

REPUBLIC OF MAURITIUS

Ministry of Economic Development, Financial Services and Corporate Affairs

CENTRAL STATISTICS OFFICE

2000
HOUSING AND POPULATION CENSUS

REPUBLIC OF MAURITIUS

ANALYSIS REPORT
VOLUME I - CENSUS METHODOLOGY

February 2002

(Price Rs 250)

FOREWORD

The Central Statistics Office conducted a Housing and Population Census in year 2000. Census 2000 was the seventeenth for the Island of Mauritius and the seventh for the Island of Rodrigues.

Table reports covering housing and living conditions, demographic and fertility characteristics, economic characteristics, educational characteristics, household characteristics, migration and disability were published during the following year. Analysis and evaluation of the census data are currently being carried out and the results will be published in a series of ten analytical reports during the course of this year.

This report is the first of the series. It attempts to describe how Census 2000 was organized and conducted.

Subsequent reports will deal with the results of the analysis and evaluation of census data in conjunction with other available data. The analytical reports will be as follows: Housing and household characteristics, Population distribution and migration, Population data evaluation and projections, Education: characteristics, prospects and implication, Disability characteristics, Nuptiality and fertility, Health, morbidity and mortality, Economic activity – characteristics and prospects, and The elderly.

I would like here to thank all persons and organizations, who have contributed in one way or another to the success of the census operation. In particular, I would like to thank the staff for the efforts put into the organization and conduct of Census 2000, the processing of census data and the preparation of the table reports, as well as to analysts who are currently working on the analytical reports.

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CONTENTS	Page
CHAPTER 1. INTRODUCTION	
1.1 Census definition	5
1.2 Why take a Census?	5
1.3 Historical background	5
1.4 Methodology	6
1.5 Census dates	6
1.6 Coverage	6
1.7 Budget	6
1.8 Legal framework	6
1.9 Confidentiality of information collected	7
CHAPTER 2. CENSUS ORGANISATION	
2.1 Office organisation	8
2.2 Field organisation	9
2.3 Calendar of activities	11
2.4 Project budget and expenditure incurred	14
2.5 Publicity	16
CHAPTER 3. CENSUS CARTOGRAPHY	
3.1 Geographical, administrative and electoral constituency divisions	17
3.2 Census enumeration divisions	17
3.3 Mapping	18
3.4 Geographical coding system	19

CONTENTS (cont'd) **Page**
CHAPTER 4. CENSUS QUESTIONNAIRES

4.1	Questionnaire design	20
4.1.1	Topics selection	20
4.1.2	Housing Census questionnaire	20
4.1.3	Population Census questionnaire	22
4.2	Census guide and instructions	24
4.3	Printing of census questionnaires and guides	24

CHAPTER 5. CONCEPTS AND DEFINITIONS, AND CLASSIFICATIONS

5.1	Concepts and definitions	25
5.1.1	Housing Census	25
5.1.2	Population Census	27
5.2	Classifications used	29

CHAPTER 6. FIELD OPERATION

6.1	Fieldstaff	30
6.1.1	Determining the number of field staff	30
6.1.2	Procedure for recruitment	30
6.1.3	The field force	31
6.1.4	Terms of appointment	31
6.1.4.1	Chief Supervisor/Assistant Chief Supervisor	31
6.1.4.2	Senior Supervisor	32
6.1.4.3	Supervisor	33
6.1.4.4	Chief Enumerator	34
6.1.4.5	Enumerator	34
6.1.5	Training of field staff	35
6.1.5.1	Housing Census	35
6.1.5.2	Population Census	36

CONTENTS (cont'd)		Page
6.2	Census enumeration	36
6.2.1	Housing Census	36
6.2.2	Population Census	37
6.3	Quality assurance of field operation	38
6.4	Movement of census forms	39

CHAPTER 7. PROCESSING OF CENSUS DATA

7.1	Editing and coding	40
7.1.1	Recruitment and training of editors and coders	40
7.1.2	Editing and coding of Housing Census questionnaires	40
7.1.3	Editing and coding of Population Census questionnaires	41
7.2	Data processing	42
7.2.1	Software and equipment	42
7.2.2	Processing operations	42
7.2.3	Data capture	43
7.2.4	Data validation	44
7.2.5	Production of address labels	45
7.2.6	Tabulation	45

CHAPTER 8. DISSEMINATION OF CENSUS RESULTS, EVALUATION AND ANALYSIS

8.1	Dissemination of census results	46
8.2	Ad-hoc requests for census tables	46
8.3	Mapping products	46
8.4	Evaluation and analysis	47

CONTENTS (cont'd)	Page
CHAPTER 9. PROBLEMS ENCOUNTERED AND RECOMMENDATIONS	
9.1 Shortage of staff	48
9.1.1 Field staff	48
9.1.2 Editors and coders, and data entry operators	48
9.2 Enumeration procedure	48
9.3 Wholly absent households	49
9.4 Place of usual residence	49
9.5 Data processing	49
Appendix I – Housing Census questionnaire	50
Appendix II - Population Census questionnaire	52
Appendix III - List of tables in 2000 Census table reports	59

CHAPTER 1. INTRODUCTION

1.1 Census definition

According to the handbook “Principles and Recommendations for Population and Housing Censuses” of the United Nations Statistics Division, a census is defined as the “total process of collecting, compiling, evaluating, analyzing and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well-delimited part of a country.”

1.2 Why take a Census?

A census gives a complete and comprehensive picture of the nation as well as groups of people living in specific areas. In what type of buildings and housing units are we living? What are the amenities and facilities that are available therein? How many rooms are there and what is the extent of overcrowding? How many people live in a given town or locality? How many children are there? How many women are there? How many are old enough to vote? What kind of jobs are we doing? What is our level of education? Do we have the required qualifications or skills to satisfy the needs of the labour market? The census helps to answer these questions and many others.

It provides up-to-date and disaggregated data on the housing conditions, the spatial distribution, and the demographic and socio-economic characteristics of the population. These data are essential for assessing the country’s demographic, social and economic performance and for developing sound policies and programmes aimed at fostering the welfare of the country and its population.

Census data are also useful to business, industrial and commercial organisations to estimate and forecast demand for their products and services, and to assess the supply of manpower with the relevant skills to run their activities.

Furthermore, census data are used in the derivation of many important and meaningful social indicators that are needed by local and international organizations. Thus, many social indicators, as defined in the set of indicators recommended by the United Nations Statistics Division, can only be worked out from census data.

1.3 Historical background

Census taking in Mauritius dates back to the 18th Century. The first complete census for the Island of Mauritius, then known as Isle de France, was taken in 1735 under the governorship of Mahé de Labourdonnais. Since then, numerous complete censuses or partial counts of the population have been made. However, the first census report to be printed was probably that of 1846. The 1846 census was followed by another one in 1851. Since then, and up to 1931, censuses have been taken every ten years. With the outbreak of the Second World War, the one due in 1941 had to be postponed to 1944. The first census after the War was taken in 1952, and the ten-yearly programme was

subsequently resumed with a census taken in 1962 and another one in 1972. The one scheduled for 1982 was postponed to 1983 because of the 1982 parliamentary elections. The following census which was due in 1993 was advanced to 1990 to satisfy an urgent need for up-to-date data, particularly on the economic characteristics of the population. Census 2000 was the seventeenth for the Island of Mauritius and the seventh for the Island of Rodrigues.

1.4 Methodology

Census 2000, like the three previous ones, was taken in two distinct rounds: the Housing Census followed by the Population Census four months later. The main reason for adopting this enumeration procedure was the possibility of obtaining at the Housing Census a list of names and addresses of heads of households which served as frame for the Population Census.

1.5 Census dates

The Housing Census was conducted from 7 February to 18 June 2000 and the Population Census from 19 June to 16 July 2000 in respect of all persons alive at midnight on 2 July 2000.

1.6 Coverage

The Housing Census enumerated all buildings, housing units, households, commercial and industrial establishments, hotels and boarding houses as well as fruit trees of bearing age on residential premises.

The Population Census enumerated all persons present on census night in all households and communal establishments, as well as usual residents who were away on census night.

Housing and population enumerations were conducted on the Islands of Mauritius, Rodrigues and Agalega. As regards St Brandon islands, only a count of persons spending census night on the islands was made, these islands being fishing stations with no resident population.

1.7 Budget

The project value of the census was estimated at around Rs 75 Mn. Given the availability of existing infrastructure, services and human resources, the actual census budget worked out to around Rs 70 Mn.

1.8 Legal framework

Census 2000 was conducted according to provisions of the Statistics Act of 7 April 1951. The underlying procedures are given in Sections 5, 6 and 13 of the Act.

In March 1998, the Cabinet agreed to the conduct of a housing and population census in year 2000. In June 1999, it gave its approval to the census dates and to the topics to be investigated.

The regulations for the Housing Census, prescribing the particulars and information to be collected, were subsequently prepared and approved by the President in November 1999. The regulations were published as Government Notice 170 of 1999.

In December 1999, the President made an order to the effect that a census of the population be taken between 19 June and 16 July 2000 in respect of all persons alive at midnight on 2 July 2000. The Order was gazetted in December 1999.

The regulations for the Population Census, prescribing the particulars and information to be collected were approved by the President in April 2000 and published as Government Notice 57 of 2000.

1.9 Confidentiality of information collected

As stated earlier, the census was conducted under the provisions of the Statistics Act. The Act invests the Director of Statistics with the power to obtain particulars relating to a large number of topics, but at the same time it lays down strict rules to ensure that all information collected are kept strictly confidential. It forbids the publication of particulars in a way that enables identification of any individual person, undertaking or business. The Act also requires that every person employed in connection with the census to make an oath of secrecy to that effect before a magistrate. Penalties are provided for any breach of confidentiality. Furthermore, census field officers were provided with an authorization card duly signed by the Director. To safeguard the public against unauthorized persons, field officers had to produce their authorization card during interviews in connection with the census. Also, any person who refused or neglected to fill in the prescribed forms or to supply the particulars required, or knowingly made false statements, was liable to prosecution.

CHAPTER 2. CENSUS ORGANISATION

2.1 Office organisation

At the previous census, a division comprising some 20 technical staff was set up to work on the census project. Once the project was completed, the division was dissolved; however, one Statistician and one Senior Statistical Officer remained to constitute a core census unit, whose task was to ensure the optimum and continuous utilisation of census data.

A full-fledged census unit, whose main task was the planning and execution of Census 2000, was constituted in 1999, when census planning started. The unit, which included officers involved in cartographic work, fell under the responsibility of a senior statistician. The composition of the unit by grade was as follows:

- 1 Senior Statistician
- 3 Statisticians
- 5 Senior Statistical Officers
- 50 Statistical Officers/Clerical Officers (mainly involved in editing and coding of census questionnaires)
- 2 office attendants

The census operation can be broadly divided into five phases. These are (i) the preparatory work, (ii) the enumeration, (iii) the data processing, (iv) the dissemination of results, and (v) the evaluation and analysis of results. Tasks within each phase were identified and the responsibility for each task was assigned to a statistician or to the senior statistician. As regards field enumeration, the organization of the work followed a different set-up (see paragraph 2.2).

The tasks within each phase were as follows:

- (i) preparatory work
 - project document including calendar of activities
 - budget
 - legal basis
 - publicity materials and campaign
 - cartographic work
 - census questionnaire design
 - census guide and instructions booklet
 - tabulation plan
 - instructions manuals for field staff
 - editing and coding instructions manuals
 - printing of census documents including questionnaires and guides
 - recruitment and training of staff
- (ii) enumeration

- (iii) data processing
 - editing and coding of census forms
 - data capture
 - data validation and cleaning
 - tabulation
- (iv) dissemination of results
 - Publication of results
 - Posting on the website
- (v) evaluation and analysis of results

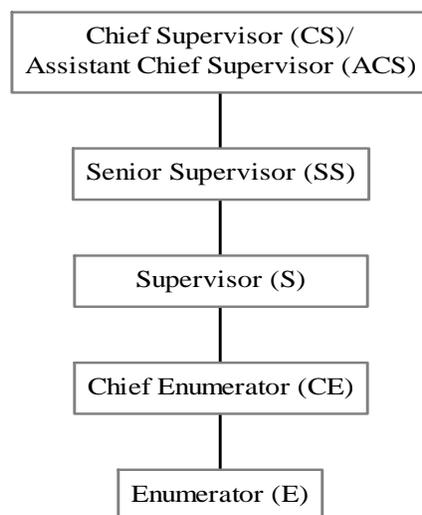
It should be noted that the tasks were not chronologically separate so that in many instances, there was overlapping of tasks as regards the time frame. Thus, data editing and coding, and data capture were carried out simultaneously.

Although specific jobs were assigned to each and every staff of the unit, the demarcation of job assignments was not rigid. Any one in the team was expected to shift to tasks that needed more pressing attention.

The unit also had the support of officers from the Central Information Systems Division (CISD) of the Ministry of Information Technology and Telecommunications for the processing of the census data.

2.2 Field organization

The field force consisted of about 6,225 officers operating in a structure involving five layers of hierarchy as follows:



The table below shows the number of officers needed by grades for the Islands of Mauritius and Rodrigues.

	Island of Mauritius	Island of Rodrigues	Total
Supervisory staff			
Chief Supervisor	←————→	1	→————→ 1
Assistant Chief Supervisor	←————→	2	→————→ 2
Senior Supervisor	17	-	17
Supervisor	137	6	143
Chief Enumerator	994	35	1,029
Enumerator	4,944	197	5,141
TOTAL	6,095	238	6,333

Although 6,333 persons were needed for the fieldwork, only 6,225 were recruited. This was mainly, because in some regions, the number of applicants did not meet the number of field staff needed. The short fall was 108 and concerned only the grade of enumerators where the number of recruits was 5,033 as compared to 5,141 needed. To ensure timely completion of the Population Census enumeration, 24 Enumerators were called to carry out an additional workload and 84 Chief Enumerators to work as enumerator as well.

The Chief Supervisor was responsible for the whole field operation in the country. He was supported by two Assistant Chief Supervisors. Seventeen Senior Supervisors worked under the direct supervision of the Chief Supervisors and each Senior Supervisor had the charge of about eight Supervisors and 60 Chief Enumerators for the Housing Census, and an additional 300 Enumerators for the Population Census. A Supervisor had about seven Chief Enumerators and 36 Enumerators working under his supervision.

The Housing Census enumeration was carried out by the 1,029 Chief Enumerators, each of whom had to control the work of about 5 Enumerators at the Population Census.

Supervisors, Chief Enumerators and Enumerators working on the Island of Rodrigues worked under the supervision of the Senior Statistician responsible of statistics for the Island of Rodrigues.

As regards the Island of Agalega, two officers attached to the Meteorological Services on the island were recruited to carry out the Housing and the Population Census enumerations.

2.3 Calendar of activities

A timetable indicating the sequence of each component operation of the census was prepared as an overall framework for the census. It served as a guide for measuring the progress of work at each stage of the census operation. It was thus possible to detect delays and errors in time estimates by comparing the calendar target dates and the actual dates of implementation.

Below is the calendar giving the actual dates of implementation of activities.

Activities	Date of implementation
A. Preparatory work	
1. Cartographic work:	
(i) Cartographic field work	Jan 1998- May 1999
(ii) Allocation of workload to fieldstaff	June- Oct 1999
(iii) Preparation of census field maps	June – Dec 1999
(iv) Preparation of geographical codes	June – Dec 1999
2. Design of questionnaire	
(i) Discussions with government stakeholders	August 1998- June 1999
(ii) Final draft of questionnaires	
Housing Census	Sept. 1999
Population Census	January 2000
3. Legal instruments	
(i) Cabinet agreed to the principle of carrying a census in year 2000	March 1998
(ii) Cabinet approved census dates and topics to be investigated	June 1999
(iii) Cabinet approved regulations for the Housing Census	October 1999
(iv) President approved regulations for the Housing Census and gazetting of regulations	Nov. 1999

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- | | | |
|--------|---|------------------------|
| (v) | National assembly voted motion to the effect that a Population Census be taken | Dec 1999 |
| (vi) | President made Census Order and gazetting of Order | Dec 1999 |
| (vii) | Cabinet approved regulations for the Population Census | March 2000 |
| (viii) | President approved regulations for the Population Census and gazetting of regulations | April 2000 |
| 4. | Preparation of census guide | Jan-Feb 2000 |
| 5. | Printing of census questionnaires and documents | |
| (i) | Census documents (authorisation cards, listing sheets, etc.) | January 2000 |
| (ii) | Housing Census questionnaires | January 2000 |
| (iii) | Population Census (questionnaires and guides) | April-
June 2000 |
| 6. | Preparation of instructions manuals | |
| (i) | Instruction manual for supervisory staff | Dec. 1999 |
| (ii) | Instruction manual for Chief Enumerators | Dec. 1999 |
| (iii) | Instruction manual for the Population Census field staff | May 2000 |
| 7. | Preparation of editing and coding instructions | |
| (i) | Housing Census | February 2000 |
| (ii) | Population Census | June 2000 |
| 8. | Preparation of publicity materials and publicity campaign | Aug 1999-
July 2000 |
| 9. | Recruitment of fieldstaff | |
| (i) | Supervisory staff | January 2000 |
| (ii) | Chief enumerators | January 2000 |
| (iii) | Enumerators | June 2000 |

- | | | |
|------------------------------------|--|--------------|
| 10. Training of fieldstaff | | |
| (i) Housing Census | | January 2000 |
| (ii) Population Census | | June 2000 |
| 11. Training of editors and coders | | |
| (i) Housing Census | | March 2000 |
| (ii) Population Census | | July 2000 |

B. Census enumeration

- | | | |
|---|--|--------------------------|
| 12. Housing Census | | |
| (i) Distribution of documents and materials to fieldstaff | | January 2000 |
| (ii) Field reconnaissance | | January 2000 |
| (iii) Enumeration | | Feb-April
2000 |
| (iv) Submissions of completed census forms and other documents to head office | | March-
April 2000 |
| 13. Population Census | | |
| (i) Preparation of addressed population census forms | | May-
June 2000 |
| (ii) Preparation of workload of enumerators | | May-
June 2000 |
| (iii) Distribution of census materials to fieldstaff | | June 2000 |
| (iv) Distribution of census questionnaires and guides to heads of households | | June 2000
(last week) |
| (v) Collection of completed questionnaires and submission to head office | | July 2000 |

C. Processing

- | | | |
|------------------------|--|------------------------|
| 14. Editing and coding | | |
| (i) Housing Census | | March-
May 2000 |
| (ii) Population Census | | Aug 2000-
June 2001 |

15. Design and testing of computer systems for data entry		
(i)	Housing Census	March 2000
(ii)	Population Census	June 2000
16. Data entry		
(i)	Housing Census	March- May 2000
(ii)	Population Census	Sept 2000- July 2001
17. Data validation and cleaning		
(i)	Housing Census	April- May 2000
(ii)	Population Census	July- August 2001
18. Tabulation		
(i)	Housing Census	June - Oct 2000
(ii)	Population Census	September - Oct 2001

D. Dissemination

19. Publication of results		
(i)	Housing Census	
	Main results (economic and social indicator issue)	Sept 2000
	Table reports	Nov 2000
(ii)	Population Census	
	Table reports	Nov 2001
	Main results (economic and social indicator issue)	Dec 2001

E. Evaluation and analysis

Data evaluation and analysis are currently being carried out and the results will be published during the course of year 2002.

2.4 Project budget and expenditure incurred

Estimates of the budget in the planning phase were based on expenditure incurred at the previous census brought up to the actual value by adjusting for price and population

increases during the period 1990-2000. The project value of the Housing and Population Census was thus estimated at around Rs 75 Million. However, because of existing infrastructure and services, including personnel, the actual project budget was reduced to Rs 70 Million.

The breakdown of project budget and the expenditure incurred to date are given in the table below.

Items	Project budget (Rs '000)	Expenditure incurred to date (Rs'000)
1. Salaries of staff	56,500	56,147
<i>of which field staff fee</i>	<i>47,300</i>	<i>50,036</i>
2. Office accommodation	500	514
3. Electricity & telephone	450	58
4. Furniture	365	193
5. Stationery and other office equipment	300	496
6. Cartographic equipment and materials	500	224
7. Travelling & transport	3,000	3,282
<i>of which field staff travelling allowance</i>	<i>2,600</i>	<i>2,237</i>
8. Printing	2,000	1,065
9. Publicity	300	360
10. Data processing	2,600	1,270
11. Rodrigues missions	200	101
12. Contingencies	3,500	0
TOTAL	70,215	63,710

It is to be noted that around Rs 52 Mn, i.e. 82 % of the Rs 64 Mn spent to date, were used for payment of fees and travelling to field staff. Further, a bulk of Rs 42 Mn was incurred during the financial year 2000/2001.

2.5 Publicity

The success of the census operation depends to a large extent on the co-operation and understanding of the public. It was therefore necessary to have a publicity campaign to convince the population of the usefulness of the census and to appeal for their contribution.

The publicity materials included a census caption, video and audio spots, and communiqués in the media. The census caption and spots were prepared by a private agency. Spots were transmitted on radio and television by the national broadcasting station.

The publicity campaign started in February 2000 with the transmission of spots on radio and television during hours of wide audience. The spots were in three different languages, namely, Bhojpuri, Creole and French. These were transmitted more frequently during the first weeks of February 2000 when the housing census enumeration started and around the census night of 2 July 2000. The Director of Statistics also made brief interventions on radio and television; the objectives of the census and the confidential aspect of the information collected were covered and an appeal was made for the co-operation of the public.

Further, wide coverage of the event by the media contributed to public awareness.

CHAPTER 3. CENSUS CARTOGRAPHY

3.1 Geographical, administrative and electoral constituency divisions

The Republic is made up of the main Island of Mauritius, the Island of Rodrigues and several islands located at distances greater than 350 Km from the main island. The main land is divided into nine districts. These divisions which date to the time of the French occupation, no longer represent any administrative entity, though they are well known to most people.

The Island of Mauritius is divided into nine administrative regions - five Municipal Council Areas (MCA) and four District Council Areas (DCA). The MCAs and DCAs are further broken down into smaller areas, known as Municipal Wards (MW) and Village Council Areas (VCA) respectively. There are 20 Municipal Wards and 124 Village Council Areas. Municipal Wards constitute the urban regions and the Village Council Areas the rural regions.

The Island of Rodrigues is administered by the Ministry of Local Government, Rodrigues and Rural and Urban Development while the other islands are administered by the Ministry of External Communications. Rodrigues and the other islands are wholly rural.

There exists a third division, the electoral constituency division which is used for the parliamentary elections. There are twenty electoral constituencies on the main island and one on the island of Rodrigues.

3.2 Census enumeration divisions

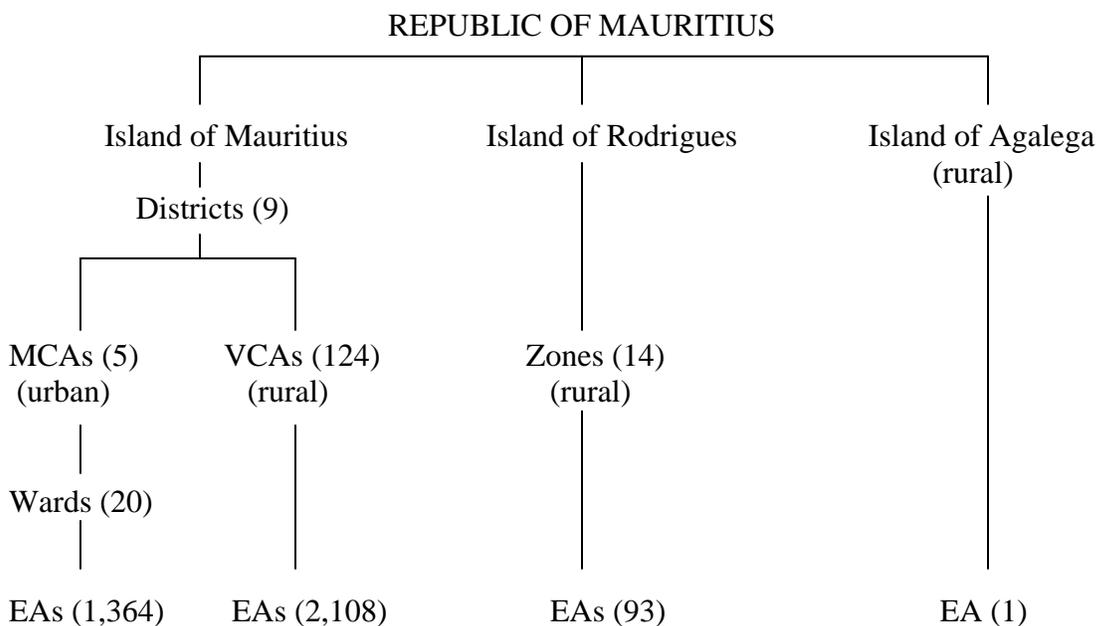
Because of the various types of boundaries that exist and the overlapping of one type on the other, a census mapping that takes into consideration all existing boundaries would be a complex and almost impossible task.

As at the 1990 Census, Municipal Wards and Village Council Areas, which constitute administrative regions for which data would be most relevant, were used as the starting point for the subdivision of the country into census enumeration areas (EAs). In splitting MW/VCA's into enumeration areas, care was taken to provide well-defined clusters with easily identifiable boundaries such as roads, lanes, rivers, etc. Enumeration areas were as far as possible made to contain equal number of households. On the average, enumeration areas contained about 75 households in rural regions and about 90 in urban regions, although the range of variation was between 0 in uninhabited areas to 260 in some EAs.

As regards the Island of Rodrigues, the island was split into enumeration areas having on average about 85 households, the range of variation being between 8 and 225 households. Fourteen zones regrouping adjacent localities were also identified.

There were 3,472 enumeration areas in the Island of Mauritius, 93 in Rodrigues and one in Agalega.

Below is a chart showing the census enumeration divisions used at Census 2000.



3.3 Mapping

The work of the Cartographic unit of the Office consisted of the continuous process of map updating after field visits. Maps that had been used for the 1990 Census and for other intercensal surveys were available; however, these needed further updating.

Various source documents were used in the preparation of census enumeration maps. These were on three different scales, namely the 1:2,500, the 1:10,000 and 1:25,000. Maps on the 1:10,000 and the 1:25,000 scales were used mostly for rural regions where there was little or no habitation. Base maps were mainly from the Ministry of Housing and Lands. Other sources include plan of morcellement plots from the Ministry of Public Infrastructure, and maps of housing estates from the National Housing Development Company Ltd.

At the beginning of 1998, an inventory of existing maps was made to have an assessment of the work already covered. For enumeration maps to be ready by the end of 1999, field visits were done almost every day and due attention was given to areas where there had been considerable development in terms of new settlements. Fieldstaff of the cartographic unit were requested to provide estimates of the number of households in the different regions covered by them, these estimates being important in the allocation of workloads to the field staff working for the census enumeration. Updating of maps was done as and when field visits to the various regions were completed. The main task,

thereafter, was the production of the Supervision Area maps and the Enumeration Area maps. Relevant boundaries of Geographical Districts, Municipal Wards/Village Council Areas and Enumeration Areas were inserted on the updated maps which all carried the main ground features of the regions. Supervision Area maps which showed agglomeration of enumeration areas falling under the control of a Supervisor were less detailed than the enumeration area maps. Supervision Area maps were produced on a 1:25,000 scale for rural regions and on a 1:5,000 scale for urban regions. Enumeration Area maps, which were needed at a more detailed level, were produced on a 1:2,500 scale.

Fieldwork in the Island of Rodrigues consisted of two two-week visits by officers of the Cartographic Unit to the island in 1999. Area maps used for the 1990 Census were then updated accordingly. The boundaries of the previous census enumeration areas were retained, except in the few cases where equitable allocation of workloads dictated otherwise.

3.4 Geographical coding system

The software used for tabulation provides with the possibility of producing tables at any defined geographical level; tables produced can then be summed up to higher levels if needed, provided that the geographical divisions follow a hierarchical structure. The hierarchical structure used at Census 2000 was the same as that used at the 1990 Census; however, an additional level was added to cater for the different islands.

The following geographical coding structure was used:

- (i) a one-digit island code (1-3)
- (ii) a one-digit district code (1-9)
- (iii) a two-digit Municipal Ward/Village Council Area code and
- (iv) a two-digit enumeration area code.

Thus the two-digit codes of Municipal Wards/Village Council Areas, when associated with the relevant district and island codes, gave unique Municipal Ward/Village Council Area identifiers made up of four digits. Similarly, an EA was uniquely identified by a six-digit code comprising the island code (1 digit), the geographical district code (1 digit), the Municipal Ward/Village Council Area code (2 digits) and the Enumeration Area code (2 digits).

In rare cases, boundaries of a VCA extended over two or three geographical districts. The same hierarchical coding procedure was applied to each part of the VCA, each part bearing the code of the district in which it was located. A total of about 25 VCAs had their boundaries over two or three districts.

Other geographical subdivisions, such as electoral constituencies and localities were also used; these, however, constituted geographical hierarchies different from the above.

CHAPTER 4. CENSUS QUESTIONNAIRES

4.1 Questionnaire design

4.1.1 Topics selection

Consultation with stakeholders from Government Ministries and Departments started in 1998. Heads of Government Ministries and Departments were invited via a circular letter to submit a list of demographic, social and economic data they considered essential for administration, planning and policy-making and which could be collected at the census. The proposals received were discussed at various levels. In the light of these discussions and taking into account recommendations of the United Nations Statistics Division on subject matters that can be investigated at a census, final selection of topics was made at a meeting with subject matter specialists from our parent Ministry.

The main considerations in the final selection of topics were:

- (i) the importance of the topics to the country,
- (ii) the cost for collecting and processing data on a given item,
Where it was possible by other means to obtain satisfactory information more cheaply, the topic was not selected.
- (iii) the suitability of topics,
Sensitive and controversial issues as well as questions that were too complicated or difficult for the average respondent to answer were avoided.
- (iv) whether the census was the appropriate method for data collection.
Topics that required detailed investigation or highly qualified staff were not included since they would be best canvassed by sample surveys.

4.1.2 Housing Census questionnaire

All topics investigated at the 1990 Census were included in the 2000 Housing Census questionnaire. Three new items were however added. These were: "Availability of domestic water tank/reservoir", "Principal fuel used in bathroom" and "Fruit trees on premises".

The Housing Census questionnaire was divided into seven parts. A list of topics and items included in the questionnaire is given below:

- (i) Part I – Location
- (ii) Part II – Type of Building

- (iii) Part III - Characteristics of buildings
 - Storeys above ground floor
 - Year of completion
 - Principal material of construction used for roof and walls

- (iv) Part IV - Characteristics of housing units
 - Ownership
 - Occupancy
 - Water supply
 - Domestic water tank/reservoir
 - Availability of electricity
 - Toilet facilities
 - Bathing facilities
 - Availability of kitchen
 - Refuse disposal

- (v) Part V - Characteristics of households
 - Household type
 - Name and address of head of household
 - Number of persons by sex
 - Tenure
 - Number of rooms for living purposes
 - Number of rooms for business or profession
 - Monthly rent
 - Principal fuel used for cooking
 - Principal fuel used in bathroom

- (vi) Part VI – Commercial and industrial establishments, hotels and boarding houses
 - Name and address of establishment or working proprietor/manager
 - Main activity in which the establishment is engaged
 - Number of persons engaged at the time of enumeration

- (vii) Part VII - Fruit-trees on premises
 - Number of fruit trees of bearing age by type

A copy of the 2000 Housing Census form appears at Appendix I.

The Housing Census form was designed to cover one housing unit, up to three households and one commercial/industrial establishment, hotel or boarding house. However, in practice varying situations arose.

The simplest case was a residential building accommodating one housing unit with one household where only one form was filled in.

If there were more than three households in the housing unit, additional forms were used to cater for the additional households.

In the case of a multi-housing unit building, one form was used for each housing unit.

For partly residential buildings, one form was filled in to cover one housing unit, up to three households and one commercial/industrial establishment, hotel or boarding house. More forms were used to cater for any additional housing units, households or establishments in the building.

In the case of a non-residential building, one form was used for each establishment found in the building. However, only the first form contained information on the characteristics of the building.

4.1.3 Population Census questionnaire

The 2000 Population Census questionnaire covered most of the topics investigated at the 1990 Population Census. A question on income was added while the questions on education were reviewed to include qualifications, other than those of the primary and secondary levels, of the respondent. The topic, main activity status of person during the year, which was investigated at the previous census was not included.

Topics and items included in the population census questionnaire are given below:

- (i) Location
- (ii) Names of persons
These information were asked only to ensure that all members of the household were enumerated. Also, the listing of names of each person facilitated the checking for accuracy and completeness of each entry at the time of enumeration and later, if errors or missing information still persisted on the form. It should be pointed out that names were not captured at the data entry stage, so that data collected could not be identified with any individual person, in line with the requirements of the Statistics Act.
- (iii) Demographic and social characteristics
 - Relationship to head (only one head is allowed for each household)
 - Sex
 - Age
 - Date of birth (This question served as a verification to the age reported earlier)
 - Citizenship
 - Marital Status
 - Religion
 - Linguistic group
 - Language usually spoken

-
- (iv) Whether disabled or not
Type of disability, if disabled
- (v) Migration characteristics
Whereabouts on Census night
Usual address
Usual address five years ago
- (vi) Fertility
For persons not single:
Age at first marriage
Whether married more than once
Number of children ever born (for women only)
- (vii) Education characteristics
For persons 2 years and above:
Languages read and written
School attendance
Primary and secondary education
- For persons aged 12 years and above:
Qualifications other than those of the primary and secondary levels
Details for the three highest qualifications were asked for.
Duration of training
Qualification received and field of study
- (viii) Current economic characteristics
For persons aged 12 years and over:
Number of hours worked for pay, profit or family gain from
Monday 26 June to Sunday 2 July 2000
- Was there a job at which the person did not work because of
illness, injury, holiday, industrial dispute, off-season inactivity,
temporary disorganization, etc.?
- Did the person take any active steps to look for work or set up a
business of his/her own during the past four weeks?
- Was the person available for work during the past week?
- How many months ago did the person work for the last time, even
for a few days?

The following referred to the person's job during the reference week or the person's last job if the person was without a job during that week.

Name and type of establishment
 Kind of business, industry or service
 Place of work
 Occupation
 Employment status
 Length of service with employer

(ix) Income

For persons aged 12 years and over

Total cash income in rupees received from all sources for the month of June 2000

A copy of the 2000 Population Census form is at Appendix II.

4.2 Census guide and instructions

A census guide and instructions booklet was prepared and distributed to all heads of households. The booklet contained extensive explanations on how to fill in the census form and answered questions that people usually asked about censuses. Thus the objectives of the census, what happened to the census forms once the enumeration was over, the confidential aspect of collected information as well as the usefulness of each item were explained.

4.3 Printing of census questionnaires and guides

The census questionnaires, and the census guide and instructions booklets were printed by the Government Printer. The numbers printed were as follows:

(i)	Housing Census questionnaires	16,000 booklets of 25 questionnaires
(ii)	Population Census questionnaires	375,000
(iii)	Census guide and instructions booklets	312,000

Other census documents printed by the Government Printer included instruction manuals, authorization cards for field staff and listing booklets for Chief Enumerators.

CHAPTER 5. CONCEPTS AND DEFINITIONS, AND CLASSIFICATIONS

5.1 Concepts and definitions

Concepts and definitions used at Census 2000 are according to those defined in the handbook “Principles and Recommendations for Population and Housing Censuses – Statistical Papers Series M No. 67/Rev.1” of the United Nations Statistics Division.

5.1.1 Housing Census

(1) A building was defined as any independent free-standing structure comprising one or more rooms or other spaces, covered by a roof and usually enclosed within external walls or dividing walls which extended from the foundations to the roof.

Dividing walls, rather than external walls were quite common in densely built-up commercial areas of mainly urban regions. A building could be used or intended for residential, commercial, industrial or agricultural purposes or for the provision of services. It could be a detached housing unit, an apartment building, a shop, a warehouse, a factory, a workshop, a school, a church, etc.

For the purpose of the Housing Census, detached structures such as toilets, bathrooms, kitchens, stores and garages were not counted as separate buildings; they were accounted for as facilities available to the housing units to which they belonged. On the other hand, detached rooms used for living purposes, were counted as separate buildings. Similarly, a garage, storeroom or any temporary or improvised structure being used for living purposes at the time of enumeration, was counted as a building.

The following were enumerated at the Housing Census:

- (i) buildings used at the time of enumeration for residential, commercial, industrial purposes or for the provision of services, including hotels, institutions and public buildings;
- (ii) buildings intended for purposes mentioned at (i), but which were vacant at the time of enumeration;
- (iii) any shelter which, although not in conformity with the definition of a building, was used for habitation purposes at the time of enumeration;
- (iv) buildings under construction.

The following were not enumerated:

- (i) buildings used for agricultural purposes, such as stables for livestock, pens for poultry, greenhouses, tea or tobacco weighing offices on estates, stores on agricultural establishments, etc.;

- (ii) garages not used for habitation, commercial or industrial purposes;
- (iii) temporary shelters and improvised housing units that were not occupied at the time of enumeration;
- (iv) buildings being demolished or awaiting demolition;
- (v) dilapidated buildings which were uninhabited at the time of enumeration;
- (vi) embassy buildings except those where Mauritians were residing.

(2) A housing unit was defined as a separate and independent place of abode intended for habitation by one household, or one not intended for habitation but occupied for living purposes by a household at the time of enumeration. Although intended for one household, a housing unit could however be occupied by more than one household or part of a household. It could also be vacant at the time of the census.

A place of abode was considered separate if surrounded by walls and fences, and covered by a roof, so that a person or a group of persons could isolate himself or themselves from other persons in the community for the purposes of sleeping, preparing and taking their meals, and protecting themselves from the hazards of climate and environment. Such structure was considered independent when it had direct access from the street or from a public or communal staircase, passage, gallery or grounds, i.e. when the occupants were able to come in or go out of their living quarters without passing through anybody else's premises.

(3) A household was either (i) a one-person household, i.e. a person who made provision for his own food or other essentials for living, or (ii) a multi-person household, i.e. a group of two or more persons, whether related or not, living together and making common provision for food or other essentials for living. Cases of persons with varying degree of common housekeeping were considered as one household, if there was any arrangement to share at least one meal a day.

A distinction was made between the various types of households:

- (i) private households, which consisted of single and combined households. A single household was defined as a household in which all its members occupied a single housing unit while a combined household was defined as a household in which its members were lodged in rooms located in two or more buildings;
- (ii) households in communal establishments such as hotels, infirmaries, hospitals and other institutions;
- (iii) households in collective quarters; the members of such households were groups of foreign workers sharing accommodation; and

(iv) homeless households.

(4) A room was defined as a space in a housing unit enclosed by walls reaching from the floor to the ceiling or roof covering, or to a height of at least of two metres, and of a size large enough to hold a bed for an adult, that is, at least four square metres. A room partitioned by curtains or pieces of furniture was counted as a single room.

Rooms for living purposes were distinguished from rooms used for business or professional purposes. Rooms for living purposes include bedrooms, dining rooms, living rooms, studies, habitable attics and closed verandahs. Kitchens were also considered as rooms for living purposes if they satisfied the room definition; open verandahs, corridors, lobbies, bathrooms, toilets, stores and garages were not counted as rooms used for living purposes.

Rooms were considered as being used for business or profession if they were exclusively used for that purpose; otherwise, they were counted as rooms for living purposes.

(5) An establishment was defined as a place of work situated in a permanent or semi-permanent structure where an activity was carried out to produce or distribute goods or services. Mobile street vendors or street vendors selling goods on pavements or alongside streets were not considered as establishments.

5.1.2 Population Census

(1) Population base

The census enumerated all persons present on census night in all households, as well as usual residents who were absent on census night.

From the answers to questions on “usual address” and “whereabouts on census night”, it was possible to make a distinction between the following with reference to the census night:

- (i) usual residents of the household who were present on census night,
- (ii) usual residents of the household who were temporarily absent on census night and
- (iii) persons not residing in the household, but who spent the census night in the household.

This enables tabulation on the basis of place of usual residence as well as place where present on census night. Most published tables however, refer to the resident population, i.e population on the basis of place of usual residence, since they give a more accurate picture especially where household characteristics and migration are concerned.

The method used to obtain the resident population count consists of identifying all persons returning “here” to the question on “usual address”. The adopted method, however, excludes members of wholly absent households who were elsewhere in Mauritius on Census night from the count of residents; they are nevertheless included in

the count of present population. Wholly absent households who were not in Mauritius on Census night were not enumerated and are hence excluded from both the resident and present population counts.

(2) The enumerated population consisted of all persons who spent the Census night in the household as well as persons who usually lived in the household, but who were absent on census night.

(3) The present population consisted of all persons who spent the Census night in the household. Persons who answered “Here” to the question on “Whereabouts on Census night” constituted the present population.

(4) The resident population was defined as persons who usually lived in the household, whether they were present or absent on Census night. Persons who answered “Here” to the question on “Usual Address” were considered as residents. The resident population also includes non-mauritians working in the country, who reported their usual address as being in Mauritius, as well as their families living with them.

(5) Private households with usual residents were private households with at least one resident member at the time of the census.

(6) The head of household was any adult member, whether male or female, who was acknowledged as such by the other members of the household. Although the designation of a head for an institution, a hotel or a collective quarter was meaningless, the person-in-charge was considered as the head.

(7) A family nucleus consisted of either a couple with or without children, or a lone parent with unmarried children. The number of family nuclei was identified at the editing stage from answers to question on relationship to head. Only resident members of the household were considered when identifying the number of family nuclei.

(8) A person with a disability was defined as a person who, at the time of the Census, was limited to perform a daily-life activity in a manner considered normal for a person of his/her age because of a long-term physical or mental condition, or health problem. The condition or problem was considered as long-term if it had lasted or was expected to last for six months or more.

(9) A person was considered as literate, if he or she was able, with understanding, to both read and write a simple statement in his/her everyday life.

(10) Educational attainment referred to the highest level of education completed for persons not attending school or the level being attended for persons still attending school.

Only persons having a post-secondary degree were considered as having attained the tertiary level. Persons currently attending a post-secondary institution and who had not

yet acquired any post-secondary degree were not considered as having attained the tertiary level of education.

(11) The currently active population consisted of the currently employed and the currently unemployed population as defined below.

(12) The currently employed population included all persons aged 12 years and over, who during the reference week of 26 June 2000 to 2 July 2000,

- (i) worked for pay, profit or family gain for at least one hour, **or**
- (ii) held a job during the reference week, but did not do any work because of illness, injury, holiday, industrial dispute, off-season inactivity, temporary disorganisation, etc.

(13) The currently unemployed population included all persons aged 12 years and over, who

- (i) did not do any work for pay, profit or family gain during the reference week of 26 June 2000 to 2 July 2000, **and**
- (ii) did not hold a job during the reference week, **and**
- (iii) took active steps to look for work or set up a business anytime during the four weeks preceding the census night, **and**
- (iv) were available for work during the week ending 2 July 2000.

5.2 Classifications used

The main classifications used for codification of information collected were:

- (i) Locality codes
- (ii) Country codes
- (iii) Field of study codes
- (iv) National Standard Industrial Classification of Economic Activities, an adapted version of the International Standard Industrial Classification of all Economic Activities – Revision 3 of 1990
- (v) National Classification of Occupations, an adapted version of the International Standard Classification of Occupations - 1988

CHAPTER 6. FIELD OPERATION

6.1 Fieldstaff

6.1.1 Determining the number of field staff

The number of staff required for the field operation was worked out by the Cartographic Unit, on the basis of the expected number of households by region and on the workload statistics at the previous census.

An estimate of the number of households by region for year 2000 was derived using as benchmark, data obtained at the 1990 Census. Various sources of information were used to update the figures. These were: the population growth rate from the Demographic Unit, information collected at intercensal surveys as well as information gathered on the field by officers of the Cartographic Unit.

The number of Chief Enumerators for the housing census enumeration and the number of enumerators for the population census enumeration were then worked out using workloads at the previous census as guidelines. However, factors such as the spread of the households, the type of terrain, the number of special enumeration units such as hotels and institutions, the number of bungalows, vacant housing units, buildings under construction and establishments were considered to ensure an equitable distribution of workloads.

The number of field officers at higher levels in the hierarchy was derived using staffing ratios of the previous census and taking into consideration working conditions on the field.

It is to be noted that the number of enumerators was reviewed on completion of the housing census enumeration since the exact number of households to be visited was then available.

6.1.2 Procedure for recruitment

Field staff was recruited from government employees. This time-consuming exercise was started as early as 1998. A circular letter inviting applications from officers who were interested to work as field staff at the census, was sent to all Government Ministries and Departments. About 6,500 applications were received.

The Public Service Commission on the recommendation of the Director of Statistics appointed the Chief Supervisor, Assistant Chief Supervisors and Senior Supervisors. As regards the other grades of field staff, the Commission gave authorization to the Director of Statistics for their recruitment. This was done on the advice of a selection board and according to pre-defined selection criteria. The composition of the selection board and the selection criteria were as approved by the Commission.

The criteria for selection were as follows:

- (i) performance in previous censuses and surveys necessitating direct contact with households; selection of new recruits if engaged in census activities such as editing and coding of census questionnaires,
- (ii) nearness of applicants' residence to regions to be enumerated,
- (iii) availability for work outside office hours and
- (iv) other things being equal, priority given to staff of the Office and of the Central Information Systems Division (CISD).

6.1.3 The field force

A total of 6,225 field officers were recruited on a part-time basis for the census field operation. The number of officers recruited by grade was:

- (i) one Chief Supervisor,
- (ii) two Assistant Chief Supervisors,
- (iii) 17 Senior Supervisors,
- (iv) 143 Supervisors,
- (v) 1,029 Chief Enumerators,
- (vi) An additional 5,141 Enumerators were needed for the Population Census enumeration; however, only 5,033 Enumerators were recruited given that, in some regions, the number of applicants did not meet the number of officers needed. To ensure timely completion of the Population Census enumeration, 24 Enumerators were called to carry out an additional workload and 84 Chief Enumerators to work as Enumerator as well.

Fieldwork was performed outside office hours, and on Saturdays and Sundays. Besides, all staff took an oath of office to perform their duties according to the requirements of the Statistics Act.

6.1.4 Terms of appointment

6.1.4.1 Chief Supervisor/Assistant Chief Supervisor

The Chief Supervisor was responsible for the whole field operation and was assisted by two Assistant Chief Supervisors. These officers were appointed for a period of nine months as from January 2000.

The main responsibilities of the Chief Supervisor/Assistant Chief Supervisor were as follows:

- (i) to be responsible for administrative control and fieldwork in the Islands of Mauritius and Rodrigues, and the Outer Islands,
- (ii) to co-ordinate the field and office activities,
- (iii) to deal with problems of recruitment and replacement of field staff,
- (iv) to train Senior Supervisors and Supervisors,

- (v) to ensure that Senior Supervisors performed their duties satisfactorily and to deal with all unforeseen problems and
- (vi) to control the quality of work of Senior Supervisors.

The work required a total of 350 hours spread over a period of nine months from January 2000 to September of the same year. The Assistant Chief Supervisor received a fee of Rs 7,000 and travelling allowance of Rs 3,700 per month for the nine-month period of appointment while the Chief Supervisor received a monthly travelling allowance of Rs 3,700 for the nine-month period.

6.1.4.2 Senior Supervisor

Seventeen Senior Supervisors were appointed for a period of nine months as from January 2000. The Senior Supervisors worked under the direct supervision of the Chief Supervisors and each Senior Supervisor had the charge of about eight Supervisors and 60 Chief Enumerators for the Housing Census and an additional 300 Enumerators for the Population Census.

The main duties of the Senior Supervisor were as follows:

- (i) to attend training and briefing sessions and study instructions manuals for both the Housing Census and the Population Census,
- (ii) to reconnoitre the census area allocated to him with a view to clearly identifying the boundaries of Geographical Districts, District Councils, Municipal Wards, Village Council Areas and Census Enumeration Areas,
- (iii) to equitably allocate census enumeration areas amongst his Supervisors and Chief Enumerators,
- (iv) to show to each of his Supervisors the boundaries of the enumeration areas allocated to them and to ensure that there was no overlapping or omission,
- (v) to train Supervisors, Chief Enumerators and Enumerators under his/her responsibility as required,
- (vi) to ensure that all staff under his responsibility performed their duties as required and within the established time limits,
- (vii) to control the quality and timeliness of the work of his Supervisors and Chief Enumerators and keep necessary control documents up to date,
- (viii) to be responsible for the timely transmission and control of maps, census documents and materials from the office to the field and back,
- (ix) to act as liaison officer between the Chief Supervisor/Assistant Chief Supervisor and the field staff working under his responsibility.

The work of a Senior Supervisor required a total of 375 hours spread over a period of nine months from January to September 2000. The appointment as Senior Supervisor carried a remuneration fee of Rs 6,500 per month and a monthly travelling allowance varying from Rs 2,000 to Rs 3,700 depending on the spread of regions allocated to him.

6.1.4.3 Supervisor

One hundred and forty-three Supervisors were appointed for a period of eight months as from January 2000. On the average, a Supervisor had to supervise the work of seven Chief Enumerators and 36 Enumerators.

The main duties of the Supervisor were as follows:

- (i) to attend training and briefing sessions, and study instructions manuals for both the Housing Census and the Population Census,
- (ii) to make a reconnaissance of his allocated census area with his Senior Supervisor and be acquainted with the boundaries of the enumeration areas of each of his Chief Enumerators; subsequently to show to each Chief Enumerator the boundaries of his areas to avoid omissions and double counts,
- (iii) to assist his Senior Supervisor in allocating enumeration areas to Chief Enumerators so that the workload was equitably distributed,
- (iv) to be present during training of his Chief Enumerators to be able to deal with any problems that could crop up during field work; to train his Enumerators after making necessary arrangements as regards place and time of training sessions,
- (v) to control the flow of census documents from his Senior Supervisor to his Chief Enumerators and back,
- (vi) to accompany each of his Chief Enumerators in the first few interviews to ensure that all concepts were clearly understood,
- (vii) to control the quality of work of his Chief Enumerators at the Housing Census and his Enumerators at the Population Census,
- (viii) to prepare a count of housing units, households, and persons by gender, for each enumeration area from completed Housing Census books before submitting the latter to the Senior Supervisor,
- (ix) to ensure that fieldwork progressed satisfactorily and was completed on time and
- (x) to keep records for control of progress and quality of fieldwork.

These duties required some 400 hours of work, spread over a period of eight months from January to August 2000. The Supervisor was remunerated at the rate of Rs 5,000 per month; he was also given a monthly travelling allowance varying from Rs 1,000 to Rs 1,700 depending on the spread of regions allocated to him.

6.1.4.4 Chief Enumerator

The number of Chief Enumerators recruited for Census 2000 was 1,029. Chief Enumerators were recruited for the Housing Census enumeration from February to April 2000 and for leading a team of 5 Enumerators at the Population Census in June/July 2000.

The main duties of the Chief Enumerator were as follows:

- (i) to attend briefing sessions for the Housing Census,
- (ii) to make a reconnaissance of area allocated under the guidance of the Supervisor and update census maps if necessary,
- (iii) to carry out the enumeration of all buildings, housing units, households, commercial and industrial establishments, hotels and boarding houses as well as fruit trees of bearing age on residential premises, in each of the Enumeration Areas assigned to him, within time limit,
- (iv) to prepare counts of valid schedules, housing units, households and persons in each completed Housing Census book,
- (v) to prepare a list of buildings, housing units, household heads and their addresses for each Enumeration Area,
- (vi) to prepare a list of heads of households and their addresses for each of his enumerators,
- (vii) to attend briefing sessions for the Population Census,
- (viii) to be in charge of a team of about 5 enumerators and see that they performed their duties according to instructions given,
- (ix) to control the work of his Enumerators and check for errors and omissions,
- (x) to prepare a count of persons by gender for each Enumeration Area from the completed Population Census questionnaires,
- (xi) to keep records for control purposes and
- (xii) to make call-backs if necessary to obtain missing information and correct errors.

Chief Enumerators had to furnish about 145 hours of work for the Housing Census and an additional 50 hours for the Population Census. The fee for the whole work was Rs 17,000 inclusive of travelling expenses and was paid in two instalments. The first payment was made around May 2000 on completion of duties regarding the Housing Census, and the second around August 2000 on completion of duties regarding the Population Census.

6.1.4.5 Enumerator

The total number of Enumerators initially intended for the Population Census enumeration was 5,141. However, only 5,033 officers were recruited as Enumerators, as explained at paragraph 6.1.3. Twenty-four of them were called to carry out an additional workload while 84 Chief Enumerators had to work as Enumerator as well.

The main duties of the Enumerator were as follows:

- (i) to attend briefing sessions,
- (ii) to deliver Population Census questionnaires and guides to about 50-75 households 3 to 4 days before Census night,

- (iii) to call on each of the households after Census night to collect the questionnaires after checking that they were correctly filled in,
- (iv) to fill in the questionnaire, in part or in full, for households which were unable to do so and
- (v) to return completed questionnaires to the Chief Enumerators and make call-backs to households to correct errors or to obtain missing information if necessary.

The Enumerator had to furnish about 95 hours of work between mid-June and mid-July 2000. The fee offered to the Enumerator was Rs 5,000 and was inclusive of travelling expenses.

6.1.5 Training of field staff

6.1.5.1 Housing Census

Training of field staff for the Housing Census started in January 2000 with the training of Senior Supervisors by the Chief Supervisor. The training consisted of two formal sessions of three hours held on two different days. During the sessions, stress was laid on the responsibilities of Senior Supervisors and on study of the instruction manuals (Instructions to Supervisory Staff and Instructions for Chief Enumerators). Senior Supervisors were given instructions on how to carry out their duties, specially with regards to supervision and quality control of fieldwork, and timely transmission and control of census documents between the field and the office. They were also given guidelines on how to train their field staff.

Training of Supervisors and Chief Enumerators was later carried out by the Senior Supervisors. During two three-hour sessions, Senior Supervisors elaborated on the duties of the field staff and on the procedures for the housing census enumeration as set out in the instructions manuals. Other information relevant to census taking such as the objectives of the census, the uses of census data, the coverage, the field organization, the methodology adopted, the legal and confidential aspects of the census was given. The information, though not directly relevant to fieldwork, was given to equip interviewers so that they could perform in an efficient way. Emphasis was laid on creating and maintaining a good rapport with respondents.

Formal training sessions were supplemented by informal meetings where senior supervisors and supervisors ensured that instructions had been understood and that doubts that could in one way or another affect the smooth running of the field work were cleared.

Furthermore, a review of the situation on the field was made during the weekly meetings of Chief Supervisors and Senior Supervisors. Problems encountered on the field and which were not addressed in instructions manuals or during training sessions were discussed and solved; instructions were then promptly submitted to the different grades of field staff at the various meetings that followed.

6.1.5.2 Population Census

Training of field staff for the Population Census started in June 2000 with a session for Senior Supervisors and Supervisors, conducted by the Chief Supervisor. The training session, which lasted four hours, included a detailed study of the “Instructions for field staff” manual and of the “Census guide and instructions” booklet. The supervisory aspect of the fieldwork was also stressed upon.

Training of Chief Enumerators and of Enumerators were later conducted by the Senior Supervisors and Supervisors respectively. The training of each of the two grades consisted of two sessions of three hours. During the sessions, the instructions manual, and the Census guide and instructions booklet were studied; special attention was given to the use of listing sheets and to the filling in the census forms. As part of their training and as case example study, Chief Enumerators and Enumerators were asked to fill in a population census form in respect of their households; problems that arose during the exercise were discussed thereafter.

After the formal training sessions, regular meetings between the various grades of field staff were held. This was to ensure that instructions were clearly understood and were being appropriately followed, to take stock of the situation on the field and to solve problems that arose during fieldwork. The weekly meetings of Chief Supervisors and Senior Supervisors were maintained.

6.2 Census enumeration

6.2.1 Housing Census

The enumeration work was organized by EA. Enumeration within each EA was done in a systematic way to ensure that all buildings, housing units and households within the limits of the area were canvassed. This necessitated a good planning of the enumeration work involving the sub-division of each EA into well-demarcated blocks and the canvassing of one block after the other until the whole EA was covered.

One or two weeks before the housing census, Chief Enumerators made field reconnaissance and ensured that they were well-acquainted with the boundaries and ground features of the enumeration areas allocated to them. With the assistance of the Supervisors, Chief Enumerators identified blocks with well-defined boundaries such as roads, lanes, rivers, mountain sides or cane fields within each EA. EAs were then sub-divided accordingly and blocks within each EA were assigned a two-digit code starting with 01. Chief Enumerators then proceeded with the enumeration of buildings within each block in an orderly and systematic manner starting with block number 01 until the whole EA was covered. Each enumerated building was assigned a unique identification number consisting of the two-digit block number and a three-digit building number. Thus the first building in block 01 was given the identification number 01/001, the second 01/002 etc. These identifiers, besides being recorded on the census forms were

written on the enumerated buildings on a conspicuous place so that they could be easily spotted by the supervisors during control and later by the enumerators during the population census enumeration.

Chief Enumerators also had to indicate on their EA census maps their starting point as well as their route of travel for each block. This was to facilitate the control work of the Supervisors and later to help enumerators to easily locate the households they had to visit at the Population Census.

Information was collected in booklets of 25 housing census forms. Since the movement of census forms was organized by EA, booklets used for a given EA were tagged together and were kept separate from booklets used for other EAs. Furthermore, to avoid bottlenecks at the processing stage, tagged booklets were verified and returned to the office as soon as the canvassing of an EA was completed.

For each EA covered, the Chief Enumerator had to prepare a list of heads of households, vacant housing units and housing units under construction together with the addresses. The number of persons in occupied households was also recorded on the list. The list was later used for the preparation of workloads of Enumerators.

6.2.2 Population Census

A population census form, with the name and address of the head of household as well as other geographical information, was prepared for each private household enumerated at the Housing Census. Addressed population census forms were also prepared for hotels, institutions, collective quarters, vacant housing units and housing units that were under construction.

Each Enumerator was given a list of addresses to be visited and an addressed population census form for each of these addresses. He was also provided with some unaddressed forms for newly-formed households and for households that could have been missed at the Housing Census as well as a specially designed sheet to record the names and addresses of any newly formed or missed households.

Distribution of the census forms and guides to heads of households was done during the week preceding the Census night of 2 July 2000. The Enumerator was given specific instructions on how to proceed with the list of households provided to him. By inserting appropriate remarks for each entry on the list at the distribution and later at the collection stage, he was able to keep control of his work on the field. He was able to tell whether all the forms had been delivered and subsequently collected, whether a household had moved to a new address or whether a housing unit reported as vacant at the Housing Census, was now occupied.

Heads of households were requested to fill in the census forms according to instructions given in the "Census guide and instructions" booklet delivered to them along with the census form. However, if a household was unable to fill in the form, in part or in full, it

was the duty of the enumerator to complete or fill in the form according to statements provided by the head.

After delivery of the census forms, meetings at various levels of field staff were held to assess the situation on the field and to solve unexpected problems.

Special arrangements were made with managers or responsible officers of hotels, institutions and collective quarters for the enumeration of guests or inmates. Since it was difficult to obtain information from persons staying in hospitals, infirmaries, asylums and prisons, information from administration records were used to answer as many questions as possible. Enumeration of foreign workers living in collective quarters was done with the assistance of responsible officers of factories where the foreigners were working.

Collection of completed census forms started on the 3rd July 2000 and lasted until the third week of same month. When collecting the forms, enumerators had to ensure that information collected were legible, consistent and complete. Enumerators were asked to compare the resulting person count for each household with that obtained at the Housing Census and provided to them. Any difference had to be explained.

6.3 Quality assurance of field operation

The quality of information collected depends not only on the training of field workers, but also on the day-to-day control and supervision of the fieldwork.

Supervisors had to accompany each of their Enumerators in the first visits to ensure that interviews were done according to instructions given and that all concepts were clearly understood. Surprise and pre-arranged field checks as well as re-interviews also helped to increase the reliability of the information collected. Furthermore, Supervisors had to check all completed questionnaires at the early stage of enumeration and later a sample of the completed questionnaires to ensure that the quality of work was satisfactory. Meetings were held regularly to take stock of the field situation and to solve problems met on the field.

All supervisory staff had to record their field activities in provided diaries. The day-to-day record outlined the activities carried out, the dates on and the places at which the activities were carried out, problems encountered and remedial actions taken. The day-to-day recording of activities allowed supervisory staff to follow the progress of work and to assess the performance of each and every staff working under their supervision. Furthermore, it ensured that supervisory control prevailed all along the fieldwork.

6.4 Movement of census forms

Movements of census forms were organized by EA. Booklets or forms used for given EAs were tagged together in batches and returned to the census storeroom at the Office after verification. Special control forms were used to record the EA number of the batch,

the date of reception, the name of the officer returning the batch as well as the relevant counts for the EA covered.

Similarly, movements of the EA batches from the storeroom to the editing and coding sub-unit, from the editing and coding sub-unit to the Central Information Systems Division (CISD) for data entry and finally from the CISD to the storeroom for final storage were recorded on specially designed control sheets.

The control sheets helped to assess the progress of work and ensured that batches of all EAs had been through the various processing stages.

CHAPTER 7. PROCESSING OF CENSUS DATA

7.1 Editing and coding

7.1.1 Recruitment and training of editors and coders

About 15 clerical officers who were previously engaged in the various units of the Office and 10 newly recruited statistical officers were called on to the editing and coding of the census forms while a request for the services of 50 additional clerical officers was made to the Ministry for Civil Service Affairs and Administrative Reform. Between March 2000 and May 2001, small groups of clerical officers from the ministry joined the team. Staff turnover was high; many left for better jobs so that finally the number of editors and coders in the team attained a maximum of 50 around May 2001.

Editors and coders were trained by the statistician in charge of the exercise, in small groups and as and when they joined the team. Training was essentially an on-going process and supervisory staff had to ensure that instructions were understood and followed. To achieve uniformity and consistency, problems that arose and which were not covered in the manuals or during training sessions were discussed with the senior statistician. Instructions were then transmitted to the team of editors and coders during short briefing sessions that were conducted as and when needed.

The main duties of the officers consisted in the editing and coding of the census forms. However, they were also involved in various administrative works such as the preparation of appointment letters to field staff, preparation of addressed population census forms, preparation of census materials for field staff, preparation of lists of field staff for payment, reception of completed census forms and other documents from the field, etc. They also worked on the correction of invalid records at the validation stage of the Housing and Population data files.

7.1.2 Editing and coding of Housing Census questionnaires

Editing and coding of the Housing Census questionnaires started during the second week of March 2000 and was completed during the first week of May of the same year. Around 15,000 booklets of 25 housing census forms were handled in the process. However, since not all the 25 forms making a booklet were used, it is estimated that about 310,000 Housing Census forms were edited and coded. A team of 30 editors and coders and three supervisors was involved in the exercise. On the average, an officer edited and coded about 300 Housing Census forms per day.

Editors and coders first verified that geographical identifiers on the cover of booklets making the EA batch were the same. Consistency checks of block numbers, building numbers within blocks as well as the housing units within buildings were then performed. Editors finally proceeded to consistency checking, and editing and coding of the information collected according to instructions given.

The Housing Census form being largely pre-coded, only the locality codes had to be inserted. The coding of Section VI - Commercial, industrial establishments, hotels and boarding houses and Section VII - Fruit-trees on premises was treated as a separate exercise and was carried out around June and July 2000 when the editing and coding of Sections I to V was completed. The reason was that the capture and processing of information needed for the production of address labels had to be completed early enough so that addressed census forms could be prepared on time for the Population Census enumeration.

7.1.3 Editing and coding of Population Census questionnaires

Editing and coding of Population Census forms started in August 2000 and ended in June 2001. About 300,000 Population Census forms containing around 1,200,000 entries were handled. The team of coders which was composed of about 30 officers in August 2000 grew to a maximum of about 50 around May 2001. It should be noted that a request for 70 officers was made for this exercise; based on the number of officers requested, the editing and coding of the Population Census forms was scheduled to be completed around April 2001. The team therefore had recourse to extensive after-office work so that the exercise could be completed within a reasonable time frame. On the average, about 35 forms were edited and coded per day by an officer.

The editing and coding of the Population Census forms consisted of three different stages: the overall verification of the EA batch, consistency checking and editing of the information collected followed by coding.

Verification of the EA batches consisted of checking that all census forms in a given batch had the same EA codes; appropriate geographical codes were inserted on unaddressed forms that were used to enumerate newly formed households. Officers then proceeded with consistency checking and editing of the individual forms according to instructions given. Some of the checks performed were the verification of the presence of only one "head" per household and the sequential numbering of entries on the forms, consistency between age and date of birth, consistency between age and marital status, and consistency between age and educational attainment.

The coding of the Population Census forms was more complex and time-consuming than that of the Housing Census forms where only locality codes were inserted. Apart from the geographical codes that were printed on the address labels, all information on the population census forms had to be coded.

Various code lists were used. Because of difficulties encountered by editors and coders in understanding the different codes, a system was devised such that a form was handled by two officers. The first officer performed the overall verification of the EA batch and edited and coded the part of the form prior to economic activity. The second officer edited and coded the part on economic activity. The group working on the second part of the form was chosen according to its ability to understand the different codes involved.

The implementation of the system had, as result, a reduction in the number of coding errors and an increase in the number of forms handled daily by the team.

7.2 Data processing

7.2.1 Software and equipment

The software used for the processing of the census data was IMPS 4.1 (Integrated Microcomputer Processing System) of the International Programs Center of the US Bureau of the Census, which is specifically designed for census and survey data processing.

The software, which operates in a Windows environment, has separate modules for data entry (CENTRY), data edit and imputation (CONCOR), publication tabulation (CENTS), quick tabulation (QUICKTAB), table retrieval (TRS), variance calculation (CENVAR) and data entry control (CENTRACK). The modules that were used in the processing of the census data were CENTRY, CONCOR, QUICKTAB and CENTS.

The following equipment was available for data capture and processing:

- (i) 30 PCs for data capture,
- (ii) 3 PCs with zip disk drives for validation and tabulation,
- (iii) 2 line printers for printing of address labels and
- (iv) 2 laser printers for printing of publication tables.

7.2.2 Processing operations

The processing of the Housing Census data and the Population Census data were done along the same lines, although the various operations involved in the processing were somewhat more complex for the Population Census than for the Housing Census. On the other hand, the production of address labels concerned only the Housing Census. The processing of the census data involved the following main operations:

- (i) Writing programmes for
 - (a) data entry applications with range checks,
 - (b) validation of data files,
 - (c) checking consistency of EA data file names with Island, Geographical District, Municipal Ward/Village Council Area and EA codes in the data files,
 - (d) creation of address label files,
 - (e) tabulation of census data;
- (ii) Data capture;
- (iii) Data validation and updating of data files;
- (iv) Checking for inconsistent EA data file names;
- (v) Checking for duplicate and missing EAs;

- (vi) Production of address labels from Housing Census files and printing of labels;
- (vii) Consolidation of EA data files;
- (viii) Tabulation.

The aim of checking the consistency of EA data file names with the EA geographical codes that appeared in the data files was to ensure that the correct geographical codes of EA batches had been entered, and also to safeguard against creation of EA data files with similar names. Any error at this stage would have caused serious problems in the control of captured EAs: missing EA files and EA data files with similar names would then have had to be handled.

7.2.3 Data capture

Data entry with 100% verification (rekeying) of the Housing and Population Census forms was done by operators of the Central Information Systems Division of the Ministry of Information Technology and Telecommunications. The data entry staff was composed of a maximum of 28 operators and 5 supervisors working normally on a one-shift and five working-day system. Other applications were run concurrently with that of the census so that, whenever the need arose, data entry officers shifted to applications with higher priority. The Division had recourse to extensive after-office work to complete the data entry exercise within reasonable time limits.

The data entry exercise for the Housing Census started in March 2000 and was completed in May of the same year when data for about 310,000 forms were keyed in. The number of keystrokes involved in the data entry and verification exercise was estimated to be around 70 million while the average number of keystrokes per operator per hour was estimated to be around 7,500 with a range extending from 5,000 to 9,000.

Data of Section VI - Commercial, industrial establishments, hotels and boarding houses and Section VII - Fruit-trees on premises of the Housing Census questionnaires were captured during the months of July and August 2000.

Data capture for the Population Census started in September 2000 and was completed in July 2001. Data for around 300,000 Population Census forms containing about 1,200,000 records were keyed in during that period. The total number of keystrokes was estimated to be around 185 million and the average speed of an operator was around 12,000 keystrokes per hour, the range varying from 8,000 to 16,000.

7.2.4 Data validation

A validation programme that verified field consistencies was run to identify records with errors. Listings of these records were produced; relevant census forms were retrieved and corrections made accordingly and data files updated. The validation of Housing Census files was done, in parallel with the editing and coding exercise, by a team of five officers during the months of April and May 2000. Because of shortage of staff, the validation of

the Population Census data files was carried out on completion of the editing and coding exercise, i.e. during the months of July and August 2001.

Once validation of data files was completed, the data files were concatenated to the country level. The size of the concatenated data file for the Housing Census was about 56 MB while that for the Population Census was about 134 MB.

A preliminary set of publication tables was produced using the country data file. Analysis of these tables showed that no additional editing was needed for the Housing Census data. As regards the Population Census data, while the tabulated counts of households and population were found to be consistent with the Housing Census tabulated figures, there were inconsistencies in some tables. A list of relevant edit specifications was drawn and incorporated in a CONCOR programme to remove the inconsistencies from the tabulated data. It should be mentioned that the edits included in the CONCOR correction programmes were not exhaustive so that tables still contained slight inaccuracies that would be too costly and time-consuming to identify and correct.

7.2.5 Production of address labels

As mentioned earlier, names and addresses of heads of households obtained at the Housing Census were used as frame for the Population Census. Names and addresses as well as the geographical identification codes needed to identify households were extracted from the data files and printed on labels which were then stuck on Population Census forms.

A programme was run regularly to assess the completeness of the work before proceeding to the extraction of the required information. The programme in fact flagged all validated EA files on a master list of EAs by Supervisor. As and when all data files for a given Supervisor had been validated, these were consolidated. Information required was retrieved and address label files created. Printing of address labels was done in order of EA by Supervisor.

A total of about 310,000 address labels were printed during the month of May 2000; two line printers with a speed of 200 lines per minute were used for the task.

7.2.6 Tabulation

Tabulation was done using the CENTS module of IMPS. A set of 20 tables was produced for the Housing Census. Since all the tables were at the same geographical level, namely at the Municipal Ward/Village Council Area level, only one run was required.

As regards the Population Census, 114 tables at various area levels were produced. A different strategy was therefore adopted. Tabulation programmes were written according to topics irrespective of the geographical level at which tables were to be published. Eight sets of tabulation programmes involving the following topics were written:

demographic characteristics, fertility characteristics, economic activity and characteristics of the employed, characteristics of the unemployed, educational characteristics, household characteristics, migration characteristics and disability were written. Even though all tables in a set were not published at the same level, all intermediate table files for a given set were produced at the lowest level required. Appropriate level for each table was introduced in the table format files so that all tables were eventually produced at the level needed.

The tables produced by CENTS were publication-quality tables so that little text editing was needed. Only removal of duplicate tables at some area levels and some formatting as regards the page settings of large tables were performed before publication.

The publication table files were exported to the spreadsheet software EXCEL to facilitate their conversion to HTML files; the latter were subsequently posted on the office website.

The processing and tabulation of the Housing Census data were completed in October 2000. As regards the Population Census, the exercise was completed in October 2001.

CHAPTER 8. DISSEMINATION OF CENSUS RESULTS, EVALUATION AND ANALYSIS

8.1 Dissemination of census results

The processing and tabulation of the Housing Census data were completed in October 2000 while those of the Population Census data were completed in October 2001. Main results of the two census rounds were published in two issues of Economic and Social Indicators, namely,

2000 Housing Census – main results,
2000 Population Census – main results.

Detailed results were published in seven volumes of table reports. These are:

Volume I	-	Housing and Living Conditions
Volume II	-	Demographic and Fertility Characteristics
Volume III	-	Economic Characteristics
Volume IV	-	Educational Characteristics
Volume V	-	Household Characteristics
Volume VI	-	Geographical and Migration Characteristics
Volume VII	-	Disability

All the above publications are on sale at the Office and at the Government Printer while soft copies are available at the Office. Furthermore, the tabulation files have been converted to HTML files and are posted on the website of the office (<http://statsmauritius.gov.mu>).

A list of tables included in the table reports is shown at Appendix III.

8.2 Ad-hoc requests for census tables

The census has collected a vast amount of valuable information from which numerous and various types of analytical studies can be made. Tables that have been published so far are of general interest. The Office is aware that these will not satisfy the needs of specialized users. In this connection, specific tables for such purposes can be produced on request and within reasonable time limits.

8.3 Mapping products

It is currently envisaged to produce and disseminate statistical or thematic maps using census data. The aim is to make census results more meaningful to a wider community and easier to use. Maps will allow the general user to visualize the geographical distributions and patterns inherent to the census data; interest may reside in the current patterns and also in changes in the patterns that have occurred over time, particularly since the last census.

The creation of statistical or thematic maps will entail the digitization of maps with the relevant boundaries, as a first step. In this connection, the Office is envisaging the procurement of digitized maps of the country from the Ministry of Housing and Lands. Administrative and Enumeration Area boundaries will then have to be demarcated on the digitized maps while a census database of important indicators will have to be produced at disaggregated levels, before the production of thematic maps can start. The Office is aware that the task will take some time; it is however hoped that some thematic maps will be available by the end of the year.

8.4 Evaluation and analysis

The Office usually publishes unadjusted census data as soon as they are available and then carries out an exhaustive analysis and evaluation exercise. Data analysis and evaluation is currently being carried out and the results will be published in a series of analytical reports during the course of this year.

This report is the first of the series. Nine other analysis reports will be published as follows:

Volume II	-	Housing and household characteristics
Volume III	-	Population distribution and migration
Volume IV	-	Population data evaluation and projections
Volume V	-	Education: characteristics, prospects and implication
Volume VI	-	Disability characteristics
Volume VII	-	Nuptiality and fertility
Volume VIII	-	Health, morbidity and mortality
Volume IX	-	Economic activity – characteristics and prospects
Volume X	-	The elderly

CHAPTER 9. PROBLEMS ENCOUNTERED AND RECOMMENDATIONS

9.1 Shortage of staff

Problems of shortage of staff were met at various stages of the census operation, causing delays on the time schedule.

9.1.1 Field staff

There was a shortfall of 108 field officers in the grade of enumerators. In many regions, the number of applicants did not meet the number of enumerators required and it was not feasible to send officers from a region where they were in excess to another where they were scarce because of long distances involved. To ensure timely completion of the population census enumeration, it was necessary to allocate additional workloads to 24 Enumerators and to call upon 84 Chief Enumerators to carry out the workload of an Enumerator as well.

9.1.2 Editors and coders, and data entry operators

Editing and coding of the population census forms started in August 2000 with 30 officers. The number in post attained a maximum of around 50 towards the month of May 2001 when the exercise was nearing completion. The exercise which had been scheduled to be completed in April 2001 with 70 officers, was completed in June 2001, after extensive after office work.

All subsequent operations were consequently delayed. Delays in the data entry operation were further accentuated by shortage of operators coupled with priority of other applications. Again, officers had recourse to after office work so that census data capture could be completed within reasonable time limit.

9.2 Enumeration procedure

The procedure of enumeration adopted until now consisted of a two-round enumeration. The housing enumeration was followed by that of the population four months later. The main reason was the possibility of obtaining at the Housing Census a list of names and addresses of heads of households, which served as frame for the Population Census. However, the bulk of work that needed to be covered during the four-month period to that end (capture and processing of names and addresses of heads of households, printing of labels and preparation of addressed population census forms) caused undue stress.

Furthermore, the merging of the housing and the population census data, in view of a more comprehensive study of the housing conditions of households, has so far not been possible. An attempt made at the 1990 Census on census data of two districts had revealed that the percentage of record mismatch was around 5%.

9.3 Wholly absent households

Members of wholly absent households who were not in Mauritius on the night of the census were not enumerated and are hence excluded from all tabulations. On the other hand, those of wholly absent households who were elsewhere in Mauritius (e.g. in secondary residences, etc.) were enumerated at the place of their whereabouts. They are therefore included in the count of present population, but are excluded from the count of usual residents, the method adopted to arrive at the count of usual residents being based on persons returning "Here" to the question on usual address.

9.4 Place of usual residence

The place of usual residence is the geographical place where a person resides. While most persons had no difficulty in stating their place of usual residence, confusion arose with persons who have left the country temporarily, but are expected to return after some time and, with persons working temporarily in the country and are expected to return to their country. Although the treatment of such cases are clearly set forth in the instructions, it may be desirable in the future to set time limits of presence in, or absence from, the country in the definition of a "usual" resident.

9.5 Data processing

The use of new technologies for data processing, especially regarding data capture, would be desirable for future censuses. In spite of the high cost of the equipment, the benefits will be huge. Data quality will be improved while timeliness will be enhanced. Further, the use of electronic data capture will solve to a large extent the problem of shortage of staff met at the various processing stages since manual editing and coding and data capture will be negligible. It should be pointed out that the high cost of the equipment will be dampened by lower expenditure on salaries due to reduced numbers of editors and coders and data entry operators.

The use of electronic data capture will entail proper planning to achieve desired results. Proper questionnaire design with extensive testing will have to be carried out. There may be need to review the actual enumeration procedure which consists of the conduct of the census in two distinct rounds, namely the Housing Census followed by the Population Census four months later. The housing and population enumeration could be executed in a single round, preceded by a households listing exercise.