census

Distribution of the population census forms started about the end of June. Heads of households were requested to complete all items, except those on economic characteristics (which were to be filled in by the Enumerator), in respect of every person who spent census night

on the premises, or who joined the household or institution on 3 July without having been counted elsewhere. Collection of all questionnaires was completed about a week later. Besides the officers already recruited at the housing census, an additional staff of 121 Enumerators were required for the population census fieldwork.

2.3 Vital registration system

It is not known exactly when registration of vital events was introduced in the island of Rodrigues. However, there exist in the archives of the Central Civil Status Office in Port Louis, registers of births, deaths and marriages for the island of Rodrigues since 1843.

At present there is only one Civil Status Office in Rodrigues responsible for the registration of live births, still births, deaths and marriages. The office is situated in Port Mathurin and covers the whole island with an area of slightly more than 100 Km^2 or a total population of 36,000 as at the end of 1986. In comparison, one office in the island of Mauritius covers an area of about 40 Km^2 or a population of 22,000. Moreover, whereas the average yearly number of vital events registered at each civil status office in the island of Mauritius is about 800, in Rodrigues, it is about 1,400. Despite these differences, the coverage of vital statistics in Rodrigues appears to be as good as that in the main island. However, there are indications that the quality of these data need to be further improved. The office in Rodrigues which is presently staffed with two civil status officers falls under the control of the Central Civil Status Office in Port-Louis, the whole Department being under the supervision of the Registrar of Civil Status.

Registration of vital events is done by the civil status officer in the appropriate register. For each event registered, the officer is then required to transcribe the relevant information on a special card which is used for compilation of vital statistics. At the end of each month, all the cards for that month are forwarded to the main office in Port Louis. After carrying out some checks and verifications, mainly administrative, these cards are then sent to the Central Statistical Office where they are coded, edited and finally forwarded to the Data Processing Division for processing by computer.

2.4 Passenger traffic statistics

2.4.1 Introduction

Migration is an important factor contributing to population change in the island of Rodrigues. Because of the island's small population, migration has the long-term effect of modifying its size, age and sex composition. During the intercensal period 1972 - 1983 a total of 50,747 arrivals were registered as compared to 50,314 departures, thus indicating a yearly average of about 4,600 arrivals and about the same number of departures. These figures relate exclusively to movement of persons, whether residents or not, between the islands of Rodrigues and Mauritius. There is no direct external traffic between Rodrigues and other foreign countries, except through the island of Mauritius. Control over passengers, entering or leaving the island of Rodrigues, is exercised by the Passport and Immigration Office either at Port Louis harbour or at Plaisance airport in the island of Mauritius.

Basic information on the number of persons, by age and sex, entering or leaving the island, coupled with statistics of vital events is necessary for making good estimates and projections of population. Further, with these data, it is possible to analyse the changes in the structure of the population that have occurred between any two censuses.

2.4.2 Sources and quality of migration data

Information on passenger traffic between the islands of Rodrigues and Mauritius is collected by the Passport and Immigration Office. Unfortunately these data suffer from serious problems of completeness, adequacy and reliability. There are several reasons for the poor quality of the data. Rodrigues forms an integral part of the territory of Mauritius and controls are not very strict over passengers travelling between the two islands, especially those travelling by sea. For those that are recorded, the only information that can be obtained from the Passport and Immigration Office is merely a breakdown of the number of passengers by sex without any classification by other characteristics, see Table 2.2 ; and the sex itself is not explicitly recorded, but deduced from the name of the passenger.

Table 2.2 - Arrivals and departures by sex, 1952 - 1983

Year	Arrivals			Departures			Net migration		
	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes
1952	408	144	552	364	158	522	+ 44	- 14	+ 30
1953	528	186	714	591	299	890	- 63	- 113	- 176
1954	417	153	570	417	157	574	-	- 4	- 4
1955	642	219	861	732	323	1,055	- 90	- 104	- 194
1956	579	247	826	679	281	960	- 100	- 34	- 134
1957	769	281	1,050	773	338	1,111	- 4	- 57	- 61
1958	697	253	950	767	303	1,070	- 70	- 50	- 120
1959	776	284	1,060	838	379	1,217	- 62	- 95	- 157
1960	...	...	...	...	...	...	...	...	- 151
1961	...	...	...	...	...	...	...	...	- 117
1962	661	372	1,033	725	401	1,126	- 64	- 29	- 93
1963	620	279	899	905	534	1,439	- 285	- 255	- 540
1964	850	450	1,300	915	535	1,450	- 65	- 85	- 150
1965	854	485	1,339	961	564	1,525	- 107	- 79	- 186
1966	860	466	1,326	904	514	1,418	- 44	- 48	- 92
1967	940	545	1,485	822	446	1,268	+ 118	+ 99	+ 217
1968	940	601	1,541	946	539	1,485	- 6	+ 62	+ 56
1969	1,034	535	1,569	994	499	1,493	+ 40	+ 36	+ 76
1970	1,103	637	1,740	1,123	639	1,762	- 20	- 2	- 22
1971	1,017	561	1,578	1,118	626	1,744	- 101	- 65	- 166
1972	1,409	759	2,168	1,469	842	2,311	- 60	- 83	- 143
1973	1,521	906	2,427	1,511	942	2,453	+ 10	- 36	- 26
1974	1,197	856	2,053	1,560	1,088	2,648	- 363	- 232	- 595
1975	1,870	1,098	2,968	2,030	1,289	3,319	- 160	- 191	- 351
1976	2,528	1,268	3,796	2,854	1,367	4,221	- 326	- 99	- 425
1977	2,935	1,542	4,477	3,214	1,639	4,853	- 279	- 97	- 376
1978	3,588	1,983	5,571	3,641	2,001	5,642	- 53	- 18	- 71
1979	3,794	1,991	5,785	3,672	1,726	5,398	+ 122	+ 265	+ 387
1980	3,964	2,078	6,042	3,908	1,814	5,722	+ 56	+ 264	+ 320
1981	4,871	2,228	7,099	4,256	1,934	6,190	+ 615	+ 294	+ 909
1982	4,144	2,189	6,333	3,778	1,902	5,680	+ 366	+ 287	+ 653
1983	4,182	2,374	6,556	4,182	2,338	6,520	-	+ 36	+ 36

Despite arduous efforts by this office it has not been possible either to obtain migration data classified by age from the companies operating air and sea travel services between the two islands or to have them help us in the collection of these data. The magnitude of the traffic between the two islands makes it imperative to have these data collected and made available to this office not only because they would be necessary for making reliable and up-to-date estimates of the population but also for carrying out more in-depth demographic analysis. Even when the overall balance of net migration tends to be negligible it may happen that there are considerable differences from one age to another. Therefore, without the basic requirement of an age-sex distribution of net migration it is almost impossible to arrive at a satisfactory picture of the composition of population . The unreliability of the data as to the volume of migration makes it very difficult to predict future trends in the volume of migration. Assessment of the completeness of migration data has been made indirectly in the context of the census evaluation. There are indications that many arrivals and departures between the two islands are not reported or recorded.

2.5 Evaluation of census

2.5.1 Evolution of the population over time

Table 2.1 shows the evolution of the population of the Island of Rodrigues as enumerated at each of the censuses since 1851. The enumerated population of the island in 1983 was 33,082 and this represented an absolute increase of 8,313 since the previous census of 1972. The average annual rate of increase was 2.67 percent for the intercensal period 1972-83.

Table 2.3 shows the mid-year population and vital statistics for each year of the period 1952-83 while Table 2.4 gives the vital statistics rates for the same period. Because of the small size of the population of the island and the even smaller number of vital events occurring each year the vital statistics rates presented in Table 2.4 are based on the average number of events and the average population for three year periods. This has been done in order to remove wide fluctuations in the yearly data.

Table 2.3 - Population and vital statistics, 1952 - 1983

Period	Population at mid-period	Live births	Deaths	Natural increase	Infant deaths	Still births	Civil marriages
1952	13,333	569	122	447	38	...	59
1953	13,818	532	251	281	101	...	164
1954	14,248	587	125	462	44	...	83
1955	15,177	642	172	470	72	23	182
1956	15,879	756	171	585	68	25	160
1957	16,236	782	220	562	95	31	167
1958	16,689	798	195	603	69	22	147
1959	17,315	869	287	582	108	39	150
1960	17,467	710	340	370	111	31	174
1961	18,089	936	192	744	69	28	137
1962	18,335	895	160	735	58	23	145
1963	18,529	881	203	678	79	21	171
1964	18,974	1,082	237	845	86	32	161
1965	19,438	916	300	616	116	32	127
1966	20,084	1,014	243	771	89	26	132
1967	20,762	972	207	765	70	33	156
1968	21,832	996	256	740	102	30	145
1969	22,434	902	305	597	110	37	173
1970	23,433	1,143	211	932	80	35	152
1971	24,041	1,092	188	904	69	40	132
1972	24,769	999	247	752	91	31	132
1973	23,245	1,041	254	787	76	23	146
1974	23,587	1,064	203	861	68	25	134
1975	24,221	1,065	234	831	84	36	181
1976	24,417	1,024	153	871	36	24	189
1977	24,936	1,129	188	941	64	30	211
1978	25,720	1,028	196	832	53	27	209
1979	27,081	1,107	246	861	67	18	247
1980	28,153	1,311	234	1,077	56	39	265
1981	29,677	1,297	249	1,048	89	37	237
1982	31,527	1,212	199	1,013	58	20	171
1983	33,082	1,125	210	915	59	24	188

Table 2.4 - Population and vital statistics rates[1/], 1952 - 1983

Period	Population at mid-period	Crude birth rate	Crude death rate	Rate of natural increase	Infantile mortality rate	Still birth rate	Marriage rate
1952	13,333	41.9	11.8	30.1	100.2	...	15.0
1953	13,818	40.7	12.0	28.7	108.4	...	14.8
1954	14,248	41.2	12.8	28.4	123.2	...	20.1
1955	15,177	43.6	10.3	33.3	92.7	...	18.7
1956	15,879	45.8	11.8	34.0	107.8	35.0	21.4
1957	16,236	48.0	12.0	36.0	99.3	32.3	19.5
1958	16,689	48.9	14.0	34.9	111.1	36.2	18.5
1959	17,315	45.8	15.8	30.0	121.2	37.3	18.1
1960	17,467	48.0	15.6	32.4	114.5	37.5	17.6
1961	18,089	46.8	12.8	34.0	93.7	31.3	16.8
1962	18,335	49.3	10.1	39.2	76.0	25.9	16.5
1963	18,529	51.4	10.8	40.6	78.0	25.9	17.2
1964	18,974	50.6	13.0	37.6	97.6	28.7	16.1
1965	19,438	51.7	13.4	38.3	96.6	29.0	14.4
1966	20,084	48.2	12.4	35.8	94.8	30.4	13.8
1967	20,762	47.9	11.3	36.6	87.5	29.0	13.9
1968	21,832	43.8	11.7	32.1	98.3	33.7	14.5
1969	22,434	45.2	11.5	33.7	96.0	32.5	14.0
1970	23,433	44.6	10.0	34.6	82.6	34.5	13.0
1971	24,041	44.8	9.0	35.8	74.2	31.7	11.5
1972	24,769	42.1	9.3	32.8	75.4	29.1	11.0
1973	23,245	44.5	10.1	34.4	75.7	24.8	11.8
1974	23,587	44.8	9.8	35.0	71.9	25.8	13.0
1975	24,221	43.4	8.1	35.3	59.6	26.3	13.9
1976	24,417	43.9	7.8	36.1	57.2	27.2	15.9
1977	24,936	42.5	7.2	35.3	48.1	24.8	16.3
1978	25,720	42.3	8.2	34.1	56.4	22.5	17.3
1979	27,081	42.4	8.3	34.1	51.1	23.8	17.7
1980	28,153	44.0	8.6	35.4	57.1	24.7	17.7
1981	29,677	42.9	7.7	35.2	53.1	24.5	15.1
1982	31,527	38.4	7.0	31.4	56.7	21.8	12.6
1983	33,082	34.7	6.4	28.3	51.6	17.1	11.8

1/ Because of the small number of vital events, the rates have been calculated by taking the average for three years in order to remove out wild fluctuations in the yearly data

Table 2.4 shows that there are wide fluctuations in the crude birth rate (C.B.R.). The C.B.R. which was already high in 1952, reached extremely high values during the period 1957-66 but after that date it showed a slowly declining trend to finally reach 34.7 in 1983. In contrast, the crude death rate (C.D.R.) did not show much fluctuations. Excepting a temporary rise during the period 1958-60, the C.D.R. did not fluctuate outside the range 10.0 - 13.4 during the period from 1952 to 1970. After 1970, there was a moderate declining trend in the C.D.R. which attained 6.4 in 1983.

It is seen from Table 2.5 below that there has been a slowdown of population growth in the island of Rodrigues, from an average of 3.05 percent per annum during the period 1962-72 to 2.67 percent during the period 1972-83. But the natural growth rate did not indicate such a large fall.

Table 2.5 - Population growth by sex, last two intercensal periods

Intercensal period	Average annual growth rate (%)			Natural growth rate (%)
	Male	Female	Both sexes	Both sexes
1962-72	3.08	3.03	3.05	3.66
1972-83	2.76	2.57	2.67	3.57

The fast decline in growth rate shown by the rate of population growth could be explained only by differential coverage of the population, increasing mortality, fall in fertility or by out-migration. Actually enumeration could have improved over time and hence an opposite effect should have emerged. Also, mortality could not have deteriorated as vital statistics show that there could have been actually a slight improvement - particularly for females. Out-migration could, to a certain extent, explain it. Fertility could have declined a little as vital statistics indicated birth rates around 45-50 in the fifties and sixties and around 43 in the seventies. Some underenumeration of at least young children in the 1962 census is indicated.

2.5.2 Balancing equation

Table 2.6 shows for the intercensal period 1972-83, for each sex, the 1983 enumerated total population compared with the expected total population based on the 1972 census data. The expected 1983

population was obtained by adding the balance of natural increase (excess of births over deaths) and the balance of net migration (excess of arrivals over departures) during the intercensal period to the enumerated 1972 population .

It can be noted that the enumerated population in 1983 was short of 2,122 persons (687 males and 1,435 females) as compared to the expected population. The magnitude of the deficit is suspiciously high and cannot be ignored, especially that for females which is about twice that for males. In percentage terms, this deficit represented 6.4 percent for both sexes, 4.2 percent for males and 8.7 percent for females.

Table 2.6 - Balancing equation for the intercensal period 1972-83

	Male	Female	Both sexes
Enumerated population, 30th June 1972	12,270	12,499	24,769
Births, July 1972-June 1983	+ 6,219	+ 6,154	+12,373
Deaths, July 1972-June 1983	- 1,226	- 1,145	- 2,371
Arrivals, July 1972 - June 1983	+33,091	+17,656	+50,747
Departures, July 1972 - June 1983	-33,115	-17,199	-50,314
Expected population, 30th June 1983	17,239	17,965	35,204
Enumerated population, 2nd July 1983	16,552	16,530	33,082
Enumerated - Expected (Residual)	- 687	- 1,435	- 2,122
Deficit as percentage of enumerated 1983 population	- 4.2	- 8.7	- 6.4

If we assume that the 1972 census was correct, then the deficit of 2,122 persons would be an estimate of the extent of under-enumeration in 1983. On the contrary, if we assume that the 1983

census was complete, then this deficit would indicate overenumeration in 1972, a most improbable scenario. Errors in the other items that are included in the balancing equation - statistics of births, deaths and arrivals and departures - could also seriously affect the residual even though the coverage of both censuses may have been complete.

During the inter-censal period 1972-83, there was a total of 12,373 live births, out of which there were 6,219 male births and 6,154 female births. The sex-ratio at birth was therefore 101.1 male births for every 100 female births. During the same period, there were 1,226 male deaths and 1,145 female deaths, giving a total of 2,371 deaths. The sex-ratio of deceased persons was therefore 107.1, indicating appreciably higher male mortality. The statistics of births and deaths appear reasonable and do not arouse doubts and suspicions. It may be of some interest to mention here that United Nations experts who have analysed data from the registration system for the island of Mauritius have found them to be complete and of good quality. Since the same system is operational in Rodrigues also, there appear no grounds for doubting the completeness and accuracy of the data for Rodrigues as well.

Analysis of migration data by sex in Table 2.6 reveals that there were 33,091 male in-migrants and 33,115 out-migrants. For females, there were 17,656 arrivals against 17,199 departures. Thus, during the inter-censal period 1972-83 there was a net out-migration of 24 males compared to a net in-migration of 457 females. In terms of the sex-ratio of migrants, there were 187.4 male arrivals for every 100 female arrivals and 192.5 male departures for every 100 females departures. This sex-imbalance in the migration data does not look reasonable. Whilst it is known that there are many Rodriguans leaving their native island in search of more favourable situations in the main island and in other countries, it is not realistic to believe that, as shown by the migration data there has been insignificant male out-migration and a considerable amount of female in-migration. As already mentioned in section 2.4, this finding seems to suggest that there are serious problems in the quality of the passenger traffic data. It would appear that, not only are there a substantial

number of inter-island passengers who are under-registered but the distribution by sex of the available data itself is questionable. Such sex reporting problem has been noted for the island of Mauritius also.

Thus the deficit of 2,122 shown by the balancing equation cannot be explained by deficiencies in the vital registration data. The population count at the population census has been compared with other sources of data like the housing census and educational statistics and they indicate good amount of consistency. Furthermore, when the preliminary population count at the 1983 Housing Census showed a shortfall when compared with estimates based on 1972 census data, a field check was made in a number of enumeration areas, but this showed the 1983 count to be good.

2.5.3 Internal consistency checks

2.5.3.1 Sex ratio

If we study the evolution of the population in terms of the sex ratio (number of males per 100 females), we find that while the sex-ratio was 98.2 in 1972, it increased to 100.1 in 1983, showing an increase of 1.9 points. The overall sex ratio depends on the sex ratio at birth, the sex ratio of deceased persons, the sex ratio of net migrants, and sex differentials in enumeration. Generally if there are no major sex-differential in these factors the overall sex ratio for most countries varies in the range of 95 to 105. Although the sex ratio for Rodrigues is well within this range, the change from 98.2 to 100.1 between the last two censuses needs to be commented upon. The sex ratio at birth has remained more or less constant at around 101 during the intercensal period; the sex ratio at death, although showing relatively larger fluctuations than the sex ratio at birth, also indicates no clear trend except perhaps a slight increase towards the end of the period. Hence neither the sex ratio at birth nor the sex ratio at death have undergone any changes that could have contributed significantly to the observed increase in the sex ratio of the population.

Furthermore it has been observed that registered migration data do not explain the observed increase. In fact the registered net inward movement of 457 females and the net outward movement of 24 males noted above would have had the exact opposite effect. However, it has also been stated that migration data for Rodrigues are subject to serious shortcomings and in particular a large number of Rodriguans travelling from or to Rodrigues may not be in the statistics at all. For consistency between the two recent censuses, it seems that an estimated 700 males and 1,000 females out-migrated during 1972-83. These estimates of net out-migration by sex seem more plausible than the reported numbers, firstly, because the net stream is outward for each sex. Secondly a relatively larger number of female outmigrants would be expected in the light of the fact that the new industries (mainly textiles and garments) on the mainland offer better employment prospects for females. Furthermore female Rodriguans marrying non-Rodriguans are more likely not to return to the island.

Table 2.7 gives the sex ratio for open-ended age groups of the enumerated populations of 1972 and 1983. Study of sex-ratio for open-ended age groups has the advantage over 'closed' age groups in that they are less affected by age reporting errors. Furthermore, they are also not affected by births occurring during the period 1972-1983 and it is only death and migration that can influence the numbers in each age group. Since male mortality is generally higher than female mortality, we expect that in the absence of sex selective migration, the sex ratio of the population aged x years and over in 1972 would decline in 1983 when the numbers remaining from that group are 11 years older and have been depleted by deaths. A glance at this table reveals that the sex ratio for age groups 0 and above to 25 years and above, all show a systematic increase in 1983. Although this could be attributed to deficiencies in the coverage at either or both censuses, it is believed that the main reason is the outmigration of relatively more females during the intercensal period.

Table 2.7 - Sex ratio for open-ended age groups, 1972 and 1983

Age x	(1) Male population aged x and over in 1972	(2) Female population aged x and over in 1972	(3) Sex ratio $\frac{(1)}{(2)} \times 100$	(4) Male population aged x + 11 and over in 1983	(5) Female population aged x + 11 and over in 1983	(6) Sex ratio $\frac{(4)}{(5)} \times 100$
0	12,270	12,499	98.2	10,847	10,806	100.4
5	9,993	10,215	97.8	8,736	8,729	100.1
10	7,919	8,169	96.9	6,853	6,887	99.5
15	6,252	6,498	96.2	5,453	5,473	99.6
20	5,111	5,296	96.5	4,379	4,441	98.6
25	4,205	4,401	95.5	3,554	3,685	96.4
30	3,433	3,597	95.4	2,777	2,944	94.3
35	2,712	2,808	96.6	2,089	2,235	93.5
40	2,086	2,185	95.5	1,543	1,696	91.0
45	1,573	1,708	92.1	1,082	1,264	85.6
50	1,177	1,346	87.4	716	900	79.6
55	862	1,040	82.9	436	624	69.9
60	579	729	79.4	229	368	62.2
65	346	461	75.1	101	180	56.1
70	186	264	70.5	37	83	44.6
75	84	136	61.8	5	23	21.7

2.5.3.2 Age composition

Past levels and trends in fertility, mortality and migration not only affect the growth of a population but they also have a direct influence on the age structure or age composition of that population. Table 2.8 shows the age composition for certain broad age groups of the enumerated population at the last three censuses.

Table 2.8 - Age composition of the population (percentage), 1962, 1972 and 1983

Age-group	Male			Female		
	1962	1972	1983	1962	1972	1983
0 - 4	19.5	18.5	17.1	18.9	18.3	17.0
5 - 14	25.6	30.5	27.6	24.5	29.8	27.5
15 - 49	44.5	41.4	45.4	45.9	41.2	44.7
50 - 64	7.6	6.8	7.0	7.6	7.1	6.7
65+	2.8	2.8	2.9	3.1	3.6	4.1
	100.0	100.0	100.0	100.0	100.0	100.0

From 1962 to 1983 there has been a continuous decline in the proportion of children under 5 years. However, if we consider children in the broader age group 0 - 14, it is found that for males, the percentage increased from 45.1 in 1962 to 49.0 in 1972 while for females, the increase during the same period was from 43.4 to 48.1. However, the proportion of the population aged under 15 years in the 1962 census seems rather low. It appears that there has been some under-enumeration of children in this age group, more particularly in the age group 0 - 4. According to registered vital statistics, there were 4,152 births between July 1957 and June 1962. Their survivors would number about 3,650 in the 1962 census (assuming Mortality level 15 - 16 of the Coale-Demeny West Model Life Tables). Thus, the child population aged 0 - 4, numbering 3,522 in the 1962 census looks slightly underenumerated. The high proportion of children under

15 years in 1972 was due to the temporary rise in fertility during the period 1957 - 66. From 1967 onwards, a continued fall in fertility caused the percentage of children of the 0 - 14 age group to decline from 49.0 in 1972 to 44.7 in 1983 for males and from 48.1 to 44.5 for females. Female population in the age range 15 - 49 declined from 45.9 percent in 1962 to 41.2 percent in 1972 but increased to 44.7 percent in 1983. Thus in 1983 women in the reproductive ages exceeded those in 1972 by 3.5 percentage points. At the same time, in 1962, the percentage of old-age persons (65 years and above) was 2.8 for males and 3.1 for females. From 1962 to 1972, this percentage did not increase for males but for females, it increased by 0.5 to reach 3.6 point. From 1972 to 1983 while the increase was only 0.1 point for males, that for females was 0.5 point.

Thus it appears that the main factor affecting the age structure has been the recent onset of a fertility decline which has reduced the proportion of children and caused a bulge in the age-group 15 - 49. This age-group includes the larger cohorts of persons born in the earlier period of high fertility. The small changes observed in the proportion aged 65 and above are mainly because of the very little improvement in mortality at the older ages. Hence although the population base has narrowed it is still too early to speak of ageing of the population in Rodrigues.

As indicators of the age structure, the mean and median age of the population for each sex have been calculated and are presented in Table 2.9 .

Table 2.9 - Mean and Median age of the population, 1962, 1972 and 1983

	Male			Female		
	1962	1972	1983	1962	1972	1983
Mean age	22.2	21.5	22.1	22.7	22.1	22.6
Median age	17.5	15.5	17.2	18.3	16.0	17.3

Given the highly asymmetric or skewed age distribution of the population (the bulk of the population being concentrated in the young ages) the mean age is not a very useful indicator of the age structure. Instead we shall focus more attention on the median age.

As revealed by Table 2.9, there is a decline in the median age between 1962 and 1972. Also, the median age for males as well as for females in 1962 seems rather high. This could be partly due to the small underenumeration of child population noted above. From 1972 the median age increased by 1.7 years for males and 1.3 years for females to reach 17.2 years for males and 17.3 years for females in 1983 perhaps due to a fall in fertility and some fall in mortality. The median age for females has always been higher than for males but whereas in 1972 the difference was 0.5 year between the two sexes, it was only 0.1 year in 1983. This probably is due to larger female adult out-migration.

Defining a population as 'young' if its median age is less than 20 years, as 'old' if its median age is more than 30 years and 'intermediate' if its median is between 20 and 29, indicates that the Rodriguan population is very young.

The various changes in the age structure of the population over the last two decades was brought about mainly by fluctuations in past birth and death rates. Thus, a combination of high fertility and relatively low mortality was responsible for a shifting of the whole age distribution towards the younger age groups in 1972. However, moderate decline in the crude birth rate since 1970 onwards, excepting occasional fluctuations, caused a slight shifting of the age distribution towards the older ages. Nonetheless, because of the persistently high birth rates, the age distribution of the island of Rodrigues remains characterized by a very young population. Such a young age structure has very important socio-economic implications and, if left unchecked, will favour a very rapid population increase in the future.

2.5.3.3. Child-woman ratio

The child-woman ratio is calculated by dividing the total number of children in the population in the age group 0 - 4 by the number of women in the age group 15 - 49, times 1,000. Children

under 5 years of age at a given census are the survivors of the births that occurred during the past five years so that the child-woman ratio is seriously affected by rapid changes in fertility and infant and child mortality. Furthermore, the child-woman ratio may be grossly in error if, as is often the case, there has been underenumeration of children in the 0 - 4 age group or mis-statements of their ages. Despite these limitations, the child-woman ratio can nevertheless be used for checking internal consistency of data for census evaluation.

The child-woman ratio increased from 827 in 1962 to 887 in 1972 but declined to 765 in 1983. Since the average fertility rate for the period 1958 - 62 (C.B.R. of 47.7) was much higher than that for the period 1968 - 72 (C.B.R. of 42.8), the increase of 7.5 percent in the child-woman ratio in 1972 could be due to the omission of children in the 0 - 4 age group in the 1962 census and to a large reduction in the proportion of women in the age group 15 - 49. The infantile mortality rate fell from an average of 98.6 infant deaths per 1,000 live births in the period 1958 - 62 to an average of 88.1 in the period 1968 - 72, i.e. a 10% fall. Women aged 15 - 49 represented 23.2% of the total population in 1962 and 20.7% in 1972 implying more than 10% fall. The child-woman ratio declined by about 14 percent from 1972 to 1983 as a result of the combined factors of a low fertility rate for the period 1979 - 83 (C.B.R. of 40.8) and of a higher proportion of women in the reproductive age group, even though the infantile mortality rate showed a fast decline, falling to an average of 54.4 for the period 1979 - 1983.

2.5.3.4. Dependency ratio

Another measure to study the structure of the population is by means of the dependency ratio - the ratio of children under 15 years of age and old persons aged 65 and above per 1,000 persons in the age group 15 - 64. As a rough guide, the population in the age groups 0 - 14 and 65 and above is considered to be economically inactive (or dependent) while the population in the age group 15 - 64 is considered to be economically active.

Table 2.10 - Dependency ratio by sex - 1962, 1972 and 1983

	1962	1972	1983
Male	917	1,078	912
Female	869	1,070	945
Both sexes	892	1,074	928

The dependency ratio for males, females and both sexes have evolved in the same way over the past two or three decades (Table 2.10). The dependency ratio for both sexes together increased by about 20 percent from 892 in 1962 to 1,074 in 1972 but then declined by about 13 percent to reach 928 in 1983. However, comparisons by sex show that the dependency ratio for females was lower than that for males in 1962 and 1972 but higher in 1983. The reason is that both in 1962 and 1972 the proportion of the female population aged 15 - 64 was higher than the corresponding proportion for males whereas the reverse was true in 1983 (Table 2.8). The slight underenumeration of children in 1962, the migration and fluctuating fertility and mortality could have brought in the observed patterns.

2.5.3.5. Underenumeration of children

In many censuses, it is commonly found that the number of enumerated children, especially those in the age group 0 - 4, is often less than the expected number. If vital and migration statistics are sufficiently complete and accurate, a good estimate can be obtained

of the number of children of a specific age that is expected to be found at a given census. For example, the children aged under 1 that are expected to be found at the 1983 census are those born during the period 2.7.1982 - 1.7.1983, depleted by deaths and increased or decreased by the balance of net migration. Similarly the children aged 1, 2, 3 and so on, that are expected to be found at the 1983 census are the survivors of birth cohorts from corresponding past periods. In Table 2.11 the enumerated and the 'expected' child population for each of the ages 0 to 10 are compared with a view to finding whether there has been underenumeration of young children in 1983. However, as has already been stated in previous sections, data on arrivals and departures by age are not available and so could not be incorporated when estimating the expected child population by single year of age. In calculating their expected numbers therefore, it has been assumed that children in these young age groups do not migrate, or if they do, then their numbers are very negligible. For the age group 0 - 10, as a whole, the difference between enumerated and 'expected', both for males and females, is not significant, being less than 1 percent. However, quite large discrepancies were found at certain individual ages especially at ages 1, 2, 4, 5, 6 and 10. These discrepancies could be due to the net effect of several types of errors including incompleteness and inaccuracy of census enumeration and birth and death registration and non-allowance for the balance of net migration. But on the whole, it appears that minor errors in age reporting are more likely to be the cause.

Table 2.11 - Comparison of enumerated with 'expected' child population

Age	Male			Female		
	Enumerated	'Expected'	Difference	Enumerated	'Expected'	Difference
0	561	565	- 4	536	551	- 15
1	579	597	- 18	588	607	- 19
2	577	565	+ 12	601	567	+ 34
3	595	599	- 4	579	572	+ 7
4	525	499	+ 26	513	498	+ 15
5	495	485	+ 10	504	479	+ 25
6	523	500	+ 23	515	518	- 3
7	493	487	+ 6	490	486	+ 4
8	448	459	- 11	497	487	+ 10
9	479	484	- 5	471	476	- 5
10	430	480	- 50	430	470	- 40
0 - 10	5,705	5,720	- 15	5,724	5,711	+ 13

2.5.4 External consistency checks

2.5.4.1 Comparison of Housing census data with Population census data

From the analysis of housing census data presented in Chapter 5, it is clear that the population census figures are very consistent with information collected at the housing census.

2.5.4.2 Comparison of census data with education statistics

From the analysis of education statistics presented in Chapter 3, it can be seen that the relevant child population from the census and educational statistics are quite close and hence give confidence in their reliability and accuracy.

2.6 Content error

2.6.1 Digit preference

Misstatements of age are frequently observed in population censuses, sometimes resulting in concentration of reported numbers at ages ending in certain digits, most often digits 0 and 5. Preference (or dislike) for any of the ten digits 0 to 9 in age reporting was studied by calculating Myers' index (MI) for the censuses of 1962, 1972 and 1983 and for each sex separately. Myers' method was applied to the population in the age group 10 - 69. The individual percentages for each digit are shown in Table 2.12 while Table 2.13 shows the digits preferred listed in order of importance. For comparison, the usual digit preference index (DPI), was calculated and some results are also presented.

Table 2.12 - Myers' index, 1962, 1972 and 1983

Digit	Individual percentages					
	Male			Female		
	1962	1972	1983	1962	1972	1983
0	11.34	10.02	9.50	10.44	10.77	9.33
1	9.81	10.82	9.72	9.31	10.63	9.89
2	11.36	10.94	11.17	11.01	9.39	10.42
3	8.89	9.25	9.73	9.77	10.13	9.89
4	9.33	9.81	9.06	9.77	9.57	9.46
5	10.23	10.50	9.80	10.26	10.07	10.06
6	9.29	9.27	10.42	9.56	9.48	9.97
7	10.09	9.83	10.50	9.49	10.45	10.77
8	10.24	9.41	10.18	10.35	10.54	9.65
9	9.42	10.15	9.92	10.04	8.97	10.56
MI	6.52	4.86	4.54	4.20	5.18	3.62
DPI	13.8	12.8	9.4	9.6	11.8	7.8

Table 2.13 - Digits preferred by order of importance, MI and DPI

	Digits preferred	
1962 census	Myers' Index	Digit Preference Index
Male	2, 0, 8, 5, 7	0, 2, 1
Female	2, 0, 8, 5, 9	0, 2, 1, 5
1972 census		
Male	2, 1, 5, 9, 0	1, 0, 2, 3, 5
Female	0, 1, 8, 7, 3, 5	0, 1, 3, 2
1983 census		
Male	2, 7, 6, 8	2, 0, 1, 3
Female	7, 9, 2, 5	2, 0, 1, 3, 5

Census year 1972, being a year having terminal digit 2, one would have expected the pattern of digit preference for that year to be more or less the same as in 1962, but apparently this was not the case. Digit 2 was most preferred by males but was avoided by females. However, preference for digits 0 (most preferred by females) and 5 was still found to be present.

For 1983, the data again indicate preference for reporting ages ending in digit 2, although more strongly by males than by females. Moreover there was an exaggerated concentration of males and females at ages ending in digit 7 and also a clear tendency to strongly avoid digit 4. In fact, without any exception, digit 4 was always avoided in the last three censuses, both by males and females. Further the tendency to report ages ending in digits 0 and 5 was practically nonexistant in 1983.

The type of age misstatement that has been studied above, namely the tendency to state ages ending in certain terminal digits could be due to a number of factors. Firstly, there is a persistent bias on the part of some people to report their age or their year of birth ending mostly in either digit 0 or 5 and secondly, a majority of people, most of whom are illiterate, make use of historical events of the past to reckon their age or year of birth. However, it is very difficult to interprete the causes of misstatements of age that have been found above. In particular, in the absence of relevant vital and migration data covering a long period of time, it is not known whether digit preference, resulting in heaping on certain ages are due to real fluctuations in past births, deaths or migration.

Finally, as a summary measure of net error in age reporting, the Myers' and Digit Preference Indices were calculated for each sex separately and are shown in the last two lines of Table 2.12. The Myers' index can assume values between 0 and 180 and the smaller the value of the index, the less pronounced is the extent of digit preference in the data.

It is observed that there is a decline in the indices over time especially for males. The indication is that age reporting has improved.

2.6.2 Vertical consistency checks

Data on age are of fundamental importance in demographic analysis. Thus it is important to test for the accuracy of age-reporting of census data. This will be done by a careful study of the age structure of the population. An investigation of the age structure of the population can sometimes reveal the extent of errors, if any, in the reporting of age and also of the relative completeness of enumeration of certain groups in the population.

2.6.2.1 Percentage age distribution (or age structure) of the population

Table 2.14 presents the population distribution by sex and age group (number and percentage). If there have been no major fluctuations in past birth, death or net migration rates, then the percentage age distribution are expected to decline more or less smoothly with increasing age. It can be seen that, for either sex, the percentage age distribution for each of the last three censuses in fact follow a smooth decline. Another way of studying the age distribution of a population is by drawing the pyramid. Figure 2.1 shows the population (percent) pyramid of the island of Rodrigues for the 1972 and 1983 censuses. The pyramid clearly reveals that the base corresponding to younger age groups (0 - 14) for 1972 is broader than that for 1983 because of higher fertility during the period 1962 - 72 than during the period 1972 - 1983.

2.6.2.2 Age ratios and age ratio scores

As an additional tool in the evaluation of the age structure of the population, age ratios have been calculated. An age ratio is defined as the ratio of the population in a given age group to the arithmetic mean of the populations in the two adjacent age groups. The age ratio technique assumes that an age-ratio should not deviate too much from 100, except at the advanced ages or as a result of major fluctuations in past birth rates, death rates or net migration. Age ratios calculated by five year age groups, up to age 74, and for each sex separately are presented in Table 2.15 .

Table 2.14 - Age structure of the population by sex (number and percentage), 1962, 1972 and 1983

Age-group (years)	1962				1972				1983			
	Number		Percentage		Number		Percentage		Number		Percentage	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
0 - 4	1,767	1,755	19.5	18.9	2,277	2,284	18.6	18.3	2,838	2,818	17.2	17.0
5 - 9	1,278	1,295	14.1	14.0	2,073	2,047	16.9	16.4	2,438	2,477	14.7	15.0
10 - 14	1,041	978	11.5	10.6	1,667	1,670	13.6	13.4	2,131	2,067	12.9	12.5
15 - 19	909	921	10.0	9.9	1,141	1,202	9.3	9.6	1,962	1,943	11.9	11.8
20 - 24	796	906	8.8	9.8	905	895	7.4	7.2	1,470	1,502	8.9	9.1
25 - 29	665	699	7.3	7.5	770	803	6.3	6.4	1,162	1,123	7.0	6.8
30 - 34	558	543	6.2	5.9	719	788	5.9	6.3	852	768	5.1	4.6
35 - 39	412	450	4.5	4.8	625	621	5.1	5.0	768	740	4.6	4.5
40 - 44	394	398	4.4	4.3	513	474	4.2	3.8	705	729	4.3	4.4
45 - 49	302	341	3.3	3.7	398	362	3.2	2.9	585	584	3.5	3.5
50 - 54	302	294	3.3	3.2	316	308	2.6	2.5	485	434	2.9	2.6
55 - 59	242	239	2.7	2.6	284	313	2.3	2.5	374	384	2.3	2.3
60 - 64	148	171	1.6	1.8	234	269	1.9	2.2	294	290	1.8	1.8
65 - 69	105	115	1.2	1.2	161	198	1.3	1.6	221	250	1.3	1.5
70 - 74	76	97	0.8	1.0	103	129	0.8	1.0	140	213	0.8	1.3
75 - 79	36	34	0.4	0.4	50	65	0.4	0.5	78	112	0.5	0.7
80 - 84	19	20	0.2	0.2	20	42	0.2	0.3	39	64	0.2	0.4
85 +	12	17	0.1	0.2	14	29	0.1	0.2	10	32	0.1	0.2
All ages	9,062	9,273	100.0	100.0	12,270	12,499	100.0	100.0	16,552	16,530	100.0	100.0

Fig. 2.1 – POPULATION PYRAMIDS , 1972 and 1983

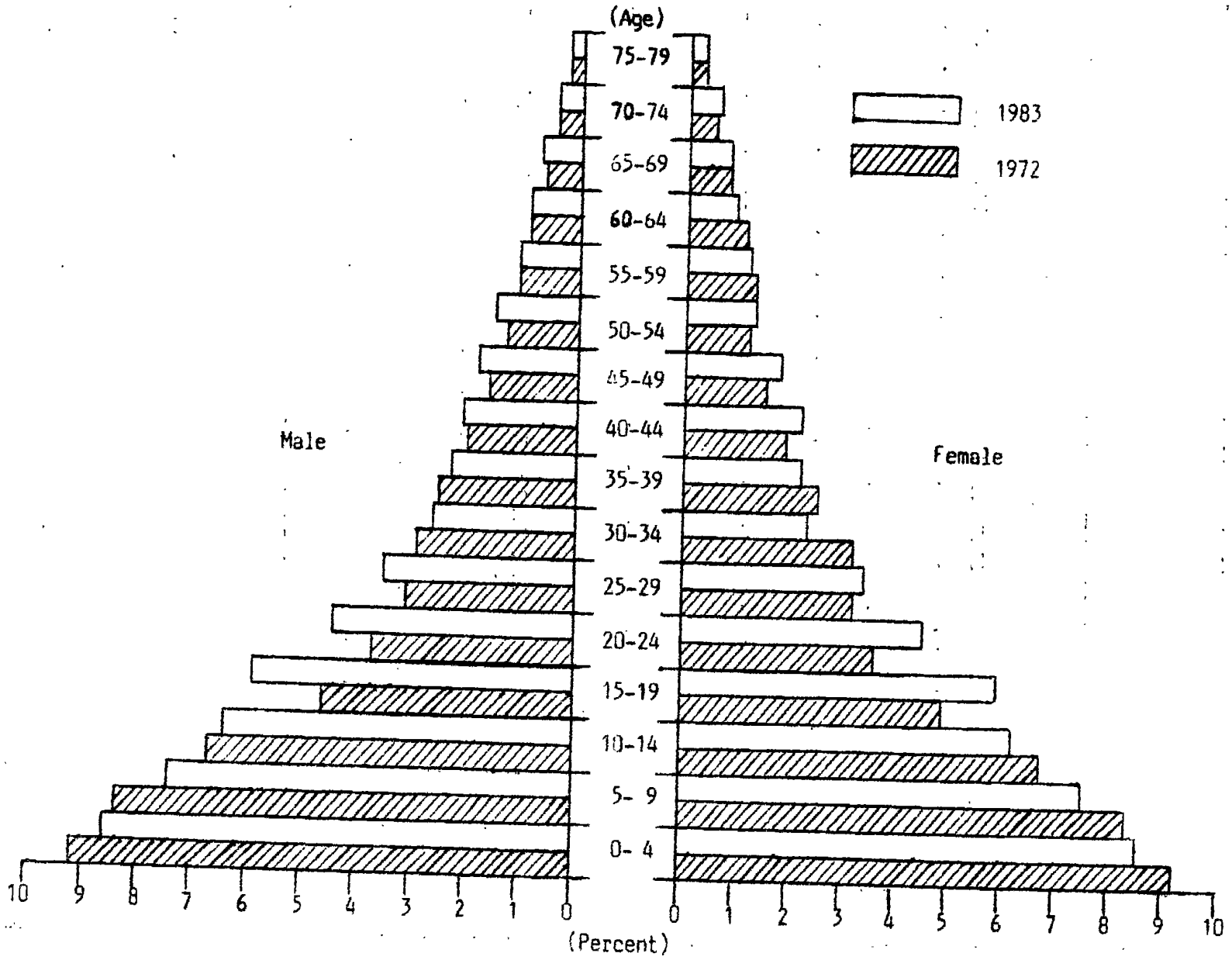


Table 2.15 - Age ratios and age ratio scores, 1962, 1972 and 1983

Age group (years)	Age ratio (Males)			Age ratio (Females)		
	1962	1972	1983	1962	1972	1983
0 - 4	-	-	-	-	-	-
5 - 9	91.0	105.1	98.1	94.7	103.5	101.4
10 - 14	95.2	103.8	96.9	88.3	102.8	93.5
15 - 19	99.0	88.7	109.0	97.8	93.8	108.9
20 - 24	101.1	94.7	94.1	111.9	89.2	98.0
25 - 29	98.2	94.9	100.1	96.5	95.5	99.0
30 - 34	103.6	103.1	88.3	94.5	110.7	82.4
35 - 39	86.6	101.4	98.7	95.6	98.4	98.9
40 - 44	110.4	100.4	104.2	100.6	96.5	110.1
45 - 49	86.8	95.9	98.4	98.6	92.5	100.5
50 - 54	111.0	92.8	101.2	101.4	91.2	89.7
55 - 59	107.6	103.3	96.0	102.8	108.4	106.1
60 - 64	85.3	105.2	98.7	96.6	105.5	91.5
65 - 69	93.8	95.5	102.1	85.8	99.5	99.2
70 - 74	-	-	-	-	-	-
Age ratio score	7.53	4.60	3.65	5.25	5.71	5.77

For 1962, it is seen that, for both males and females, age groups 20 - 24, 30 - 34 (males only), 40 - 44 and 50 - 54, all had age-ratios either slightly or well above 100. While this could be due to the influence of a large number of factors, it is most likely that misreporting of age was the main reason. As revealed by Myers' index, digits 0 and 2, which are to be found in these age groups were strongly preferred in 1962 resulting in an artificially excessive number of persons in age groups 20 - 24, 30 - 34, 40 - 44 and 50 - 54 compared with adjacent age groups, and thus increasing the age ratios. A high age ratio for age group 55 - 59 is also noted, perhaps due to some overstatement of age. For 1972, the age ratios for male and females aged under 15 years are relatively high. For males, some high age ratios are also observed,

especially for age group 30 - 34 and 35 - 39 and higher age groups while for females, apart from age group 30 - 34, the high age ratios are concentrated at the advanced ages 55 - 64. For 1983, the age ratios do not seem to have the pattern observed for the two previous censuses. Thus, in 1962 and 1972, it is noticed that, when the age ratios were high, this was so far, both males and for females. This pattern was not followed in 1983, in so far as persons in the age groups 45 and above were concerned, and high ratios for males, corresponded with low for females and vice versa.

The age ratio score for a particular sex is taken as the average of the absolute values of the deviations from 100 of each of the age ratios. For males, the age ratio score which was 7.53 in 1962, declined to 4.60 in 1972 and further to 3.65 in 1983. For females the age ratio score increased from 5.25 in 1962 to 5.71 in 1972 and further to 5.77 in 1983. Thus, according to the age ratio score, there was a continuous improvement in age reporting for males while for females the data reveal slightly continuous deterioration.

2.6.3 Horizontal consistency checks

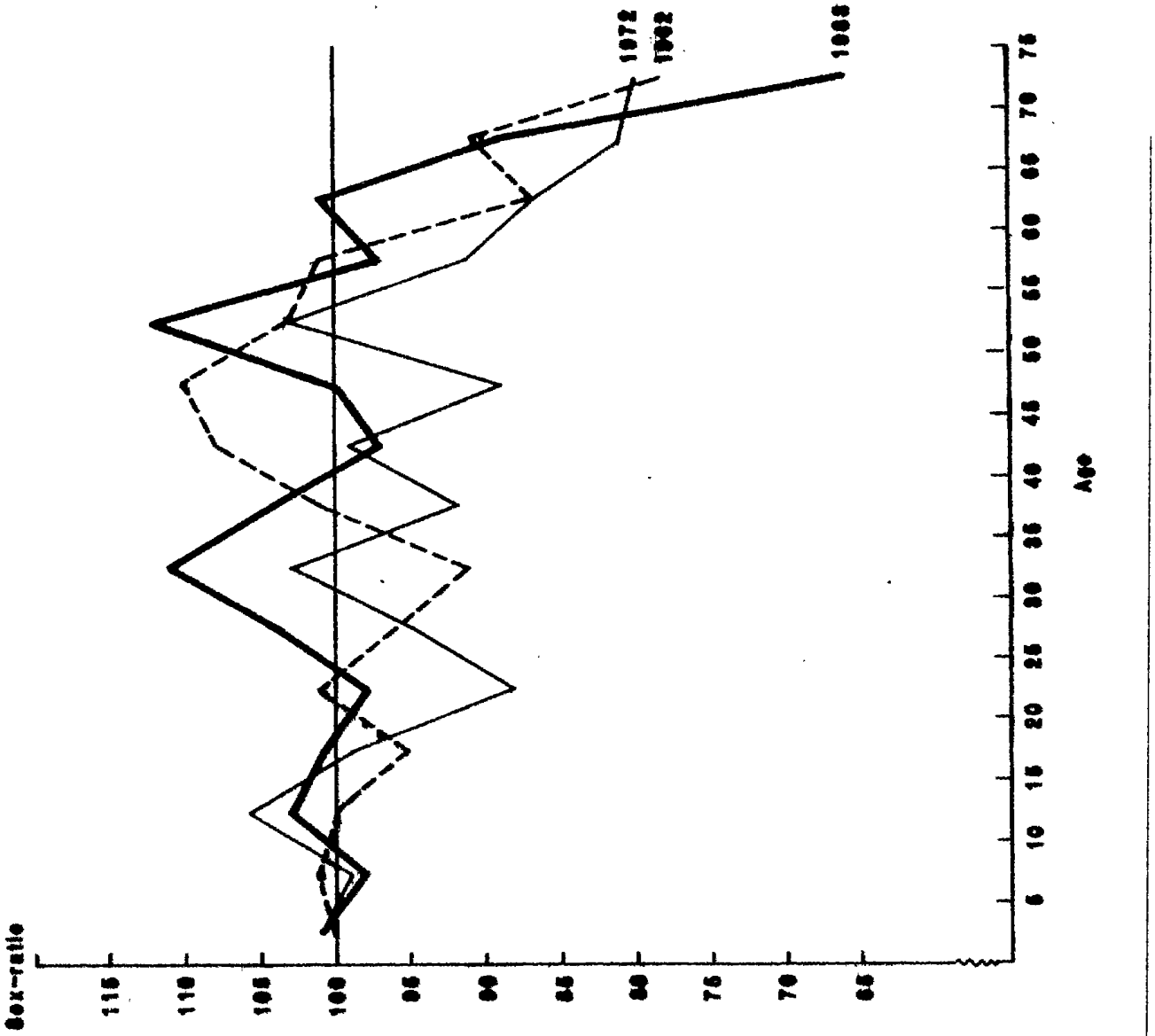
2.6.3.1 Sex ratios and sex ratio scores

The overall sex ratio and sex ratio by age group will be used here as measures for the study of the sex-structure of the population. It was indicated in Section 2.5.3.1 that the increase in the sex ratio of the population from 98.2 in 1972 to 100.1 in 1983 could be because of a large volume of female out-migration during the period 1972 - 1983. Given that migration affects considerably the sex ratio of the whole population it is to be expected that this will have an even greater influence on the sex ratio for five year age groups due to the small numbers in each group. Ordinarily, if migration is not sex-selective, the sex ratio starts at a level somewhat over 100 (usually between 101 and 107), decreases gradually to about 100 by age 15 - 20 and then continues to decrease as advanced ages are attained. Table 2.16 presents the sex ratios by five-year age-group, up to age 74. The same data, also depicted in figure 2.2 show very wild fluctuations.

Table 2.16 - Sex ratios and sex ratio scores

Age group (years)	Sex ratios		
	1962	1972	1983
0 - 4	100.7	99.8	100.7
5 - 9	98.7	101.4	98.4
10 - 14	106.4	99.9	103.2
15 - 19	98.7	95.0	101.0
20 - 24	87.9	101.2	97.9
25 - 29	95.1	96.0	103.5
30 - 34	102.8	91.3	111.0
35 - 39	91.6	100.6	103.8
40 - 44	99.0	108.3	96.7
45 - 49	88.6	110.0	100.2
50 - 54	102.7	102.9	111.8
55 - 59	101.3	91.0	97.4
60 - 64	86.5	86.9	101.4
65 - 69	91.3	81.2	88.8
70 - 74	78.4	79.7	65.7
All ages	97.7	98.2	100.1
Sex ratio score	8.58	5.22	7.79

Fig. 2.2 - SEX-RATIO BY FIVE- YEAR AGE - GROUP , 1962, 1972 and 1983



For 1962, the sex ratios have a disorderly pattern and wide fluctuations are observed. The sex ratios at advanced ages (50 - 54 and 55 - 59) remain abnormally high. For 1972 the data show excessively high sex ratios in the age groups from 35 to 54 but thereafter a smooth gradual decline is observed. For 1983, the data follow a smooth decline at first but then, for age groups 25 - 39, 45 - 54 and 60 - 64, extremely high ratios are noted. These irregular patterns observed in the data seem rather unusual. We shall therefore try to identify the causes of these irregularities. The sex ratio for a given age group depends on three factors:-

(a) the sex-ratio at birth;

(b) the sex ratio of deceased persons; and

(c) the sex ratio of net migrants.

The sex ratio for a given age group is also affected if there is a sex-differential in enumeration at these ages.

The sex ratio at birth, as observed for most countries having good vital registration is well above 100, usually between 101 and 107. The sex ratio at birth for the intercensal period 1972-83 is 101.1. Ordinarily therefore, the sex ratio at young ages (0 - 20, say) are above 100. However the sex ratios for age group 5 - 9 for 1962 and 1983 look exceptionally low if compared with adjacent age groups. As for the sex ratio of deceased persons, there is nothing that appears suspicious. The sex ratio of deceased persons during the intercensal period 1972 - 83 was 107.1. The general trend is that females have an overall advantage over males with respect to mortality, females having slightly lower death rates when compared to males. Age reporting errors and out-migration, could have brought about the observed pattern of sex ratio.

To summarise the sex ratio technique, the sex ratio score was calculated. The sex ratio score is obtained by first calculating the differences between successive sex ratios and taking the average of these differences, irrespective of sign. The sex ratio score which was 8.58 in 1962, declined to 5.22 in 1972 but increased to 7.77 in 1983. The improvement in data quality over time, migration and mortality trend change from favourable male to female mortality, all could be responsible for the fluctuations in the scores.

2.6.4 United Nations age-sex accuracy index

As an overall measure of the accuracy of the age-sex data, the United Nations (U.N.) age-sex accuracy index (or joint score) was calculated. The joint score is the sum of the age-ratio scores (males and females) and three times the sex-ratio score. Table 2.17 summarizes the computation of the U.N. joint score.

Table 2.17 - Calculation of joint score, 1952, 1962, 1972 and 1983

	1952	1962	1972	1983
Age-ratio score (Males)	10.95	7.53	4.60	3.65
Age-ratio score (Females)	6.53	5.25	5.71	5.77
Sex-ratio score	17.16	8.58	5.22	7.79
U.N. Joint score	68.96	38.52	25.97	32.79

According to accepted international norms, data are considered to be :

(a) of good quality, with practically no adjustments needed, if the joint score is under 20;

(b) of average quality with some adjustments needed, if the joint score is between 20 and 40;

(c) of poor quality but requiring elaborate adjustments, if the joint score is between 40 and 60; and

(d) of very poor quality, if the joint score is more than 60.

Thus according to the above table, data for 1952 were of very poor quality while those for the next three censuses were of average quality but required moderate adjustments. However, the scores indicate that the age-sex data for 1983 was of poorer quality than for 1972. This is mostly because of the larger sex ratio in 1983 and the weight of 3 given to it.

2.6.5 Diagonal consistency checks

2.6.5.1 Cohort survival and overall survival ratios

Table 2.18 presents the 11-year survival ratios for five year age cohorts computed from data from the two censuses of 1972 and 1983. An age cohort is a group of persons born during a particular period. In the study of cohorts by age group between two successive censuses it is usually assumed that the population is a closed one, that is, there is practically no in or out-migration and that death is the only factor of change of population for a given cohort. However, the assumption of a closed population is very often too restrictive and what we usually assume is that migration, if present, is negligible. Thus, if census data are good and migration is negligible, the survival ratios are expected to increase from the younger ages to attain its peak at around ages 10 - 14 and thereafter to decrease, gradually at first but more and more rapidly as advanced ages are reached.

Table 2.18 - Cohort survival ratios by sex, 1972 - 1983

Age group x	Male			Female		
	(1) Population aged x in 1972	(2) Population aged x + 11 in 1983	(3) Cohort survival ratio (2) ÷ (1)	(4) Population aged x in 1972	(5) Population aged x + 11 in 1983	(6) Cohort survival ratio (5) ÷ (4)
0 - 4	2,277	2,111	0.9271	2,284	2,077	0.9094
5 - 9	2,074	1,883	0.9079	2,046	1,842	0.9003
10 - 14	1,667	1,400	0.8398	1,671	1,414	0.8462
15 - 19	1,141	1,074	0.9413	1,202	1,032	0.8586
20 - 24	906	825	0.9106	895	756	0.8447
25 - 29	772	777	1.0065	804	741	0.9216
30 - 34	721	688	0.9542	789	709	0.8986
35 - 39	626	546	0.8722	623	539	0.8652
40 - 44	513	461	0.8986	477	432	0.9057
45 - 49	396	366	0.9242	362	364	1.0055
50 - 54	315	280	0.8889	306	276	0.9020
55 - 59	283	207	0.7314	311	256	0.8232
60 - 64	233	128	0.5494	268	188	0.7015
65 - 69	160	64	0.4000	197	97	0.4924
70 - 74	102	32	0.3137	128	60	0.4688
75 & over	84	5	0.0595	136	23	0.1691
All ages	12,270	10,847	0.8840	12,499	10,806	0.8645

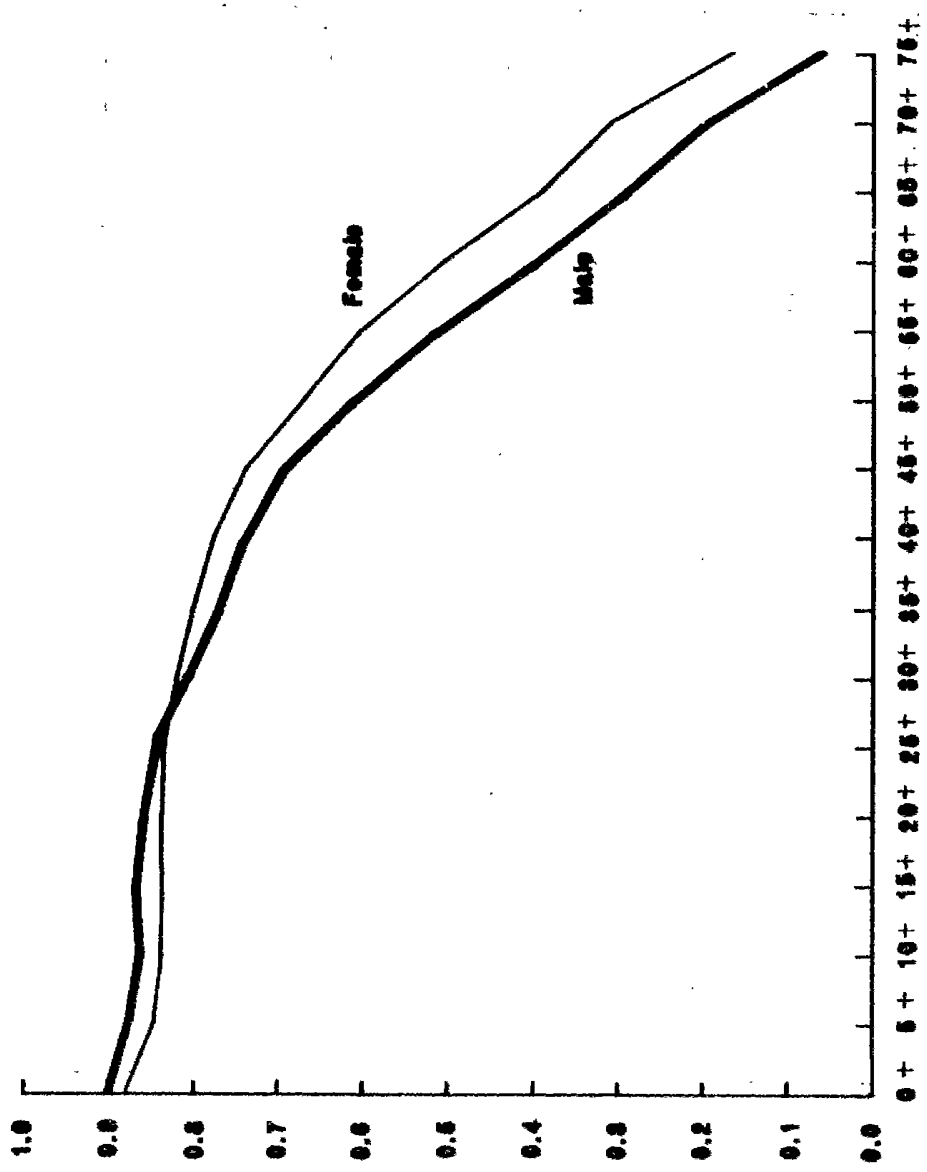
A close examination of the data in Table 2.18 reveals considerable irregularities. There are two cases, one for males (age group 25 - 29) and one for females (age group 45 - 49), where the ratio exceeds unity. Another irregularity observed is that there are several cases, mostly in the younger age groups, where the survival ratios for females are lower than those for males. Although not impossible, this seems most improbable since female mortality, at almost all ages, is lower than male mortality. One reason, could be the out-migration of a large number of females. Another irregularity observed is that the survival ratio for ages 10 - 14, for both males and females, appear suspiciously low. Again the ups and downs in the ratios indicate age reporting errors.

Errors in the data resulting from age misstatements, under or over-enumeration in any one of the two censuses, would render the survival ratios particularly sensitive, especially since the numbers in each age cohort are relatively small. Therefore, to eliminate the fluctuations due to age reporting errors and the smallness of the age cohorts, the overall survival ratios are considered next. The calculation of overall survival ratios and the theory behind are similar to those for the cohort survival ratios, except that they make use of open-ended age intervals. The overall survival ratios are shown in Table 2.19 and pictured in Figure 2.3. The survival ratios for females from age zero up to age 25 are all lower than those for males. Since female mortality is usually lower than male mortality at most ages it is not unreasonable to state once more that during the period 1972 - 83 there may have been a large number of females, of the ages 15 - 30, say, who have left the Island of Rodrigues. This is indicated by the lower overall ratios for females.

Table 2.19 - Overall survival ratios by sex, 1972 - 1983

Age x	Male			Female		
	(1) Population aged x and over in 1972	(2) Population aged x + 11 and over in 1983	(3) Overall survival ratio (2) ÷ (1)	(4) Population aged x and over in 1972	(5) Population aged x + 11 and over in 1983	(6) Overall survival ratio (5) ÷ (4)
0	12,270	10,847	0.8840	12,499	10,806	0.8645
5	9,993	8,736	0.8742	10,015	8,729	0.8545
10	7,919	6,853	0.8654	8,169	6,887	0.8431
15	6,252	5,453	0.8722	6,498	5,473	0.8423
20	5,111	4,379	0.8568	5,296	4,441	0.8386
25	4,205	3,554	0.8452	4,401	3,685	0.8373
30	3,433	2,777	0.8089	3,597	2,944	0.8185
35	2,712	2,089	0.7703	2,808	2,235	0.7959
40	2,086	1,543	0.7397	2,185	1,696	0.7762
45	1,573	1,082	0.6879	1,708	1,264	0.7400
50	1,177	716	0.6083	1,346	900	0.6686
55	862	436	0.5058	1,040	624	0.6000
60	579	229	0.3955	729	368	0.5048
65	346	101	0.2919	461	180	0.3905
70	186	37	0.1989	264	83	0.3144
75	84	5	0.0595	136	23	0.1691

Fig. 2.8 - OVERALL SURVIVAL RATIOS BY SEX , 1966 CENSUS



2.6.6 Age not stated

In most censuses, there are a certain number of persons who, deliberately or through ignorance, do not report their age. At the coding and processing stage these have been classified among the 'not stated' or 'unknown' cases. In 1962, the number of persons whose age was 'not stated' was negligible: in all 4 persons (2 males and 2 females) failed to report their age. In 1972, the total number of 'not stated' cases was 118 (53 males and 65 females), representing less than 1 percent of the population. In 1983, their numbers were reduced to 70 (34 males and 36 females) and again, they represented less than 1 percent. In dealing with tables showing persons of unknown age, the practice at this office is to prorate the number of unknowns in proportion to those of known ages. As the number of unknowns is very negligible, there is not much loss in accuracy in using these adjusted figures for making estimates of population and for calculating vital rates. However, it is considered important to have age information on all persons.

2.6.7 Conclusion

The evaluation and analysis of the age sex data indicated that, excepting minor errors, the overall quality of reporting was acceptable. The small size of the population, the past fluctuations in vital rates and some unrecorded out-migration could have resulted in some of the observed patterns.

2.7 Population projections

2.7.1 Introduction

Statistics about the size, composition and distribution of a population are of vital importance to planners and policy makers for the formulation and implementation of the appropriate plans of development. In this respect, they need to have not only the most recent and accurate estimates available, but also projections showing what the situation is likely to be in the future.

The accuracy of estimates depends on the reliability of the base population as well as the accuracy of registration data on births, deaths and migration. The accuracy of projections not only depends on these factors but is also conditional upon the assumptions about fertility, mortality and migration on which they are based.

2.7.2 Projected population, 1987 - 2002

Population projections by age and sex have not been published in the past because of their unreliability resulting from the uncentainties associated with the small numbers involved; the relative inaccuracy of age data on mortality, and the non-availability of migration data by age and sex. Despite these problems an attempt is made here to work out a set of population projections starting with 1987 as base. However the age and sex distribution of the 1987 population is not available. Only the total population by sex has been obtained by bringing forward the 1983 census population with the addition of births and the subtraction of deaths. Passenger traffic data are so unreliable that no allowance has been made for migration. To get a breakdown of the estimated 1987 population by age-group, it was decided first to project the 1983 population by five-year age-group using survival ratios derived from a life table based on mortality data for the five years from 1981 to 1985. The population thus obtained was for 1988. The 1987 population estimates by age and sex were then obtained by pro-rating the 1987 total for each sex according to the age distribution of the projected 1988 population. Starting with this base population a set of projections using the cohort component method, has been prepared under certain assumptions about fertility and mortality trends in the future.

Fertility

The island of Rodrigues has experienced extremely high levels of fertility during the early sixties with a crude birth rate of about 50 births per thousand population. This rate has declined only moderately and by 1980 was still at a high of around 45. After 1980, however, a relatively fast and continuous decline has been observed and by 1986 reached a moderate level of about 25 births per thousand population. Based on the experience of the island of Mauritius, it is assumed that the Gross Reproduction Rate (GRR) will continue to decline from an estimated average of 1.54 during the period 1987-92 to 1.03 during 1992 - 2002. The decline is assumed to be exponential, falling more rapidly during the period 1987-92 and proceeding at a slower pace afterwards.

Mortality

There has been a slow but gradual decline in mortality since the past two decades, with the crude death rate falling from about 10 deaths per thousand population in the early 1970's to a rate below 6 in 1986. This has resulted in further improvements with the life expectancy reaching 64.5 years for males and 69.0 years for females in 1983.

For the present projections it is assumed that, for both sexes, mortality of the population under 30 years of age will improve from the present level of around 21 (according to the Coale-Demeny scale) to reach level 23 by the year 2000. Adult mortality for both sexes will improve by one level during the same period.

Migration

Analysis of migration data for the past two decades do not seem to reveal any straightforward pattern. Whereas during the intercensal period 1972-83 the data indicate net male out-migration and net female in-migration, the pattern shown during the period 1983-1987 is the other way round. Such a finding

does not seem acceptable and gives little confidence about the quality of the data. For the present projections, it is assumed that the effect of migration on the future growth of the population will be negligible.

The complete results of the population projections are shown in Table 2.20.

2.7.3 Implications of the projection

Population size and growth rate

As shown in the Table 2.21, the population is expected to increase gradually from 36,200 in 1987 to just over 46,500 in 2002. Over time, the average yearly growth rate of the population will decline continuously from 1.95 percent in 1987-92 to 1.64 in 1992-97 and further to 1.49 in 1997-2002.

Age structure

The age structure of the population will undergo some important changes over the next twenty years. The percentage of the population under 15 years of age will fall from 41.3 in 1987 to 27.8 in 2002, as a result of the expected decline in fertility. At the same time, there will be a swelling up of the population aged 15-64, from 55.2 percent in 1987 to 67.6 percent in 2002. The continuous downward trend of fertility will also cause an upward shift in the proportion of the population aged 65 years and over, from 3.5 percent in 1987 to 4.5 in 2002. Although this percentage increase is not very large, the absolute numbers will increase rapidly over the period, from 1300 to 2100. At the same time, the median age of the population, which is the age that divides the population

Table 2.20 - Population projections, 1987 - 2002.

Age group (years)	30th June 1987		30th June 1992		30th June 1997		30th June 2002	
	Male	Female	Male	Female	Male	Female	Male	Female
0 - 4	2,344	2,346	2,257	2,250	2,140	2,130	2,141	2,130
5 - 9	2,765	2,754	2,319	2,320	2,237	2,230	2,125	2,116
10 - 14	2,361	2,398	2,757	2,748	2,313	2,316	2,232	2,227
15 - 19	2,059	1,995	2,351	2,392	2,747	2,742	2,306	2,312
20 - 24	1,903	1,888	2,046	1,987	2,338	2,384	2,734	2,734
25 - 29	1,425	1,461	1,889	1,878	2,032	1,978	2,325	2,375
30 - 34	1,127	1,095	1,412	1,453	1,874	1,869	2,018	1,970
35 - 39	821	745	1,113	1,088	1,397	1,444	1,858	1,860
40 - 44	735	714	808	737	1,097	1,078	1,380	1,433
45 - 49	672	700	719	703	792	727	1,078	1,065
50 - 54	553	557	653	685	700	689	772	714
55 - 59	444	406	523	538	620	664	668	669
60 - 64	329	348	405	381	480	508	573	630
65 - 69	247	252	287	316	356	348	425	467
70 - 74	162	209	192	220	227	276	286	305
75 - 79	88	162	108	163	131	173	159	218
80 +	45	87	56	112	71	129	91	149
All ages	18,080	18,117	19,895	19,971	21,552	21,685	23,171	23,374
Both sexes	36,197		39,866		43,237		46,545	

Assumptions:
(i) Base population - Estimated 1987 population by age and sex
(ii) Fertility: G.R.R declines from an estimated average of 1.54 during 1987 - 1992 to 1.03 during 1997-2002
(iii) Mortality: For both sexes under 30, mortality improves from the present level of around 21 to reach level 23 by the year 2000. Adult mortality for both sexes will improve by a further level during the same period.
(iv) Migration: Negligible

Table 2.21 - Distribution of the population by broad age groups, growth rates, dependency ratios, median age, and sex ratio, 1987 - 2002

	1987	1992	1997	2002
1. Population by age				
(a) Number				
Under 15	14,968	14,651	13,366	12,971
15 - 64	19,977	23,761	28,160	31,474
65 and over	1,252	1,454	1,711	2,100
All ages	36,197	39,866	43,237	46,545
(b) Percentage				
Under 15	41.3	36.8	30.9	27.9
15 - 64	55.2	59.6	65.1	67.6
65 and over	3.5	3.6	4.0	4.5
All ages	100.0	100.0	100.0	100.0
2. Child dependency ratio	749.3	616.6	474.6	412.1
Old-age dependency ratio	62.7	61.2	60.8	66.7
Total dependency ratio	812.0	677.8	535.4	478.8
3. Median age	18.9	20.7	22.9	25.2
4. Sex ratio	99.8	99.6	99.4	99.1

into two equal-sized groups, will increase from 18.9 years in 1987 to 25.2 years in 2002.

Other measures showing the changes to occur in the age structure of the population are the dependency ratios. The Total Dependency Ratio, which is defined as the number of persons under 15 years and those aged 65 years and above per thousand population aged 15-64, will decline from 812.0 in 1987 to 478.8 in 2002. A fall in the dependency ratio is generally considered to be favourable since it indicates a reduction in the number of dependents that have to be supported by the population of working age. However, whilst the child dependency ratio (expressed as the number of children under 15 per thousand population aged 15-64) is expected to decline over the whole projection period, the old age dependency (ratio of persons aged 65 and over per thousand population aged 15-64) will decline slowly up to 1997 and then start on an upward trend which will be maintained till the end of the projection period.

The sex ratio, defined as the number of males per 100 females in the population will gradually decline from 99.8 in 1987 to 99.1 in 2002. This continuous fall will be caused by a faster decline in female mortality.

Fertility

Other demographic indicators which are implicit in the projection assumptions are shown in Table 2.22. The crude birth rate will continue to fall during the next two decades, from an average of 24.8 births per thousand population during the period 1987-1992 to 19.6 during 1997-2002. The age-specific fertility rates which are more refined measures, imply considerable reductions in fertility during the next two decades. In general, the declines will be more important for older women, especially for those above 35 years of age assuming that voluntary actions tending to restrict higher order births will be fruitful. These changes will be reflected in the mean age of mothers, expected to fall from an estimated average of 29.0 years in 1987-1992 to 28.6 in 1997-2002. Although the proportion of the female population in the reproductive

Table 2.22 - Implied demographic rates, 1987 - 2002

	1987-1992	1992-1997	1997-2002
1. Average annual growth rate of population (%)	1.95	1.64	1.49
2. Crude birth rate	24.8	21.3	19.6
3. Crude death rate	5.5	5.1	4.9
4. Rate of natural increase	19.3	16.2	14.7
5. General fertility rate	100.1	79.0	67.8
6. Total fertility rate	3.10	2.41	2.07
7. Gross reproduction rate	1.54	1.20	1.03
8. Net reproduction rate	1.44	1.13	0.98
9. Age specific fertility rates			
Age of Women (years)			
15 - 19	55.7	43.5	37.3
20 - 24	154.8	125.4	109.7
25 - 29	148.6	120.6	105.5
30 - 34	123.8	96.5	80.7
35 - 39	86.7	62.7	51.8
40 - 44	43.3	28.9	24.8
45 - 49	6.2	4.8	4.1
10. Mean age of childbearing	29.0	28.7	28.6
11. Average female population aged 15 - 49 years	9,418	11,230	12,986
12. Expectation of life at birth			
Males	66.3	67.8	69.4
Females	70.6	72.0	73.4

ages 15-49 will increase from 49.5 percent in 1987-1992 to 55.6 in 1997-2002, the total fertility rate, which is the average number of children born per woman, is expected to decline from an average of 3.10 to 2.07 during the same period as a result of family planning efforts.

Mortality

As for the future course of mortality, it is expected that the crude death rate will decline slowly but continuously from around 5.5 per thousand during 1987-1992 to 4.9 during 1997-2002. The expectation of life at birth will increase from 66.3 years in 1987-1992 to 69.4 years in 1997-2002 for males, and from 70.6 to 73.4 during the same period for females. These assumptions imply an average annual gain of approximately 0.3 year for both males and females. In terms of the sex differential in mortality, the gap between the male and female life expectancy at birth will narrow from 4.3 years in 1987-1992 to 4.0 years in 1997-2002.

The implications of the projections in relation to other factors such as education, employment and housing are considered in the appropriate chapters of this report.

Chapter 3

EDUCATIONAL CHARACTERISTICS

3.1 Introduction

The necessity of providing the means of having the children in Rodrigues educated was pointed out for the first time in 1844 by the police magistrate. Though the idea was received with sympathy, it was only after 22 years, i.e. on the 12th November 1866, that the first school opened its door in Port Mathurin. The initial enrolment was 13 girls and 14 boys. However, exactly one month after opening, problems arose between the School Master and the Magistrate. The school was a government one and Magistrate Jenner naturally wanted it to be strictly undenominational. However, the clergy had different views.

In 1875 enrolment had gone up to 47 children. On the 2nd February 1882, another primary school opened its doors at St. Gabriel in a rented house. The attendance which was 24 on the first day rose to 70 by the end of the month. This school operated as a government primary school until 1919 when its administration was taken over by the clergy.

3.2 Evolution of school population

With the growth of the population and greater demand for education, additional schools have been created and in 1986 there were 10 primary schools in the Island with a student population of around 6,000. Table 3.1 shows the number of schools, number of pupils and number of teachers for the period 1967-1986, and Fig. 3.1 illustrates the evolution in enrolment.

The average number of pupils during the five year periods 1967-71, 1972-76, 1977-81 and 1982-86 were 3,537, 4,277, 5,026 and 5,645 indicating an average annual exponential growth rate of 3.9%, 3.3% and 2.4% respectively. The growth in the primary school population till 1981 was far above population growth and even during 1982-86 it is slightly higher than rate of population growth so that the participation rate is improving.

The development of secondary education in Rodrigues is of recent origin. The first secondary school was established in Port Mathurin in 1962 and was called St. Louis College, and it was administered by the Roman Catholic Church. A few years later, another one was created by the Protestant Church. Prior to 1962, those who, after successful completion of primary education, wanted to pursue secondary education had to come over/the Island of Mauritius. Only a few parents could afford to do this. In 1974, the 2 colleges were

amalgamated to form the Rodrigues College. A Junior Secondary School, now known as State Secondary School, was opened in 1979. Secondary school population in 1986 was 1,115, representing a four-fold increase over the last 20 years (Table 3.2 and Figure 3.1). The introduction of new subjects in school curriculum has caused the number of teachers to increase sharply from 49 in 1983 to 66 in 1984.

The growth in secondary school pupils was phenominal. From an average of 244 in 1967-71, it increased to 315 in 1972-76, to 656 in 1977-81 and to 1,168 in 1982-86 with respective growth rates of 5.2%, 15.8% and 12.2%. The fall in growth rate in the recent period is due to a fall in secondary school population in the last 2 years 1985 and 1986 after attaining a peak in 1984. However, the high growth rates of the past periods helped to improve the participation rates.

Pre-primary education

The Rodriguan population is very conscious of the need for educating their children so much so that parents are personally involved in the construction of pre-primary schools. However all of the 50 pre-primary (or "maternal") classes in 1978 were located in private houses except for four which were located in Community Centres and another run by the Adventists in Port Mathurin. All these classes were being supervised by a benevolent "Comité des Ecoles Maternelles de Rodrigues".

3.3 Evaluation of data

Before we embark on the analysis of the educational data, it is essential that we ascertain how reliable and accurate the data are and, if there be any lacuna or bias, then, if possible, identify and rectify them.

We have detailed data not only on the educatinnal characteristics of the population of Rodrigues, we have also cross classifications of these characteristics with economic activity, fertility, mortality and household characteristics, which have made the analysis of these demographic and socio economic variables more meaningful and useful. In order to ensure that these analyses and interpretations are valid, it is essential that the basic information on educational characteristics be of acceptable quality.

Therefore the first attempt is to compare the census data with the independent educational statistics from the annual surveys in primary and secondary schools. It must however be pointed out that there will be slight

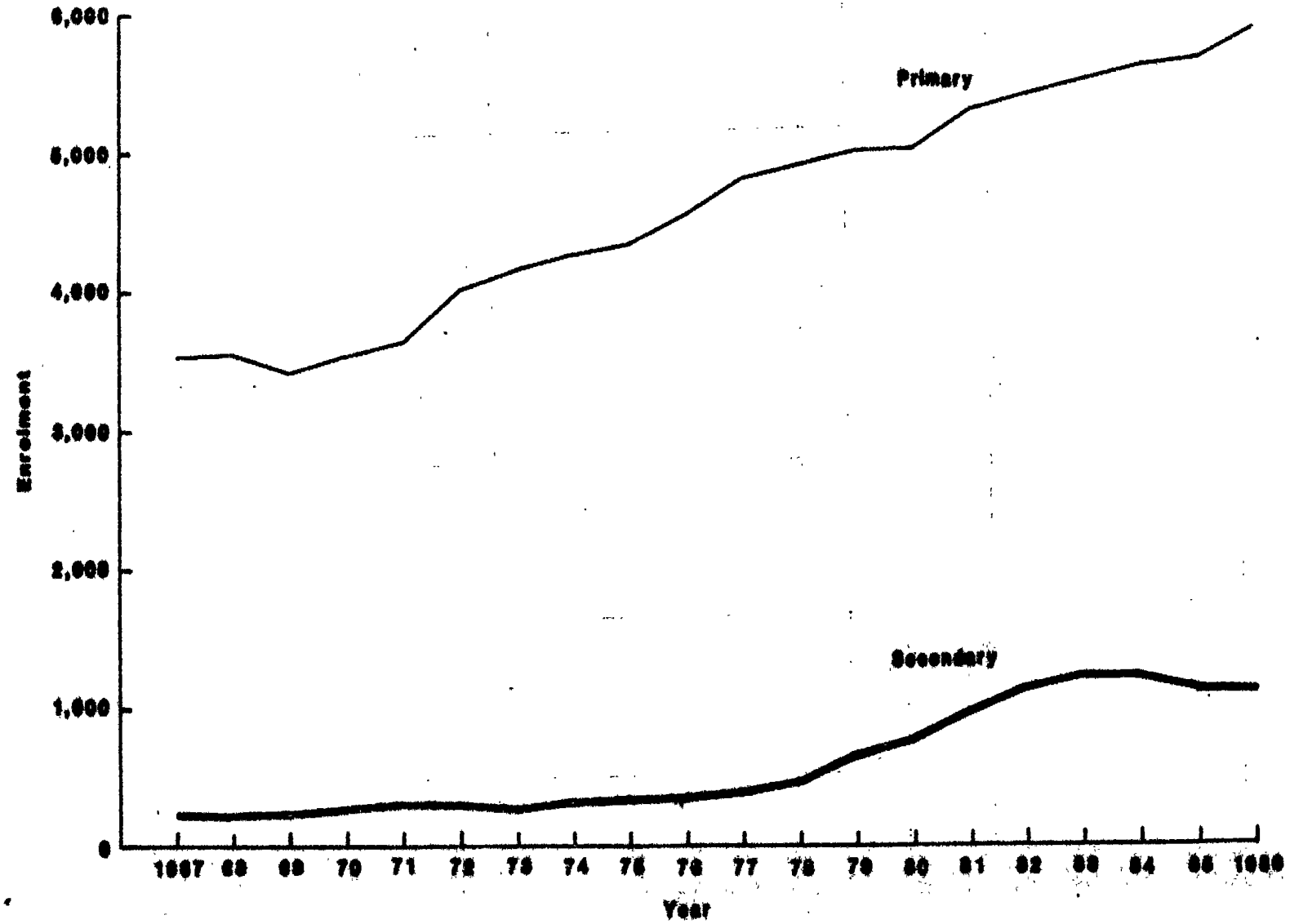
Table 3.1 - Number of schools, pupils, teachers and pupil/teacher ratio, (1967 - 1986) - Primary Education

Year	No. of schools	No. of pupils	No. of teachers	Pupil/teacher ratio
1967	7	3,535	93	38
1968	7	3,547	102	35
1969	7	3,410	105	32
1970	7	3,543	109	35
1971	7	3,649	107	34
1972	7	4,010	124	32
1973	7	4,174	128	33
1974	7	4,275	147	29
1975	7	4,363	151	29
1976	7	4,563	160	29
1977	8	4,825	181	27
1978	8	4,920	185	27
1979	9	5,020	194	26
1980	10	5,048	197	26
1981	10	5,317	191	28
1982	10	5,410	203	27
1983	10	5,535	191	29
1984	10	5,647	198	29
1985	10	5,702	197	29
1986	10	5,932	182	33

Table 3.2 - Number of schools, pupils, teachers and pupil/teacher ratio, (1967 - 1986) - Secondary Education

Year	No. of schools	No. of pupils	No. of teachers	Pupil/teacher ratio
1967	2	225	8	28
1968	2	212	10	21
1969	2	220	11	20
1970	2	262	11	24
1971	2	301	13	23
1972	2	300	13	23
1973	2	274	11	25
1974	1	325	11	30
1975	1	330	10	33
1976	1	344	12	29
1977	1	391	13	30
1978	1	460	18	26
1979	2	670	24	28
1980	2	775	26	30
1981	2	982	28	35
1982	2	1,134	31	37
1983	2	1,225	49	25
1984	2	1,231	66	19
1985	2	1,135	65	17
1986	2	1,115	59	19

Fig. 9.1 - PRIMARY AND SECONDARY ENROLMENT , 1967 - 1988.



problem in regard to the time reference for the two systems - the annual survey referring to 20 April 1983 and the census to 2-3 July 1983.

3.3.1 Primary enrolment by grade

From Table 3.3 below, it is noticed that the census has enumerated 129 boys and 67 girls less at primary level as compared to the April Survey. Most of the underenumeration arose among students of VIth Standard : 73 males and 28 females.

Table 3.3 - Primary school enrolment - Comparison by grade and sex from census and annual survey

Standard	Male			Female		
	Census	Survey	Difference	Census	Survey	Difference
I	476	514	- 38	468	495	- 27
II	484	466	+ 18	475	472	+ 3
III	501	502	- 1	513	516	- 3
IV	400	427	- 27	424	438	- 14
V	356	364	- 8	387	385	+ 2
VI	437	510	- 73	418	446	- 28
TOTAL	2,654	2,783	- 129	2,685	2,752	- 67

The deficit in Standard I can partly be accounted for by students who joined in Standard I at the age of 6 and then, after the first term (by mid-April), are promoted to Standard II after successful completion of an entrance examination.

As far as the other grades are concerned, both sources show a high degree of consistency, mainly for females.

On the whole, the discrepancies between the two sources are not very significant and can be explained by the following reasons:

(i) errors of grade misreporting at the census. This is possible among those parents who do not show much interest in the

education of their children and may not know the actual grade their wards are in.

(ii) drop-outs during the period April-June 1983.

3.3.2 Secondary enrolment by grade

Table 3.4 compares enrolment in the two secondary schools as obtained from the April Survey and the Population Census. The totals from both sources for males agree almost perfectly except for a surplus of 24 males at the census in Form I.

Table 3.4 - Secondary school enrolment - Comparison by grade and sex from census and annual survey

Grade	Male			Female		
	Census	Survey	Difference	Census	Survey	Difference
Form I	170	146	+ 24	142	168	- 26
II	140	151	- 11	92	98	- 6
III	165	168	- 3	124	121	+ 3
IV	126	135	- 9	103	122	- 19
V	48	43	+ 5	42	37	+ 5
VI	23	24	- 1	11	12	- 1
TOTAL	672	667	+ 5	514	558	- 44

Differences between the two sources of data are more significant among girls, with an overall deficit of 44 at the census. The main discrepancy arises, as for males, in Form I where the census has enumerated 26 female students less than the survey. The fact that at the census there was a surplus of 24 males and a deficit of 26 females as compared to the survey results, suggests that errors could have crept in while completing the survey questionnaires. Some male students of Form I could have wrongly been counted as females. This point appears to be confirmed when considering the sex ratio at the various forms for the survey. In fact, at Form I the survey ratio is abnormally low, 87 boys for 100 girls, while at all other forms, the ratios are more than 100. A shift of 24 females to males appears to restore the balance.

Thus it looks that the census data is quite compatible with the survey data and, as a matter of fact, the latter source may have some sex mis-reporting, perhaps due to clerical errors.

3.3.3 Enrolment by single year of age

The school population comprises mostly children aged between 5 and 19 years, though a few children below the age of 5 may be attending pre-primary schools. Table 3.5 compares the two sources using single year of age data instead of grades.

Table 3.5 - School enrolment by single year of age and sex for 1983 Census and 1983 Survey

Age (years)	Male			Female		
	Census	Survey	Difference	Census	Survey	Difference
5	373	392	- 19	393	367	+ 26
6	492	507	- 15	483	485	- 2
7	471	437	+ 34	465	499	- 34
8	415	447	- 32	463	471	- 8
9	412	401	+ 11	406	399	+ 7
10	325	332	- 7	349	320	+ 29
11	269	258	+ 11	255	235	+ 20
5 - 11	2,757	2,774	- 17	2,814	2,776	+ 38
12	206	174	+ 32	181	163	+ 18
13	152	120	+ 32	89	87	+ 2
14	111	117	- 6	89	74	+ 15
15	97	90	+ 7	69	71	- 2
16	56	59	- 3	46	51	- 5
17	54	61	- 7	37	45	- 8
18	29	24	+ 5	22	24	- 2
19	12	25	- 13	8	16	- 8
12 - 19	717	670	+ 47	541	531	+ 10
5 - 19	3,474	3,444	+ 30	3,355	3,307	+ 48

Analysis of enrolment by single year of age shows certain inconsistencies between the two sources, but for most of the ages, the differences are very small. However, discrepancies are very significant for ages 5,7, 8,12 and 13 years. Differences for students aged 5 and 7 are such that they suggest a misreporting of sex, most probably at the survey. In fact, while the Census has enumerated 19 male students aged 5 years less than the survey, the situation is quite the opposite for females of the same age who accounted for a surplus of 26 at the Census. The same phenomenon arose for age 7 where the Census has enumerated 34 boys more and exactly 34 girls less than the Survey. Differences in age reporting between the two sources also could have contributed to part of the observed patterns.

The surplus of 84 students aged 12 and 13 years registered during the census could be explained by the fact that these students were attending community schools meant for Certificate of Primary Education failures and the Survey did not cover such type of schools.

However, for the school population as a whole (5-19 years), the difference was not large between the two sources. There were only 30 boys and 48 girls more at the Census.

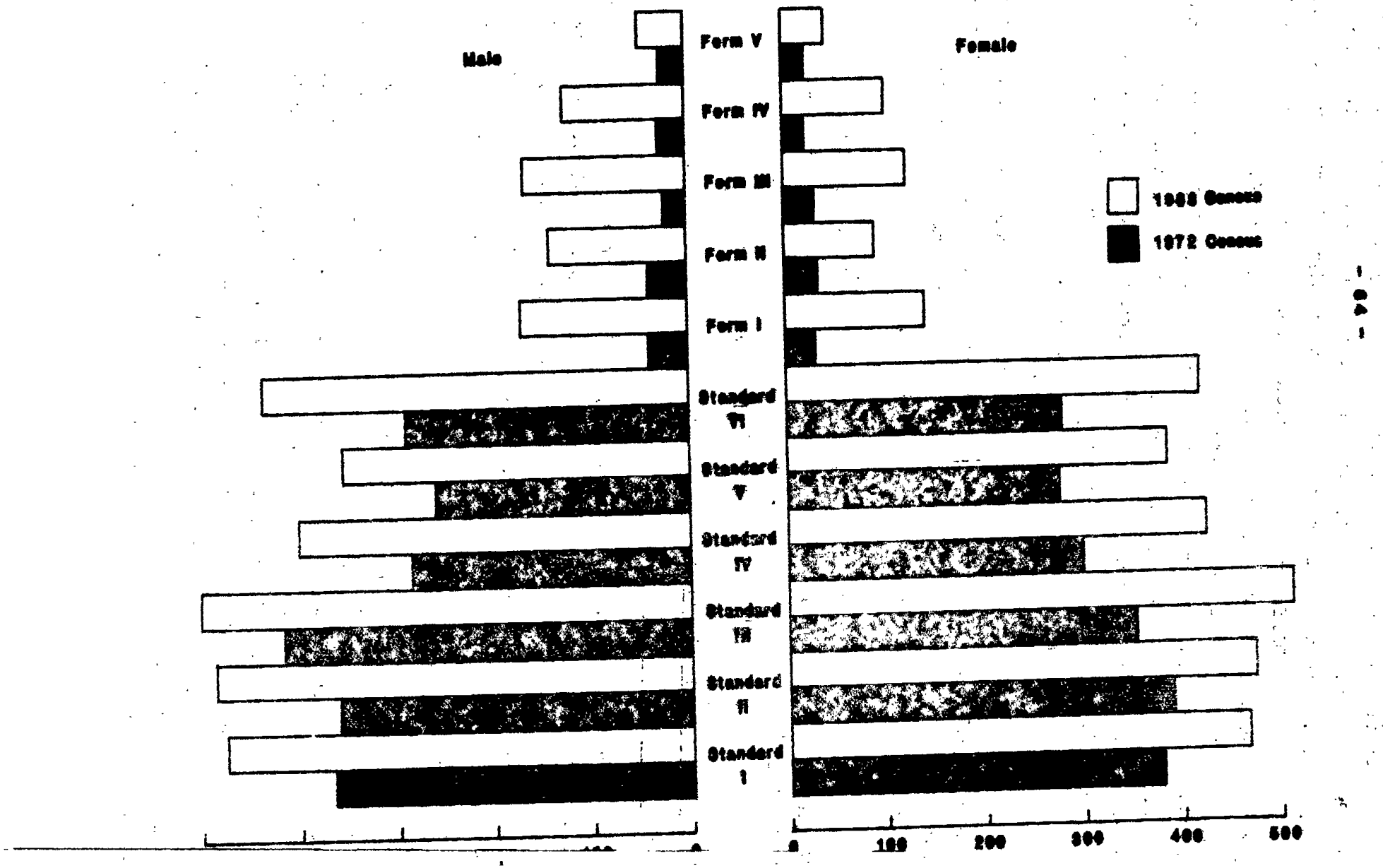
3.4 Growth of school population

3.4.1 School enrolment

From Table 3.6 and figure 3.2, it is clear that enrolment in all grades increased considerably during the period 1972 to 1983. The primary school population on the whole increased from 3,950 in 1972 to 5,339 in 1983 (i.e. by 35%). The increase is more or less uniform for the different grades of primary level and it is highest for VIth standard, 52% for males and 49% for females.

In the mid seventies, the Island of Rodrigues was severely affected by droughts with the result that the Rodriguans were discouraged and started to abandon animal rearing and vegetables planting. Thus, it is possible that they no longer needed labour support from their children and preferred to let them continue their primary cycle of education. Before that period, it was customary for some of them to withdraw their children from the school system after 4 or 5 years. For instance drop-out rate in Standard VI which was around 12% in the first half of 1970's fell to 7% in 1977, and nearly all pupils who were in Standard V in 1982 pursued Standard VI in 1983.

Fig. 8.2 - PYRAMIDS OF SCHOOL ENROLMENT , 1972 AND 1988 CENSUSES



Besides, repeating Standard VI is becoming more common in Rodrigues. In 1972, only 24.1% of students repeated Standard VI either through failure or in the hope of achieving better results at the next sitting. However, in 1978 Standard VI repetition rate was around 36%. Hence, these factors may have contributed to the high increase in Standard VI enrolment between 1972 and 1983, apart from the fact that education is perceived more and more as a desirable goal.

Table 3.6 - Enrolment by grade and sex at the 1972 and 1983 censuses

Grade	1972 Census			1983 Census		
	Male	Female	Both Sexes	Male	Female	Both Sexes
Standard I	363	381	744	476	468	944
II	358	392	750	484	475	959
III	417	352	769	501	513	1,014
IV	285	299	584	400	424	824
V	259	276	535	356	387	743
VI	288	280	568	437	418	855
Total primary	1,970	1,980	3,950	2,654	2,685	5,339
Form I	41	30	71	170	142	312
II	39	34	73	140	92	232
III	22	30	52	165	124	289
IV	28	22	50	126	103	229
V	25	22	47	48	42	90
Total secondary	155	138	293	649	503	1,152

The figures for secondary level give clear indication of the improvement in enrolment as a result of the introduction of free secondary education in 1977. In fact, the secondary school population increased almost four-fold between 1972 and 1983, from 293 to 1,152.

3.4.2 Enrolment ratios

Even though the data on absolute number of children in school is very useful; in a rapidly changing population it is better to have ratios which take account of the size of the cohorts who are of relevant ages, especially if one wishes to compare the values. These ratios could be calculated for each sex separately and for age group or for single year of age.

3.4.3 General enrolment ratios

The general enrolment ratio is the total enrolment at all levels and ages expressed as a percentage of the total population of school-going age. Using the population 5-19 years as base, both males and females have registered an increase in participation in education between 1972 and 1983. The general enrolment rate for males increased from 44.5% to 53.3% and that for females from 43.7% to 51.8%.

The general enrolment ratio is affected by age composition and is hence of less value for comparative purposes. However it avoids some of the problem of age misreporting and may be used in certain cases as a summary measure.

3.4.4 Age-specific enrolment rates

The age-specific enrolment rates provide additional useful indications on the progress of the participation of the population in education. Table 3.7 and figure 3.3 show the rates compared for the last two censuses.

On the whole, the period 1972-1983 has witnessed an improvement in the proportion of children attending school, irrespective of sex and age. The high increases at age 5, 50% for males and 45% for females, are due to the steps taken in making pre-primary education more accessible to the population. The increases for ages 6-11, though substantial, are much lower than those for older ages 12-19, on account of the already high proportion of children of the former ages going to school, and more so, because of the introduction of free secondary schooling since 1977. For the age bracket of 5-11 years, corresponding roughly to the years of primary schooling, it is noticed that the participation rates for males and females are being levelled out.

Between 1972 and 1983, age-specific enrolment rates for ages 12 to 19, increased between 93% to 303%, clearly showing the increased participation in secondary education from the very low values of 1972.

Using the Mauritian Population as standard, the general enrolment ratio for the Island of Rodrigues is 48.8% for male and 46.5% for female. These figures are close to the rates for the district of Flacq in the Island of Mauritius.

Unlike the situation in the Island of Mauritius where enrolment rate for girls is generally lower than for boys, it is noticed that at certain ages the rate for female is higher than for male. For instance, at age 5 the female enrolment rate is 78.1% as compared to a rate of 75.5% for male. This

may be accounted for by the fact that Rodrigues being an agricultural economy, the parents rely on the boys to help in the plantation fields or to look after animals and thus there may be a certain hesitation before deciding to send the boys to school.

Among those parents who send their sons to primary school, some of them may decide after some time to withdraw them from the system to give a helping hand. This argument seems to be supported by the higher female rates for ages 8, 9 and 10.

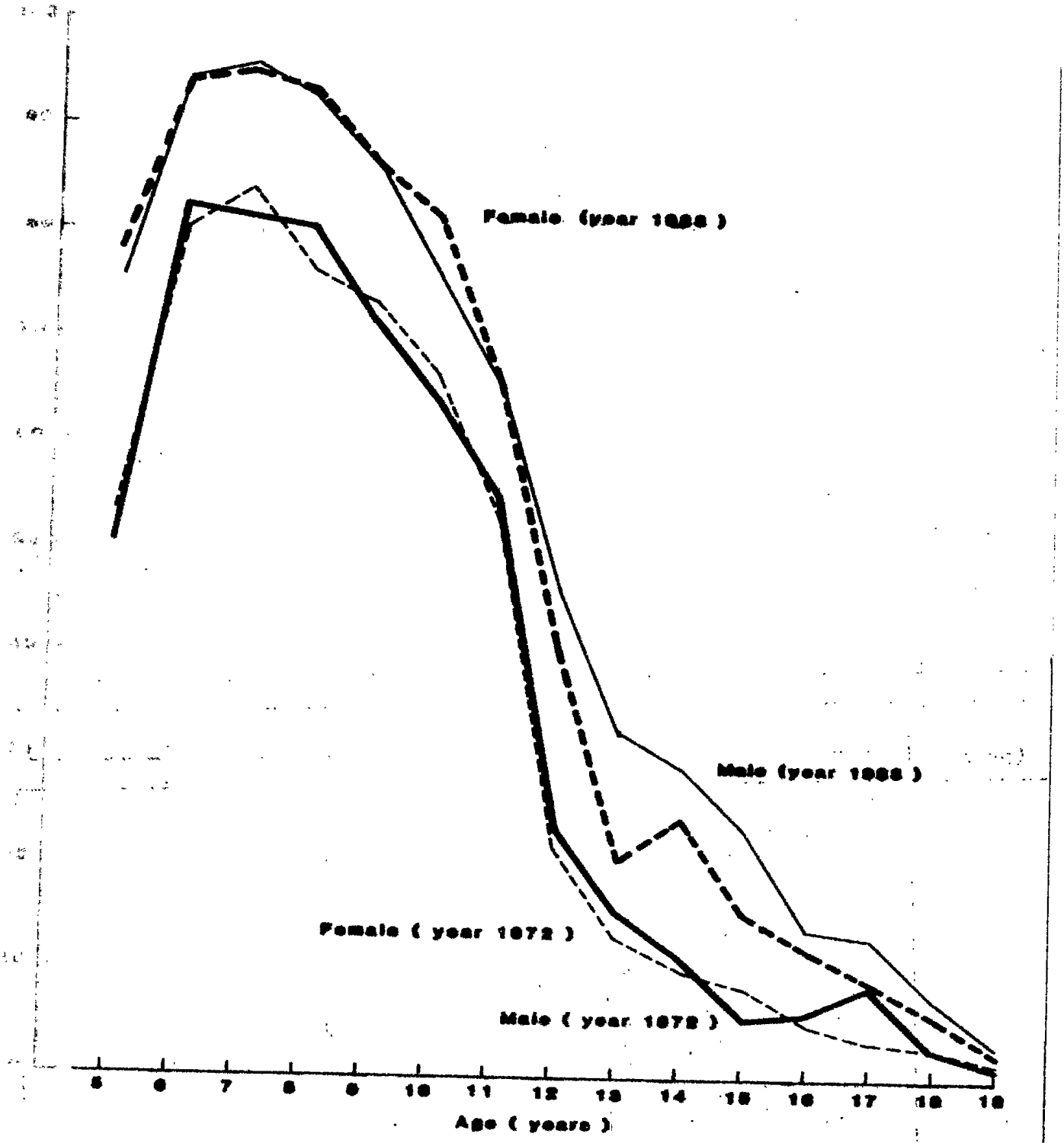
But once the boys have successfully completed their primary schooling, the parents are more interested in giving them further education, to the detriment of the girls, as revealed by the higher rates for males for ages 12 upwards.

Another feature worth noting is that the highest participation is found at age 7 for both sexes in 1983 while in 1972 it was age 6 for boys and 7 for girls. Perhaps children enter school later than at age 5 or 6 because of physical problems (distance of school from home) or socio-cultural patterns. Actually, we note that around half of the children aged 6 are still in Standard I or below and, similarly, about half of the children aged 7 years are in Standard II or below. This applies to older ages as well. The median grade of a 6 year old male child is 1.1 and that of a 7 year old male child is around 2.

Table 3.7 - Age-specific enrolment rates (%) by sex, 1972 and 1983 censuses

Age (years)	1972 Census		1983 Census		% increase 1972 - 1983	
	Male	Female	Male	Female	Male	Female
5	50.5	53.7	75.5	78.1	50	45
6	82.5	80.2	94.3	94.0	14	17
7	81.4	84.0	95.7	95.1	18	13
8	80.5	76.4	92.8	93.3	15	22
9	71.1	73.2	86.2	86.4	21	18
10	64.1	66.5	75.8	81.4	18	22
11	55.1	52.6	65.6	65.1	19	24
12	23.9	21.9	46.2	41.0	93	87
13	15.5	13.4	32.7	20.5	111	53
14	11.4	10.2	29.4	24.5	158	140
15	5.9	8.9	23.8	15.7	303	76
16	6.1	5.2	14.2	12.1	133	133
17	8.8	3.6	13.4	9.2	52	156
18	2.8	3.0	7.9	6.0	182	100
19	1.1	1.8	3.1	2.3	182	28

3.5 - AGE SPECIFIC ENROLMENT RATES BY SEX , 1972 AND 1988 CENSUSES



3.4.5 Level-specific enrolment ratio

Taking the primary school population to comprise children aged between 5-11 years, then primary enrolment ratio has increased by 15% between 1972 and 1983. The increase is almost the same for boys and for girls.

However, there has been a big increase in the secondary enrolment ratio (using population aged 12-19 years) during the same period. The ratio has increased by 161% for both sexes with a higher figure of 172% for males. The primary and secondary level enrolment ratios are shown in Table 3.8 below:

Table 3.8 - Level-specific enrolment ratios (%) by sex - 1972 and 1983 censuses

Level	1972 Census			1983 Census		
	Both Sexes	Male	Female	Both Sexes	Male	Female
Primary	70.7	70.3	71.2	81.3	81.1	81.5
Secondary	7.1	7.6	6.5	18.5	20.7	16.2

3.4.6 Age-grade distribution

Table 3.9 shows the age-grade distribution of the population aged 5-19 years who were attending school at the time of the 1983 Population Census. Figures in the last column of this table do not tally with the age-specific enrolment rates presented in Table 3.7 since a few cases of grade misreporting or wrong coding are excluded. However, these excluded cases are very few: 12 for males and 19 for females.

The proportions of children aged 5 years attending pre-primary schools and Standard I are the same for boys and girls, i.e. 28% and 45% respectively. The highest participation is among 7-year old children, 95.1% for males and 94.1% for females. From age 12, there is a sharp drop in enrolment due to the fact that this is almost the age at which most of the children would have completed their primary cycle of education, and many would not pursue secondary education.

3.5 Educational attainment

Comparison of data from 1972 and 1983 censuses indicate a marked improvement in the level of education of the population of Rodrigues.

Table 3.9 : Age-grade distribution (%) of population aged 5 - 19 years attending school by sex - 1983 Census

MALE

Age (years)	Pre-primary	Primary level						Secondary level						Total
		Std. I	Std. II	Std. III	Std. IV	Std. V	Std. VI	Form I	Form II	Form III	Form IV	Form V	Form VI	
5	27.7	44.5	2.8	-	-	-	-	-	-	-	-	-	-	75.0
6	0.8	43.5	46.4	2.9	-	-	-	-	-	-	-	-	-	93.6
7	0.6	3.7	42.5	46.3	2.0	-	-	-	-	-	-	-	-	95.1
8	0.7	0.4	2.9	49.4	34.2	4.3	-	-	-	-	-	-	-	91.9
9	0.2	0.2	1.3	5.4	44.1	32.2	2.7	-	-	-	-	-	-	86.1
10	-	-	0.2	1.4	4.7	34.5	34.5	0.5	-	-	-	-	-	75.8
11	-	-	-	0.7	1.0	4.9	46.8	11.7	0.5	-	-	-	-	65.6
12	-	-	-	-	0.2	2.0	16.6	17.5	9.6	0.2	-	-	-	46.1
13	-	-	-	-	-	0.4	1.1	8.4	14.0	7.7	0.6	-	-	32.2
14	-	-	-	-	-	-	-	0.5	6.4	13.3	3.4	-	-	28.6
15	-	-	-	-	-	-	-	-	0.7	11.5	10.8	0.5	-	23.5
16	-	-	-	-	-	-	-	-	0.5	2.3	7.9	3.6	-	14.3
17	-	-	-	-	-	-	-	-	-	1.0	7.4	3.7	1.2	13.3
18	-	-	-	-	-	-	-	-	0.3	-	1.1	3.0	3.3	7.7
19	-	-	-	-	-	-	-	-	-	-	0.5	1.0	1.6	3.1

Table 3.9 (cont'd) : Age-grade distribution (%) of population aged 5 - 19 years attending school by sex - 1983 Census

FEMALE

Age (years)	Pre-primary	Primary Level						Secondary Level						Total
		Std. I	Std. II	Std. III	Std. IV	Std. V	Std. VI	Form I	Form II	Form III	Form IV	Form V	Form V	
5	28.2	44.9	3.8	-	-	-	-	-	-	-	-	-	-	76.9
6	1.8	42.6	45.5	3.3	-	-	-	-	-	-	-	-	-	93.2
7	0.2	2.5	41.5	47.2	2.7	-	-	-	-	-	-	-	-	94.1
8	-	-	3.6	47.6	38.5	2.8	-	-	-	-	-	-	-	92.5
9	0.2	-	0.2	4.0	42.6	34.9	4.5	-	-	-	-	-	-	86.4
10	0.2	-	-	1.4	3.0	40.8	35.9	-	-	-	-	-	-	81.3
11	0.3	0.3	-	0.3	0.3	7.7	44.6	11.0	0.5	0.3	-	-	-	65.3
12	-	-	-	-	0.2	0.7	12.7	18.3	8.1	0.7	-	-	-	40.7
13	-	-	-	-	-	-	1.6	3.2	9.9	5.7	-	-	-	20.4
14	-	-	-	-	-	-	0.3	0.5	3.0	18.1	2.5	-	-	24.4
15	-	-	-	-	-	-	0.2	-	-	5.7	9.1	0.2	-	15.2
16	-	-	-	-	-	-	-	0.3	-	1.1	7.7	2.9	0.3	12.3
17	-	-	-	-	-	-	0.2	-	-	0.2	4.5	4.2	-	9.1
18	-	-	-	-	-	-	-	-	-	0.3	1.6	3.0	1.1	6.0
19	-	-	-	-	-	-	-	-	-	-	0.9	0.3	1.1	2.3

In 1972, 10% of the population aged 20 years and over who had followed only primary education had passed their Primary School Leaving Certificate Examination (now known as the Certificate of Primary Education) whereas in 1983 this figure has gone up to 21%. Likewise, the percentage of Cambridge School Certificate holders among that same population group has increased from 0.9% to 2.4% and for Higher School Certificate from 0.1% to 0.3%. The proportion of that population who has followed tertiary education has increased from 0.3% in 1972 to 1.3% in 1983.

The median level of education attained in 1983 is Standard V for both males and females as compared to a corresponding level of Standard VI for the Island of Mauritius.

3.6 - Projections of school populations

3.6.1 Introduction

This section provides projections for 5-yearly periods up to 2002 for primary and secondary level school populations in order to assist education planners in estimating future needs of teachers, classrooms and allied infrastructure.

3.6.2 Methodology and Results

For the primary level it is assumed that the enrolment rate will reach the Mauritian level of 0.95 for both males and females by 1992. After that period, the rate is assumed to remain constant at 0.95.

For secondary level, the 1983 rates of 0.22 and 0.17 for male and female respectively are assumed to reach 0.46 and 0.42 by the year 2002.

The table below presents the projected enrolment rates for both levels for the period 1987 - 2002.

Table 3.10 - Projected level enrolment rates by sex, 1987 - 2002

Year	Primary		Secondary	
	Male	Female	Male	Female
1987	0.91	0.91	0.27	0.22
1992	0.95	0.95	0.33	0.28
1997	0.95	0.95	0.39	0.35
2002	0.95	0.95	0.46	0.42

These rates have then been applied to the projections of the population of the island of Rodrigues in the appropriate age-groups to yield the expected school population at each level. Primary school-goers have been assumed to be between 5 - 11 years old while the secondary school population is taken to be in the age group 12 - 19 years. The results of the projections are shown in Table 3.11, which also contains the estimated population in 1987 and the reported enrolment for that year.

It must be noted that quite a number of Rodriguan students are attending schools in the island of Mauritius and are therefore excluded from the enrolment data for Rodrigues. The number of such students is not known and it has not been possible to adjust the projected school population to get an estimate of Rodriguan students exclusively in Rodriguan schools. Hence the forecast of teacher requirements in the next section must be treated with caution since the actual needs will be less than indicated by a proportion which will depend on the number of Rodriguan students who choose to attend schools outside Rodrigues.

Table 3.11 - Projected total population and projected school population by level and sex 1987 - 2002

Level and sex	1987		1992		1997		2002	
	Estimate	Enrolment	Projected total population	Projected school population	Projected total population	Projected school population	Projected total population	Projected school population
Primary								
Male	3,733	3,096	3,422	3,251	3,116	2,960	2,951	2,803
Female	3,737	3,099	3,419	3,248	3,110	2,954	2,940	2,793
Both sexes	7,470	6,195	6,841	6,499	6,226	5,914	5,891	5,596
Secondary								
Male	3,452	644	4,005	1,322	4,181	1,631	3,712	1,708
Female	3,410	590	4,041	1,131	4,178	1,462	3,715	1,560
Both sexes	6,862	1,234	8,046	2,453	8,359	3,093	7,427	3,268

3.6.3 Projected teacher requirements

Table 3.12 shows the number of primary school teachers (excluding head teachers and deputy head teachers) required during the projection period assuming that the 1987 pupil-teacher ratio of around 32 is maintained.

Table 3.12 - Projected number of teachers by level, 1987 - 2002

Year	Primary	Secondary
1987	190	56
1992	203	112
1997	185	141
2002	175	149

Assuming an attrition rate of 1% per annum due to retirement, resignation, etc. it is observed that an additional 23 primary school teachers will be required by 1992. However after that date no additional teachers will be required, but in fact some teachers may even become redundant unless an improvement in the pupil-teacher ratio is envisaged.

Table 3.12 also shows the number of secondary school teachers which will be required if the current pupil teacher ratio of 22 is maintained during the projection period. Again assuming an attrition rate of 1% per annum, it is estimated that the number of additional teachers required will be 59 by 1992, 35 during 1992 - 1997 and 15 during 1997 - 2002, which give average annual additional requirements of 12, 7 and 3 for the respective periods.

Chapter 4

ECONOMIC CHARACTERISTICS

4.1 Introduction

An important aspect of any population is its economic characteristics. These are likely to be influenced by socio-cultural patterns, geography, climatic conditions and also by the availability of natural resources. Thus, in a country surrounded by sea, fishing and connected activities may provide employment to many people. On the other hand, given favourable climatic conditions and a fertile land, a substantial part of economic activity may be concentrated in agriculture. The economic characteristics of a population can reflect the level of economic development attained by the population and they can also reflect its social attitudes. If often happens that as a country develops economically, there is a movement away from the primary sector (made up of Agriculture, Hunting, Forestry and Fishing and Mining and Quarrying) into the secondary sector (Manufacturing and Construction) and later to the tertiary sector (made up of Electricity, Gas and Water, Wholesale, Retail Trade, Restaurants and Hotels, Transport, Storage and Communication, Financing, Insurance, Real Estate and Business Services). Economic development is also often accompanied by a change in the organisation of employment reflected by a decreasing share of "self-employed without employees" and "unpaid family workers" and an increasing share of "employees" among the employed. This is partly the result of people leaving subsistence farming and/or fishing to take up jobs in industry and partly the result of organisation of labour to benefit from the economy of scale. The participation of women in economic activity is often a reflection of the social norms of a population.

The following sections examine the 1983 Census data pertaining to the economic characteristics of the Island of Rodrigues.

4.2 Sources and quality of data

An evaluation of the 1983 Census data on economic activity for the island of Mauritius, based on comparison of economic characteristics data from various sources, suggested massive overreporting of unemployment at the census. It has been advanced that part of such overreporting at least may have been deliberate, encouraged by rumours of imminent introduction of unemployment benefits. One may speculate that the same data problems may be present in the census economic characteristics data for the island of Rodrigues. Unfortunately it will not be possible to conduct a detailed evaluation of these data . In contrast to the Mauritian mainland for which a variety of sources of data on economic characteristics exist, data sources on the same subject for the island of Rodrigues are practically non-existent apart from the decennial censuses. An employment exchange was set up in the island in April 1984. This is potentially a source of unemployment data,

but the limitations of such a source are well documented - they rarely portray the unemployment situation since scepticism about the usefulness of registration with the employment exchange will cause underregistration whereas anticipation of benefits of some kind or other may encourage employed people to register as unemployed, thus causing exaggeration of unemployment. It is also to be noted that, in any case, data from this source would be available only for periods after 1984. These figures may still be of some use in an evaluation of the 1983 census data.

A nation-wide Labour Force Sample Survey (LFSS) was conducted during the middle of 1986 by the Central Statistical Office to obtain detailed information on the economic characteristics of the population. The survey covered 500 households in the island of Rodrigues. The results of the survey have not yet been analysed but some preliminary results are available and may be used in assessing the 1983 census data although it should be noted that (i) the LFSS results relate to mid 1986 whereas the census data relate to mid 1983 and (ii) the concepts and criteria used for dividing the population into "employed", "unemployed" and "economically inactive" differed between the two sources. The LFSS used the concepts, definitions and criteria recommended by the 1982 International Conference of Labour Statisticians and adopted by the ILO. The important differences between the 2 sources are :

(a) under the new international recommendations, to be classified as unemployed, a person must satisfy the criteria of active job search, immediate availability for employment and search for self-employment. None of these tests were specifically applied at the 1983 census.

(b) The ILO definitions give precedence to economic activity over any other type of activity. Thus a full-time student who worked for one hour during the reference period would be counted as employed and hence economically active. Furthermore, in the new international recommendations, the term economic activity is explicitly linked to the United Nations systems of national accounts and balances. The census questionnaire did not define economic activity so tightly, either explicitly or implicitly.

The shortcomings of the census questions on economic activity have been discussed elsewhere. It will be sufficient to note here that the consequences of the above differences in concepts and criteria are that, even in the absence of deliberate overreporting of unemployment at the census, unemployment is likely to be overreported and activity underreported

under the census concepts and criteria when compared to what they would be under the new international concepts and criteria used for the Survey.

The 1972 census results on economic activity may to a certain measure be used in the evaluation of the 1983 census data on the same subject, since any changes observed may be examined to see whether they appear plausible or otherwise. However, it must be noted that, although the 1983 census questions on economic activity were similar to those asked at the 1972 census, the reference period was different: a six-day week in 1983 and a whole month for 1972 census. The likely effect, will be a relatively larger number of persons reported as employed, and a relatively smaller number of persons reported as unemployed for the longer period. The total of the employed and unemployed, i.e. the labour force is not likely to be much affected though.

It must be noted, however, that, as may be apparent from the above, both the 1972 and 1983 census questionnaires left room for a substantial amount of self-definition of activity status. It is not unlikely that, over the years, the perception by respondents of what constitutes economic activity may have altered, and this possibility must be borne in mind when comparing the 1972 and 1983 census data on economic activity.

In the next few sections, the economic characteristics data from the 1983 census are evaluated as best as possible, using the alternative sources of economic characteristics data on Rodrigues mentioned above, but allowing for differences in concepts and criteria or reference period. The 1983 census data will then be adjusted, where necessary, so as to be comparable to the 1972 census data, by making allowances for any apparent over-reporting of unemployment or underreporting of employment at the 1983 Census in relation to 1972 criteria and perceptions.

4.3 Main economic characteristics

Table 4.1 below presents the main economic characteristics of Rodrigues as obtained at the 1972 and 1983 censuses and by the 1986 Survey.

The data indicate that male activity rate fell in the inter-censal period between 1972 and 1983 from 92.4 to 85.6. A fall in male activity rate was indeed expected under the twin effects of increased

Table 4.1 - Main economic characteristics of population aged 15 and over, 1972, 1983 and 1986
(Unadjusted data)

	1972 Census		1983 Census		1986 Labour Force Sample Survey	
	Male	Female	Male	Female	Male	Female
Employed	5,112	1,867	5,514	757	7,807	4,382
Unemployed	684	89	2,326	440	849	476
Labour Force	5,796	1,956	7,840	1,197	8,656	4,858
Economically Inactive	479	4,570	1,320	7,987	1,327	4,858
Population 15+	6,275	6,526	9,160	9,184	9,983	9,716
Activity Rate	92.4	30.0	85.6	13.0	86.7	50.0
Unemployment Rate	10.9	1.4	25.4	4.8	8.5	4.9
Employment Rate	81.5	28.6	60.2	8.2	78.2	45.1

participation in education and earlier retirement. The magnitude of the fall does not seem to raise a lot of questions either. The 1986 male activity rate of 86.7 estimated by the Survey seems to indicate a reversal of trend, but the differences between the concepts and criteria may be the reason. The male activity rate of 85.6 does not therefore appear unreasonable, although it will be rounded down to 85 to allow for a few inactives who may have reported themselves as unemployed.

However, the female activity rate fell to 13.0 in 1983 from 30.0 in 1972. While this is possible it is hardly believable, especially when it is considered that the 1986 LFSS estimated female activity rate at 50.0. A likely hypothesis is that female activity, especially that of an informal nature, conducted perhaps on a part time basis (e.g. subsistence farming), was grossly under reported at the 1983 Census. This hypothesis would be supported by the relatively high female activity rate obtained by the 1986 LFSS since the latter took special care to capture such activities. The strange thing then would be that females engaged in such activities who failed to report the fact did not report themselves as unemployed either. A possible explanation would be that the alleged underreporting was not deliberate, but arose out of a change in perceptions by respondents between 1972 and 1983. In other words a substantial amount of activity of an informal nature which was perceived as economic activity and reported as such in 1972 may no longer have been regarded as economic activity in 1983. It may also be, however, that social attitudes have changed, and that manual agricultural work is increasingly being perceived as work of low status, hence a reluctance to report it. But, it may also be that many females who used to divide their time between agriculture and household chores may increasingly be devoting less and less time to agriculture so that such activity was, at the 1983 Census, considered as marginal by them and not reported. The marginalisation of agriculture, of which there are some visible signs, may have been encouraged by the difficulty of agriculture arising out of the topography of the island which renders "terracing" indispensable, the barrenness of the soil, the draught conditions and the difficulty of irrigation in the absence of a good water supply network. The vulnerability of agriculture to bad weather, especially cyclones may also have been a contributory factor.

Further evidence of underreporting of activity (especially of an informal nature) is discussed in the ensuing sections. For now, bearing in mind that, in view of its concepts and criteria, the LFSS places an upper limit on economic activity, and that the female activity rate for 1972 was 30.0, the 1983 Census figure for female activity rate is adjusted from 13.0 to 34.0

Before discussing the unemployment and employment rates, it should be noted that in the presentation that follows, these rates refer either to the unemployed or the employed of a given age range expressed as a percentage of the total population of the corresponding age range. This departs from the standard practice which relates the employed and unemployed to the economically active population. However the practice adopted here will make clearer the motivation for any adjustments that may be necessary to be made to the census data on the employed and unemployed.

Another point to be noted is that the present analysis of economic activity concerns the population aged 15 years and over only, although the census data were collected in relation to the population aged 12 years and above. However the unadjusted census data for the 12-14 years age-group is given below from which it can be seen that it is not large especially in 1983.

Table 4.2 - Population and labour force aged 12-14 years, 1972 and 1983

	1972			1983		
	Male	Female	Both Sexes	Male	Female	Both Sexes
Employed	247	95	342	30	11	41
Unemployed	97	15	112	69	36	105
Labour force	344	110	454	99	47	146
Population	922	913	1,835	1,288	1,241	2,529

The unemployment rate of 25.4 among males aged 15 and over, in 1983, appears grossly exaggerated given that the 1986 LFSS estimated the unemployment rate in 1986 at 8.5 and that there is scope for self-employment in fishing and/or agriculture in Rodrigues. Considering that the LFSS concepts and criteria while capturing a lot of employment of an informal and perhaps part-time nature cannot entirely eliminate overreporting of unemployment especially when it is deliberate, the male unemployment rate at the 1983 census is lowered to 8.

The female unemployment rate in 1983 was 4.8. One would suppose that, as among males, overreporting of unemployment must have prevailed among females also, although to a lesser extent. The LFSS obtained practically the same figure, although one would have expected the LFSS figure to be less. However it must be noted that the LFSS result is based on a sample which may have large sampling variations for female activity rates. Furthermore the LFSS result refers to 1986. With these considerations the observed female

unemployment rate of 4.8 is rounded down to 4.

The adjusted employment rates are obtained by the difference between the activity rates and the unemployment rates. The adjusted male employment rate turns out to be 77, whereas that for females becomes 29.

Before settling on the above ajdusted rates, the Census data on employment in Rodrigues and, in particular, the distribution of employment by industrial groups has been critically examined. Taking into consideration the likely deficiencies of the employment data, the distribution of employment by industry has been adjusted. This is discussed in a later section. However it may be noted here, that in deciding on the adjusted rates discussed above, their consistency with the adjusted employment data has been checked.

A summary of the adjusted main economic characteristics of Rodrigues as at the 1983 census is given below:

Table 4.3 - Adjusted main economic characteristics of population aged 15 and over, 1983

	Male	Female
Employed	7,050	2,700
Unemployed	750	400
Labour Force	7,800	3,100
Economically Inactive	1,400	6,100
Activity Rate	85	34
Unemployment rate	8*	4
Employment rate	77*	29

*N.B. These rates refer to those aged 15+ in that category expressed as a percentage of the total population aged 15+

4.4 Economic Activity by age and sex

Table 4.4 presents the age-specific activity rates from the 1972 and 1983 censuses by sex. As discussed in the previous section, the overall male activity rate from the 1983 census does not seem to be much in error. Comparison of the male age-specific rates for 1972 and 1983 do show the effects expected. Thus a decrease in economic activity, no doubt, arising out of increased participation in education is observed in the youngest age-group, where activity fell by over 13 percentage points from 89.8 to 76.3. A more or less marked decreased in activity in the age-groups above 50 arising

Table 4.4 - Distribution of population and labour force by age-group, 1972 and 1983 censuses
(Unadjusted data)

Male

	1972 Census			1983 Census		
	Population	Labour Force	Activity Rate	Population	Labour Force	Activity Rate
15 - 19	1,136	1,020	89.8	1,958	1,494	76.3
20 - 24	901	882	97.9	1,467	1,435	97.8
25 - 29	767	759	99.0	1,160	1,136	97.9
30 - 34	716	711	99.3	850	834	98.1
35 - 39	622	612	98.4	766	754	98.4
40 - 44	511	501	98.0	703	684	97.3
45 - 49	396	389	98.2	584	569	97.4
50 - 54	315	307	97.5	484	463	95.7
55 - 59	283	269	95.1	373	327	87.7
60 - 64	233	150	64.4	293	67	22.9
65 - 69	160	77	48.1	221	33	14.9
70 - 74	102	52	51.0	140	22	15.7
75+	84	24	28.6	127	8	6.3
N.S. but over 15	49	43		34	14	
	6,275	5,796		9,160	7,840	

Table 4.4 - Distribution of Population and labour force by age-group, 1972 and 1983 censuses (cont'd)
(Unadjusted data)

Female	1972 Census			1983 Census		
	Population	Labour Force	Activity Rate	Population	Labour Force	Activity Rate
15 - 19	1,196	356	29.8	1,939	313	16.1
20 - 24	890	255	28.7	1,499	226	15.1
25 - 29	799	237	29.7	1,121	162	14.5
30 - 34	784	232	29.6	766	105	13.7
35 - 39	618	198	32.0	738	107	14.5
40 - 44	472	173	36.7	727	90	12.4
45 - 49	360	132	36.7	583	74	12.7
50 - 54	306	108	35.3	433	57	13.2
55 - 59	311	130	41.8	383	44	11.5
60 - 64	268	65	24.3	289	8	2.8
65 - 69	197	33	16.8	249	5	2.0
70 - 74	128	13	10.2	213	6	2.8
75+	136	6	4.4	208	-	-
N.S. but over 15	61	18		36	-	
	6,526	1,956		9,184	1,197	

undoubtedly out of earlier retirement is also observed. Decreases in activity in most other age-groups are also observed but they are very slight. In view of the fact that practically no adjustment was made to the overall male activity rate as measured at the 1983 Census, and given that the age-specific rates from the Census appear reasonable, no adjustments are made to them.

It was observed in the preceding section that female activity, most probably, was grossly underreported at the Census. The female age-specific activity rates as measured at the Census (Table 4.4) show that such underreporting is common to all age-groups. Furthermore the rates do not display the pattern which was observed in 1972 of activity initially increasing with age and then falling off. Instead a pattern of continuous decline of activity with age is observed. This is an indication that the different age-groups have not been affected to the same extent by underreporting of activity. With this consideration in mind, and allowing for a decrease in activity between 1972 and 1983 in the youngest age group from increased participation in education, and a fall in the highest age-groups from earlier retirement, the female age-specific activity rates have been adjusted. The adopted rates for both males and females are included in Table 4.5 which gives the implied distribution of the economically active population by age group and sex.

4.5 Employment by age and sex

In view of the data problems referred to above, the distribution of both employment and unemployment by age as measured at the Census (Table 4.6) require adjustment. This has been effected by first adjusting the sex and age-specific unemployment rates using the LFSS rates as guide. The adjusted rates were then applied to the population in the different age-groups as enumerated at the Census to obtain the number of unemployed in each age-group. The number of employed in each age-group was then obtained by the difference between the active population in each age-group (Table 4.5) and the unemployed population in each age-group. Table 4.7 gives a comprehensive picture of the adopted distribution of the population age 15 and above by activity status and age.

4.6 Employment by industry and sex

Table 4.8 shows the 1983 Census data on the distribution of employment by industry and compares them to the 1972 data. The table provides additional evidence of massive underreporting of female activity.

Table 4.5 - Adopted distribution of economically active population aged 15 and over by age-group and sex, 1963 Census

Age-group	Male		Female	
	Active population	Activity rate	Active population	Activity rate
15 - 19	1,490	76	550	29
20 - 24	1,440	98	540	36
25 - 29	1,140	98	430	38
30 - 34	830	98	290	38
35 - 39	750	98	320	43
40 - 44	680	97	310	42
45 - 49	570	97	240	42
50 - 54	460	96	170	38
55 - 59	330	88	150	38
60 - 64	70	23	60	20
65 - 69	30	15	30	12
70 - 74	20	16	10	4
75+	10	6	-	-
All ages	7,820	85	3,100	34

Table 4.6 - Distribution of population aged 15 years and over by sex and activity status, 1983 Census

Unadjusted data

Age-group (years)	Male					Female				
	Total Population	Labour Force			Inactive	Total Population	Labour Force			Inactive
		Total	Employed	Unemployed			Total	Employed	Unemployed	
15 - 19	1,958	1,494	236	1,258	464	1,939	313	55	258	1,626
20 - 24	1,467	1,435	656	779	32	1,499	226	133	93	1,273
25 - 29	1,160	1,136	995	141	24	1,121	162	132	30	959
30 - 34	850	834	778	56	16	766	105	89	16	661
35 - 39	766	754	727	27	12	738	107	87	20	631
40 - 44	703	684	664	20	19	727	90	79	11	637
45 - 49	584	569	555	14	15	583	74	69	5	509
50 - 54	484	463	447	16	21	433	57	51	6	376
55 - 59	373	327	319	8	46	383	44	43	1	339
60 - 64	293	67	66	1	226	289	8	8	-	281
65 +	522	77	71	6	445	706	11	11	-	695
	9,160	7,840	5,514	2,326	1,320	9,184	1,197	757	440	7,987

Table 4.7 - Adopted distribution of population aged 15 years and over by sex and activity status, 1983 Census

Age-group (years)	Male					Female				
	Total Population	Labour Force			Inactive	Total Population	Labour Force			Inactive
		Total	Employed	Unemployed			Total	Employed	Unemployed	
15 - 19	1,960	1,490	1,130	360	470	1,940	550	430	120	1,380
20 - 24	1,470	1,440	1,140	300	30	1,500	540	400	140	960
25 - 29	1,160	1,140	1,070	70	20	1,120	430	400	30	690
30 - 34	850	830	820	10	20	770	290	280	10	480
35 - 39	770	750	745	5	20	740	320	305	15	420
40 - 44	700	680	675	5	20	730	310	260	50	420
45 - 49	580	570	570	-	10	580	240	220	20	340
50 - 54	490	460	460	-	20	440	170	150	20	260
55 - 59	380	330	330	-	40	390	150	150	-	230
60 - 64	300	70	70	-	220	290	60	60	-	230
65 +	500	60	60	-	430	690	40	40	-	630
	9,160	7,820	7,070	750	1,340	9,190	3,100	2,695	405	6,090

Table 4.8- Population (15 and over) in employment by major industrial division and sex, 1972 and 1983 Censuses

Major industrial division	1972				1983			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
1. Agriculture, Hunting, Forestry and Fishing	3,266	63.9	1,448	77.6	2,607	47.3	152	20.1
2. Mining and Quarrying	-	-	-	-	6	0.1	-	-
3. Manufacturing	109	2.1	58	3.1	238	4.3	33	4.4
4. Electricity, Gas and Water	91	1.8	-	-	163	3.0	1	0.1
5. Construction	839	16.4	2	0.1	1,176	21.3	5	0.7
6. Wholesale and Retail Trade, Restaurants and Hotels	168	3.3	72	3.9	264	4.8	139	18.4
7. Transport, Storage and Communication	109	2.1	3	0.2	273	5.0	2	0.3
8. Financing, Insurance, Real Estate and Business Services	16	0.3	1	0.1	32	0.6	6	0.8
9. Community, Social and Personal services	447	8.7	257	13.8	755	13.7	418	55.2
0. Activities not adequately defined	67	1.3	26	1.4	-	-	-	-
Activity not stated	-	-	-	-	1	0.0	1	0.1
Total in employment	5,112	100.0	1,867	100.0	5,515	100.0	757	100.0

Such underreporting is seen to be concentrated, as was suggested earlier, in the Agricultural Sector : a sharp drop in the number of employed females from 1448 to 152 in the Major Industrial Division 1 between 1972 and 1983. The other sectors which are expected to have been affected, although to a much lesser extent, are Industrial Divisions 3, 6 and 9 i.e. "Manufacturing", "Wholesale and Retail Trade, Restaurants and Hotels" and "Community, Social and Personal Services".

Among males too, it is expected that there has been underreporting of employment in "Agriculture, Hunting, Forestry and Fishing" although the extent of underreporting is no doubt less marked than among females. The other industry groups too are expected to have been affected to some degree.

Using the 1972 Census data as a guide and taking into consideration that the deficits at the 1983 Census would be higher in certain sectors, the previously estimated employment figure for each sex is broken down by industry group as follows:

Table. 4.9 - Adjusted distribution of Population (15 and over) in employment by Major Industrial Division and Sex, 1983

Major Industrial Division	Male	Female
1. Agriculture, Hunting, Forestry and Fishing	3,500	1,600
2. Mining and Quarrying	6	-
3. Manufacturing	400	250
4. Electricity, Gas and Water	163	1
5. Construction	1,400	5
6. Wholesale and Retail Trade, Restaurants & Hotels	350	200
7. Transport, Storage and Communication	300	2
8. Financing, Insurance, Real Estate and Business Services	32	6
9. Community, Social and Personal Services	900	650
Total	7,051	2,714

4.7 Employment by occupation and sex

The reporting problems referred to in preceding sections are bound to have affected the distribution of employment by occupation as measured at the 1983 Census. This distribution is shown in Table 4.10. The deficits in "Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters" are particularly prominent, especially among females. Bearing in

Table 4.10 - Population (15 and over) in employment by Major Occupational group and sex, 1972 and 1983 Censuses

(Unadjusted data)

Major occupational group	1972				1983			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
0/1 Professional, Technical and Related Workers	103	2.0	111	5.9	206	3.7	211	27.9
2 Administrative and Managerial Workers	3	0.1	-	-	13	0.2	2	0.3
3 Clerical and Related Workers	103	2.0	14	0.7	175	3.2	78	10.3
4 Sales Workers	142	2.8	71	3.8	213	3.9	123	16.2
5 Service Workers	307	6.0	130	7.0	542	9.9	151	19.9
6 Agricultural, Animal Husbandry and Forestry Workers, Fishermen and Hunters	3,111	60.9	1,455	77.9	2,014	36.5	156	20.6
7/8/9 Production and Related Workers, Transport Equipment Operators and Labourers	1,277	25.0	61	3.3	1,421	25.8	30	4.0
X Workers not classifiable by occupation	66	1.3	25	1.3	931	16.9	6	0.8
Total in employment	5,112	100.0	1,867	100.0	5,515	100.0	757	100.0

mind the relationships between industrial group and occupational group, the distribution of employment by occupation and sex has been adjusted so as to be consistent with the distribution of employment by industry and sex, again using the 1972 Census data as a benchmark. This adjusted distribution is presented below:

Table 4.11 - Adjusted distribution of employed population 15+ by major occupational group and sex, 1983

Major occupational group	Male	Female
0/1 Professional, Technical and Related Workers	206	211
2 Administrative and Managerial Workers	13	2
3 Clerical and Related Workers	175	80
4 Sales Workers	350	250
5 Service Workers	900	325
6 Agricultural, Animal husbandry and Forestry workers, Fishermen and Hunters	3,400	1,600
7/8/9 Production and Related Workers, Transport Equipment Operators and Labourers	2,000	250
X Workers not classifiable by occupation	-	-
T o t a l	7,044	2,718

4.8 Employment by Employment Status and Sex

Table 4.12 below compares the distribution of employment by employment status and sex from the 1983 Census to that from the 1972 Census.

Table 4.12 - Distribution of employed (15 and over) by employment status and sex, 1972 and 1983 (Unadjusted data)

Employment Status	1 9 7 2		1 9 8 3	
	Male	Female	Male	Female
Self-employed with employees	151	49	83	13
Self-employed without employees	1,872	778	625	243
Employee paid by month	884	237	4,479	447
Employee paid by day/work/job	1,616	127	277	22
Apprentice	13	2	12	1
Unpaid family workers	519	654	34	30
Other and unspecified	57	20	3	1
T o t a l	5,112	1,867	5,513	757

The table provides further evidence of the underreporting of male employment and female employment and activity. Comparison of 1983 with 1972 data indicates that such underreporting occurred mainly among persons with informal jobs, like "Self-employed without employees" and "unpaid family workers". The main point to note is the remarkable increase between 1972 and 1983 in the number of employees paid by month and decrease of those paid by day/work, job. These changes are largely accounted for by the transfer of casual employees in Government service to the permanent and pensionable establishment, and by the recruitment of new employees in Government service. The changes represent greater security for workers since they imply that the share of stable jobs with guaranteed pay out of the total number of available jobs has greatly increased.

4.9 Inactivity by age-group and sex

Table 4.13 presents the distribution of the economically inactive by functional categories, age-group and sex. The table is based on unadjusted data from the 1983 Census. In view of the poor quality of the Census data on economic activity, the table must be analysed with caution. However, as noted previously, the reporting of economic activity (employment and unemployment taken together) among males does not seem to be much in error. The data on economically inactive males are therefore probably reliable and indeed the distribution of inactive males by age-group and functional categories appears reasonable, except that the 73 males aged 15-19 reported as homemakers probably include some young persons engaged in economic activity carried out on their own premises.

The distribution of females reported as economically inactive by functional categories, however, seems to provide further evidence of the problems considered earlier. While the tendency for increased participation in economic activity accompanied by decreasing involvement in homemaking is almost universal, the data seem to indicate a reversal of this trend. Table 4.14 compares the proportions of the female population by age group engaged in homemaking for 1972 and 1983 as measured at the censuses. The huge increase in the latter census gives credence to our belief that, for one reason or other, many women reported themselves as homemakers instead of as active.

4.10 Projections of Labour Force

Table 4.15 gives projected activity rates at quinquennial intervals from 1987 to 2002 for both sexes. These rates have been arrived at after consideration of past trends and possible future events that may have a bearing

Table 4.13 - Population not economically active by functional categories, age-group and sex, 1983 Census

(Unadjusted data)

Male

Age-group (years)	Total not economically active	Student	Homemaker	Inmate of an institution	Permanently disabled	Rentier	Retired persons or pensionable	Other and unspecified
15 - 19	464	255	73	-	20	-	1	115
20 - 24	32	4	11	-	3	-	-	14
25 - 29	24	-	2	2	10	-	-	10
30 - 34	16	-	-	1	6	-	1	8
35 - 39	12	-	1	2	5	-	-	4
40 - 44	19	1	2	-	8	-	2	6
45 - 49	15	-	1	-	7	-	2	5
50 - 54	21	1	1	-	6	1	8	4
55 - 59	46	-	2	2	12	-	22	8
60 - 64	226	-	3	8	-	2	210	3
65 - 69	188	-	1	2	11	2	170	2
70 - 74	118	-	2	3	3	2	105	3
75 & over	119	-	-	4	5	-	108	2
Not stated	20	-	-	-	-	-	1	19

Table 4.13 - Population not economically active by functional categories, age-group and sex, 1983 Census (cont'd)

(Unadjusted data)

Female

Age-group (years)	Total not economically active	Student	Homemaker	Inmate of an institution	Permanently disabled	Rentier	Retired persons or pensionable	Other and unspecified
15 - 19	1,626	188	1,379	-	11	-	1	47
20 - 24	1,273	4	1,250	-	7	-	-	12
25 - 29	959	-	944	-	9	-	1	5
30 - 34	661	-	645	2	8	-	-	6
35 - 39	631	1	618	3	6	-	-	3
40 - 44	637	1	629	2	5	-	-	-
45 - 49	509	-	498	4	5	-	-	2
50 - 54	376	-	366	1	5	-	1	3
55 - 59	339	-	316	4	7	-	7	5
60 - 64	281	-	210	1	3	-	65	2
65 - 69	244	-	165	2	5	1	69	2
70 - 74	207	-	127	6	6	1	67	-
75 & over	208	-	101	3	11	1	92	-
Not stated	36	-	8	1	1	-	2	24

Table 4.14 - Females 15 + engaged in homemaking by age-group, 1972 and 1983 Censuses
(Unadjusted data)

Age-group (years)	1972			1983		
	Population	Homemaker	%	Population	Homemaker	%
15 - 19	1,196	773	64.6	1,939	1,379	71.1
20 - 24	890	628	70.6	1,499	1,250	83.4
25 - 29	799	555	69.5	1,121	944	84.2
30 - 34	784	544	69.4	766	645	84.2
35 - 39	618	417	67.5	738	618	83.7
40 - 44	472	294	62.3	727	629	86.5
45 - 49	360	225	62.5	583	498	85.4
50 - 54	306	195	63.7	433	366	84.5
55 - 59	311	171	55.0	383	316	82.5
60 - 64	268	114	42.5	289	210	72.7
65 - 69	197	90	45.7	249	165	66.3
70 - 74	128	56	43.8	213	127	59.6
75 +	136	39	28.7	208	101	48.6
Not stated	61	36	59.0	36	8	22.2

Table 4.15 - Projected activity rates by age-group and sex, 1987 - 2002

Age-group (years)	Male				Female			
	1987	1992	1997	2002	1987	1992	1997	2002
15 - 19	70	65	60	55	29	29	29	29
20 - 24	97	97	97	97	37	38	39	40
25 - 29	98	98	98	98	39	40	41	42
30 - 34	98	98	98	98	39	40	41	42
35 - 39	98	98	98	98	44	45	46	47
40 - 44	97	97	97	97	42	43	44	45
45 - 49	97	97	97	97	42	43	44	45
50 - 54	94	92	91	90	40	41	42	43
55 - 59	86	84	83	82	39	40	41	42
60 - 64	23	23	23	23	20	19	18	17
65 +	10	9	8	7	5	4	3	2

Table 4.16 - Projected Labour force by age-group and sex, 1987 - 2002

Age-group (years)	MALE				FEMALE			
	1987	1992	1997	2002	1987	1992	1997	2002
15 - 19	1,440	1,530	1,650	1,270	580	695	795	670
20 - 24	1,845	1,985	2,270	2,650	700	755	930	1,095
25 - 29	1,395	1,850	1,990	2,280	570	750	810	1,000
30 - 34	1,105	1,385	1,835	1,980	425	580	765	825
35 - 39	805	1,090	1,370	1,820	330	490	665	875
40 - 44	710	785	1,065	1,340	300	315	475	645
45 - 49	650	700	770	1,045	295	300	320	480
50 - 54	520	600	635	695	225	280	290	305
55 - 59	380	440	515	550	160	215	270	280
60 - 64	75	95	110	130	70	70	90	105
65 +	55	60	60	65	35	30	30	20
T O T A L	8,980	10,520	12,270	13,825	3,690	4,480	5,440	6,300

on activity rates, such as changes in the participation in education and changes in the involvement of women in economic activity. The resulting projections of the labour force by 5-year age-groups from age 15 and onwards for the same periods are presented in table 4.16. It is estimated that out of 9,000 males in the labour force in 1987, 8,100 were employed and 900 unemployed: whilst the female labour force of 3,700 consisted of 3,200 employed and 500 unemployed.

4.11 Conclusion

Evaluation of the economic characteristics data from the 1983 Census has brought to light some major reporting errors. This highlights once again the need for close attention to be paid to questions on economic characteristics in future censuses. The major problems in the economic characteristics data for Rodrigues are understatement of female activity and overstatement of unemployment especially among males. These problems have made comparison with the 1972 Census data on economic characteristics difficult and they also explain why the present analysis has concentrated mainly on assessing the likely deficiencies of the Census data and making adjustments. Some points of a general nature may be noted here although they should be treated with caution given the poor quality of the census data. The apparent underreporting of female activity in the agricultural sector may be the sign of a tendency towards neglect of agriculture, and may need further investigation. Agriculture is likely to remain important in Rodrigues, given that the scope for industrialisation is limited. The natural resources of the island are scant, and in view of its small population size, the implantation of manufacturing industries in the island may not be viable. On the other hand, however, there is probably scope for extension of activity in handicrafts ("artisanat"). The increase observed between 1972 and 1983 in the number of employees paid by the month has been beneficial to Rodriguan workers in general. This increase stemmed mainly from confirmation of casual employees in Government service and fresh recruitments by Government. It may be mentioned here that the vast numbers employed by Government represent a large human resource potential for the development of the island.

Chapter 5

HOUSEHOLDS AND HOUSING

5.1 Introduction

An important institution among human beings is that of family. Among all societies there are arrangements whereby certain people live together under one roof. For statistical purposes we can consider all persons who live together and partake of a commong kitchen as constituting a household. Generally members of households are related to each other. There are various types of households - one person, multi person. Sometimes several persons live together who are not in any way related to each other. Other times they are members of what are called 'institutions' such as hospitals, prisons, military barracks etc. If members in a household are composed of a head, his spouse and children, it is called a nuclear family. If other relatives share a household, then such a household has an extended or composite family. A household may also have non relatives. Thus there are various types of household compositions depending on socio cultural, economic and other factors.

In Rodrigues less than 3% of households in 1983 are of the institutional type as against slightly more than 1% in 1972. Since the problems of such persons are different from those of 'private households', the analysis will not include institutional households, and will be restricted only to 'private households' which are much more numerous and also have greater significance in the study of population.

Private households are not only convenient statistical entities in census and survey operations, they also are the most convenient grouping for enquiries on consumption, production, reproduction etc. The household is also the unit which is directly related to housing, which is a basic need of human beings.

5.2 The housing and population censuses

Housing and population censuses have been carried out in the past and the latest one was taken in 1983. Detailed tabulations have been published both for 1972 and 1983. However no analysis has yet been done on these. The present attempt is therefore to remedy the situation by considering the data from both 1972 and 1983.

Since households live in dwelling or housing units which form part of buildings, or occupy whole buildings, the analysis proceeds by considering buildings first, then housing units and lastly households.

5.3 Buildings

Table 5.1 shows that in 1983 there were 7,300 buildings of which 6,995 were residential or partly residential, whilst in 1972 there were 5,266 buildings with 5,109 residential or partly residential units. Thus, over a period of 11 years there was an increase of 2,034 buildings and 1,886 residential units, representing an average annual geometric growth rate of 3% and 2.9% respectively. The percentage of residential and partly residential buildings has remained more or less the same. It is, however, to be noted that, with a population increase of 2.7% per annum during the eleven-year period, the increase in the building stock has been such as to improve slightly the availability of residential buildings for the people.

Table 5.1 - Buildings by use, 1972 and 1983

Year	All buildings	Residential and partly residential				Non-residential
		Total	Wholly residential	Partly residential	Hotels and institutions	
1972						
Number	5,266	5,109	4,949	154	6	157
%	100.0	97.0	94.0	2.9	0.1	3.0
1983						
Number	7,300	6,995	6,765	211	19	305
%	100.0	95.8	92.7	2.9	0.2	4.2

In addition to slight improvement in the quantitative aspect of buildings, there was substantial qualitative upgrading as well, especially in regard to materials of construction. As can be noted from Table 5.2, the number of buildings constructed entirely in concrete rose from 65 in 1972 to 1,595 in 1983, that is from 1.3% to 22.9%. The number of buildings with concrete walls and non-concrete roofs rose from 68 (1.3%) to 662 (9.5%) during the same period. This shows that Rodriguans too, like their countrymen on the main island, are very much conscious of cyclones that regularly hit the island and destroy large numbers of structures, especially those which are of flimsy or non-durable materials.

Table 5.2 - Buildings by type of wall and roof materials, 1972 and 1983

Type of wall and roof material	1972		1983	
	Number	%	Number	%
Concrete walls and roof	65	1.3	1,595	22.9
Concrete walls and wood, iron or tin roof	67	1.3	486	7.0
Concrete walls but roof other than concrete, wood, iron, or tin	1	-	176	2.5
Wood, iron, or tin walls and roof	3,846	76.2	4,451	63.9
Walls and roof other than concrete, wood, iron or tin	1,071	21.2	25	3.7
Total	5,050 1/	100.0	6,962 2/	100.0

1/ excluding 53 temporary shelters

2/ excluding 14 temporary shelters

However, even in 1983, two-thirds of all buildings still had both their walls and their roof made of wood, iron or tin. It may be that people are reluctant to make big investments in houses which have to be put up on crown lands of which they are not owners. Hence the structures are neither on solid foundations nor of strong materials. This coupled with frequent cyclones makes the life of buildings relatively low. It is believed that the average life length of buildings in Rodrigues was around 15 years in 1972. This figure is estimated to have increased to around 27 years in 1983 because of a larger proportion of concrete structures.

Table 5.3 - Residential and partly residential buildings by year of completion, 1972 and 1983

Census Year	Year of completion					
	Before 1960	1960 - 72	1973 - 74	1975 - 79	1980 - 81	1982 - 83
1972	1,349 1/	3,701	N.A.	N.A.	N.A.	N.A.
1983	1,574 2/	1,228 3/	285 3/	1,833	1,254	788

1/ includes 351 buildings whose year of completion was not stated

2/ Includes 516 buildings whose year of completion was not stated

3/ The actual numbers were 659 during 1960 - 68 and 854 during 1969 - 74

With a life length of 15 years, around 6.7% of the buildings in 1972 are anticipated to be lost every year. Thus in the 11-year period, the 5,050 units would be reduced to 2,355. This compares very favourably with the number of buildings (2,286) reported at the 1983 Census as having been constructed before 1973 (Table 5.3). Some of the difference could be due to the 516 buildings whose year of construction was not stated.

To obtain the number of new constructions between 1972 and 1983 it is necessary to make assumptions about the life length of buildings constructed during the periods 1973 - 74, 1975 - 79, 1980 - 81 and 1982 - 83. These periods have been taken because they are the ones for which year of completion data are available. If it is assumed that the life length of buildings constructed during each of these periods is 30, 40, 50 and 60 years respectively, which implies faster improvement during the more recent periods, then the number of buildings constructed during 1972 - 83 comes out at around 4,600.

There was only marginal change between 1972 and 1983 in the distribution of buildings by type as shown in Table 5.4. About 96% of buildings were used wholly as one housing unit both in 1972 and 1983. However, there was a slight increase between the two years in the number of buildings with more than one housing unit, whilst the number of improvised housing units reduced from 53 in 1972 to only 4 in 1983.

Table 5.4 - Residential and partly residential buildings[1/] by type, 1972 & 1983

Type of building	1972		1983	
	Number	%	Number	%
I. Used wholly as one housing unit	4,814	95.7	6,588	96.0
II. Containing more than one housing unit	10	0.2	47	0.7
III. Partly residential	154	3.1	211	3.1
IV. Used as improvised housing unit	53	1.0	4	0.1
V. Not intended for habitation but used as such	-	-	10	0.1
Total	5,031	100.0	6,860	100.0

1/ Excluding hotels and institutions, and detached rooms intended for use by part of a household

5.4 Housing units

Although buildings are the structures within which most people live, the basic unit relevant for an analysis of the living conditions of households is the housing unit. This is a separate and independent place of abode intended for habitation or one not intended for habitation but occupied for living purposes. The idea of separateness implies that the person or group of persons in the housing unit can isolate themselves from other persons in the community for the purposes of sleeping, preparing and taking their meals, and sheltering themselves. The idea of independence implies that the occupants can come in or go out of their housing unit without passing through the premises of somebody else.

According to the 1972 census the number of residential and partly residential buildings (excluding hotels and institutions) was 5,103 of which 53 were improvised housing units and 72 were "one of several (detached) buildings which together comprise one housing unit." If the improvised and detached buildings are excluded, then there were 4,978 buildings with at least one housing unit each in 1972. There were 10 buildings which had more than one housing unit each, and if it can be assumed that each of these had an average of 3 housing units then the number of housing units is expected to be around 4,998. However, the published 1972 census data indicate that there were only 4,763 housing units of which 4,711 were principal residences. Hence it appears that there were about 235 housing units which were probably vacant at the time of the 1972 census. With 4,998 housing units for 4,978 buildings the ratio of housing units to buildings was therefore 1 : 1 in 1972.

At the 1983 Census the number of residential and partly residential buildings (excluding hotels and institutions) was 6,976 of which 14 were improvised housing units and 116 detached rooms for use by part of a household. If the improvised housing units and detached rooms are excluded then the number of residential and partly residential buildings was 6,846. The number of housing units was 6,915 which gives a 1 : 1 ratio of housing units to buildings for 1983 as well.

The 1983 census also enumerated 378 vacant buildings the vast majority (372) of which were buildings intended to be used wholly as one housing unit. Three of the remaining six were buildings intended to be used as one housing unit but crudely subdivided into smaller housing units, whilst the other three were buildings used partly for residential and partly for other purposes.

The stock of housing units has thus increased by about 1,900 during the intercensal period 1972 - 83, which represents a geometric growth of 3.0% per year. This rate is satisfactory when compared with an annual growth of 2.7% in the population.

The percentage of housing units which are privately owned is high and has increased only marginally from 98.2 in 1972 to 98.9 in 1983. Considering the households living within housing units, Table 5.5 indicates that there has been a slight reduction in owner occupancy but more than a compensatory increase in free accommodation. On the whole there seems to have been some improvement in the tenure status of households.

Table 5.5 - Households in housing units used as principal residence by tenure of household, 1972 and 1983

Tenure	1 9 72		1 9 8 3	
	Number	%	Number	%
Owner	4,549	95.2	6,273	94.2
Tenant	100	2.1	69	1.0
Sub-tenant	-	-	-	-
Free	66	1.4	177	2.7
Other	63	1.3	138	2.1
Total	4,778	100.0	6,657	100.0

5.5 Amenities

For decent, safe and comfortable living, a household needs, in addition to a bare dwelling, certain amenities like protected water supply, toilet facilities, kitchen, bath-room and facilities like electricity, refuse disposal and so forth. Both in 1972 and 1983 households were asked to give information on the availability or otherwise of such amenities and facilities whether in the housing unit itself or elsewhere. Several tabulations have been prepared to study the situation at the census dates and also to assess the progress over time. The data will provide planners with information in order to articulate action programmes based on the existing situation and the anticipated health, social and other problems.

From Table 5.6 it is noted that there has been an improvement in every aspect except refuse disposal. However, the improvements have not been uniform. Especially disturbing is the finding that still half the number of households do not have access to piped water, and almost all the others have to depend upon river, well, and spring water (Table 5.7) which may not be safe. The increase in bathing facilities is creditable, but with half the households not having piped water and with the general dearth of water in the island, how far the mere existence of bathing facilities will ensure better hygiene is a moot point. However Table 5.8 shows that there has been some improvement in bath facilities with water.

Table 5.6 - Percentage of housing units with certain amenities, 1972 and 1983

Amenities	1972	1983
Piped water	46.0	50.5
Electricity	0.7	19.0
Toilet	45.0	86.7
Bathroom	12.8	43.4
Kitchen	72.1	93.2
Refuse disposal facilities	46.2	33.8

Table 5.7 - Housing units by source of water supply, 1972 and 1983

Source of water supply	1972		1983	
	Number	%	Number	%
Piped water :				
inside housing unit	251	5.3	563	8.1
outside but on premises	999	21.2	1,885	27.3
public fountain	914	19.5	1,043	15.1
Well or river	2,154	45.7	3,362	48.6
Other and not stated	393	8.3	62	0.9
Total	4,711	100.0	6,915	100.0

Table 5.8 - Housing units by type of bathing facilities, 1972 and 1983

Type of bathing facilities	1972		1983	
	Number	%	Number	%
Bathroom inside housing unit :				
with running water	145	3.1	411	5.9
without running water	46	1.0	113	1.6
Bathroom outside housing unit :				
with running water	253	5.4	306	4.4
without running water	158	3.3	2,174	31.5
No bathroom	4,090	86.8	3,911	56.6
Not stated	19	0.4	-	-
Total	4,711	100.0	6,915	100.0

Improvements have also occurred in the availability of toilet facilities, both in quantitative and qualitative terms and these will certainly have a salubary effect on health and general living conditions. Table 5.6 shows that the proportion of housing units with toilet facilities increased from 44.4% in 1972 to 86.7% in 1983 whilst Table 5.9 indicates that some qualitative improvement in the types of toilet available has also occurred between the two years.

Table 5.9 - Housing units by type of toilet facilities, 1972 & 1983

Type of toilet facilities	1972		1983	
	Number	%	Number	%
Flush toilet	98	2.1	305	4.4
Pit latrine :				
water seal	29	0.6	55	0.8
other	1,773	37.6	5,332	77.2
Pail	220	4.7	300	4.3
None	2,572	54.6	923	13.3
Not stated	19	0.4	-	-
Total	4,711	100.0	6,915	100.0

Kitchen facilities are becoming available to more and more housing units. Table 5.10 shows that in fact the percentage of housing units without a kitchen dropped from 26.9% in 1972 to 6.8% in 1983. Although a high proportion of kitchens continue to be located outside housing units, the very fact of availability of kitchen may result in better quality of food, as well as lighten the burden of the housewife in her daily chores, of which cooking the family meals is one of the most important. It may also be mentioned that

Table 5.10 - Housing units by availability of kitchen, 1972 and 1983

Availability of kitchen	1972		1983	
	Number	%	Number	%
Kitchen inside housing unit	215	4.6	944	13.6
Kitchen outside housing unit	3,210	68.1	5,501	79.6
No kitchen	1,267	26.9	470	6.8
Not stated	19	0.4	-	-
Total	4,711	100.0	6,915	100.0

whereas in 1972, 92.0% of households used wood as cooking fuel, this had dropped to 77.4% in 1983 (Table 5.11) mainly because of a switch to kerosene whose share increased from 2.8% in 1972 to 17.1% in 1983. There was also a new type of fuel, electricity, which was used by 4.6% of households in 1983 as the principal fuel for cooking.

Table 5.11 - Households by principal fuel used for cooking, 1972 & 1983

Principal fuel used	1972		1983	
	Number	%	Number	%
Wood	4,393	92.0	5,155	77.4
Charcoal	211	4.4	20	0.3
Kerosene	134	2.8	1,137	17.1
Electricity	-	-	305	4.6
Other and not stated	40	0.8	40	0.6
Total	4,778	100.0	6,657	100.0

Electricity became more widely available in recent years, and whilst almost no one had electricity in 1972, in 1983 almost one fifth of households were using electric power (Table 5.12). It has been noted in other countries that the provision of electricity has caused marked changes in the life of the people with the availability of added facilities for children's studies, recreation and lightening the chores of adults. Electrification has also been accompanied by reductions in fertility.

Table 5.12 - Housing units by availability of electricity, 1972 & 1983

Availability of electricity	1972		1983	
	Number	%	Number	%
With electricity :	30	0.6	1,316	19.0
from CEB	...	...	(1,260)	(18.2)
from other source	...	...	(56)	(0.8)
Without electricity	4,662	99.0	5,599	81.0
Not stated	19	0.4	-	-
Total	4,711	100.0	6,915	100.0

As regards refuse disposal it has been pointed out earlier that the situation has deteriorated. Table 5.13 shows that 74% of housing units in 1983 did not have proper facilities for refuse disposal as compared to 54% in 1972. This has been the result of a decrease, during the intercensal period in the proportion of housing units having refuse disposal facilities such as receptacles with or without cover, brick or stone enclosures and ash pits.

Table 5.13 - Housing units by refuse disposal facilities, 1972 and 1983

Refuse disposal facility	1972		1983	
	Number	%	Number	%
Receptacle :				
with cover	8	0.2	9	0.1
without cover	123	2.6	62	0.9
Brick or stone enclosure	106	2.3	21	0.3
Ash pit	1,924	40.8	1,764	25.5
Other	2,532	53.7	5,059	73.2
Not stated	18	0.4	-	-
Total	4,711	100.0	6,915	100.0

5.6 Living space

An important consideration in the study of living conditions is the concept of density of persons per room, which is a good indication of the extent of crowdedness, if any. In Mauritius, if in any housing unit there are 3 or more persons for each room used for living purposes (i.e. excluding kitchen, bathroom, garage, lobby, etc) then overcrowding is considered to be present.

Tables 5.14 and 5.15 which present data for 1972 and 1983 respectively, indicate that there has been some improvement between the two census years in so far as availability of living space is considered. Firstly, the average number of rooms per housing unit has increased. It can be calculated from the tables that this indicator improved from 2.70 in 1972 to 2.79 in 1983. Then the density per room has also improved from 1.88 persons in 1972 to 1.81 in 1983. However, if it is considered acceptable to have up to 3 persons per room, then it is estimated from other published data that about 15% of households were living in congested conditions in 1983.

Table 5.14 - Housing units (used as principal residence), number of occupants, and density per room by number of rooms for living purposes per housing unit, 1972

No. of rooms for living purposes per housing unit	Housing units		Number of persons	Density per room
	Number	%		
1	401	8.64	1,397	3.48
2	2,423	52.23	11,670	2.41
3	482	10.39	2,573	1.78
4	990	21.34	5,814	1.47
5	215	4.64	1,291	1.20
6	94	2.03	625	1.11
7 or more	34	0.73	240	0.96
Total	4,639 1/	100.00	23,610	1.88

1/ excluding 22 for which number of rooms was not stated

Table 5.15 - Housing units (in permanent dwellings), number of households and persons, and density per room by number of rooms for living purposes per housing unit, 1983

Number of rooms for living purposes per housing unit	Housing units		Households		Number of persons	Density per room
	Number	%	Number	%		
1	385	5.89	489	7.35	1,306	3.39
2	2,995	45.82	3,059	45.99	13,750	2.30
3	1,474	22.55	1,459	21.93	8,137	1.84
4	1,256	19.21	1,242	18.67	7,093	1.41
5	265	4.05	249	3.75	1,636	1.23
6	109	1.67	100	1.50	659	1.01
7 or more	53	0.81	54	0.81	344	0.85
Total	6,537	100.00	6,652	100.00	32,925	1.81

5.7 Households

There were 6,657 households as enumerated at the housing census carried out between mid March and mid May 1983. At the population census held as of 2 - 3 July 1983 the number of households came out to be 6,674 i.e. a difference of only 17. This is not very large and hence gives confidence in the figures.

The population figures from the two sources also were remarkably close. The housing census gave a population of 32,901 whereas the population census produced a population of 33,082. With 2.7% growth rate and a three-month interval between the two operations, this difference in figures can easily be explained.

In 1972 there were 4,937 households. Thus we note that between 1972 and 1983 there was a slight fall in average household size from 5.02 to 4.96. The fall in fertility can easily explain this. The growth rate of households and population remained virtually the same.

5.8 Household structure and composition

Households are generally formed by young married couples who during their life time produce children and thus increase the household size and modify household structure (age-sex composition). At any point in time there will be households in various stages of formation through the operation of fertility, mortality and migration, as members can be added through fertility and in migration and depleted by mortality and out migration. Thus the demographic components are important determinants of household size and composition.

Socio cultural, psychological and economic factors also influence the type of living arrangements through composite or extended family systems, doubling up and even allowing distantly related or even strangers to share housing facilities.

Therefore the marital status distribution of a population is an important determinant of household formation because not only households may change when a change occurs in marital status from single to married, but also when mortality, migration or other socio economic factors removes one of the partners.

Since fertility is an important determinant of household size and composition any changes in level or pattern of fertility will influence future households.

Table 5.16 gives the marital status distribution by sex and age groups for 1962, 1972 and 1983. One can notice that there has been some changes in marital composition over time.

Fertility as measured by crude birth rate remained high and more or less constant till around 1981 but in recent years there has been a perceptible fall. It is anticipated to fall further and reach replacement level towards the end of the century. This fall in fertility will have an immediate impact on household size and composition and it is expected that the average household size which is 4.96 in 1983 will reduce to 4.3 by 2002.

Unfortunately household size distribution and composition are available only from the 1983 Census. From Table 5.17 it can be seen that despite the large household size, there are sizeable number of small households with 1 - 3 members. Almost half the households have 4 or less members. It is understood that in Rodrigues young adult males build their own dwelling and stay in their own structures which may be consisting of only one or two rooms. It can be derived from Table 5.18 that a household has on average of only 2.73 unmarried children and .06 married children i.e. 2.79 children living with the head. The total fertility rate in 1983 was 5.2 and has been higher in the past. Thus only half the number of children are on the average found in their parents' households.

At the same time, an average household has 0.76 spouse. We can see from Table 5.19 that there are 163 male and 292 female heads who are single and 164 male and 653 female heads who are either widowed, divorced or separated. Out of 6,674 households it therefore works out that about 19% of all heads of households do not have a spouse.

An average household has in addition to spouse, children and close relatives, some other relatives, and visitors. On an average a household has only 0.14 other relatives and 0.06 visitors. Thus a household is generally composed of the head, spouse, their children, spouse of children and grand children.

Table 5.19 shows the headship rates by age and sex. The marital status composition of heads is also shown to bring forward the type of living arrangements in the island. It can be noted that around 18% of households only are headed by females most of whom are single, widowed, divorced, or separated. Rarely does one find married women being head of a household when the husband is around. Only about 20% of female headed households are headed by married women and this is only 4% of all households. Single, widowed, divorced and separated women on the other hand are generally found more

Table 5.16 - Population by age, sex and marital status, 1962, 1972 and 1983

Age	1962						1972						1983					
	Single		Married		Widowed/ divorced/ separated		Single		Married		Widowed/ divorced/ separated		Single		Married		Widowed divorced/ separated	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
15 - 19	901	778	8	140	-	3	1,120	983	16	204	-	1	1,924	1,562	34	367	-	9
20 - 29	776	411	680	1,173	5	21	857	394	800	1,217	11	49	1,241	728	1,364	1,815	21	73
30 - 39	82	69	880	871	8	53	115	55	1,206	1,252	17	71	115	161	1,474	1,268	24	73
40 - 49	20	31	648	642	28	66	27	40	853	699	27	84	57	90	1,195	1,075	34	145
50 - 59	19	20	496	428	29	85	18	20	549	452	31	138	33	71	776	596	47	148
60 +	9	21	333	228	56	207	34	51	519	393	79	344	49	97	649	447	110	435
TOTAL	1,807	1,330	3,045	3,482	126	435	2,181	1,543	3,943	4,217	165	687	3,419	2,709	5,492	5,568	236	883

Table 5.17 - Households by size, 1983

Size of household	Number of households	Percentage
1 person households	485	7.3
2 persons households	795	11.9
3 persons households	1,020	15.3
4 persons households	1,000	15.0
5 persons households	873	13.1
6 persons households	762	11.4
7 persons households	597	8.9
8 persons households	425	6.4
9 persons households	314	4.7
10+ persons households	403	6.0
T O T A L	6,674	100.0

Table 5.18 - Population in households by relationship to head of household, 1983

Relationship to head of household	Number	Percentage
Head	6,674	20.3
Spouse	5,067	15.4
Unmarried children	18,255	55.4
Married children	401	1.2
Spouse of married children	184	0.6
Grand-children	997	3.0
Other relatives	956	2.9
Visitors	384	1.2
Not stated	2	0.0
T O T A L	32,920	100.0

Table 5.19 - Headship rates (%) by sex, age-group and marital status, 1983

Males

Age-group	Total			Marital Status								
				Single			Married			Widowed/Divorced/separated		
	Heads	Population	Headship rate	Heads	Population	Headship rate	Heads	Population	Headship rate	Heads	Population	Headship rate
20 - 24	447	1,467	30.47	47	956	4.92	396	503	78.73	4	7	57.14
25 - 29	837	1,160	72.16	41	285	14.39	789	861	9.64	7	14	50.00
30 - 39	1,444	1,616	89.36	27	115	23.48	1,401	1,474	95.05	16	24	66.67
40 - 49	1,197	1,287	93.01	22	57	38.40	1,151	1,195	96.32	23	34	67.65
50 - 59	794	857	92.65	13	33	39.39	743	776	95.75	38	47	80.85
60 & over	696	781	89.12	13	29	44.83	606	640	94.69	76	110	69.09
All ages 20+	5,415	7,168		163	1,475		5,086	5,449		164	256	

Females

20 - 24	68	1,499	4.54	38	547	6.95	17	915	1.86	13	33	39.39
25 - 29	83	1,121	7.40	37	181	20.44	19	900	2.11	27	40	67.50
30 - 39	167	1,504	11.10	68	161	42.24	45	1,268	3.55	54	75	72.00
40 - 49	241	1,310	18.40	52	90	57.78	57	1,075	5.30	132	145	91.03
50 - 59	220	816	27.00	43	71	60.56	50	596	8.39	127	148	85.81
60 & over	418	959	43.59	54	86	62.79	64	442	14.48	300	479	69.93
All ages 20+	1,197	7,209		292	1,136		252	5,196		653	870	

frequently as heads of their households. With the anticipated increase in female population due to better mortallity conditions, increased age at marriage as well as further accretion to widowed/divorced/separated categories because of widening mortality differentials and socio-economic changes, it is anticipated that there will be proportionally more female headed households in the future.

Thus the scenario on the household level will be a fall in size, reduction in number of children and adults and more female headed households.

5.9 Projections

As we do not have data on headship for more than one period it is not possible to project the future rates. Moreover it will be too detailed and may in fact mislead unless the information is available in good quantity and quality. An acceptable method for projection of households is through average household size.

As mentioned earlier the household size fell slightly between 1972 and 1983. Fertility is expected to fall much further between 1987 and 2002 so that the household size can be assumed to reduce from 4.96 in 1983 to 4.3 in 1987 and then remain more or less constant thereafter.

Under this assumption the number of households can be worked out from the population projections. This comes out to be 7,900 in 1987, 9,100 in 1992, 10,000 in 1997 and 10,800 in 2002. The households are thus expected to increase by around 4,100 between 1983 and 2002.

To estimate housing needs one has to keep in mind that there were in 1983 slightly more housing units than households (6,915 housing units for 6,674 households) and that during the next 20 years some of the buildings will dilapidate and need to be replaced.

It has been observed that the average life of a building in 1983 was 27 years but was only 15 years in 1972. This increase was mainly due to improvements in quality of buildings. It is anticipated that future construction will be mostly of cement-concrete type with a life of 60 or more years. With a higher proportion of such durable housing units and reduction in the flimsy structures, the average life is assumed to be 35 years for the period 1983 - 2002.

With this assumption the number of units required to house the new households and provide shelter to those whose dwelling may be lost, come out

as 1,800 during 1983 - 87, 2,400 during 1987 - 92 and 2,300 during each of the periods 1992 - 97 and 1997 - 2002. This shows that for the period 1983 - 2002 an additional 8,800 units need to be constructed to adequately shelter the anticipated population.

It may be worth comparing this requirement with what was achieved during the 11 year period 1972 - 83. We had estimated that around 4,700 units must have been built i.e. 427 per year. The requirement for the next 20 years is 405 per year almost the same as that for the immediate past. However it should be pointed out that the achievement of the 1972 - 83 period is really commendable and was geared to provide shelter to those who either lost their homes because of the cyclones or were destitute. Whether the same enthusiasm and resources will be available in the next 20 years is something which policy makers will have to decide. On the part of statisticians and demographers the scenario unfolding is what has been presented.

Table 5A.1 - Number of households by size of households and number of family nuclei, 1983 census

Size of Household	Family Nuclei				
	TOTAL	0	1	2	3 or more
All households	6,674	706	5,675	275	18
1 person	485	485	-	-	-
2 persons	795	132	663	-	-
3 persons	1,020	49	971	-	-
4 persons	1,000	22	963	15	-
5 persons	873	5	828	40	-
6 persons	762	10	708	44	-
7 persons	597	1	552	42	2
8 persons	425	-	381	40	4
9 persons	314	-	275	36	3
10 persons or more	403	2	334	58	9

Table 5A.2 - Population in households by size of households and number of family nuclei, 1983 census

Size of Household	Family Nuclei				
	TOTAL	0	1	2	3 or more
All households	32,920	1,098	29,529	2,109	184
1 person	485	485	-	-	-
2 persons	1,590	264	1,326	-	-
3 persons	3,060	147	2,913	-	-
4 persons	4,000	88	3,852	60	-
5 persons	4,365	25	4,140	200	-
6 persons	4,572	60	4,248	264	-
7 persons	4,179	7	3,864	294	14
8 persons	3,400	-	3,048	320	32
9 persons	2,826	-	2,475	324	27
10 persons or more	4,443	22	3,663	647	111

Table 5A.3 - Population in private households by relationship to head of household, age-group and sex, 1983 census

Both sexes

Relationship to head of household	Total population	Age-group (years)								
		15	15-19	20-24	25-34	35-44	45-54	55-64	65 +	Not stated
TOTAL	32,920	14,731	3,878	2,945	3,872	2,922	2,069	1,322	1,150	31
Head	6,674	1	54	515	1,740	1,548	1,237	826	746	7
Spouse	5,067	6	266	808	1,443	1,199	744	389	211	1
Unmarried children	18,255	13,493	3,112	1,202	355	61	22	7	-	3
Married children	401	4	74	155	114	37	11	5	-	1
Spouse of married children	184	2	62	65	46	4	4	1	-	-
Grand-children	997	840	107	34	12	-	1	-	-	3
Other relatives	956	300	149	105	76	37	30	72	178	9
Visitors	384	85	53	60	86	36	20	22	15	7
Not stated	2	-	1	1	-	-	-	-	-	-

Table 5A.3 (cont'd) - Population in private households by relationship to head of household, age-group and sex, 1983 census

M a l e

Relationship to head of household	Total population	Age-group (years)								
		< 15	15-19	20-24	25-34	35-44	45-54	55-64	65 +	Not stated
TOTAL	16,453	7,387	1,942	1,456	1,995	1,459	1,058	657	482	17
Head	5,456	1	37	447	1,570	1,357	1,000	616	425	3
Spouse	80	-	-	7	20	22	14	8	9	-
Unmarried children	9,555	6,782	1,717	793	218	28	12	3	-	2
Married children	141	-	16	64	46	7	6	2	-	-
Spouse of married children	60	-	4	25	26	3	1	1	-	-
Grand-children	500	406	59	26	6	-	1	-	-	2
Other relatives	432	154	78	57	42	24	13	16	43	5
Visitors	229	44	31	37	67	18	11	11	5	5
Not stated	-	-	-	-	-	-	-	-	-	-

Table 5A.3 (cont'd) - Population in private households by relationship to head of household, age-group and sex, 1983 census

F e m a l e

Relationship to head of household	Total population	Age-group (years)								
		< 15	15-19	20-24	25-34	35-44	45-54	55-64	65 +	Not stated
TOTAL	16,467	7,344	1,936	1,489	1,877	1,463	1,011	665	668	14
Head	1,218	-	17	68	170	191	237	210	321	4
Spouse	4,987	6	266	801	1,423	1,177	730	381	202	1
Unmarried children	8,700	6,711	1,395	409	137	33	10	4	-	1
Married children	260	4	58	91	68	30	5	3	-	1
Spouse of married children	124	2	58	40	20	1	3	-	-	-
Grand children	497	434	48	8	6	-	-	-	-	1
Other relatives	524	146	71	48	34	13	17	56	135	4
Visitors	155	41	22	23	19	18	9	11	10	2
Not stated	2	-	1	1	-	-	-	-	-	-

Table 5A.4 - Households by type and sex of head, 1983 census

Type of household	Both sexes	Male	Female
All types	6,674	5,456	1,218
Type I : One person households	486	253	233
Type II : Couples without children	512	500	12
Type III : (Couples with unmarried children only (One parent households with unmarried children only	4,238	3,682	556
Type IV : (Couples with unmarried children and other relatives 1/ (One parent households with unmarried children and other relatives 1/	359	303	56
Type V : (Couples with married children (without grandchildren) as well as unmarried children (if any) (One parent households with married children (without grandchildren) as well as unmarried children (if any)	105	69	36
Type VI : (Couples with married children and grandchildren as well as unmarried children (if any) (One parent households with married children and grandchildren as well as unmarried children (if any)	228	146	82
Type VII : (Households consisting of head of household and other relatives 1/ (Couples living with grandchildren and/or other relatives 1/ (Couples with unmarried children and grandchildren (Couples with unmarried children and unrelated persons (Other households	746	503	243

1/ "Other relatives" exclude spouse, children, spouse of children and grandchildren.

Table 5A.5 - Households by sex and age-group of head, and type of household, 1983 census

Both sexes

Age-group	Type of household							
	TOTAL	I	II	III	IV	V	VI	VII
TOTAL	6,674	486	512	4,238	359	105	228	746
< 20	55	20	8	9	1	-	-	17
20 - 24	515	38	109	310	21	-	-	37
25 - 29	920	39	90	703	55	-	-	33
30 - 34	820	23	38	654	59	-	2	44
35 - 39	791	28	26	610	75	7	2	43
40 - 44	757	26	15	587	40	10	19	60
45 - 49	681	29	23	477	44	18	25	65
50 - 54	556	30	24	352	26	20	32	72
55 - 59	458	35	32	212	21	16	49	93
60 - 64	368	46	35	153	11	13	33	77
65 +	746	170	112	169	6	20	66	203
Not stated	7	2	-	2	-	1	-	2

Table 5A.5 (contd) - Households by sex and age-group of head, and type of household, 1983 census

M a l e

Age-group	Type of Household							
	TOTAL	I	II	III	IV	V	VI	VII
TOTAL	5,456	253	500	3,682	303	69	146	503
∠ 20	38	16	8	3	-	-	-	11
20 - 24	447	34	107	263	14	-	-	29
25 - 29	837	36	89	635	48	-	-	29
30 - 34	733	21	38	586	51	-	1	36
35 - 39	711	21	26	550	71	5	2	36
40 - 44	646	18	15	516	33	6	12	46
45 - 49	551	19	20	405	36	11	17	43
50 - 54	449	13	22	300	20	15	26	53
55 - 59	345	16	30	175	17	13	32	62
60 - 64	271	20	35	125	9	7	24	51
65 +	425	38	110	123	4	11	32	107
Not stated	3	1	-	1	-	1	-	-

Table 5A.5 (contd) - Households by sex and age-group of head, and type of household, 1983 census

F e m a l e

Age-group	Type of Household							
	TOTAL	I	II	III	IV	V	VI	VII
TOTAL	1,218	233	12	556	56	36	82	243
20	17	4	-	6	1	-	-	6
20 - 24	68	4	2	47	7	-	-	8
25 - 29	83	3	1	68	7	-	-	4
30 - 34	87	2	-	68	8	-	1	8
35 - 39	80	7	-	60	4	2	-	7
40 - 44	111	8	-	71	7	4	7	14
45 - 49	130	10	3	72	8	7	8	22
50 - 54	107	17	2	52	6	5	6	19
55 - 59	113	19	2	37	4	3	17	31
60 - 64	97	26	-	28	2	6	9	26
65 +	321	132	2	46	2	9	34	96
Not stated	4	1	-	1	-	-	-	2

Chapter 6

F E R T I L I T Y

6.1 Introduction

In most countries, fertility is the main factor responsible for changes in the size and composition of the population. The problem of rapid population growth is most often the result of a continuous and large excess of births over deaths, unaccompanied by any substantial out migration. In the island of Rodrigues, the rapid growth of the population since the past several decades has been caused by persistently high fertility and falling mortality. This rapid growth of population has brought about problems of food, education, employment, housing, health, sanitation and has added extra pressures on the already limited resources of the island.

This chapter examines levels, trends and patterns of fertility in the island of Rodrigues. Two brief sections are also devoted to the analysis of nuptiality and contraceptive use as determinants of fertility change.

6.2 Sources and quality of data

Vital Registration System. A broad description of fertility levels and trends in the island of Rodrigues can be obtained by combining data on live births, collected through the vital registration system, and population data obtained from censuses. But detailed analysis of fertility by age, occupation, marital status and other socio-economic characteristics of mother or father has not been possible for the period prior to the seventies. Although the recording of live births exists since long, the additional information allowing for a more complete analysis of fertility differentials has never been tabulated. The only information available was merely the total number of live births by sex, without any further breakdown by detailed demographic or socio-economic characteristics. Since the early 1970's more detailed tabulations of vital registration data have been possible with computerisation facilities. But still the non-availability of data on the population at risk by age, occupation, etc. limited the use of vital registration data for analysis of fertility determinants and differentials. Such data can be obtained only from censuses and surveys.

Censuses. Besides providing data on the age and other characteristics of the population at risk for the calculation of various rates and indices, censuses have also provided additional birth statistics for a more complete analysis of fertility. In the island of Rodrigues, fertility data was first collected in the 1952 census when a question was put to all ever-married women, asking about the total number of children born alive to them. This question was again repeated in the 1962 census. For the 1972 and 1983 censuses, fertility

information was secured through the recording of the birth history of all ever-married women under 55 years of age. Unfortunately, the fertility data from the 1952, 1962 and 1972 censuses have never been tabulated or analysed. An attempt has been made to analyse the 1983 census data but this has been hampered by problems of data processing. A major problem of the 1983 census fertility data was that the birth history questions were not completed by about six percent of eligible women. In general, the proportion of ever-married women not answering these questions increased with age, that is, non-response was higher for older women. Another deficiency found was that there was significant underreporting of births for those women who did answer the birth history questions. Underreporting was substantially higher for older women. All these problems, associated with that of working with small numbers, particularly in cells of detailed cross-classifications, would make difficult the interpretation of the analysis results. However quite a few tables have been produced which allow us at least to check on the reliability of the vital registration data.

6.3 Comparison of fertility measures from census with those from vital registration system

One convenient measure of completed fertility that can be derived from the 1983 census data is the average number of children ever-born (average parity) to ever-married women in different age categories (Table 6.1). But first an evaluation of the distribution of ever-born children by sex and age group of mothers shows a suspiciously high sex ratio for children of women 35-39 years of age. It is possible that this is due to displacement of male births for women in the next older age group (40-44) where the sex ratio falls below the average of 101-103 usually observed from the more complete vital registration data. It is seen that the average parity of all ever-married women increases for each successive five-year age groups up to age 40-44 and then falls for the last two age groups. At these older age groups, births history data have the usual problems of misdating and omission, especially since they are concerned with births that occurred in the distant past. The mean number of children ever-born to women aged 45-49 years, is a measure of completed family size, that is, it indicates the actual reproductive performance of ever-married women up to age 50 (5.9 children in 1983).

Alternatively, by comparing the average parity of women (irrespective of marital status) in successive five-year age groups with cumulated period fertility obtained from the census births which occurred in the last twelve months, it was possible to derive a set of age specific fertility rates. The derivation of these fertility rates are shown in Table 6.2 below and they are compared with those obtained from the vital registration system. The Vital Registration method, it must be pointed out, yields the more accurate set of fertility rates and by comparison with those obtained from census birth-history data reveals the type and magnitude of the errors inherent in the latter system.

Table 6.1 - Children ever born alive by age group of women, 1983 census

Age group	Ever-married women	Children ever born				Average number of children per ever-married woman		
		Male	Female	Both sexes	Sex Ratio	Male	Female	Both Sexes
15 - 19	374	147	142	289	103.5	0.39	0.38	0.77
20 - 24	932	778	774	1,552	100.5	0.83	0.83	1.68
25 - 29	926	1,390	1,366	2,756	101.8	1.50	1.48	2.98
30 - 34	648	1,318	1,267	2,585	104.0	2.03	1.96	3.99
35 - 39	626	1,776	1,607	3,383	110.5	2.84	2.57	5.40
40 - 44	607	1,803	1,824	3,627	98.8	2.97	3.00	5.98
45 - 49	483	1,432	1,40	2,840	101.7	2.96	2.92	5.88
50 - 54	335	935	9	1,841	103.2	2.79	2.70	5.50
Total	4,931	9,579	9,294	18,873	103.1	1.94	1.88	3.83

Table 6.2 - Estimation of fertility based on information about children ever born, 1983

Age of women	Average parity	Period fertility rate	Estimated parity equivalent	P/F ratio	ASFR	ASFR (vital registration)	Absolute difference	Percentage difference
15 - 19	0.1487	0.0576	0.1204	1.235	0.0873	0.0908	- 0.0035	- 4.0
20 - 24	1.0399	0.1944	0.8414	1.236	0.2539	0.2448	0.0091	3.6
25 - 29	2.4541	0.2217	1.9354	1.268	0.2751	0.2348	0.0403	14.6
30 - 34	3.3659	0.1849	2.9210	1.152	0.2276	0.2057	0.0219	9.6
35 - 39	4.5716	0.1730	3.8458	1.189	0.2082	0.1554	0.0528	25.4
40 - 44	4.9753	0.0768	4.3988	1.131	0.0858	0.0768	0.0090	10.5
45 - 49	4.8630	0.0223	4.6277	1.051	0.0216	0.0211	0.0005	2.3

It can be seen that the fertility rates for age groups 15-19, 20-24 and 45-49 are quite comparable. Substantial differences however exist for ages 25-44. They probably stem from the fact that the assumptions necessary for the validity of the method may not hold and also from underreporting of births that occurred in the past twelve months. This is seen from table 6.3 below, where it is possible to compare the reported births of last year from census schedules with those obtained from the vital registration method.

Table 6.3 - Comparison of births of last year from census with those obtained from the vital registration method

	Male	Female	Both sexes	Sex ratio
Births during last year:				
Census	510	485	995	105.2
Vital registration method	581	557	1,138	104.3
Ratio of census to Vital Registration method	0.88	0.87	0.87	

It is found that the proportion of census births to vital events is roughly 87 percent, that is, about 13 percent of births seem to have been missed by census. The difference in omission rate between the two sexes appears to be negligible.

The broad conclusions to be drawn from the comparison of fertility rates obtained from census and vital registration system are that for some age groups, the rates were quite comparable while for others, substantial differences existed. Two major problems found were that the fertility experience of about six percent of eligible ever-married women under 55 years of age went unrecorded; and secondly, there appeared to be significant underreporting of children ever-born. Finally, the difficulty of working with small numbers rendered the interpretation of rates and other measures based thereon very difficult. However, the census data provided an important check on the reliability of the Vital Registration data.

6.4 Nuptiality

Nuptiality is considered an important determinant of fertility change. Marriage rates determine the number of women becoming exposed to the risk of childbearing whilst the age at which women marry determines the length of a woman's exposure to childbearing and ultimately the size of the completed family.

The nuptiality analysis presented in this section will be carried out by using data obtained exclusively from census sources. Throughout the

analysis, a married person is defined as someone living in any type of union, including not only unions sanctioned legally or religiously or both but also consensual unions.

Marital status. Marital status composition is an important characteristic of any population. Changes in marital status, from single to married or from married to either widowed, divorced or separated entail changes in the rates of family formation and family dissolution. The marital status composition of the population by age and sex as at the last two censuses is shown in Tables 6.4 and 6.5.

Trends in proportions ever married. The extent to which persons marry in a population can be discerned from the data showing the proportions ever-married which relate the number of ever-married persons (i.e. who are either currently married, widowed, divorced or separated) to the total population.

Table 6.6 below shows the percentage population ever-married by age group and sex at the last two censuses in the island of Rodrigues. As can be seen, for both males and females, marriage is virtually universal. In 1983, 93.5 percent of males had been married by age 50 (98.1 percent in 1972) while for females, the corresponding percentage was 94.2 (95.6 in 1972). Marriage is relatively early among females. In 1972, 17.8 percent of women had already been married by age 20, 65.2 percent by age 25 and 89.5 percent by age 30. In 1983, the corresponding figures were 19.4, 63.5 and 83.8 percent respectively. For males as well as for females, the proportion ever-married increases with age but as might be expected, there are significant differences between the two sexes, especially at the young adult ages where females marry earlier than males. For instance, while 74.2 percent of the male population in age group 25-29 in 1983 had already entered into a union, for females, the corresponding figure was 83.8 percent. For males, it is seen that the proportions ever-married below age 30 have all increased during the last intercensal period. This would mean that males tend to marry earlier while females tend to postpone marriage. Although not impossible, it is probable that this could be due to inherent problems in the census data. In particular, it could be due to some overreporting in the category consensually married by males in the two youngest age groups and further to difficulties of working with small population figures. Among the male population currently married in the age group 15-19 years in 1983, for example, 79.4 percent were reported as married consensually, a figure which appears to be high. For the same age group in 1972, only 50.0 percent of married males were reported as living in consensual unions.

Table 6.4 - Population by marital status and age group, Male, 1972

Age group (in years)	Total	Single	Married 1/	Consensually married	Widowed	Divorced	Separated	Not stated
All ages	12,270	8,162	3,541	402	83	4	78	-
Under 15	5,991	5,991	-	-	-	-	-	-
15 - 19	1,136	1,120	8	8	-	-	-	-
20 - 24	901	651	177	69	-	-	4	-
25 - 29	767	206	497	57	1	-	6	-
30 - 34	716	64	591	54	1	-	6	-
35 - 39	622	51	505	56	2	-	8	-
40 - 44	511	17	445	38	5	1	5	-
45 - 49	396	10	344	26	3	2	11	-
50 - 54	315	6	259	38	4	-	8	-
55 +	862	22	691	53	65	1	30	-
Not stated	53	24	24	3	2	-	-	-

1/ Civilly and/or religiously married

Table 6.4 (cont'd) - Population by marital status and age group, Female, 1972

Age group (in years)	Total	Single	Married 1/	Consensually married	Widowed	Divorced	Separated	Not stated
All ages	12,499	7,505	3,536	687	484	8	195	84
Under 15	5,969	5,962	2	4	-	-	-	1
15 - 19	1,196	983	136	68	-	1	-	8
20 - 24	890	310	433	109	-	-	19	19
25 - 29	799	84	567	108	5	-	25	10
30 - 34	784	36	610	92	10	1	23	12
35 - 39	618	19	468	82	19	1	17	12
40 - 44	472	24	328	66	29	-	22	3
45 - 49	360	16	264	41	11	-	22	6
50 - 54	306	7	205	32	39	2	17	4
55 +	1,040	43	498	72	368	3	48	8
Not stated	65	21	25	13	3	-	2	1

1/ Civilly and/or religiously married

Table 6.5 - Population by marital status and age group, Male, 1983

Age group (in years)	Total	Single	Married 1/	Consensually married	Widowed	Divorced	Separated	Not stated
All ages	16,552	10,811	4,726	766	113	8	115	13
Under 15	7,392	7,392	-	-	-	-	-	-
15 - 19	1,958	1,924	7	27	-	-	-	-
20 - 24	1,467	956	337	166	1	1	5	1
25 - 29	1,160	285	710	151	1	1	12	-
30 - 34	850	75	679	83	-	-	12	1
35 - 39	766	40	624	88	1	-	11	2
40 - 44	703	38	579	70	5	1	9	1
45 - 49	584	19	495	51	6	1	12	-
50 - 54	484	18	402	45	4	1	14	-
55 +	1,154	44	886	83	95	3	40	3
Not stated	34	20	7	2	-	-	-	5

1/ Civilly and/or religiously married

Table 6.5 (cont'd) - Population by marital status and age group, Female, 1983

Age group (in years)	Total	Single	Married [2/]	Consensually married	Widowed	Divorced	Separated	Not stated
All ages	16,530	10,044 [1/]	4,733	846	633	6	246	22
Under 15	7,346	7,335	-	11	-	-	-	-
15 - 19	1,939	1,562	177	190	1	-	8	1
20 - 24	1,499	547	766	149	5	-	28	4
25 - 29	1,121	181	782	118	9	1	30	-
30 - 34	766	88	558	80	11	1	28	-
35 - 39	738	73	548	82	12	1	22	-
40 - 44	727	56	553	56	33	2	27	-
45 - 49	583	34	411	55	45	-	38	-
50 - 54	433	27	295	40	53	-	17	1
55 +	1,342	130	639	64	458	1	48	2
Not stated	36	11	4	1	6	-	-	14

1/ Includes 370 unmarried mothers

2/ Civilly and/or religiously married

Table 6.6 - Percentage 1/ ever-married by age group and sex, 1972 and 1983

Age group (years)	Male		Female	
	1972	1983	1972	1983
15 - 19	1.4	1.7	17.8	19.4
20 - 24	27.8	34.3	65.2	63.5
25 - 29	73.1	74.2	89.5	83.8
30 - 34	91.1	89.6	95.4	88.5
35 - 39	91.8	93.0	96.9	90.1
40 - 44	96.7	92.3	94.8	92.3
45 - 49	97.5	93.5	95.6	94.2
50 - 54	98.1	92.4	97.7	93.8
SMAM	25.6	24.8	21.3	21.7

1/ excluding age and marital status not stated

Age at marriage. A measure that can be used to summarise the data on proportion ever-married by age group is the singulate mean age at marriage (SMAM). It is defined as the average age of persons who ultimately marry before age 50. As expected from analysis of proportions ever-married, it is observed that the age at marriage for males has declined (from 25.6 years in 1972 to 24.8 in 1983) whilst for females it has increased (from 21.3 years in 1972 to 21.7 in 1983). Assuming that the figures for females are not affected by the data problems mentioned earlier, the 0.4 year increase in the age of marriage of women is expected to have contributed partly to the decline in fertility observed between 1972 and 1983.

6.5 Family Planning

Family planning plays an important role in determining fertility levels and trends by allowing women to control their childbearing experience. Family Planning services were first introduced in the island of Rodrigues in 1964 by Action Familiale, a non-governmental organisation advocating natural methods of contraception. The Mauritius Family Planning Association is also present in the island since the early 80's and its contraceptive supplies include pills, condoms, injectables, and I.U.D.'s. Presently, there are six service points in the island and they are situated at Port Mathurin, La Ferme, Mont Lubin, Riviere Cocos, Creve Coeur, and Oyster Bay. This section

presents a brief commentary of the data from the programme's service statistics and discusses contraceptive prevalence according to data from the Contraceptive Prevalence Survey conducted in 1985.

According to the statistics of the Ministry of Health (Table 6.7 below) there were, as at the end of 1987, 5,340 clients registered in the different family planning clinics in the island, compared to 1,700 as at the end of 1978. It can be seen that the contraceptive methods used have changed over time. The pill and rhythm method still remain the two most popular methods of contraception used although their share have been reduced in favour of other methods such as injectables, barrier and the I.U.D. Of the total users as at the end of last year, 35 percent were on the rhythm method, followed by the pill (31 percent) and the injectable (20 percent).

A Contraceptive Prevalence Survey was conducted in 1985 in the island to provide further information on other aspects of family planning use not obtainable from service data. A sample of slightly less than 400 ever-married women in the age group 15 - 49 years were interviewed. Ever-married women were those who had ever been in a marital union of any kind - whether legal, religious or consensual.

The data reveal that while 77 percent of women had ever used any contraceptive method, only 51 percent were current users. This prevalence rate is relatively low compared to the island of Mauritius (75 percent) and possibly implies that Rodriguan women are more exposed to the risk of unwanted pregnancies. For example, the survey indicated that among women who became pregnant after 1979, only 63 percent had planned their most recent pregnancy, while 24 percent reported the pregnancy to be unplanned and 13 percent mistimed. Users in the island of Rodrigues are not well served and almost half of the respondents reported having to travel at least an hour to get to the nearest service point. About 20 percent of women at risk of unplanned pregnancy, were in need of family planning services. A woman was defined as being in need of such services if she was sexually active, not currently pregnant and did not currently desire to become pregnant.

Thus, it seems that family planning programmes in the island of Rodrigues need to be strengthened not only to satisfy the demand but also to improve the efficiency of contraceptive use.

6.6 Fertility levels and trends

Fertility levels and trends in the island of Rodrigues can be discerned from the information of Table 2.4 (page 17) showing the evolution of the crude birth rate for each of the years during the period 1952 to the last census. To facilitate description of the trend, data for a few additional years have been added to this series and a summary table has been calculated.

Table 6.7 - Current users of Family Planning methods, 1978 - 1987

Year	Pill	Barrier Method	Injectable	I.U.D	Rhythm	Total
1978	862	86	56	2	712	1,698
1979	844	99	56	42	712	1,753
1980	690	192	39	93	1,012	2,026
1981	881	400	107	44	964	2,396
1982	1,249	278	199	80	1,113	2,919
1983	1,475	366	416	82	1,222	3,561
1984	1,325	424	695	80	1,446	3,970
1985	1,381	461	891	167	1,652	4,552
1986	1,573	548	997	180	1,797	5,095
1987	1,646	585	1,054	198	1,871	5,354

Source : MCH/FP Division, Ministry of Health

This table is given below and shows the average birth rate for each of the quinquennial periods since the 1950's and the years 1986 and 1987.

Table 6.8 - Crude birth rate, 1951 - 1987

Year	Average crude birth rate
1951-55	42.0
1956-60	46.9
1961-65	50.8
1966-70	46.1
1971-75	45.3
1976-80	43.5
1981-85	33.9
1986 1/	25.1
1987 2/	24.1

1/ average for the period 1985-87
2/ for the year 1987 only

It can be seen that, in general, fertility has remained high right up to the early eighties. From an average of 42 during the period 1951-55, the crude birth rate continued to increase and reached an extremely high level by the mid-sixties, averaging more than 50 births per thousand population. Since then, fertility started to decline, but only very slowly. From 1961-65 to 1971-75, the birth rate declined by only about 10 percent and during the period 1976-80, it was still at a high of 43.5 births per 1,000 population. Thus during the period between 1951 and the early 80's, a period of almost three decades, the crude birth rate never came down to below 40 births per thousand population. Because of this, fertility has been the most important factor accounting for the high rates of population growth in the island of Rodrigues. From an enumerated figure of 13,300 in 1952, the population has risen to 18,300 in 1962, to 24,800 in 1972, to 33,100 in 1983 and finally to an estimated figure of 36,500 as at mid of last year. Thus, in the relatively short span of three and half decades between 1952 and 1987, the population has been augmented by more than two and a half times.

During the whole of this period, the annual growth rate of the population reached an average of nearly 3 percent, implying a doubling time of only 24 years for any population with such a growth rate.

Since after 1981, however, there is evidence of a continuous and apparently rapid fall in fertility. Without interruption, the crude birth rate has declined successively from 43 in 1981 to 35 in 1983, to 28 in 1985 and finally to an estimated figure of just below 25 in 1987. The drop in birth rate during this short period of only six years between 1981 and 1987 represents more than 40 percent. It is therefore clear that since the

beginning of this decade, a fertility decline is well under way in the island of Rodrigues.

6.7 Age patterns of fertility

Although the crude birth rate can be used to describe the general trend of fertility over time, its use is affected by such factors as the age, sex, marital and other characteristics of the population. More refined measures such as those relating births to the total number of women of the reproductive ages or to women of specific age groups within that broad age range are therefore required.

However, as already mentioned at the beginning of this chapter, two factors, namely that - (i) prior to 1971, basic tabulations of births by age of mother were not available; and (ii) the continued non-availability of accurate population estimates by age and sex even when the detailed tabulations were finally processed thereafter - have resulted in that reliable time series of age schedules of fertility are not available for the period prior to the 1972 census.

Analysis of trends is limited to the census years 1972 and 1983. The age specific fertility rates for these two years, obtained by using the enumerated population by age and sex as denominators for the calculation of these rates are shown in Table 6.9.

Table 6.9 - Fertility rates, 1972 and 1983

Age specific fertility rates	1972	1983	Percentage change
15 - 19	103.4	90.8	- 12.2
20 - 24	308.8	244.8	- 20.7
25 - 29	320.9	234.8	- 26.8
30 - 34	227.2	205.7	- 9.5
35 - 39	226.0	155.4	- 31.2
40 - 44	104.8	76.8	- 26.7
45 - 49	46.0	21.1	- 54.1
General fertility rate	202.9	155.5	- 23.4
Total fertility rate	6.7	5.2	- 22.9
Gross reproduction rate	3.3	2.6	- 23.1
Net reproduction rate	2.8	2.4	- 14.3

The general fertility rate, which is defined as the ratio of the number of live births in a year to the average number of women of the reproductive ages (usually taken as 15 - 49 years), has declined from 202.9 in 1972 to 155.5 in 1983, a decline of almost 25 percent. Since significant

differences exist within this broad age range, age specific fertility rates have been calculated to show the differences in the frequency of childbearing from one quinquennial age group to another.

There have been important changes in the age pattern of fertility of Rodriguan women between 1972 and 1983. It can be seen that fertility has declined among all age groups, although the reductions for ages 15 - 19 and 30 - 34 are not as important as for the other age groups. But, in general, the declines have been more rapid for older women. The peak period of fertility has shifted from ages 25 - 29 in 1972 to ages 20 - 24 in 1983. Fertility among teenage mothers (15 - 19 years) continues to be high, registering a modest decline of only 12 percent, from 103.4 in 1972 to 90.8 in 1983. In this age group, the proportion of currently married women remained high; it actually increased over time, from 17.1 percent in 1972 to 18.9 in 1983. As a result, a relatively large proportion of very young Rodriguan women remained exposed to the risk of pregnancy. The increase in the mean age at marriage during the last intercensal period could have played some part in fertility reduction, but most of the declines, especially at the older ages, reflect some form of family limitation within marriage.

However, the contribution of older women to total fertility, although declining over time, remained still important. For instance, while women aged 30 years and above contributed 45.2 percent of total fertility in 1972, this percentage had dropped by only 0.6 point to 44.6 in 1983. The drop for women aged 35 years and above is more pronounced however, from 28.2 percent in 1972 to 24.6 in 1983, again indicating the faster decline in fertility of older women. Between 1972 and 1983, the mean age of childbearing declined very little, from 30.0 to 29.5 years, again on account of the high contribution of older women to total fertility.

The general decline in fertility during the last intercensal period also shows up in the other measures shown in Table 6.9. For example, the Total Fertility Rate, defined as the number of children a woman would bear during her reproductive lifetime, declined by 23 percent, from 6.7 in 1972 to 5.2 in 1983. In the main island where fertility has reached a low level, a Total Fertility Rate such as that currently obtained for the island of Rodrigues prevailed about two decades ago. During the same period, Gross Reproduction Rate fell by about the same amount as Total Fertility Rate, from 3.3 in 1972 to 2.6 in 1983. The magnitude of the decline in the Net Reproduction Rate was, however, slightly lower (14.3 percent), from 2.8 in 1972 to 2.4 in 1983.

An interesting point is revealed by the distribution of births by live birth order. From table 6.10 below, it is found that a large proportion of women continue to bear children of high orders. Of the total births

registered during the period 1982-84, an average of 30.7 percent were of 5th or higher order, compared to 38.2 in the period 1971-73.

Table 6.10 - Percentage distribution of births by birth order

Birth order	1971-73	1982-84
First	20.4	23.4
Second	15.8	19.4
Third	13.6	15.3
Fourth	12.0	11.2
Fifth	9.1	9.1
Sixth	8.5	6.2
Seventh	7.0	4.6
Eighth and above	13.6	10.8
T O T A L	100.0	100.0

Further analysis of fertility rates by birth order cross-classified by age of mother for the years 1972 and 1983 are shown in table 6.11 below. Analysis in this case, has however to be interpreted with caution. Most of the rates calculated are based on a small number of events (<30) and tend to be unstable. But overall, it is seen that, without exception, there have been large reductions in the birth rates for almost all live-birth orders. The largest reductions in birth rates occurred for birth order six and above, where declines of almost 50 percent are observed. This could indicate a trend towards reduction of the completed family size.

6.8 Marital Fertility

Table 6.12 below presents age specific marital fertility rates for the island of Rodrigues for the years 1972 and 1983. Age specific marital fertility rates have been calculated by using the enumerated married female population as denominators in the calculation of these rates. Differences between these and age specific fertility rates therefore reflect differences in the proportions of married women.

Table 6.11 - Age-specific fertility rates by age of mother and live birth order, 1972 and 1983

Year	Age of woman	Live birth order							
		First	Second	Third	Fourth	Fifth	Sixth	Seventh & over	Total
1972	15 - 19	73.4	26.1	3.9*	-	-	-	-	103.4
	20 - 24	92.4	94.2	70.0	34.3	11.2*	5.2*	1.5*	308.8
	25 - 29	33.6*	43.6	70.6	71.0	47.3	31.1*	23.7*	320.9
	30 - 34	10.2*	12.7*	16.1*	31.7*	39.3	41.5	75.7	227.2
	35 - 39	4.8*	6.5*	5.9*	18.3*	19.3*	33.8*	137.4	226.0
	40 - 44	4.9*	2.1*	2.1*	4.2*	5.6*	7.7*	78.2	104.8
	45 - 49	4.6*	-	0.9*	0.9*	2.8*	2.8*	34.0*	46.0*
	15 - 49	41.4	32.2	27.5	24.6	18.4	17.1	41.7	202.9
1983	15 - 19	63.5	22.8	4.5*	-	-	-	-	90.8
	20 - 24	72.8	78.8	58.2	25.7	7.3	1.8	0.2*	244.8
	25 - 29	21.4*	39.8	46.3	51.9	41.2	22.3*	11.9*	234.8
	30 - 34	9.5*	16.1*	22.1*	26.5*	37.3*	35.1*	59.1	205.7
	35 - 39	3.6*	3.2*	11.7*	12.6*	20.7*	15.8*	87.8	155.4
	40 - 44	2.7*	0.9*	2.7*	2.3*	4.6*	4.6*	59.0	76.8
	45 - 49	-	-	0.6*	-	1.1*	2.3*	17.1*	21.1*
	15 - 49	36.4	30.1	23.8	17.4	14.3	9.6	23.9	155.5

* rates based on a small number of events (230)

Table 6.12 - Age specific marital fertility rates, 1972 and 1983

Age group	1972	1983	Percentage change
15-19	606.5	480.5	-20.8
20-24	507.0	400.9	-20.9
25-29	379.5	292.6	-22.9
30-34	253.9	247.3	-2.6
35-39	254.2	182.3	-28.3
40-44	125.7	91.7	-27.0
45-49	54.5	26.4	-51.6

As can be seen, the age pattern of marital fertility for both years is a maximum at age 15-19 and then declines progressively at all the ages. As regards the evolution of marital fertility between these two dates, it is found that, except for age group 30-34, the decline increases with age and attains a peak at ages 45-49 years. The considerable reductions among older women may reflect limitation of family size within marriage perhaps as a result of more effective use of birth control. However, although there were declines in all age groups over time, the level of marital fertility is still excessively high, especially at the two youngest age groups. On the average, there was one live birth for every two married women aged 15-19 years in 1983 while for age group 20-24 years, the ratio was two live births for every five married women.

6.9 Conclusion

The main part of this chapter was concerned about describing the levels, trends and patterns of fertility in the island of Rodrigues. The measures used for this purpose were mostly derived from the vital registration data which are considered fairly reliable. From the fertility data collected during the last census, some tabulations were available, but very few of them were readily usable.

Time series of crude birth rates indicates that during the three decades since the 1950's, the demographic evolution of the island of Rodrigues has been characterised by a persistently high regime of fertility. From 42 during the period 1951-55, the crude birth rate continued to increase further and exceeded more than 50 births per thousand population during the period a decade later. Although there has been an almost continuous decline since then, the fall in the crude birth rate during the next 20 years has been relatively modest, falling by only 14 percent, from 50.8 in 1961-65 to 43.5 in

1976-80. One favourable point noted however, is the fact that since the beginning of this decade, a relatively fast and continuous decline in fertility seems to have set in. As at last year, the crude birth rate was estimated to be just below 25 births per thousand population.

As regards the age patterns of fertility, it has been found that whilst declines have taken place in all age groups between 1972 and 1983, the largest ones were found at the older ages, probably resulting from increases in contraceptive use. However, women still continue to bear children during the later years of the reproductive span. Women aged 35 years and over still contributed almost 25 percent of total fertility in 1983. Another important finding is that teenage fertility has remained high. Its 1983 level is more than twice that for the island of Mauritius, and there are real prospects of fertility declines among women in this age group.

Two determinants of fertility change, nuptiality and contraception were also discussed in this chapter.

In the island of Rodrigues where marriage is almost universal, the mean age at marriage of females has remained low despite a very small increase from 21.3 years in 1972 to 21.7 in 1983. This small increase in age at marriage has probably played some part in the decline of fertility.

From a recent contraceptive prevalence survey, it was found that the overall level of contraceptive use was relatively low (51 percent), with a large proportion of women using natural methods. Access to contraception was not within easy reach for almost half of the respondents. About 20 percent of women at risk of childbearing were in need of family planning services and the level of unwanted pregnancy was relatively high.

Although the prospects for the future cannot as yet be predicted with certainty, a discernible downward trend in fertility seems to have set in during the past few years. The rapid growth of the population has been seen as a matter of serious concern by government and programmes to reduce fertility have recently been reviewed and improved upon. Side by side, other programmes and policies aimed at improving sanitation, health, housing, educational and employment facilities have also been formulated and initiated.

Chapter 7

HEALTH, MORBIDITY AND MORTALITY

7.1 Health facilities, personnel and supplies

In-patient facilities. Health facilities in the island of Rodrigues are provided mainly by the public sector through the Queen Elizabeth II Hospital at Creve Coeur (on the outskirt of Port Mathurin) and the two health centres at La Ferme and Mont Lubin.

As shown in Table 7.1, there were, as of April 1988, a total of 124 beds in these three health institutions. This represents an increase of 16 beds over the number for 1978 which was 108.

Table 7.1 - Distribution of operational beds, 1978 and 1988

	1978	1988
Queen Elizabeth Hospital	71	78
La Ferme	19	23
Mont Lubin	18	23
	108	124

Out-patient facilities. Besides the facilities provided for the treatment of in-patients, the Queen Elizabeth Hospital and the two health centres at La Ferme and Mont Lubin also have out-patient departments. Four dispensaries and four community health centres, providing minor curative services have recently been opened in the island. The community health centres provide services associated with maternal and child health care and family planning. The dispensaries are located at Baie aux Huitres, Riviere Coco, Port Sud Est and Roche Bon Dieu while the community health centres are found at Mangue, Malartic, Grand Baie and Baie Topaze. A mobile system of dispensaries exists since a long time ago to serve populations in remote and scattered areas.

Preventive Health Services. Prevention of illness and the spread of communicable and other diseases, especially in view of the unfavourable hygienic and sanitary conditions generally prevailing, is an important aspect of the services of the Health Authorities. Some of the activities of the Health Inspectorate Division include talks delivered to school children and to members of the public on personal and environmental hygiene with stress being laid on the importance of boiling water before consumption; control over the sale of vegetables, fish and food offered in restaurants; meat inspection of animals slaughtered at abattoirs or on private premises; spraying of breeding places of mosquitoes with insecticides, etc.

In the field of family planning, the Maternal and Child Health Division as well as Action Familiale (a private organisation) provide free advice and planning services. Weekly antenatal clinics are held at each hospital and antenatal care is

provided to pregnant mothers from the third month of pregnancy to full term.

An immunisation programme is in force since 1960. The number of vaccinations performed has rapidly increased over time, from 250 in 1960 to 1,400 in 1967 and 2,200 in 1987. From the more recent data available and as shown in Table 7.2, it can be seen that the program of disease prevention set-up by the public health authorities cover about 75 percent or more of registered live births, although there are significant fluctuations in the available statistics. For example, in the case of BCG, it is possible that the misleading percentages for the year 1985 and 1987 could be due to vaccinations scheduled for the previous years but actually performed in the given year since it is reported that the health authority very often runs out of stock of vaccines. In any case, the high

Table 7.2 - Immunisations carried out, 1984 - 1987

	Immunisations				As a percentage of live births			
	1984	1985	1986	1987	1984	1985	1986	1987
BCG	888	873	699	893	80.0	102.0	74.0	101.5
DPT	643	716	655	706	57.9	83.6	69.3	80.2
Measles	338	646	516	598	30.5	75.5	54.6	68.0
	1,869	2,235	1,870	2,197				

level of vaccination has proved to be very effective against recurrent epidemics and other diseases such as poliomyelitis, diphtheria and tetanus, especially among infants as evidenced by the decrease in the incidence of these diseases in recent decades.

Health personnel. Health manpower statistics (Table 7.3) indicate a sustained increase in the number of doctors, nurses and other auxiliary staff since independence. From two in 1968, the number of doctors increased to 6 in 1986, improving the doctor to population ratio from 1:11,000 in 1968 to 1:6,000 in 1986. The number of midwives has been reduced to three in 1986, possibly as a result of midwifery services being taken over by the better trained nursing officers whose numbers have considerably increased over time, from 12 in 1968 to 30 in 1981 and further to 43 in 1986. The improvement in the nurse to population ratio has been from 1:1,800 in 1968 to 1:850 in 1986.

Table 7.3 - Selected categories of health personnel, 1968, 1981 and 1986

Personnel	1968	1981	1986
Medical Officer	2	4	6
Dental Surgeon	-	1	1
Nursing Staff	12	30	43
Midwife	6	8	3
Dispensing Staff	-	2	2
Laboratory technician	-	2	2
Radiographer/Technician	1	1	1
Health Inspector	1	2	1

Medical Supplies. All medical supplies to Rodrigues are channelled through the Ministry for Rodrigues. This Ministry issues requisitions and makes the necessary payments (Departmental Warrant), in respect of the drugs that it purchases from the Central Supplies Division of the Ministry of Health in Port Louis. Drugs are delivered to Rodrigues under the relevant vote "Medical Supplies" - at the Ministry for Rodrigues.

Before the creation of a Ministry for Rodrigues, requisitions were sent directly to the Central Supplies Division which initiated action regarding the departmental warrant for the payment of the consignment to be despatched.

It has been reported also that a few shopkeepers are selling drugs following authorization that were granted to them under the old Pharmacy and Poisons Act 1955. However, private medical practice is not available in the island of Rodrigues, and almost all Rodriguans have to rely on public institutions for drugs.

7.2 Housing, environment and hygiene

As described in the various annual reports of the Ministry of Health, the housing and living conditions of the population in the 1950's were most unsatisfactory in all respects. "... Families lived in small one- or two-roomed thatched houses and usually had five or more children, so that overcrowding was very marked. The lack of bathing and washing facilities, ignorance and the bad housing conditions contributed to the persistent spreading of scabies and other infective diseases. Piped water was obtainable only at Port Mathurin, Anse aux Anglais, Oyster Bay and La Ferme. Elsewhere, water was obtainable from wells, springs and rivers. The main water supply was not passed through any process of purification or filtering, and following heavy rains got very muddy and contaminated. Rain water was stored in tanks for time of drought ..."

Some progress has been achieved since then but in spite of all the efforts made for the improvement of housing conditions, community health and the environment generally, problems such as provision of safe water, proper sewage and other sanitary facilities and soil erosion still remain. According to the 1983 census data, only about half of the population had

access to piped water while the remaining half had to rely on wells, springs and rivers. As regards sewage facilities, while 3.2 percent of the population had access to flush toilet, 82.5 percent had to use the unsatisfactory pit latrine, 3.5 percent the more unhygienic pail while 10.7 percent did not have any toilet facility. More than half of the population (56.2 percent) did not have access to a bathroom.

7.3 Food habits and food supplies

As reported by the Ministry of Health in 1953, "... maize, tapioca and sweet potatoes form the basic food of the population. With this, the population eats salt-fish and very little meat; milk, eggs and vegetables do not form much of their diet. With the failure of their crop (due to heavy rains and cyclonic weather) the inhabitants rely more on rice which, being imported, is expensive. Fruits are scarce. This general deterioration of the food situation led to more marked cases of anaemia and avitaminosis ..." In the absence of other evidence, this excerpt may perhaps be taken as a general indication of food habits and situation of Rodriguan households during the 1950's.

But since then, there have been some changes in the food consumption pattern of Rodriguans. Rice and flour, which are sold at subsidised prices have progressively replaced maize, tapioca and sweet potatoes as the basic foodstuff, although small-scale backyard cultivation of these latter commodities are still practised by some households in several areas. Current exports of rice and flour to Rodrigues amounts to about 4,000 tons and 1,400 tons respectively each year. In general, however, there are indications that many Rodriguans still do not have an adequate or balanced diet, as evidenced by the prevalence of chronic diseases such as kwashiorkor, avitaminosis, nutritional anaemias, scurvy and others.

Further interesting information about food consumption patterns can also be noted from the Household Expenditure Surveys conducted during fiscal years 1980-81 and 1986-87. Although they do not provide information for a nutrition study per se, nevertheless they do give a general idea about expenditure pattern of households with respect to food items. The raw unadjusted data indicate that, even though the average monthly consumption expenditure of the Rodriguan household has increased from Rs 1,425 in 1980-81 to Rs 1,750 in 1986-87, the share on food and non-alcoholic beverages has declined from 55.8 percent to 52.5 percent while that for alcoholic beverages and tobacco has increased from 8.9 percent to 12.1 percent during the same period. Moreover, as a percentage of total consumption expenditure on food and non-alcoholic beverages, the Rodriguan household spends, on the average, only 6.6 percent on vegetables and vegetables products and 0.6 percent on fruits, the main item being meat, fish and eggs with 33 percent.

Thus, one of the major health problems of the island of Rodrigues seems to be the significantly high incidence of malnutrition among the population. Although current statistics show that there are no deaths due to malnutrition, many infants and children suffer from chronic malnutrition diseases, very often leaving them exposed to infections and possibly contributing to retarded mental and physical growth.

For instance, a recent survey carried out by the Ministry of Health among infants and children showed that 12.0 percent were malnourished, 17.3 percent suffered from stunting and 4.9 percent from wasting. Growth faltering started at 6 months and continued till 5 years. Analysis by occupation of

father showed that malnutrition was highest among unemployed and semi-employed (25 percent) and lowest among professional, technical and related workers (5 percent). Another interesting observation found was that malnutrition and stunting were inversely related to income and associated with source of water supply and sewage facilities.

7.4 Morbidity

Analysis of mortality causes and differentials cannot be comprehensive without a proper assessment of the levels, trends and causes of morbidity. Unfortunately, in the case of the island of Rodrigues, the data required for this purpose are scarce. Causes of morbidity statistics are available only for the year 1975 and so do not allow analysis of the evolution of the pattern of diseases over time. The levels and trends cannot be adequately discerned from the few data available which appear to suffer from problems of incompleteness and inconsistency.

Table 7.4 shows for selected years, the number of in-patients admitted in the three health institutions of the island. From about 3,400 in 1968, the number of admissions increased to 4,100 in 1975 and further to 8,800 in 1984.

Table 7.4 - Admissions in health institutions, 1968, 1975 and 1984

	1968	1975	1984
Queen Elizabeth Hospital	1,938	....	7,236
La Ferme Health Centre	883	....	857
Mont Lubin Health Centre	621	....	728
	3,442	4,119	8,821

Between 1968 and 1984, most of the increases in the number of total admissions was at the Queen Elizabeth Hospital probably because it is the better-equipped of the three institutions, besides being the largest and having the greatest number of available beds.

Table 7.5 below shows the number of attendances at the out-patients' department of the three health institutions of the island of Rodrigues. According to these figures the number of attendances increased from 55,857 in 1968 to 58,302 in 1975 but fell to 43,211 in 1984. Between 1968 and 1984 , the number of attendances at the Queen Elizabeth Hospital increased by about 11 percent but decreased by around 40 percent in the two health centres. This is most improbable and it is possible that the concepts or definitions used to compile these statistics have not been uniform over time. It is possible that the figures for any given year,

Table 7.5 - Attendances at out-patients' departments, 1968, 1975 and 1984

	1968	1975	1984
Queen Elizabeth Hospital	18,550	....	20,661
La Ferme Health Centre	16,505	....	10,946
Mont Lubin Health Centre	20,802	....	11,604
	55,857	58,302	43,211

besides the number of first attendances, may or may not also include figures of subsequent attendances and attendances at antenatal or dental clinics and mobile dispensary units, thereby making comparisons over time difficult. However, a more accurate pattern should be discernible with additional improvements in the collection of data.

As regards causes of morbidity, data are available only for the year 1975 and are shown in Table 7.6. It is found that in the 1970's the diseases which Rodriguans suffered from, portray clearly the general problems of unhealthiness, malnutrition and poor sanitation. The high prevalence of such diseases as dysentery, amoebiasis, enteritis, diarrhoeal diseases, helminthiases and scabies usually reflect poor conditions of housing and living, associated closely with problems of poor sanitation, lack of safe water supply, bathing and sewage facilities. In the absence of improved conditions, these diseases turn into recurrent epidemics since

Table 7.6 - Causes of Admissions and Attendances at out-patient departments of hospitals, 1975

Diseases	In-Patients	Out-Patients1/
Bacillary dysentery and amoebiasis	134	2,061
Enteritis and other diarrhoeal diseases	536	7,988
Tuberculosis	3	986
Other helminthiases	22	4,949
Scabies	40	2,641
Kwashiorkor, other nutritional deficiency and avitaminosis	44	1,971
Anaemias	84	2,858
Hypertensive disease	190	1,913
Acute respiratory infections	131	3,149
Influenza	286	3,435
Bronchitis, emphysema and asthma	331	2,512
Hypertrophy of tonsils and adenoids	30	1,404
Other diseases of respiratory system	109	2,857
Diseases of teeth and supporting structure	5	1,492
Gastritis and duodenitis	54	2,116
Other diseases of digestive system	174	2,964
Other diseases of genito-urinary system	10	2,569
Infections of skin and subcutaneous tissue	30	6,544
Accidents, poisonings and violence	239	3,064
Other	1,667	21,230
Total	4,119	78,703

1/ including mobile dispensary attendances (20,401)

infections spread easily through contact with contaminated food, water, etc. Malnutrition diseases such as Kwashiorkor, avitaminosis and anaemias which generally result from a deficient quality and quantity of food also seem to be widespread. The statistics also reveal that other diseases of significant importance are those related to the respiratory and digestive systems and to infections of the skin and subcutaneous tissue. The importance of circulatory diseases in 1975 is not so marked but has probably evolved very rapidly, since a decade later they

were responsibie for almost 40 percent of all deaths in the island.

The pattern of diseases to-day may be very different from what it was during the mid 1970's because ways of living, consumption pattern, environmental background and other conditions may have changed. However, the major causes of illnesses and diseases need to be clearly identified if further progress in the field of health and sanitation is to be achieved.

7.5 Mortality

7.5.1 Mortality levels and trends since 1950's

Because of the small size of the population of the island of Rodrigues and the even smaller number of deaths occurring during any given year, death rates calculated on the basis of data for only one year are difficult to interprete because of large year to year fluctuations. Therefore the death rates for any given year are calculated by averaging the total number of deaths, for three years and centering on the mid-period population. This will have the effect of smoothing the death rates and making them less susceptible to wild fluctuations.

The crude death rate for each of the years between 1952 and 1983 are shown in Table 2.4 (page 17). The general trend of mortality described in this table can be further summarized in Table 7.7 below which shows the average crude death rate for each of the quiquennial period since the 1950's and for the single years 1986 and 1987.

Table 7.7 - Trends in crude death rate, 1951-1987

Period	Average crude death rate
1951-55	11.1
1956-60	14.5
1961-65	11.8
1966-70	11.2
1971-75	9.7
1976-80	7.9
1981-85	6.7
1986 1/	5.3
1987 2/	4.7

1/ average for period 1985-87 2/ for the year 1987 only

The island of Rodrigues has experienced a remarkable decline in mortality since the 1950's. This decline has not been a smooth one and as seen in Table 2.4, there were occasional fluctuations in the death rates caused mainly by recurrent epidemics. The increase in the death rate from 10.3 in 1955 to 15.8 in 1959 was caused by epidemics of dysentery and gastro-enteritis, which accounted for more than a quarter of all deaths. These two epidemics again took a high death toll in the population in 1965 and were responsible for about 40 percent of all deaths. After that date however, the tendency has been for a slow and almost continuous fall in mortality. The death rate, which reached 10.0 deaths per 1,000 population in 1970, declined to 8.6 in 1980 and further to 5.3 in 1986.

7.5.2 **Deaths by cause**

Table 7.8 shows the percentage distribution of total deaths occurring in the island of Rodrigues since 1950, classified by major cause of death. The data follow the classification of the International Statistical Classification of Diseases, Injuries and causes of Death (ICD) of the World Health Organisation. Causes of death for the years since 1981 have been classified according to the ninth revision (1975) while those for the years 1970, 1975 and 1980 according to the eighth revision (1965). The data for 1960 and 1965 follow the seventh revision (1955) those for 1955, the sixth revision (1948) and finally those for 1950, the fifth revision (1938). As a result of these various revisions in the classification of causes of death, it has been necessary to make some adjustments to ensure comparability over time. The attempt has been to bring all data more or less in line with the ninth revision. For example, deaths due to enteritis and diarrhoeal diseases, which according to the fifth, sixth and seventh revisions formed part of the group of deaths due to diseases of the digestive system have been reclassified according to the latest ICD revision and been included among the deaths due to infective and parasitic diseases. Also, deaths due to senility and old age, which in the fifth and sixth revisions formed a separate group, have been reclassified with deaths due to ill-defined conditions. However, even with these minor corrections, strict comparability over time cannot be achieved since it would have been necessary to go through the complete list of deaths for all these years. Furthermore, the reporting of causes of death may also be subject to errors and variations over time. In spite of these problems, some broad trends for the major causes of death can be discerned from the data.

It is thus seen that there has been a continuous decline in the proportion of deaths due to infective and parasitic diseases (mainly enteritis, tuberculosis, dysentery and diarrhoeal diseases), falling from 41.1 percent in 1950 to 7.9 percent in 1985. On the other hand, there has been at the same time a gradual increase in the proportion of deaths due to diseases of the circulatory system, from 1.3 per cent in 1950 to 11.1 percent in 1975 and more rapidly afterwards to 37.7 percent in 1985. For 1985, the deaths in this group are due mainly to hypertensive, heart and cerebrovascular diseases. The principal causes of deaths (all ages) for the year 1985 are shown in Table 7.9.

Another peculiar feature of the data for the island of Rodrigues is the high percentage of deaths due to ill-defined causes. In 1950, this percentage which was 12.7 percent increased to 42.7 percent in 1970. After 1981 however this figure started to decline and in 1985 only 12.6 percent of all deaths were not adequately defined. Nevertheless, this figure is still high, in comparison with 3.8 percent for the island of Mauritius in 1985.

The earliest year for which data on medical certification are available is for 1970 when only 40.8 percent of all deaths occurring in the island of Rodrigues were medically certified. Substantial improvements have occurred after the coming into operation on 1st January 1982, of the Civil Status Act 1981 which requires that a medical certificate be produced at the time of registration of any death. Since 1986 all deaths are medically certified.

Table 7.8 - Percentage distribution of deaths by cause (All ages), 1950 - 1985

Cause of death	1950	1955	1960	1965	1970	1975	1980	1981	1982	1983	1984	1985
Infective and parasitic diseases	11.1	24.4	31.5	39.6	25.1	31.2	13.7	12.9	12.1	1.8	11.1	7.9
Diseases of the circulatory system	1.3	1.2	3.2	3.0	5.2	11.1	15.1	15.3	11.1	19.0	19.6	37.7
Diseases of the respiratory system	12.0	11.6	11.5	8.0	6.6	10.7	9.0	19.3	17.1	13.8	14.0	6.5
Certain causes of perinatal morbidity and mortality	15.8	19.8	4.7	5.7	6.6	8.5	9.8	8.4	10.0	12.9	9.6	10.2
Symptoms and ill-defined conditions	12.7	26.7	39.1	29.7	42.7	24.4	42.3	30.9	25.6	24.3	25.3	12.6
Accidents, poisonings and violence	0.6	1.2	1.8	2.7	1.0	1.7	3.0	4.0	3.0	7.6	3.1	6.0
Other	16.5	15.1	8.2	11.3	12.8	12.4	6.8	9.2	18.1	17.6	14.0	19.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Total deaths (numbers)	158	172	310	300	211	231	234	219	199	210	229	215
Percentage of deaths medically certified	...	...	...	...	10.8	11.9	31.2	18.6	58.3	56.7	18.5	83.3

Table 7.9 - Principal causes of deaths (all ages), 1985

Cause (I.C.D. 1975 Revision)	Deaths			
	Male	Female	TOTAL	
			No.	%
Heart diseases	24	18	42	19.5
Cerebrovascular disease	15	13	28	13.0
Ill-defined intestinal infections (colitis, enteritis, gastro-enteritis, diarrhoea)	8	8	16	7.4
Slow fetal growth, fetal malnutrition and immaturity	7	5	12	5.6
Senility without mention of psychosis	5	7	12	5.6
Hypertensive disease	4	7	11	5.1
Accidental drowning and submersion	9	1	10	4.7
Neoplasms	3	6	9	4.2
Bronchitis (chronic and unspecified), emphysema and asthma	3	4	7	3.3
Hypoxia, birth asphyxia and other respiratory conditions	1	6	7	3.3
Pneumonia	3	3	6	2.8
All other causes	34	21	55	25.6
TOTAL	116	99	215	100.0

7.5.3 Infantile Mortality

As shown in Table 2.4 infantile mortality rate (IMR) during the 1950's registered extremely high levels, with peaks of more than 100 infant deaths per thousand live births in the years 1954 and 1959, caused mainly by infectious diseases such as whooping cough, dysentery and gastro-enteritis. After 1960, the IMR declined temporarily for two consecutive years but then picked up again. The rate reached almost 100 in 1964 and stabilised at about this level until 1969. There was a clear downward trend afterwards, but this was halted in 1977 when the rate showed some resistance to further decline, fluctuating roughly around 50 infant deaths per thousand live births during the next eight years. This rate is high compared to the rate for the island of Mauritius which, as at the end of 1985, was about 25. But even in the latter case further declines in IMR are possible. Data on infantile mortality by sex show that the rate for males has always been higher than that for females (Table 7.10).

Table 7.10 - Infantile Mortality Rate 1/ by sex, 1955 - 1985

Year	Male	Female	Both Sexes
1955	104.3	80.8	92.7
1960	126.7	102.1	114.5
1965	104.5	88.5	96.6
1970	88.0	77.2	82.6
1975	64.5	54.9	59.6
1980	61.2	52.8	57.1
1985	56.4	47.2	51.9

1/ Computed by taking the average number of infant deaths for three years and dividing by the average number of live births occurring during the same period.

Detailed causes of infant deaths for the year 1985 are shown in Tables 7.11 and 7.12. The three main causes of infant deaths for that year, accounting for more than 60 percent of all infant deaths, were slow fetal growth, fetal malnutrition and immaturity; intestinal infections; and hypoxia, birth asphyxia and other respiratory conditions. There has thus been a considerable reduction in the number of deaths due to infectious and parasitic diseases (mainly whooping cough, enteritis, gastro-enteritis and dysentery) but the three main causes of infant deaths for 1985 as cited above are also closely associated with problems arising out of unhealthy environmental conditions and nutritional deficiencies.

7.5.4 Childhood Mortality

As shown in Table 7.13, mortality for children aged 1-4 years (childhood mortality) has also declined over the years, except for a temporary rise in 1962 which could be due to the epidemic of gastro-enteritis during the period 1961-1963. However the slight underenumeration of the child population in

Table 7.11 - Principal causes of infant deaths, 1985

Cause (I.C.D. 1975 Revision)	Deaths			
	Male	Female	TOTAL	
			No.	%
Slow fetal growth, fetal malnutrition and immaturity	7	5	12	26.1
Ill-defined intestinal infections (colitis, enteritis, gastro-enteritis, diarrhoea)	6	4	10	21.7
Hypoxia, birth asphyxia and other respiratory conditions	1	6	7	15.2
Pneumonia	1	2	3	6.5
Nutritional deficiency	1	1	2	4.3
Asthma	1	1	2	4.3
Pyrexia of unknown origin	1	1	2	4.3
All other causes	3	5	8	17.4
TOTAL	21	25	46	100.0

Table 7.12 - Infant deaths by I.C.D. Chapter, 1985

Cause (I.C.D. 1975 Revision)	Deaths			
	Male	Female	TOTAL	
			No.	%
Infectious and parasitic diseases	6	5	11	23.9
Endocrine, nutritional and metabolic diseases, and immunity disorders	1	1	2	4.3
Diseases of the nervous system and sense organs	-	1	1	2.2
Diseases of the respiratory system	2	3	5	10.9
Congenital anomalies	-	1	1	2.2
Certain conditions originating in the perinatal period	10	12	22	47.8
Symptoms, signs and ill-defined conditions	2	2	4	8.7
TOTAL	21	25	46	100.0

1962 could also have contributed for this apparent rise. Unlike infantile mortality, childhood mortality was higher for females than for males. The rate for both sexes for 1983 is 5.5 deaths per thousand population of the ages 1-4. This rate is high, since it is about four times that for the island of Mauritius which is 1.4.

Thus, although there has been a general improvement in mortality in the island of Rodrigues, the improvement has not been very consequent at the very young ages 0-4. Reductions have occurred mainly at the adult ages. Both infant and childhood mortality remain high and should receive due attention from health planners and policy makers, especially since there is wide scope for vast reductions in mortality at these young ages.

Table 7.13 - Childhood Mortality by Sex, 1952-1983
(Deaths per thousand children aged 1-4 years)

Year	Male	Female	Both Sexes
1952	18.1	20.9	19.4
1962	23.1	28.2	25.6
1972	10.8	13.8	12.3
1983	5.0	6.0	5.5

(Note: rate calculated by taking the average number of deaths for three years divided by the enumerated population 1-4 years).

The main causes of death among children aged 1-4 years in 1985 were infectious and parasitic diseases, as shown in Table 7.14 below. Again, improvements, in health and sanitary conditions seem to be required.

Table 7.14 - Deaths of children aged 1-4 years by I.C.D Chapter, 1985

CAUSE (I.C.D. 1975 REVISION)	DEATHS			
			TOTAL	
	Male	*Female*	*No.*	*%*
Infectious and parasitic diseases	2	4	6	40.0
Endocrine, nutritional and metabolic diseases, and immunity disorders	-	1	1	6.7
Diseases of the nervous system and sense organs	1	-	1	6.7
Diseases of the circulatory system	-	1	1	6.7
Diseases of the respiratory system	1	1	2	13.3
Diseases of the digestive system	2	-	2	13.3
Injury and poisoning	1	1	2	13.3
Total	7	8	15	100.0

7.5.5 Life Tables

Direct computation of life tables for Rodrigues has been possible only for 1972 and 1983. Mortality data for earlier years are not available in the required details.

The mortality rates, q(x), by age and sex for the years 1972 and 1983 (Figures 7.1 and 7.2) indicate that for males as well as for females, mortality under age one is particularly high. There is then a slight fall at age 1-4 followed by a tremendous decline to age 5-9 and which continues until age group 10-14, the one where mortality is lowest. After age 15, there is a reversal of trend, with the mortality rates rising continuously until old ages are attained. The rise is steeper in 1972 but more gradual in 1983.

In general, the rates are lower for females than for males, except for 1972 when the rates were higher for females at ages 1-4 (also in 1983), 10-14 and 25-49. This pattern of higher female mortality for the island of Rodrigues is not an unusual feature though, since it has also been found to be present in the mortality data for the island of Mauritius, even for a year as recent as 1972. However, the pattern as of 1983 is the traditional higher male mortality at practically all ages.

The decline in mortality rates from 1972 to 1983 has been faster for females than for males (Table 7.15). For males, the declines were mostly found at ages under 10, especially for age group 1-4, which showed a decline of about 60 percent. The other feature of the mortality data for males is that the rates increased for young persons aged 10-19 and for adults aged 30-49 and 55-59. Incidentally, the mortality data for the island of

Fig. 7.1 - AVERAGE AGE SPECIFIC MORTALITY RATES BY SEX , 1970-1974

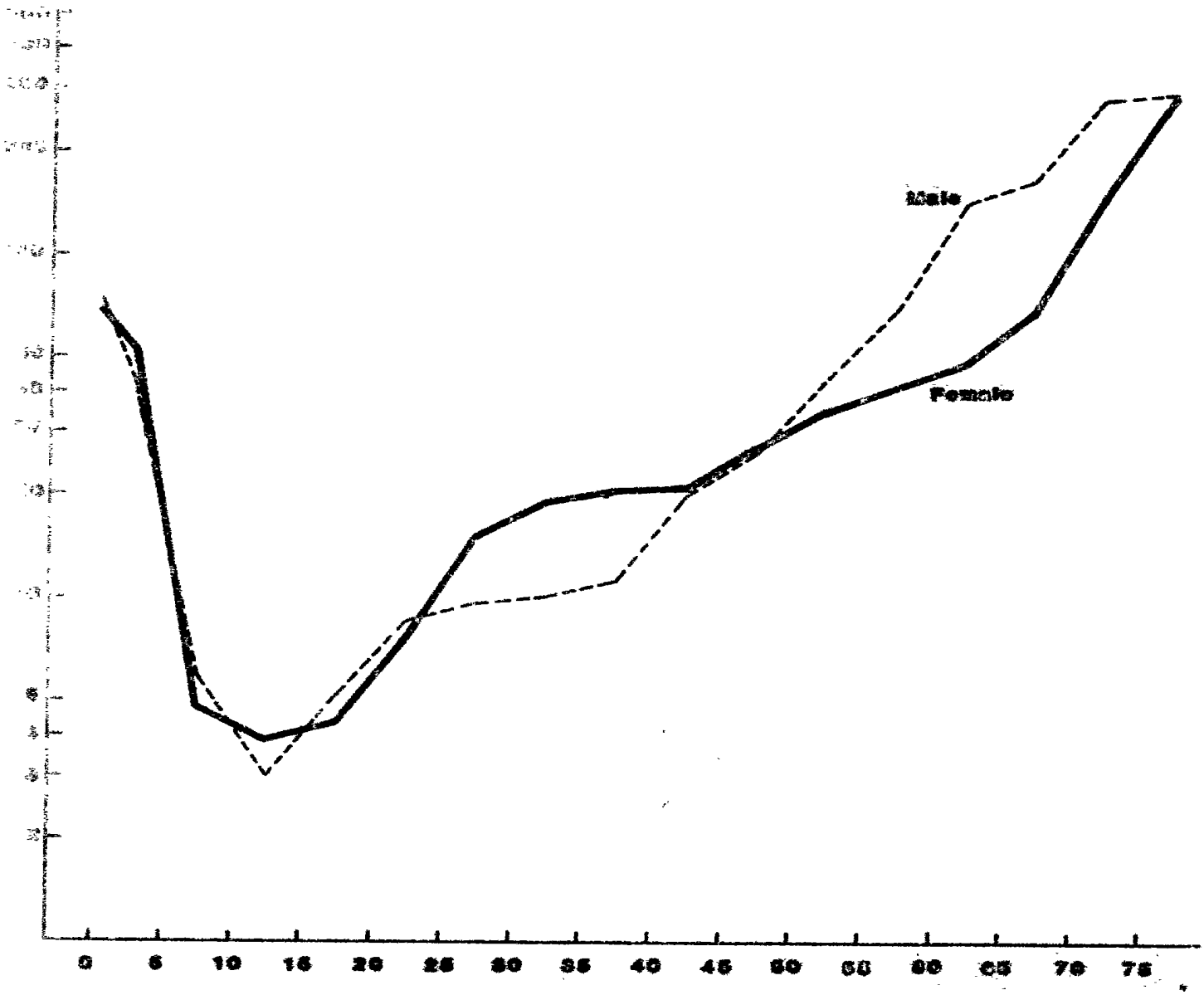


Fig. 7.2 - AVERAGE AGE SPECIFIC MORTALITY RATES BY SEX , 1981 - 1985

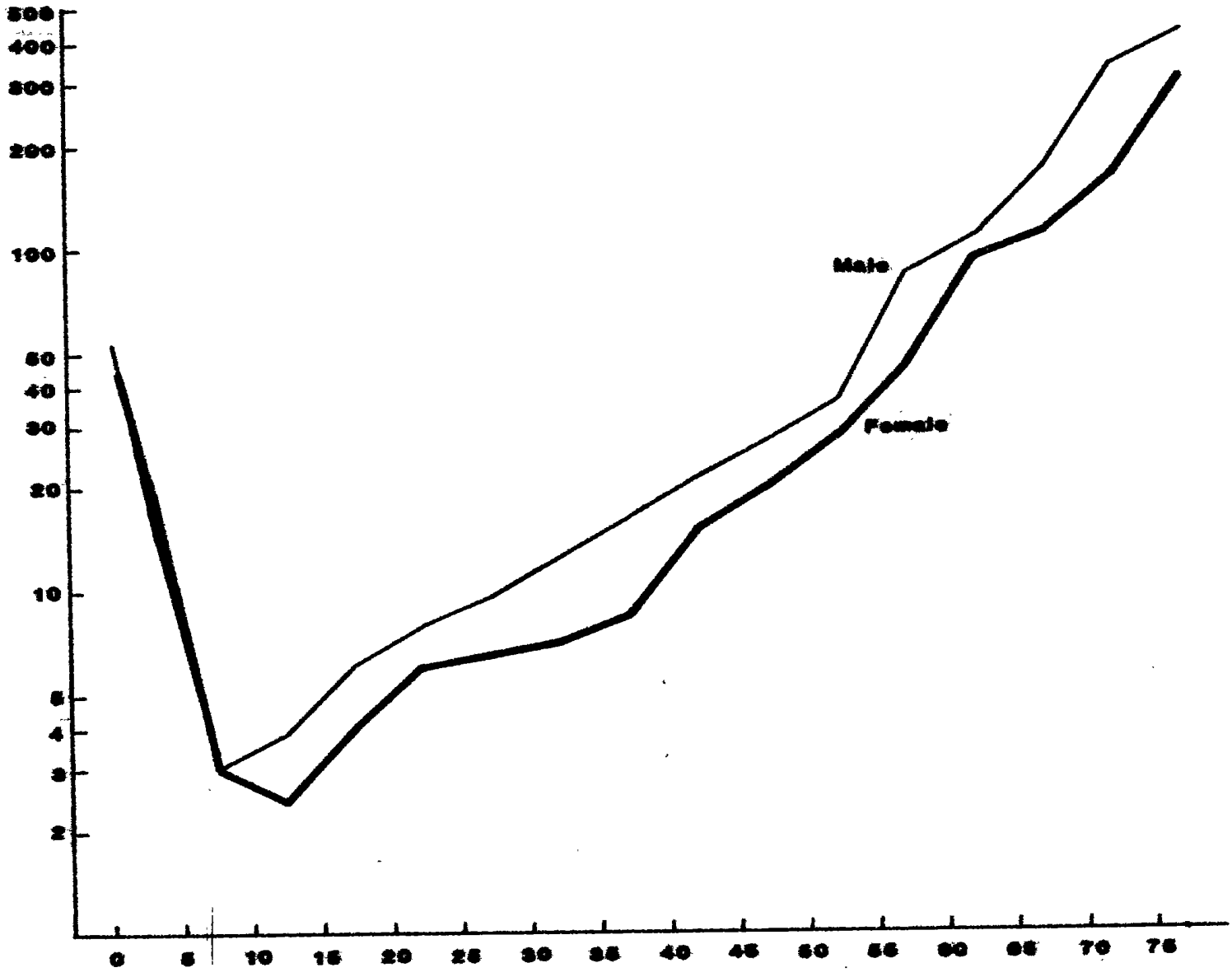


Table 7.15 - Mortality rates by sex, 1972 & 1983

Age	MALES		FEMALES	
	Absolute decline from 1972 to 1983	Percentage decline from 1972 to 1983	Absolute decline from 1972 to 1983	Percentage decline from 1972 to 1983
Under 1	20.13	27.8	27.07	39.0
1 - 4	24.13	59.4	31.94	62.2
5 - 9	2.70	46.8	1.85	37.9
10 - 14	- 0.90	- 30.0	1.48	37.9
15 - 19	- 0.75	- 14.3	0.30	7.0
20 - 24	0.79	9.0	1.50	20.0
25 - 29	-	-	8.36	55.7
30 - 34	- 2.50	- 25.0	11.84	62.8
35 - 39	- 5.38	- 48.4	12.25	59.3
40 - 44	- 1.50	- 7.5	5.66	27.0
45 - 49	- 1.97	-7.7	7.28	26.7
50 - 54	7.99	18.3	6.87	19.4
55 - 59	- 15.30	- 22.4	- 3.74	- 9.1
60 - 64	34.82	24.8	- 43.66	- 92.0
65 - 69	0.22	0.1	- 41.21	- 59.9
70 - 74	- 43.39	- 15.5	- 11.98	- 8.2
75 - 79	- 115.95	- 39.8	- 24.79	- 8.9

A negative sign (-) indicates an increase in the mortality rate

Mauritius have revealed a similar deterioration of mortality conditions for adults on the main island. For females, the declines in mortality occurred at all age groups below 55 years but the largest ones were at ages 1-4 and 25-39, where declines of more than 50 percent were registered. However there was an apparent rise in mortality for ages 55 and above. This could perhaps be due to the smallness of the population at these old ages and by a combination of several types of errors.

Life expectancy. A result of the mortality decline has been the significant rise in the expectation of life at birth. According to the two sets of abridged life tables (Tables 7.16 and 7.17), life expectancy at birth increased from 62.1 years for males and 64.2 years for females in 1972 to 64.5 years and 69.0 years for males and females respectively in 1983. The increase during the period 1972-1983 has therefore been 2.4 years for males but twice as much for females - 4.8 years. The relatively small improvement in overall male mortality is due to the deterioration of adult mortality between 1972 and 1983. Thus, while in 1972, a man aged 30 years old could hope to live a further 41.3 years, in 1983, the expectation had declined by 0.7 years to 40.6 years. On the other hand, for a woman aged 30 years, the expectation has increased slightly from 44.4 years in 1972 to 44.5 in 1983. Incidentally, a similar pattern was observed in the mortality data for the island of Mauritius. In the case of the island of Rodrigues, unfortunately, it is not known exactly when this reversal of trend occurred and what were the factors responsible for the worsening of male mortality, but it can be surmised that they were the same as those in the island of Mauritius, namely the emergence of diseases of the circulatory system as major causes of death some time in the early 70's.

7.6 Comparison of mortality data from census and vital registration system

From Table 7.18 it is seen that the census recorded 995 live births during last year as against 1,138 in the vital registration system. Assuming that registration of vital events is complete, it appears then that about 13 percent of births have been missed by the census. The sex ratio at birth was 105.2 from census data compared to 104.3 from the registration system and it looks as if that slightly more female births have been missed at the census than male births.

It is also reported that out of the total of 995 births from the census, there were 18 male and 11 female infant deaths during the period, giving a sex ratio at death of 163.6. Although trend data indicate higher male infant mortality than female, one cannot draw any definite conclusion about this rather high sex ratio since the numbers involved are very small.

The proportion of infant deaths occurring in a given year among children born during that year cannot be accurately measured from the existing registration data but a rough estimate puts it at about 65-70 percent . Assuming that the reported infant deaths among births of the last one year represent only 65 percent of all infant deaths, then the total number of infant deaths expected from last year's birth cohort will be about 45. There were 56 infant deaths reported in the vital registration system and there is an apparent underreporting of 11 infant deaths. Based on these figures, the infant mortality rate obtained from the census is slightly underestimated, 45.2 against 49.2 from the vital registration system.

Table 7.16 - Abridged Life Table by sex, 1970 - 1974

Male

Age	q_x	l_x	d_x	L_x	T_x	e_x	Survival Ratio	Mortality Level 4/
0	.072517	100,000	7,252	95,286	6,206,424	62.06	.91266 1/	18
1 - 4	.040640	92,748	3,769	361,042	6,111,138	65.89	.97213 2/	17
5 - 9	.005770	88,979	513	443,612	5,750,096	64.62	.99562	21
10 - 14	.002996	88,466	265	441,668	5,306,484	59.98	.99588	22
15 - 19	.005247	88,201	463	439,848	4,864,816	55.16	.99298	22
20 - 24	.008794	87,738	772	436,760	4,424,968	50.43	.99085	21
25 - 29	.009500	86,996	826	432,765	3,988,208	45.86	.99026	21
30 - 34	.010000	86,140	861	428,548	3,555,443	41.28	.98944	22
35 - 39	.011123	85,279	949	424,022	3,126,895	36.67	.98446	21
40 - 44	.200000	84,330	1,687	417,432	2,702,873	32.05	.97728	22
45 - 49	.025500	82,643	2,107	407,948	2,285,441	27.65	.96559	22
50 - 54	.043547	80,536	3,507	393,912	1,877,493	23.31	.94430	22
55 - 59	.068417	77,029	5,270	371,970	1,483,581	19.26	.89694	20
60 - 64	.140253	71,759	10,064	333,635	1,111,611	15.49	.84745	20
65 - 69	.166869	61,695	10,295	282,738	777,976	12.61	.78197	20
70 - 74	.279433	51,400	14,363	221,092	495,238	9.63	.71550	22
75 - 79	.291513	37,037	10,797	158,192	274,146	7.40	.42296 3/	18
80 +	1.000000	26,240	26,240	115,954	115,954	4.42		

1/ Survival ratio from birth to age 0 - 4

2/ Survival ratio from age (0 - 4) to age (5 - 9)

3/ Survival ratio from age 75+ to age 80+

4/ From COALE-DEMENY West Model Life Tables

Table 7.16 (cont'd) - Abridged Life Table by Sex, 1970 - 1974

F e m a l e

Age	q_x	l_x	d_x	L_x	T_x	e_x	Survival Ratio	Mortality Level 4/
0	.069435	100,000	6,944	95,486	6,416,490	64.16	.91020 1/	17
1 - 4	.051325	93,056	4,776	359,615	6,321,004	67.93	.96752 2/	16
5 - 9	.004879	88,280	431	440,322	5,961,389	67.53	.99561	20
10 - 14	.003900	87,849	343	438,388	5,521,067	62.85	.99590	21
15 - 19	.004300	87,506	376	436,590	5,082,679	58.08	.99411	21
20 - 24	.007500	87,130	653	434,018	4,646,089	53.32	.98877	19
25 - 29	.015000	86,477	1,297	429,142	4,212,071	48.71	.98310	18
30 - 34	.018845	85,180	1,605	421,888	3,782,929	44.41	.98026	18
35 - 39	.020666	83,575	1,727	413,558	3,361,041	40.22	.97917	19
40 - 44	.021000	81,848	1,719	404,942	2,947,483	36.01	.97589	20
45 - 49	.027277	80,129	2,186	395,180	2,542,541	31.73	.96874	20
50 - 54	.035361	77,943	2,756	382,825	2,147,361	27.55	.96187	22
55 - 59	.041005	75,187	3,083	368,228	1,764,536	23.47	.95585	23
60 - 64	.047437	72,104	3,420	351,970	1,396,308	19.37	.94215	24
65 - 69	.068787	68,684	4,725	331,608	1,044,338	15.20	.89422	24
70 - 74	.145490	63,959	9,305	296,532	712,730	11.14	.79295	24
75 - 79	.279097	54,654	15,254	235,135	416,198	7.62	.43504 3/	16
80 +	1.000000	39,400	39,400	181,063	181,063	4.60		

1/ Survival ratio from birth to age 0 - 4

2/ Survival ratio from age (0 - 4) to age (5 - 9)

3/ Survival ratio from age 75+ to age 80+

4/ From COALE-DEMENY West Model Life-Tables

Table 7.17 - Abridged Life Table by sex, 1981 - 1985

M a l e

Age	q_x	l_x	d_x	L_x	T_x	e_x	Survival Ratio	Mortality Level 4/
0	.052387	100,000	5,239	96,595	6,447,245	64.47	.94301 1/	20
1 - 4	.016513	94,761	1,565	374,912	6,350,650	67.02	.98676 2/	20
5 - 9	.003071	93,196	286	465,265	5,975,738	64.12	.99652	22
10 - 14	.003900	92,910	362	463,645	5,510,473	59.31	.99505	21
15 - 19	.005000	92,548	555	461,352	5,046,828	54.53	.99301	22
20 - 24	.008000	91,993	736	458,125	4,585,476	49.85	.99125	21
25 - 29	.009500	91,257	867	454,118	4,127,351	45.23	.98901	21
30 - 34	.012500	90,390	1,130	449,125	3,673,233	40.64	.98551	20
35 - 39	.016500	89,260	1,473	442,618	3,224,108	36.12	.98102	20
40 - 44	.021500	87,787	1,887	434,218	2,781,490	31.68	.97555	21
45 - 49	.027472	85,900	2,360	423,600	2,347,272	27.33	.96854	22
50 - 54	.035560	83,540	2,971	410,272	1,923,672	23.03	.94080	21
55 - 59	.083720	80,569	6,745	385,982	1,513,400	18.78	.90590	21
60 - 64	.105430	73,824	7,783	349,662	1,127,418	15.27	.86566	21
65 - 69	.166653	66,041	11,006	302,690	777,756	11.78	.76236	18
70 - 74	.322825	55,035	17,767	230,758	475,066	8.63	.64300	16
75 - 79	.407461	37,268	15,185	148,378	244,308	6.56	.39266 3/	15
80 +	1.000000	22,083	22,083	95,930	95,930	4.34		

1/ Survival ratio from birth to age (0 - 4)

2/ Survival ratio from age (0 - 4) to age (5 - 9)

3/ Survival ratio from age 75+ to age 80+

4/ From COALE-DEMENY West Model Life Tables

Table 7.17 (cont'd) - Abridged Life Table by sex, 1981 - 1985

F e m a l e

Age	q_x	l_x	d_x	L_x	T_x	e_x	Survival Ratio	Mortality Level 4/
0	.042370	100,000	4,237	97,246	6,894,654	68.95	.95080 1/	20
1 - 4	.019375	95,763	1,855	378,155	6,797,408	70.98	.98618 2/	19
5 - 9	.005026	93,908	284	468,830	6,419,253	68.36	.99728	21
10 - 14	.002417	93,624	226	467,555	5,950,423	63.56	.99679	21
15 - 19	.004000	93,398	374	466,055	5,482,868	58.70	.99500	21
20 - 24	.006000	93,024	558	463,725	5,016,813	53.93	.99368	21
25 - 29	.006640	92,466	614	460,795	4,553,088	49.24	.99318	22
30 - 34	.007000	91,852	643	457,652	4,092,293	44.55	.99229	22
35 - 39	.008422	91,209	768	454,125	3,634,641	39.85	.98813	22
40 - 44	.015346	90,441	1,388	448,735	3,180,516	35.17	.98234	21
45 - 49	.020000	89,053	1,781	440,812	2,731,781	30.68	.97580	22
50 - 54	.028490	87,272	2,486	430,145	2,290,969	26.25	.96351	22
55 - 59	.044742	84,786	3,793	414,448	1,860,824	21.95	.93261	21
60 - 64	.091097	80,993	7,378	386,520	1,446,376	17.86	.89990	21
65 - 69	.110000	73,615	8,098	347,830	1,059,856	14.40	.86754	23
70 - 74	.157472	65,517	10,317	301,792	712,026	10.87	.77558	23
75 - 79	.303890	55,200	16,774	234,065	410,234	7.43	.42944 3/	16
80+	1.000000	38,426	38,426	176,169	176,169	4.58		

1/ Survival ratio from birth to age (0 - 4)

2/ Survival ratio from age (0 - 4) to age (5 - 9)

3/ Survival ratio from age 75+ to age 80+

4/ From COALE-DEMENY West Model Life Tables

Table 7.18 - Comparison of births of last year and deaths among them with reported births and infant deaths from the vital registration system, 1983

	Male	Female	Both sexes	Sex ratio
Census data				
Births during last year	510	485	995	105.2
Deaths among them	18	11	29	163.6
Still alive at census	492	474	959	103.8
Expected infant deaths			45	
Infantile mortality rate			45.2	
Registration data				
Births	581	557	1,138	104.3
Infant deaths	31	25	56	124.0
Infant mortality rate			49.2	
Births (census) / Births (registered)	0.878	0.871	0.874	

Another useful evaluation comes from comparison of births of the past five years obtained from census and the survival status of these children (Table 7.19). A total of 5,205 births were reported at the census as against 6,004 births in the vital registration system. From the ratio of census births to registered births, about 13 percent of births appear to have been missed by census. The survival ratios for the five year period 1978-1983 were 0.94617 for males and 0.95403 for females. An approximate comparison with the corresponding survival ratios from the 1981-1985 life table gave quite acceptable results, 0.94301 for males and 0.95080 for females, differences of less than 1 percent.

Table 7.19 - Comparison of mortality rates from births of past five years with the life table rates, 1983

	Male	Female	Both sexes	Sex ratio
Births of past five years	2,638	2,567	5,205	102.8
Deaths among them	142	118	260	120.3
Still alive at census	4,496	2,229	4,945	101.9
Survival ratio	0.94617	0.95403	0.95005	
Survival ratio (Life table 1981-1985)	0.94301	0.95080		
Live births registered	3,029	2,975	6,004	101.8
Births (census) / Births (registered)	0.871	0.863	0.867	

Yet another set of mortality estimates from the census is obtained from the proportion of children dead among those ever-born by age group of mother (Table 7.20). From these proportions using the Trussell method, one can calculate the probability of survival of children to various ages.

Table 7.20 - Children ever-born and children dead by age of woman, 1983

Age of woman	No. of women	Children ever born	Children dead		Average parity per woman
			No.	Proportion	
15-19	1,943	289	12	.0415	0.1487
20-24	1,502	1,562	69	.0442	1.0399
25-29	1,123	2,756	165	.0599	2.4541
30-34	768	2,585	170	.0658	3.3659
35-39	740	3,383	268	.0792	4.5716
40-44	729	3,627	330	.0910	4.9753
45-49	584	2,840	255	.0898	4.8630

Comparison of these probabilities with the life table values is shown in Table 7.21. Unfortunately, the distribution of dead children by sex was not tabulated at the census and the calculated 1(x) values were made only for both sexes. The life table survival function was available for males and females separately. However, comparison is still possible since the 1(x) value for both sexes fall somewhere between the male and female values. It is found that the 1(x) values obtained from census fall very close to the corresponding life table values based on vital statistics.

Table 7.21 - Comparison of probability of surviving from birth to various ages, from Trussell's method with life table values, 1983

Parameter	Census probability of surviving	1981-85 life table	
	Both sexes	Male	Female
1(1)	0.95522	0.94761	0.95763
1(5)	0.93259	0.93196	0.93908
1(10)	0.91748	0.92910	0.93624
1(15)	0.90630	0.92548	0.93398
1(20)	0.90826	0.91993	0.93024

The broad conclusions to be drawn from these comparisons are that although births of the past year or of the last five years at census are significantly underreported as are also the numbers of dead children from these cohorts, they nevertheless provide useful measures of mortality, after making adequate adjustments. Also, the survival probabilities obtained by using the information on children ever born and proportion dead by age group of mother have been found to be in close agreement with corresponding values from the life table. However, since relatively good mortality data are already available from the vital registration system, the mortality measures obtained from census have been used only to provide useful checks on the quality of the registration data.

7.7 Conclusion

There has been a general improvement in mortality since the past two decades in the island of Rodrigues. The crude death rate has declined continuously and has reached a low level of around 5 deaths per thousand population by 1986. Life expectancy at birth has continued to increase and reached 64.5 years for males and 68.9 years for females in 1983, levels comparable to those for the island of Mauritius. The pattern of deaths has shifted from one dominated by infective and parasitic diseases into one where circulatory and respiratory diseases are now predominant. However, although the decline in overall mortality has been satisfactory, one cannot ignore that the decline in infantile mortality has lagged far behind. The infantile mortality rate of around 50 infant deaths per thousand live births is still too high. Infant deaths are due mainly to infectious, parasitic and respiratory diseases and to conditions originating in the perinatal period. Future policies, therefore, will need to place more emphasis on these areas

Health, morbidity and mortality will continue to be an important concern of the government but the challenges facing health planners, if progress is to be further sustained will be to initiate and reinforce programmes aimed at eliminating certain causes of deaths associated with infectious and parasitic diseases, malnutirtion, inadequate provision of safe drinking water, poor sanitation and hygiene and environmental hazards. These, coupled with on-going programmes to expand health services and facilities should probably be determinant factors towards a healthier, happier and more productive population.

Chapter 8

POPULATION DISTRIBUTION AND MIGRATION

8.1 Introduction

As important as the size, composition and growth of a population is its distribution over geographic space. Heavy concentrations or excessive spreading out both have inherent problems associated with them : some kind of balance resulting in optimum utilisation of an important asset of an area - land - is important.

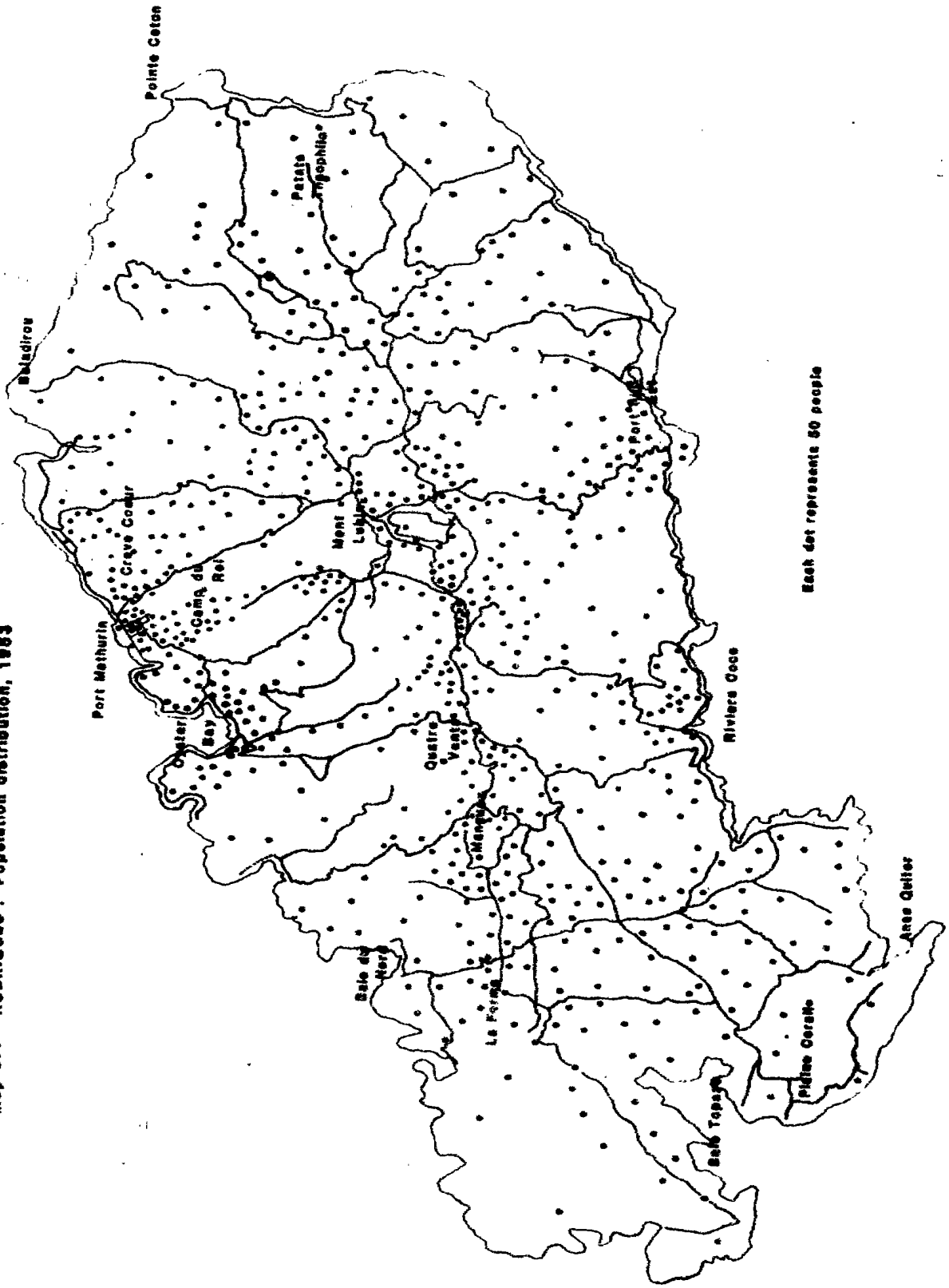
The settlement of population is conditioned by several factors. The terrain, climate, rainfall, environment, soil , vegetation and availability of water and other natural and essential requirements, infrastructures, facilities and amenities, traditions, cultural patterns, political, psychological and a whole host of other influences determine how people settle in specific areas and why they move.

Rodrigues is comparatively a small island and hence distances from place to place are not too large. It is quite homogeneous as to climate, rainfall, soil and environment in general, excepting that the terrain has brought in certain variations in vegetation and availability of water. More important perhaps may be the infrastructures, facilities and amenities which make people settle in places so as to avail themselves of these. The occupation which is more conditioned by the availability and accessibility of resources like pastures, farm lands, forest reserves, lagoons, etc. may also have played an important role in settlements and movements.

8.2 Population distribution

The population is, to some extent, evenly distributed over the island. From Map 8.1 one can notice that there are some concentrations around Port Mathurin, Oyster Bay, Mont Lubin and other large localities. There are also some sparsely populated regions particularly in the north-east and north-west.

Table 8.1 gives the population by locality as in 1983 ranked according to size and the corresponding population enumerated in 1972.



Map 8.1 - RODRIGUES : Population distribution, 1983

Table 8.1 - Population by locality, 1972 and 1983 censuses

1983 Ranking	Locality	Population		Change from 1972 to 1983
		1972	1983	
1	Petit Gabriel	1,290	1,270	- 20
2	Oyster Bay	1,215	981	- 234
3	Riviere Coco	725	843	+ 118
4	Creve Coeur	552	761	+ 209
5	Lataniers	526	670	+ 144
6	Port Mathurin	724	663	- 61
7	Mangues	270	655	+ 385
8	Corail	531	642	+ 111
9	La Ferme	473	599	+ 126
10	Grand La Fouche Mangues 1/	153	578	
11	Citrons Donis	284	578	+ 294
12	Camp du Roi	351	577	+ 226
13	Saint Gabriel	211	527	+ 316
14	Marechal	409	498	+ 89
15	Soupir	186	490	+ 304
16	Coromandel	330	490	+ 160
17	Roche Bon Dieu	185	486	+ 301
18	Acacia	423	485	+ 62
19	Eau Vannee	315	482	+ 167
20	Quatre Vents	382	468	+ 86
21	Baie Topaze	481	450	- 31
22	Mont Lubin	197	449	+ 252
23	Malartic	232	440	+ 208
24	Baie Diamant	-	390	
25	Bigarade	240	388	+ 148
26	Songe	210	383	+ 173
27	Port Sud Est	489	381	- 108
28	Trefles	260	378	+ 118
29	Pompee	91	375	+ 284
30	Terre Rouge	62	374	+ 312
31	English Bay	240	367	+ 127

Table 8.1 (cont'd) - Population by locality, 1972 and 1983 censuses

1983 Ranking	Locality	Population		Change from 1972 to 1983
		1972	1983	
32	Grande Montagne	186	365	+ 179
33	Chameaux	-	363	
34	Grand La Fouche Corail 1/	91	361	
35	Graviers	276	358	+ 82
36	Baie du Nord	364	357	- 7
37	Pointe Monnier	257	342	+ 85
38	Grand Baie	381	339	- 42
39	Mgne Goyaves	190	337	+ 147
40	Pistaches	188	329	+ 141
41	Nassola	237	325	+ 88
42	Riviere Banane	254	319	+ 65
43	Citrons	246	317	+ 71
44	Mgne Bois Noir	247	291	+ 44
45	Ile Michel	86	288	+ 202
46	Piments	189	285	+ 96
47	Mgne Cabris	8	275	+ 267
48	Cascade Jean Louis	323	271	- 52
49	Saint Francois	108	271	+ 163
50	Oranges	130	263	+ 133
51	Mgne Charlot	316	254	- 62
52	Vainqueur	347	239	- 108
53	Mourouk	138	237	+ 99
54	Fond la Digue	184	235	+ 51
55	Labonte	-	235	
56	Mont Fanal	210	233	+ 23
57	Mgne du Sable	4	230	+ 226
58	Camp Pintades	143	229	+ 86
59	Papayes	119	227	+ 108
60	Vangar	-	217	
61	Les Choux	97	213	+ 116
62	Palissade Ternel	76	211	+ 135

Table 8.1 (cont'd) - Population by locality, 1972 and 1983 censuses

1983 Ranking	Locality	Population		Change from 1972 to 1983
		1972	1983	
63	Union	225	206	- 19
64	Roseaux	132	205	+ 73
65	Tamarin	217	204	- 13
66	Grand Var	151	202	+ 51
67	Eau Claire	60	198	+ 138
68	Tambes	134	195	+ 61
69	Jardin Mamzelle	132	191	+ 59
70	Pavillon	88	182	+ 94
71	Batatran	26	178	+ 152
72	Patate Theophile	140	174	+ 34
73	Citronelle	158	174	+ 16
74	Vangassailles	-	164	
75	Sainte Famille	148	164	+ 16
76	Baie Lascars	37	162	+ 125
77	Dans Samy	7	161	+ 154
78	Cygangue	55	158	+ 103
79	Baie Malgache	633	151	- 482
80	Caverne	74	149	+ 75
81	Reposoir	166	142	- 24
82	Le Brule	92	138	+ 46
83	Camp Baptiste	154	137	- 17
84	Chateau d'Eau	101	136	+ 35
85	Petite Butte	155	135	- 20
86	Anse Raffin	180	134	- 46
87	La Boucherie	37	133	+ 96
88	Dans Begue	-	125	
89	Pointe L'Herbe	23	120	+ 97
90	Anse Goelands	164	117	- 47
91	Canne Paul	111	116	+ 5
92	Limons	76	109	+ 33
93	Mont Cheri	12	107	+ 95

Table 8.1 (cont'd) - Population by locality, 1972 and 1983 censuses

1983 Ranking	Locality	Population		Change from 1972 to 1983
		1972	1983	
94	Vingt Tours	-	107	
95	Mont Cabris SW	134	106	- 28
96	Mont Croupier	-	99	
97	Piton	31	93	+ 62
98	Bel Air	23	90	+ 67
99	Malabar	27	90	+ 63
100	Trois Soleils	60	89	+ 29
101	Nouvelle Decouverte	75	85	+ 10
102	Pointe Coton	85	79	- 6
103	Anse Baleine	78	79	+ 1
104	Manique	161	77	- 84
105	Bati Madame	32	74	+ 42
106	Anse Nicholas	75	69	- 6
107	Plaine Corail	13	67	+ 54
108	Caverne Provert	51	66	+ 15
109	Mont Limons	33	65	+ 32
110	Saint Louis	194	61	- 133
111	Anse Ally	59	60	+ 1
112	Anse Quitor	250	58	- 192
113	Mgne Tonnerre	36	58	+ 22
114	Canary	-	57	
115	Dans Bebe	-	56	
116	Baladirou	47	55	+ 8
117	Deux Montagnes	88	45	- 43
118	Saint d'Or	79	45	- 34
119	Saponnaire	54	44	- 10
120	Anse Fenny	21	42	+ 21
121	Solitude	124	41	- 83
122	Mont Ursule	49	41	- 8

Table 8.1 (cont'd) - Population by locality, 1972 and 1983 censuses

1983 Ranking	Locality	Population 1972	Population 1983	Change from 1972 to 1983
123	Mgne Travers	10	41	+ 31
124	Var Brule	47	39	- 8
125	Plaine Mao	45	34	- 11
126	Bassin Banane	115	34	- 81
127	Bengelique	18	26	+ 8
128	Pointe Palmiste	13	21	+ 8
129	Parc Tortues	32	17	- 15
130	Maurico	37	17	- 20
131	Decide	6	13	+ 7
132	Mont Long	102	12	- 90
133	Grenade	128	9	- 119
134	Pointe Source	6	7	+ 1
135	Mont Venus	15	7	- 8
136	Riviere du Sel	84	4	- 80
137	Parc Martins	92	2	- 90
	Grand La Fouche La Ferme 1/	2	-	
	Gombrani Island	1	-	
	Pointe au Sel	9	-	
	Mgne Zatte	26	-	
	Crab Island	8	-	
	Mgne Cigolette	31	-	
	Mgne du Fil	19	-	
	Chateau de Fleurs	39	-	
	Bassin Martins	24	-	
	Desire	40	-	
	Ile aux Chats	4	-	
	Riviere Trou Loulou	54	-	
	Gros Mangue	12	-	
	Fond Ali	64	-	
	Barrage	18	-	
	Fond John	67	-	
	Jamblon	4	-	
	Cascade	104	-	
	Plaine Feuillane	8	-	
	Pointe Corail	25	-	
	Fond Josette	19	-	
	Grand La Fouche 1/	176	-	
	D'Encens	266	-	
	T O T A L	24,769	33,082	
1/	Grand La Fouche	422	939	+ 517

The leading locality continues to be Petit Gabriel situated on high grounds in the central part of the island with a population of 1,270. Between 1972 and 1983 there was a small decline in its population. The second largest locality was Oyster Bay in the North with 981 persons, which also showed a huge loss between 1972 and 1983. The next two large localities were Grand La Fouche in the West (population 939) and Rivière Coco in the South (population 843), both of which gained in population between the two censuses.

Port Mathurin, the capital, with a population of 663 ranks only sixth as compared to the fourth position it occupied in 1972. It may be pointed out that Port Mathurin harbours many administrative, office, commercial and trade buildings and only part of its land is available for dwelling purposes. It is therefore not surprising that localities contiguous or situated very near, like Camp du Roi, Acacia, Pointe Monnier, English Bay, Crève Coeur and Soupir have all experienced a substantial increase in population during the past decade.

Table 8.2 shows the size distribution of localities. Firstly, we note that there has been a reduction in number of localities in the recent census. It can be noted that certain localities identified in 1983 did not exist in 1972 but there were several more localities identified in 1972 which were not found in 1983. It is quite possible that inhabitants of these places have been enumerated under the name of contiguous or neighbouring localities. The additional localities found in 1983 could be either new ones or localities which may have existed in 1972 under another name.

The striking feature of Table 8.2 is that there are large numbers of very small localities. This kind of settlement pattern must have been dictated by the terrain, the availability of land and other resources and mostly by the major activities of the people - agriculture and fishing.

Nearly all inhabited areas of less than 200 people are either small hamlets or have their occupants distributed over the hill slopes and in the coastal regions. This is clearly reflective of the activities of the people - cattle and other livestock raising, maize and onion cultivation and agriculture in general, and fishing.

Map 8.2 shows the location of educational and health institutions as well as the existing road facilities. It can be noted that the main roads run across the central ridge from the airport through La Ferme to the Capital Port Mathurin and through La Fouche, Petit Gabriel, Mont Lubin to the east and north. Arterial roads connect the main roads with other localities in the south.

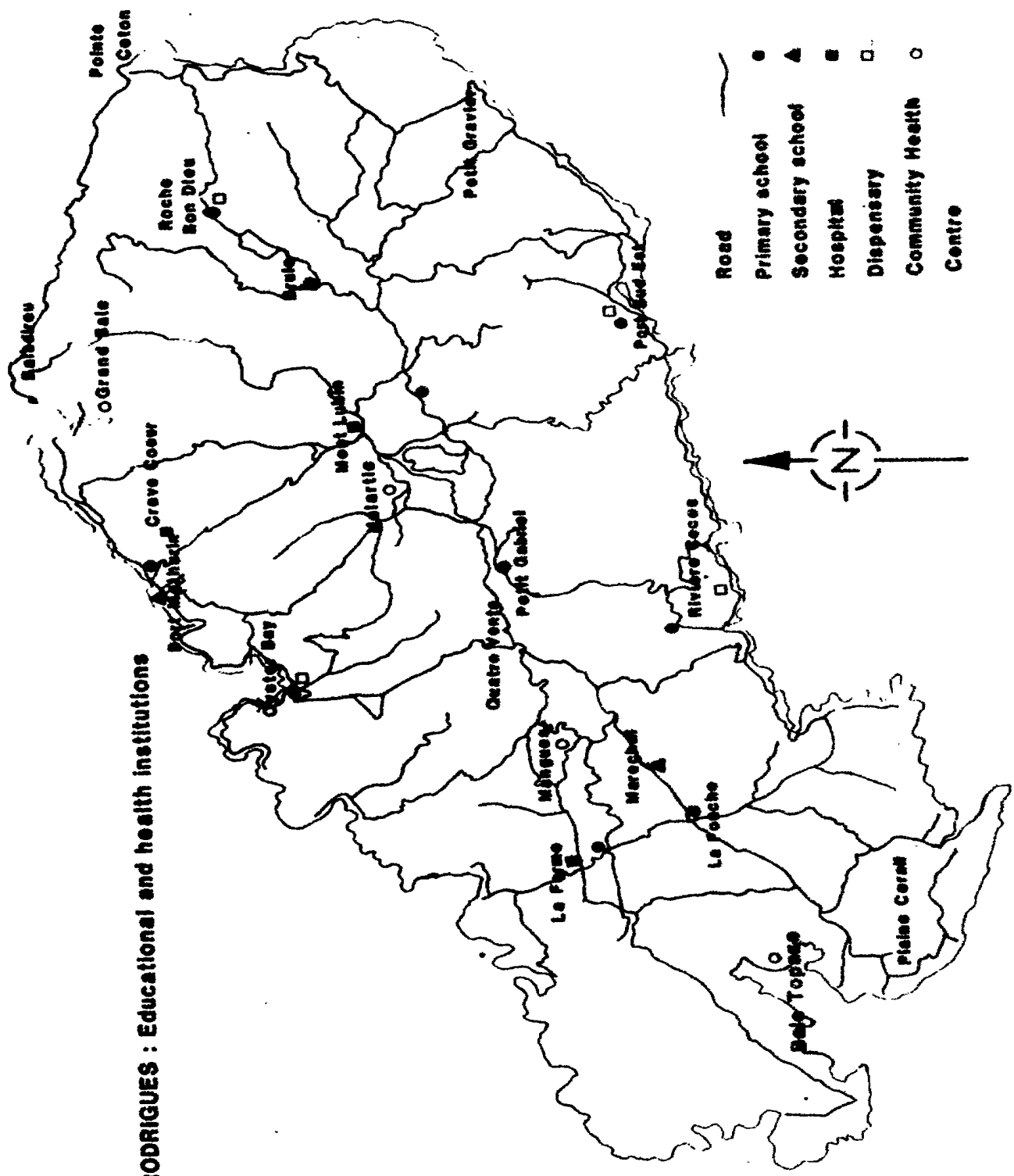
Table 8.2 - Size distribution of localities

Size of locality	Number of localities	
	1972	1983
< 50	45	21
51 - 100	27	21
101 - 200	37	29
201 - 300	19	23
301 - 400	9	20
401 - 500	5	10
501 - 600	3	5
601 - 700	1	4
701 - 800	2	1
801 - 900	0	1
901 - 1000	0	1
1001 - 1300	2	1
	150	137

The location of educational facilities (10 primary and 2 secondary schools) naturally are very near to main roads and population concentrations. There are large vacant spaces with no educational facilities and with populations which are very widely scattered. To cater for their needs is not easy as there would not be a sufficient number of children around. This may be one important reason for the lower participation of Rodriguan children in education.

The health facilities also are located around population clusters. As for education, there are sizeable populations which are quite far from health services.

These factors may influence people to move so that they have access to these facilities. Certainly they do have to move from their residences to avail themselves of health and educational services. But whether they will move physically and settle near these facilities is yet another matter. A look at the migration picture will show some patterns.



Map 8.2 RODRIGUES : Educational and health institutions

8.3 Internal migration

Even though there are several localities, they have been grouped into 12 broad regions, 3 of which are in the central part of the island.

Table 8.3 gives the names of the main localities falling within the boundaries of these 12 regions which will serve the purpose of the present analysis. All tabulations are prepared for these 12 regions.

Table 8.3 - Main localities grouped into 12 broad regions

Broad region	Main localities
1.	Baie Topaze, Pistaches, Piments
2.	Mangues, La Ferme, Baie du Nord, Citrons
3.	Oyster Bay, Pointe Monnier, Baie Diamant
4.	Acacia, Camp du Roi, Creve Coeur, Port Mathurin, Soupir
5.	Grand Baie, Montagne Goyaves, Terre Rouge
6.	Roche Bon Dieu, Trefles, Riviere Banane
7.	Lataniers, Mont Lubin, Grande Montagne, Nassola
8.	Petit Gabriel, Citron Donis, St. Gabriel, Eau Vannee, Quatre Vents, Malartic
9.	Grand La Fouche, Corail
10.	Riviere Coco, Marechal
11.	Songe, Port Sud Est, Pompee
12.	Coromandel, Graviers

For an effective and realistic study of migration in Rodrigues, there is need for a proper and complete identification of localities. The task is not an easy one save for isolated localities, since in many cases, the houses are quite dispersed in villages, over hill tops and slopes, sometimes even out of view. There is need for a much more meaningful grouping of the localities into homogeneous regions for which the migratory patterns could be studied and interpreted. The formation of homogeneous zones for purposes of measuring internal migration should take into consideration the new development projects like land resources, road construction, improved water distribution and other amenities and facilities for a better life style. Unfortunately it is not possible to attempt this at the present juncture but it should surely be carried out in future census analyses to be of value to planners and policy makers.

Table 8.4 indicates that regions 3 and 4 are the only ones with sizeable numbers of persons enumerated who do not usually reside there. Most of these are from outside Rodrigues - either tourists or Mauritians from the main island working there. The two regions contain Port Mathurin, the capital, Creve Coeur, Oyster Bay and Pointe Monnier which are relatively larger localities with certain economic and administrative activities. This clearly shows that there is very little movement within the island and this may be because of its small size with relatively short distances separating the location of agricultural or fishing areas and of housing. This analysis mostly pertains to short duration movements.

Table 8.4 - Population by place of enumeration and place of usual residence, 1983 Census

Broad Region	Place of enumeration	Place of usual residence	Difference
1.	1,871	1,852	19
2.	2,681	2,672	9
3.	1,962	1,915	47
4.	5,145	4,966	179
5.	1,353	1,360	- 7
6.	1,361	1,357	4
7.	3,738	3,737	1
8.	5,108	5,119	- 11
9.	3,040	3,041	- 1
10.	2,239	2,241	- 2
11.	2,357	2,345	12
12.	2,227	2,225	2
N/S	-	1	- 1
Outside	-	251	- 251
TOTAL	33,082	33,082	0

Table 8.5 gives a picture of migration over a five year period. It is observed that around 3,000 people were reported as having resided in a different region in 1978 as compared with 1983, which gives an annual average rate of migration of 2.2%.

Table 8.5 - Population 5 years and over by usual address 5 years ago, 1983 Census

Region of residence in 1983	Region of residence in 1978														
	001	002	003	004	005	006	007	008	009	010	011	012	Outside Rodrigues	Region unspecified	Total
001	1,283	50	2	5	2	0	8	28	54	8	3	3	65	1	1,512
002	22	2,019	6	8	5	2	18	17	28	6	7	2	80	0	2,220
003	6	38	1,450	38	3	0	5	6	0	1	8	2	48	17	1,622
004	6	15	54	3,627	36	4	25	63	9	14	6	10	296	0	4,165
005	0	6	28	91	912	14	25	4	8	9	2	3	13	0	1,115
006	1	1	1	4	0	978	36	1	1	8	5	56	1	0	1,093
007	2	11	0	40	10	56	2,761	31	5	3	71	32	38	0	3,060
008	21	63	59	27	7	11	38	3,673	11	87	93	13	70	0	4,173
009	21	71	3	9	0	1	12	25	2,265	27	5	23	32	1	2,495
010	4	14	1	3	2	8	5	54	39	1,676	1	9	41	0	1,857
011	2	2	0	4	2	5	10	26	3	14	1,786	41	30	0	1,925
012	1	2	0	11	10	16	19	21	38	15	42	1,655	14	0	1,844
Outside Rodrigues	2	4	0	3	1	0	1	1	3	2	0	0	162	0	179
Region unspecified	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total	1,371	2,296	1,604	3,870	990	1,095	2,963	3,950	2,464	1,870	2,029	1,849	890	20	27,261

Table 3.4 - Net migratory flows of population, aged 5 years and over, between regions - Census 1983

Residence in 1978	Residence in 1983												
	001	002	003	004	005	006	007	008	009	010	011	012	Total
001	-	- 28	4	1	- 2	1	- 6	- 7	- 33	- 4	- 1	- 2	- 77
002	28	-	32	7	1	- 1	- 7	46	43	8	- 5	0	152
003	- 4	- 32	-	16	25	1	- 5	53	3	0	- 8	- 2	47
004	- 1	- 7	- 16	-	55	0	15	- 36	0	- 11	- 2	1	- 2
005	2	- 1	- 25	- 55	-	- 14	- 15	3	- 8	- 7	0	7	- 113
006	- 1	1	- 1	0	14	-	20	10	0	0	0	- 40	3
007	6	7	5	- 15	15	- 20	-	7	7	2	- 61	- 13	- 60
008	7	- 46	- 53	36	- 3	- 10	- 7	-	14	- 33	- 67	8	- 154
009	33	- 43	- 3	0	8	0	- 7	- 14	-	12	- 2	15	- 1
010	4	- 8	0	11	7	0	- 2	33	- 12	-	13	6	52
011	1	5	8	2	0	0	61	67	2	- 13	-	1	134
012	2	0	2	- 1	- 7	40	13	- 8	- 15	- 6	- 1	-	19
Gain or Loss	77	- 152	- 47	2	113	- 3	60	154	1	- 52	- 134	- 19	0

According to Table 8.6, which considers net migratory movements, regions 5 and 8 gained whereas regions 2 and 11 lost, but in every case, the numbers involved are not very large. Excepting regions 1, 5 and 8 all the other regions had more than 90% of their residents in 1978 still there in 1983. Even in these 3 regions the highest percentage of migrants was in region 5 with around 17%.

On the whole, the internal migration picture is one of very subdued movements.

8.4 International and external migration

In addition to internal migration we have already noted that there are a few foreign visitors and Mauritians from the main land reported in the 1983 Census.

There is also movement of Rodriguans to the island of Mauritius and to other foreign countries. Unfortunately these statistics are not readily available but it is noted from the international passenger traffic that there is a net residue (positive or negative) of immigration and emigration. Even though these statistics for the period 1972 - 83 indicate a net inflow, analysis of the two censuses enumerations in conjunction with vital statistics pointed out to the possibility of some net out flow from Rodrigues to the island of Mauritius. It is also recognised that many persons from Port Mathurin, Oyster Bay, etc. migrated to Australia. Since such statistics are collected but not tabulated, there is need for producing tables for analysis of external and international migration. Another point brought out by the evaluation of the censuses is that there may be some movements between the two islands which may not be fully recorded. This point needs looking into and if found true, then tightening and monitoring of such movements may be necessary in order to arrive at the real magnitude of movements from and into Rodrigues.