

# Workshop on Census Data Evaluation for English Speaking African countries

**Organised by**

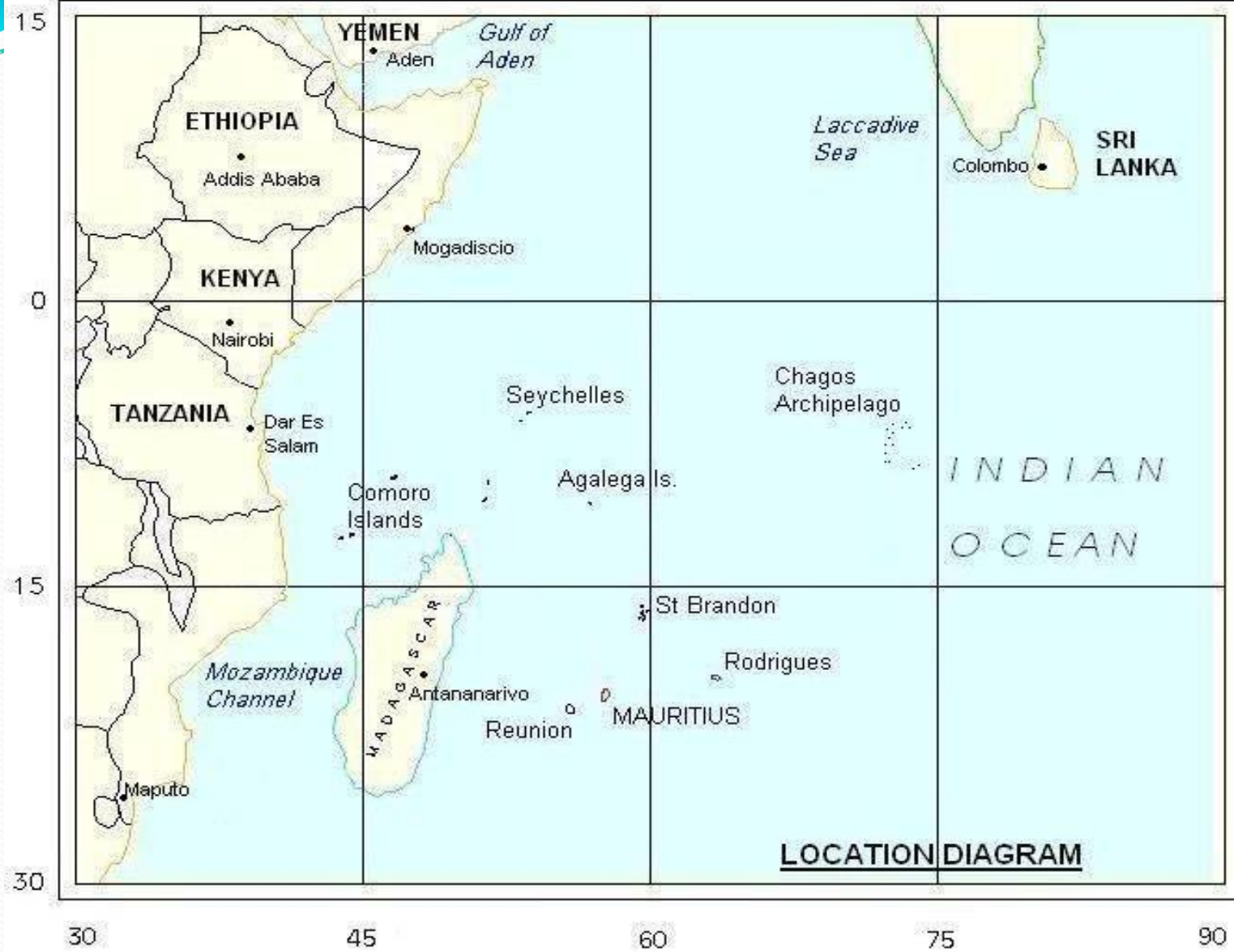
**United Nations Statistics Division (UNSD) , in  
collaboration with the Uganda Bureau of Statistics  
Kampala, Uganda, 12 – 16 November 2012**

# Country Experience Presented by

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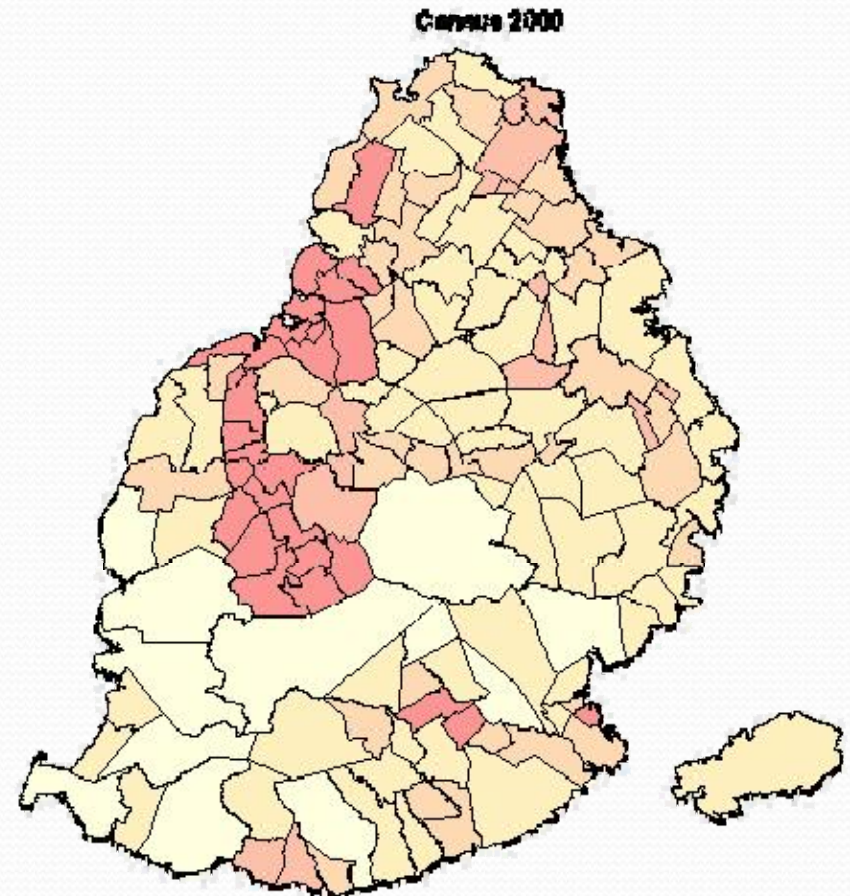
Statistics Mauritius  
Mauritius

November 2012



# *Islands of Mauritius and Rodrigues*

- **Capital: Port Louis**
- **Population : 1.24mn**
- **Population growth rate:  
0.4%**
- **Area: 2,040 km<sup>2</sup>**
- **Population density: 604  
persons/km<sup>2</sup>**
- **Monetary unit: MRupees**
- **Literacy rate : 90%**
- **Languages: English &  
French**





## *Outline*

- Census taking in Mauritius
- Evaluation of the 2000 Census
- Previous Census evaluations
- Census Errors
- Demographic Methods for census evaluation

## *Census taking in Mauritius*

- 1st complete Census in the Island of Mauritius was undertaken in 1735
- Since then, censuses have been taken in 1846, 1851 and every 10 years up to 1931.
- After the 2nd World War, the ten-yearly programme was resumed and Housing and Population censuses were undertaken in:  
1952, 1962, 1972,  
1983, 1990, 2000 and 2011



# *Census Organisation*

The 2000 Housing & Population Census (HPC) was conducted in the Island of Mauritius, Rodrigues and Agalega.

- 1st round - Housing Census
  - Chief Enumerators enumerated all buildings, housing units, households, commercial establishments, hotels, institutions etc.
  
- 2nd round - Population Census
  - Enumerators enumerated all persons present on census night as well as usual residents who were away on census night.

# *2000 Census Data Evaluation*

## **Census Evaluation**

Census data evaluation is carried after data are disseminated.

- Main objectives
  - To identify the types & sources of errors
  - To measure accuracy of data
  - To adjust the data where necessary



# *2000 Census Data Evaluation*

## **Census Evaluation**

- Two methods are available for census evaluation
  - Direct method - comparison of census data with data from other sources, e.g. Post Enumeration Surveys
  - Indirect method – external and internal consistency checks.
  
- Mauritius => Census evaluation through Demographic methods using previous censuses and comparisons with administrative data.

## ***2000 Census Data Evaluation***

- **Previous Demographic Census Evaluation**

- 1<sup>st</sup> census for which data evaluation was carried out => 1952.
- 1962 and 1972 => census evaluated by Experts appointed under the UN Programme of Technical Co-operation.
- 1983 and 1990 => census evaluated by local staff under the guidance of UNECA Expert.
- 2000 census => census data evaluation were carried out by local staff.



# *2000 Census Data Evaluation*

- **Census Errors**

- Census => massive data collection, errors may creep in at any stage of data collection and processing.

- These errors are:-

- (i) Coverage Error => error in the count of persons  
/housing units

- (ii) Content Error => error in the recorded  
characteristics of those persons  
that were enumerated in the  
Census



# *2000 Census Data Evaluation*

- **(i) Coverage Error**
- Coverage Error => non-sampling error that may have occurred during 2000 Census.
  - Omission - Omitting a unit that should have been included.
  - Duplication - Including a unit more than once.
  - Erroneous - Including a unit that should not have been included.

## *2000 Census Data Evaluation*

- Demographic methods used in Mauritius for detecting coverage error – 2000 Census
  - 1. Balancing equation by sex
  - 2. Growth rate
  - 3. Age and sex composition
  - 4. Sex ratio
  - 5. Child-woman ratio
  - 6. Population Estimates
  - 7. External Consistency Checks

# 2000 Census Data Evaluation

- **1. Balancing equation by sex**

- Comparing the 2000 Enumerated Population with the Expected population based on the 1990 census.

	<b>Expected 2000 Population</b>	<b>Enumerated Population - 2000 Census</b>	<b>Excess of Enumerated over expected</b>
<b>1990 Enumerated Pop.</b>	<b>1,056,660</b>		
<b>1990 - 2000</b>			
+ Live Births	211,689		
- Deaths	(75,425)		
+ Arrival of Mauritian Residents	1,111,526		
- Departure of Maurt. Residents	(1,120,857)		
<b>Expected Population-Year 2000</b>	<b>1,183,773</b>		
<b>Enumerated Population</b>		<b>1,178,848</b>	
<b>Excess - Enumerated /Expected</b>			<b>-4,925 (-0.4%)</b>

- So, when compared to international norms, a net deficit of 0.4% is acceptable.



# 2000 Census Data Evaluation

## • 2. Growth Rate

- Inter-censal growth rates can also help in the evaluation of census data.
- A low rate of growth would be suggestive of net under enumeration in the 2<sup>nd</sup> census relative to the 1<sup>st</sup> census or over enumeration of the 1<sup>st</sup> census relative to the 2<sup>nd</sup> census

Inter -censal period	Net Growth Rate (%)	Natural Growth Rate(%)
1962 - 1972	1.97	2.39
1972 - 1983	1.48	1.81
1983 - 1990	0.79	1.30
1990 - 2000	1.10	1.22

- In Mauritius, the natural Growth rate shows a smooth decline over time

# 2000 Census Data Evaluation

## • 3. Age and sex Composition

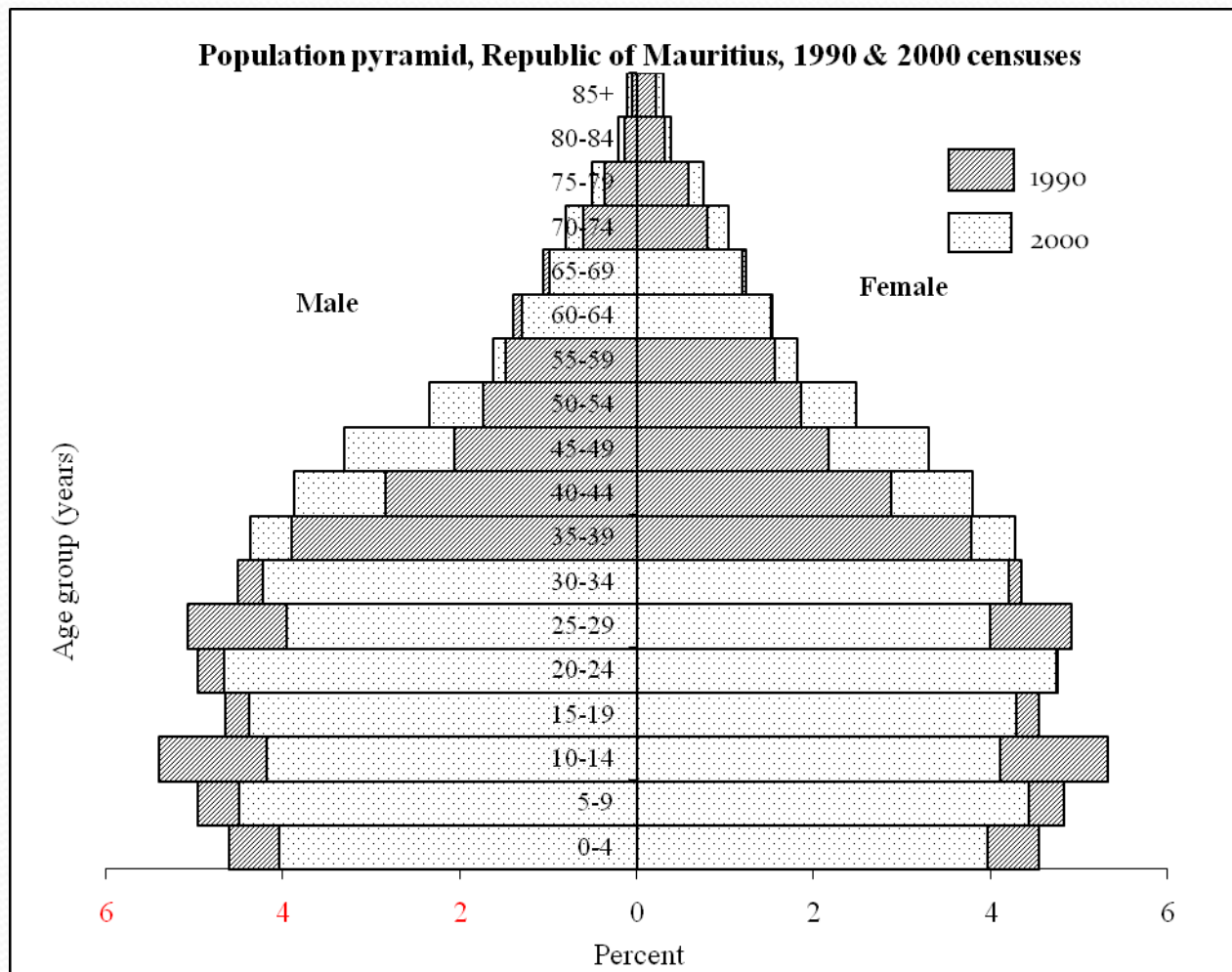
- The age and sex distribution (%) of the population for different censuses is also used to compare the Enumerated Population.

Age Group	Census			
	1972 (%)	1983 (%)	1990 (%)	2000 (%)
0 - 4	12.4	11.7	9.2	8.0
5 - 14	28.0	20.8	20.5	17.2
15 - 44	42.7	49.6	51.1	50.8
45 - 59	11.0	10.9	10.9	14.9
60+	5.9	7.0	8.3	9.1

- A decrease in the proportion of children aged(0–4) and (5 –14) and a general increase in the proportion aged 60 years and above can be observed from one census to another.

# 2000 Census Data Evaluation

- **3. Age and Sex Composition** (cont'd)
  - A Population Pyramid showing the 1990 and 2000 % population by age and sex.





# 2000 Census Data Evaluation

- **4. Sex ratio**

- The sex ratio is defined as the number of males per 100 females. It measures the composition of the population enumerated at a particular age with respect to sex.
- Unless affected by errors, the sex ratio of the enumerated census population, should be relatively stable from one census to another.

Census Year	1962	1972	1983	1990	2000
Sex ratio	100.8	100.2	99.2	99.8	98.1

- Significant departures from this pattern would indicate either of coverage error for population aged  $x$  or age misreporting.

# 2000 Census Data Evaluation

- **5. Child Woman ratio**

- The Child-woman ratio is defined as the number of children aged 0-4 years per 1,000 women in the age group 15 – 44 years.

	1983	1990	2000
Republic of Mauritius	473.7	363.3	316.7

The child–woman ratio are in line with the fertility decline registered over the past decades.

# *2000 Census Data Evaluation*

## ● **6. Population Estimates**

- This method of evaluation entails the projection of the 1<sup>st</sup> census forward in time to the 2<sup>nd</sup> census based on estimated:
  - mortality rates
  - fertility rates
  - net migration rates
  
- These rates were applied to the 1990 Population Census and the expected population derived in this manner was then compared with the 2000 enumerated population.



# *2000 Census Data Evaluation*

- **7. External Consistency Checks**

- ❖ **(i) Vital Registration System**

- Mauritius has a very good vital registration system.
- Counts of persons derived from Civil Status Division of Mauritius is complete, and provide valuable information on the accuracy of the census enumeration.

# *2000 Census Data Evaluation*

- **7. External Consistency Checks**

- ❖ **(i) Vital Registration System**

- Births and deaths registration has been used to assess census coverage of the population at youngest ages, which are usually under-enumerated.
  
- For the 2000 Population Census, adjustments for the under-enumeration of young children aged 0-9 ( 4,456 male and 3,569 female) were made to compensate this population coverage.

# *2000 Census Data Evaluation*

## ❖ (ii) Education Statistics

- Comparison of Population Census with education statistics is another external source of data with which Census data was compared.



# 2000 Census Data Evaluation

## ❖ (ii) Education Statistics

- Data from the 2000 survey conducted in March by the Ministry of Education was compared with census data on students currently going to school.

Age Group	Male			Female		
	2000 Census Data	School Statistics	% Difference	2000 Census Data	School Statistics	% Difference
5 - 9	52,702	56,172	-6.2	51,860	55,147	-6.0
10 - 14	44,862	43,104	4.1	44,222	42,770	3.4
15 - 19	25,952	23,192	11.9	25,635	23,095	11.0
<b>5 - 19</b>	<b>123,516</b>	<b>122,468</b>	<b>0.9</b>	<b>121,717</b>	<b>121,012</b>	<b>0.6</b>

# 2000 Census Data Evaluation

## ❖ (iii) Housing Census Count

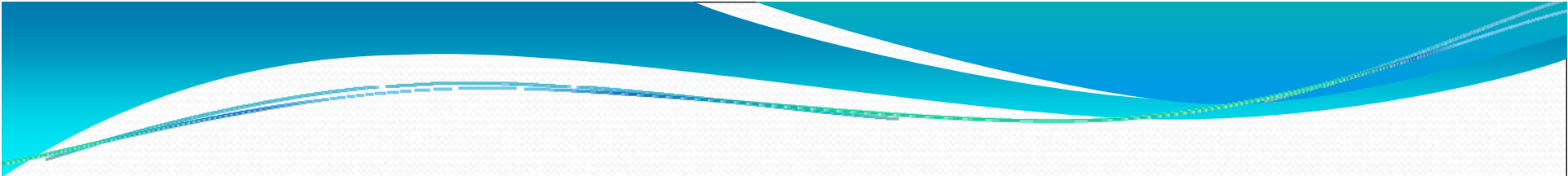
### ➤ Comparison of Population Census with Housing Census count

Housing Census was conducted from February to April 2000

Population Census was taken at the beginning of July 2000.

	2000 Housing Census - February- April	2000 Population - July	% Difference
Private Households	297,881	296,832	0.4
Population	1,168,495	1,165,570	0.3

➤ Thus, minor differences of around 0.3% in the population figures and 0.4% in the household figures are observed.



*For additional information, go to:  
<http://www.gov.mu/portal/sites/ncb/cso/report/hpcen00/census3/index.htm>*

***Thank you***