



Evaluation and analysis of socioeconomic data collected from censuses

United Nations Statistics Division



Socioeconomic characteristics

- ❑ Household and family composition
 - ❑ Educational characteristics
 - Literacy
 - School attendance
 - Educational attainment
 - ❑ Marital status
 - ❑ Economic characteristics
 - Economic activity (labor force participation)
 - Status in employment
-



Household population

- The concept of household is based on the arrangements made by persons, individually or in groups, for providing themselves with food and other essentials for living
 - A household may be either (a) *a one-person household, a person who makes provision for his or her own food and other essentials for living without combining with any other person to form a multi-person household or*
 - *a multi-person household, that is to say, a group of two or more persons living together who make common provision for food and other essentials for living*
 - The persons in the group may pool their resources and may have a common budget; they may be related or unrelated persons or constitute a combination of persons both related and unrelated
-



Institutional population

- ❑ The institutional population comprises persons who are not members of households and living in military installations, correctional and penal institutions, dormitories of schools and universities, religious institutions, hospitals and others
- ❑ Personnel responsible for the running of an institution and not living in dormitories or similar accommodations should be excluded from the institutional population



Household and family composition

- ❑ The **family** within the household is defined as those members of the household who are related, to a specified degree, through blood, adoption or marriage

 - ❑ The differences between the household and the family are that:
 - household may consist of only one person but a family must contain at least two members,
 - the members of a multi-person household need not be related to each other, while the members of a family must always be related
-



How to analyze household characteristics

- ❑ Distribution of the households by size
- ❑ Average household size
- ❑ Distribution of households by composition
 - One-person household
 - *Nuclear household, consisting a single family nucleus,*
 - *Extended household, single family nucleus with other related persons, more than one nucleus family, etc.*
 - *Composite household, a single family nucleus with other non-related persons, two or more people related to each other but not family nucleus*

Source: UN Principles and recommendations



How to analyze household characteristics



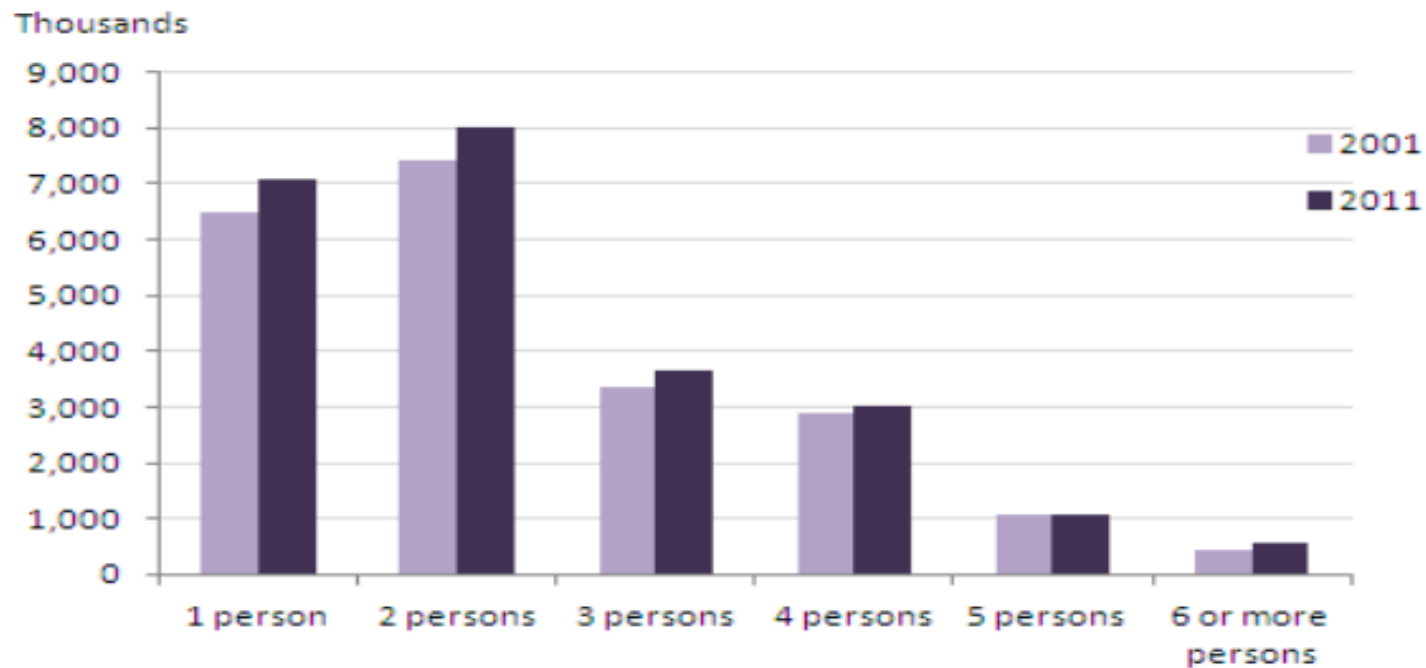
Household composition, Myanmar

- ❑ Relationship to the head of household
 - 1. Head
 - 2. Spouse
 - 3. Son/daughter
 - 4. Son-daughter in law
 - 5. Grandchild/Great grandchild
 - 6. Parents/parents in law
 - 7. Siblings
 - 8. Grandparent
 - 9. Other relatives
 - 10. Adopted child
 - 11. Non relative
-



Figure 1: Household size in England and Wales, 2001 and 2011

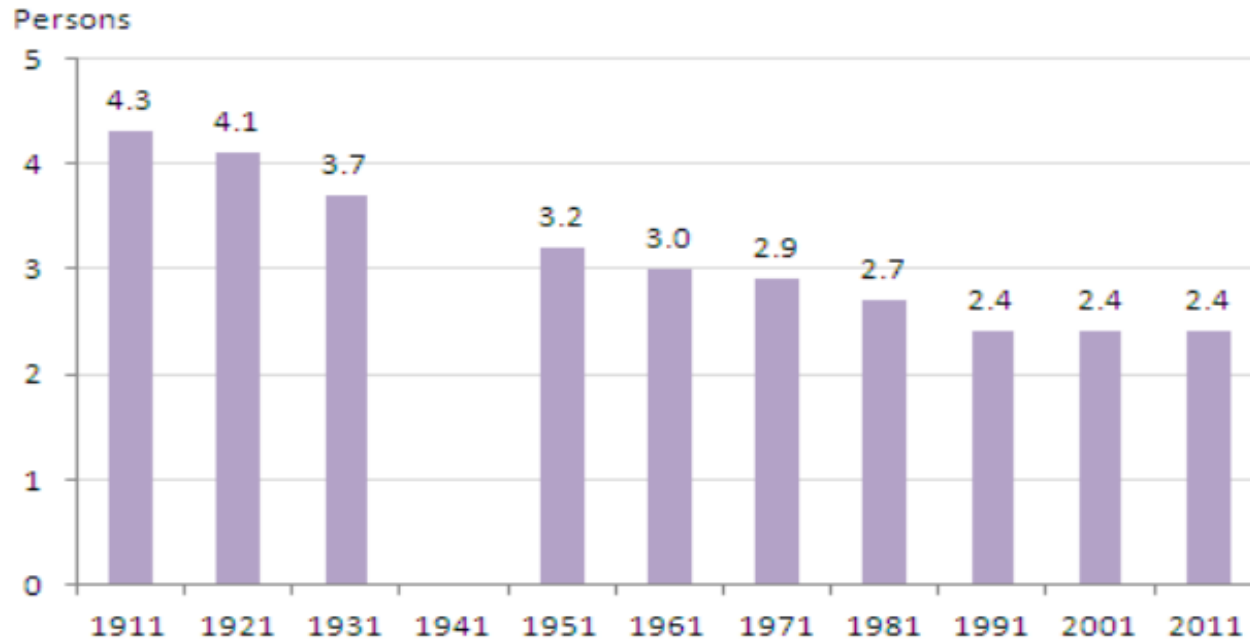
Statistics Division



Source: Census - Office for National Statistics



Figure 4: Average household size (persons) in England and Wales, 1911-2011



Source: Census - Office for National Statistics

Average HH size:
Household population/
Number of households



Map 2: Proportions of six or more person households by local authority in England and Wales; 2011

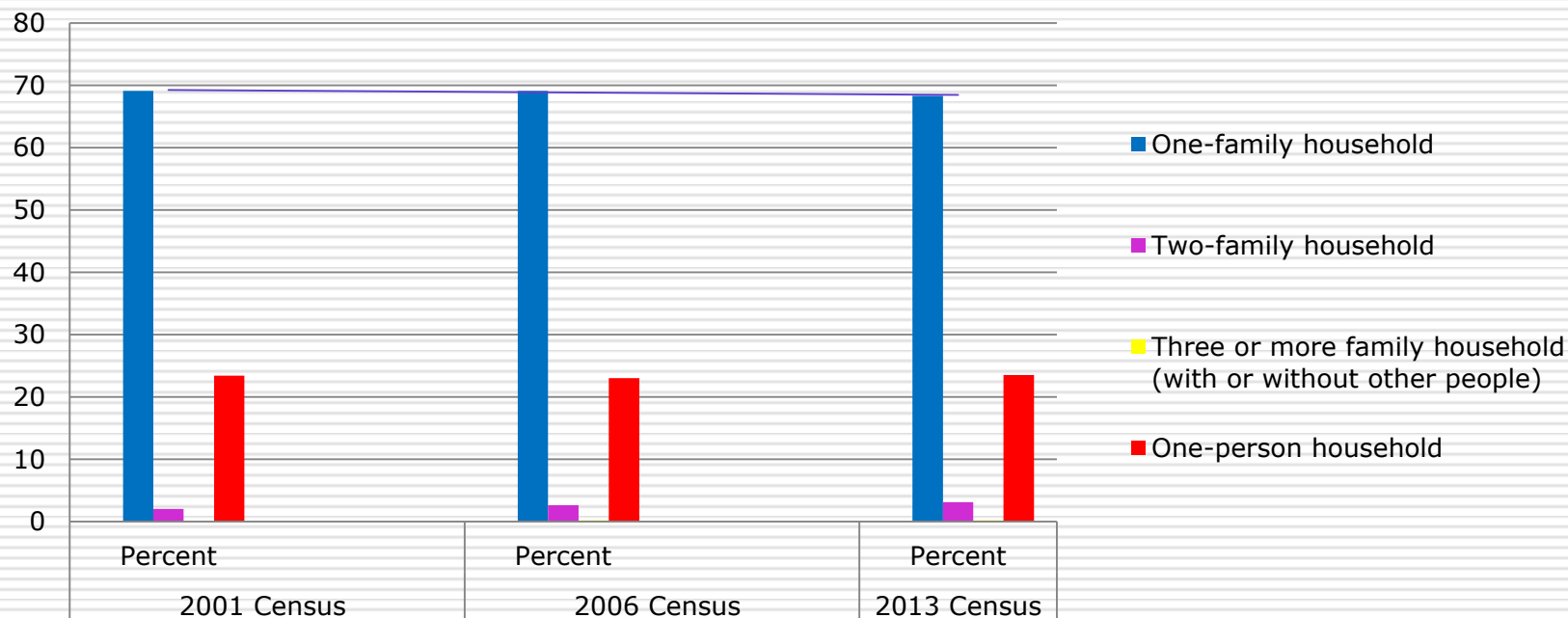
Statistics Division



Source: Office for National Statistics
Contains National Statistics data © Crown copyright and database right 2014
Contains Ordnance Survey data © Crown copyright and database right 2014



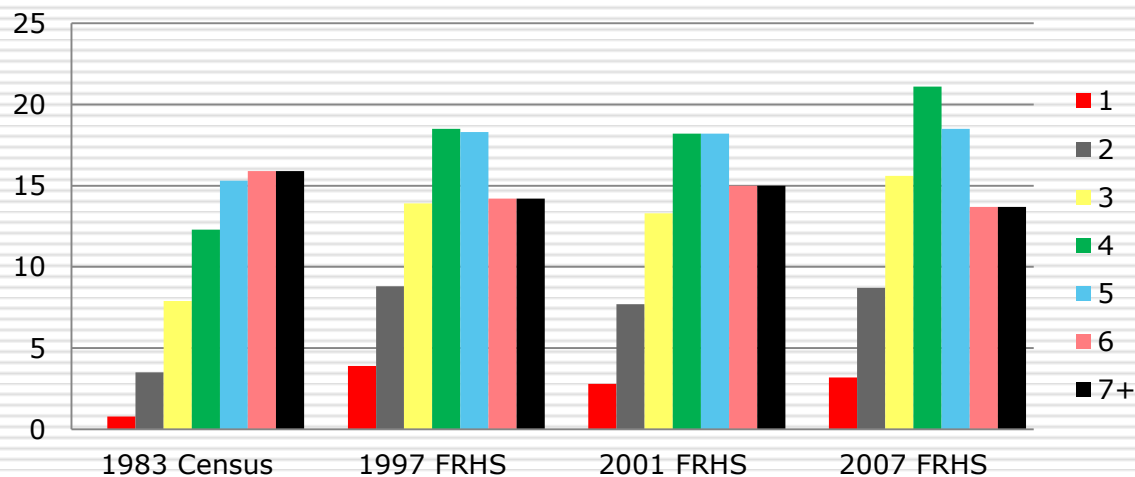
Household composition, New Zealand





Average HH Size, Myanmar

Percentage distribution of households by size, Myanmar



Average size
1983 census: 5.2
1997 FRHS: 5.0
2001 FRHS: 5.2
2007 FRHS: 4.9



Education

- ❑ Three core concepts;
 - **Literacy** – ability to read and write a short, simple statement
 - **School attendance** – current, regular attendance at an accredited educational institution or program
 - ❑ Distinguished from enrollment, which means that the student is officially registered at school, not necessarily that s/he actually goes to class
 - **Educational attainment** – highest grade completed within the most advanced level reached in the educational system
-



Education

- ❑ **How to evaluate the quality of data:**
 - Cohort analysis
 - Comparison of education indicators calculated from the census and other sources of data –household surveys, administrative registers
-



Cohort approach

- ❑ Use the demographic concept of birth cohort to generate time series data for people who were born in the same year/period by their completed level of education and literacy
 - ❑ Analyze successive census data by cohorts - if they show the same or similar number/percentage for certain level of education while age increases
 - ❑ Assumptions:
 - Population size changes with births and deaths only – no migration
 - People do not continue education after reaching certain age
- based on educational system in a country
-



Cohort approach

- ❑ Data requirement :Consecutive population censuses by age groups, sex and literacy status and completed level of education
- ❑ Example for two successive censuses conducted in 1994 and 2004

Literate Population, Morocco, Male

Age group	1994 Census	2004 Census
15-19	1,001,617	1319162
20-24	862,136	1097725
25-29	606,808	884574
30-34	498,536	772151
35-39	436,522	595152
40-44	354,813	527018
45-49	192,203	448700
50-54	134,027	362123
55-59	99,384	184222
60-64	74,235	125762
65-69	40,602	81536
70-74	27,775	56054



Cohort approach

Literate Population, Morocco,
Male

Age group	1994 Census	2004 Census
15-19	1,001,617	1319162
20-24	862,136	1097725
25-29	606,808	884574
30-34	498,536	772151
35-39	436,522	595152
40-44	354,813	527018
45-49	192,203	448700
50-54	134,027	362123
55-59	99,384	184222
60-64	74,235	125762
65-69	40,602	81536
70-74	27,775	56054

Re- organization of data by birth cohorts

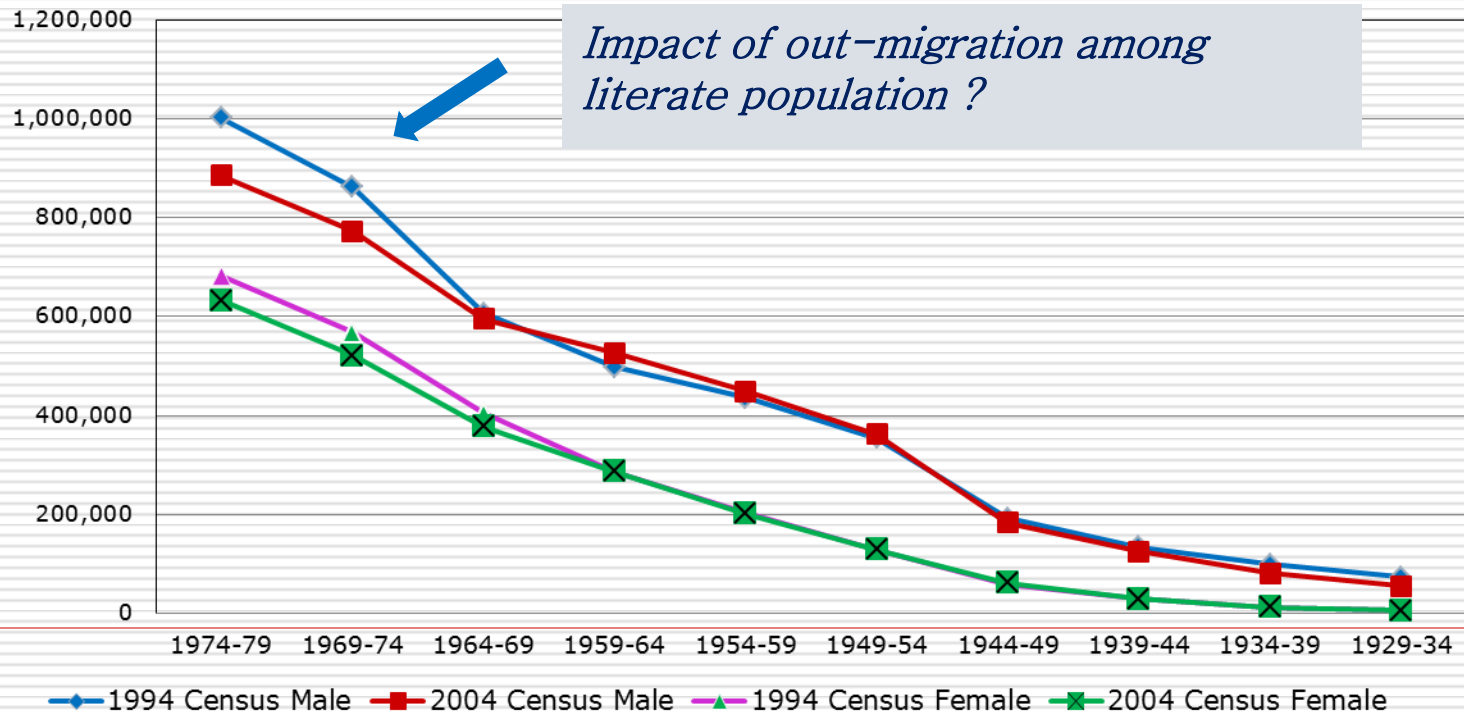
Literate Population, Morocco, Male

Age group	1994 Census	2004 Census	Year of birth
15-19	1001617	1319162	1984-89
20-24	862136	1097725	1979-84
25-29	606808	884,574	1974-79
30-34	498536	772,151	1969-74
35-39	436522	595,152	1964-69
40-44	354813	527,018	1959-64
45-49	192203	448,700	1954-59
50-54	134027	362,123	1949-54
55-59	99384	184,222	1944-49
60-64	74235	125,762	1939-44
65-69	40602	81,536	1934-39
70-74	27775	56,054	1929-34



Cohort approach

Literate population by birth cohort, Morocco, 1994 and 2004 censuses





Basic indicators

- ❑ **Adult literacy rate:** Percentage of population aged 15 years and over who can both read and write
 - Literate pop. (15+)/ Total population (15+)

 - ❑ **Youth literacy rate:** Percentage of persons aged 15-24 years who can both read and write in the population of that age group
 - Literate pop. (15-24)/ Population aged 15-24

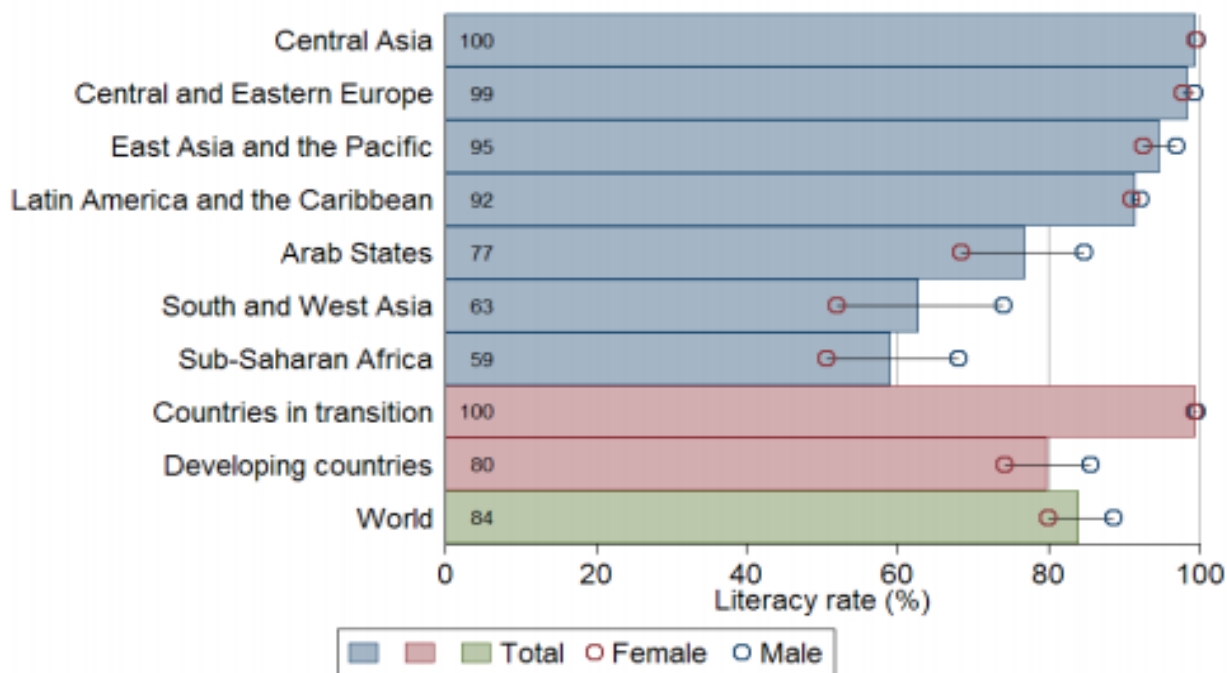
 - ❑ **Age- specific literacy rate**
 - Literate pop at age (X)/ Population at age X
-

Source: Education Indicators Technical Guidelines, UNESCO, 2009



Adult literacy rate

Figure 1. Adult literacy rate by region and sex, 2011

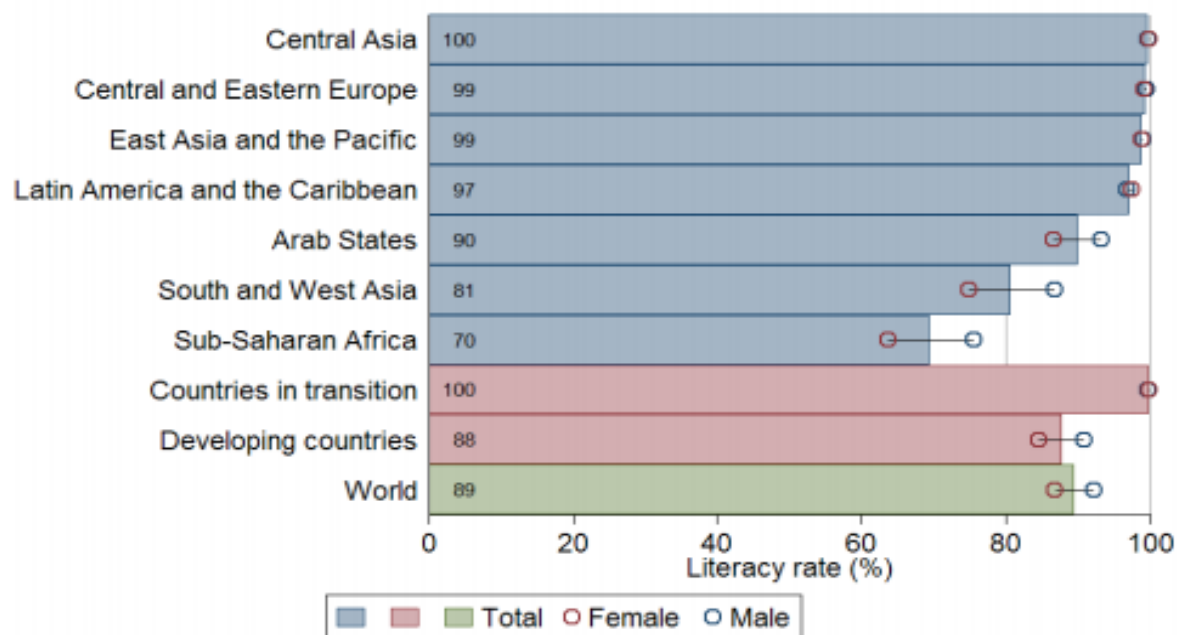


Note: 2011 data refer to the period 2005-2011.
Source: UNESCO Institute for Statistics, May 2013.



Youth literacy rate

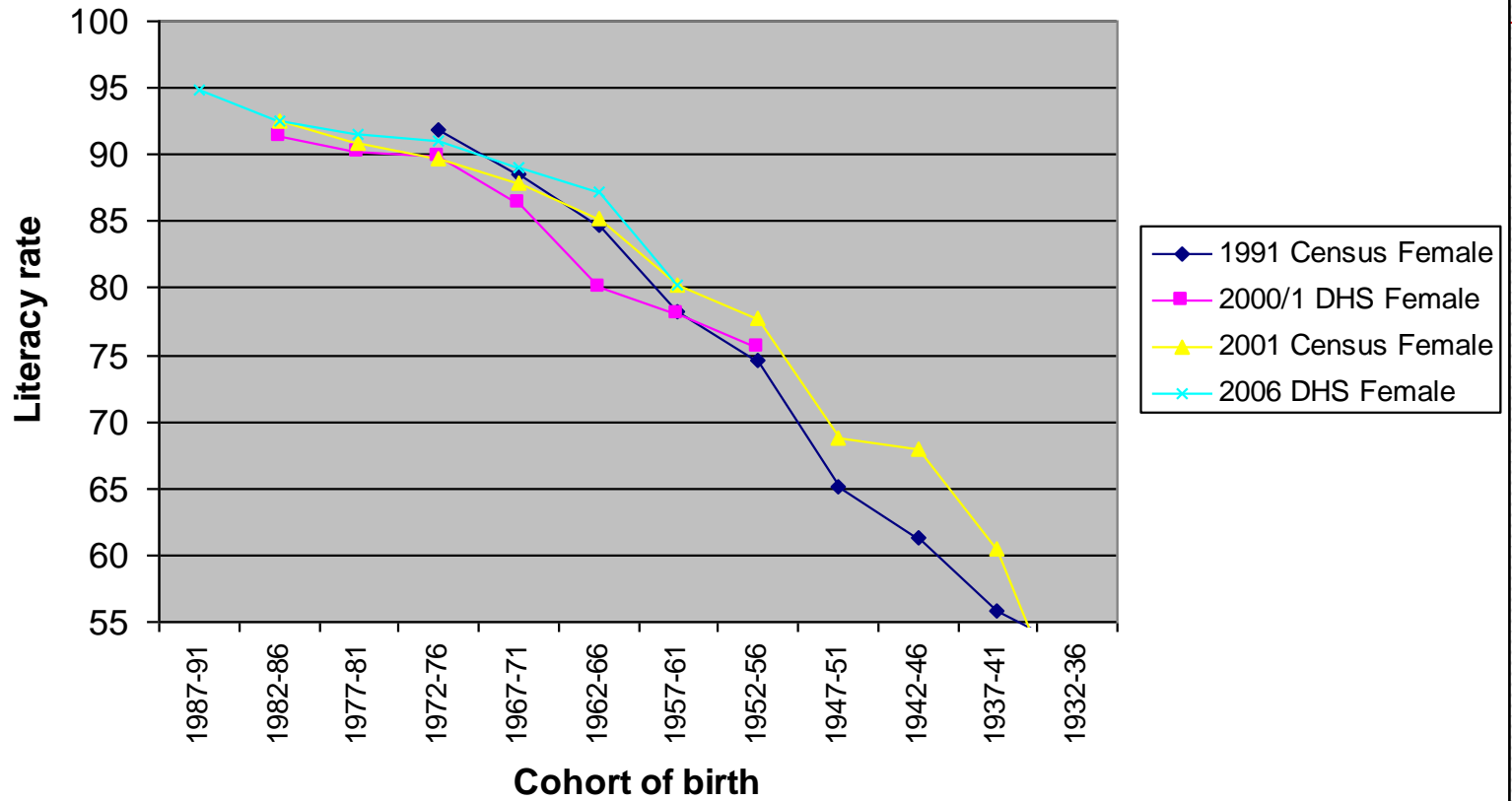
Figure 7. Youth literacy rate by region and sex, 2011



Note: 2011 data refer to the period 2005-2011.
Source: UNESCO Institute for Statistics, May 2013.



Literacy rate by cohort of birth, females, Namibia DHS and censuses

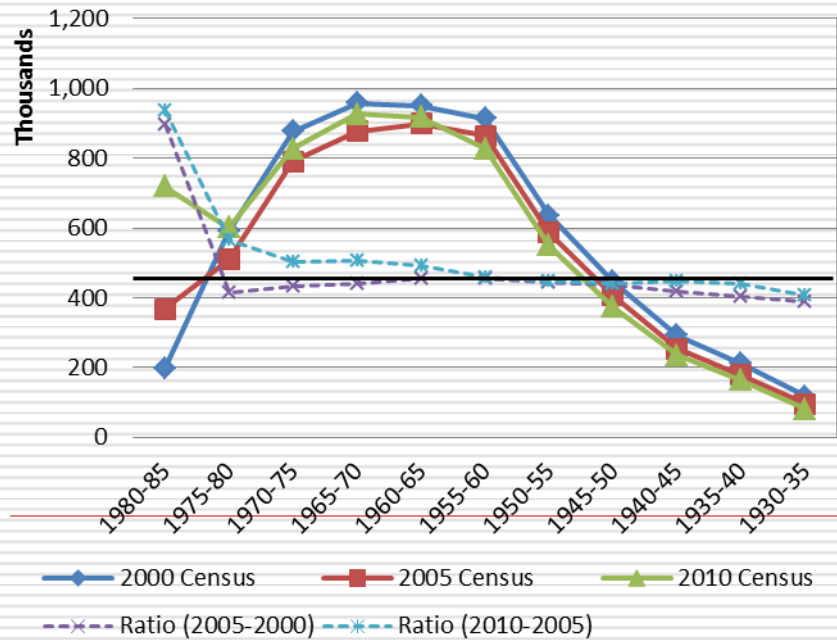




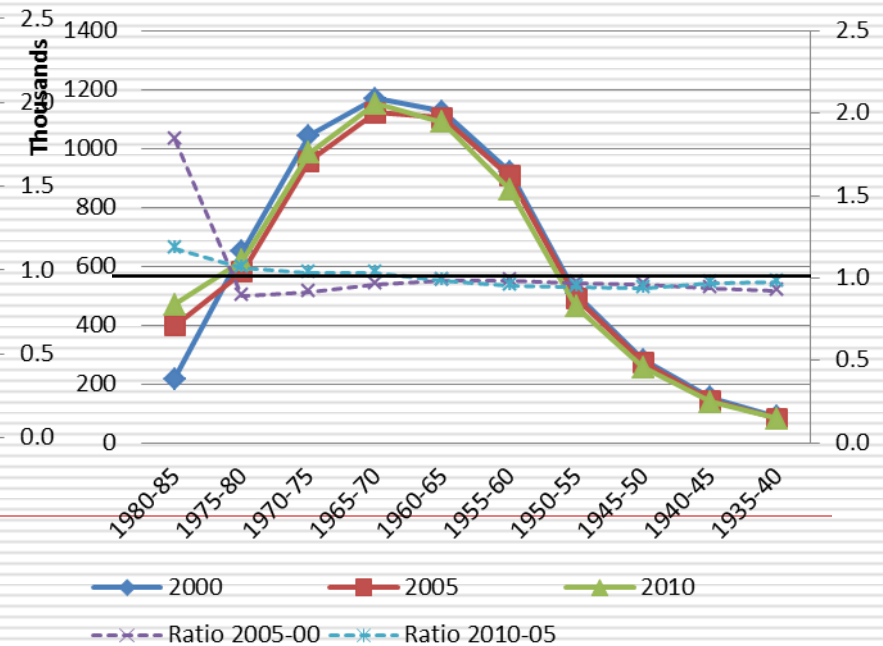
Cohort approach

Educational attainment, Republic of Korea, 2000, 2005 and 2010 censuses

Upper secondary education, Male



Upper secondary education, Female



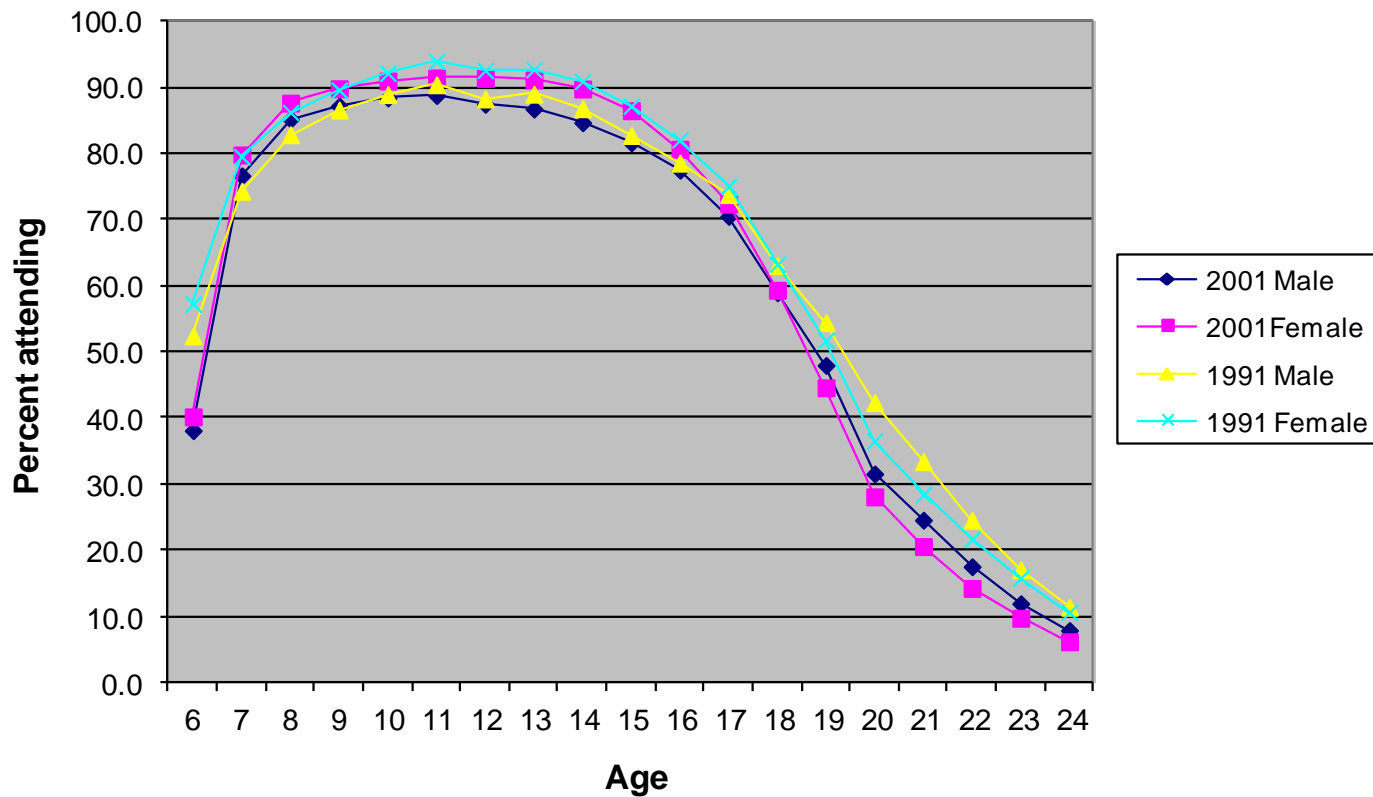


School attendance

- ❑ Percentage of children attending school by age
 - ❑ Gross attendance ratio-by level of education
 - Total attendance in a specific level of education, regardless of age, express as a percentage of the eligible official school-age population corresponding to the same level of education in a given school year
 - ❑ Net attendance rate- by level of education
 - Attendance of the official age group for a given level of education expressed as a percentage of the corresponding population
-

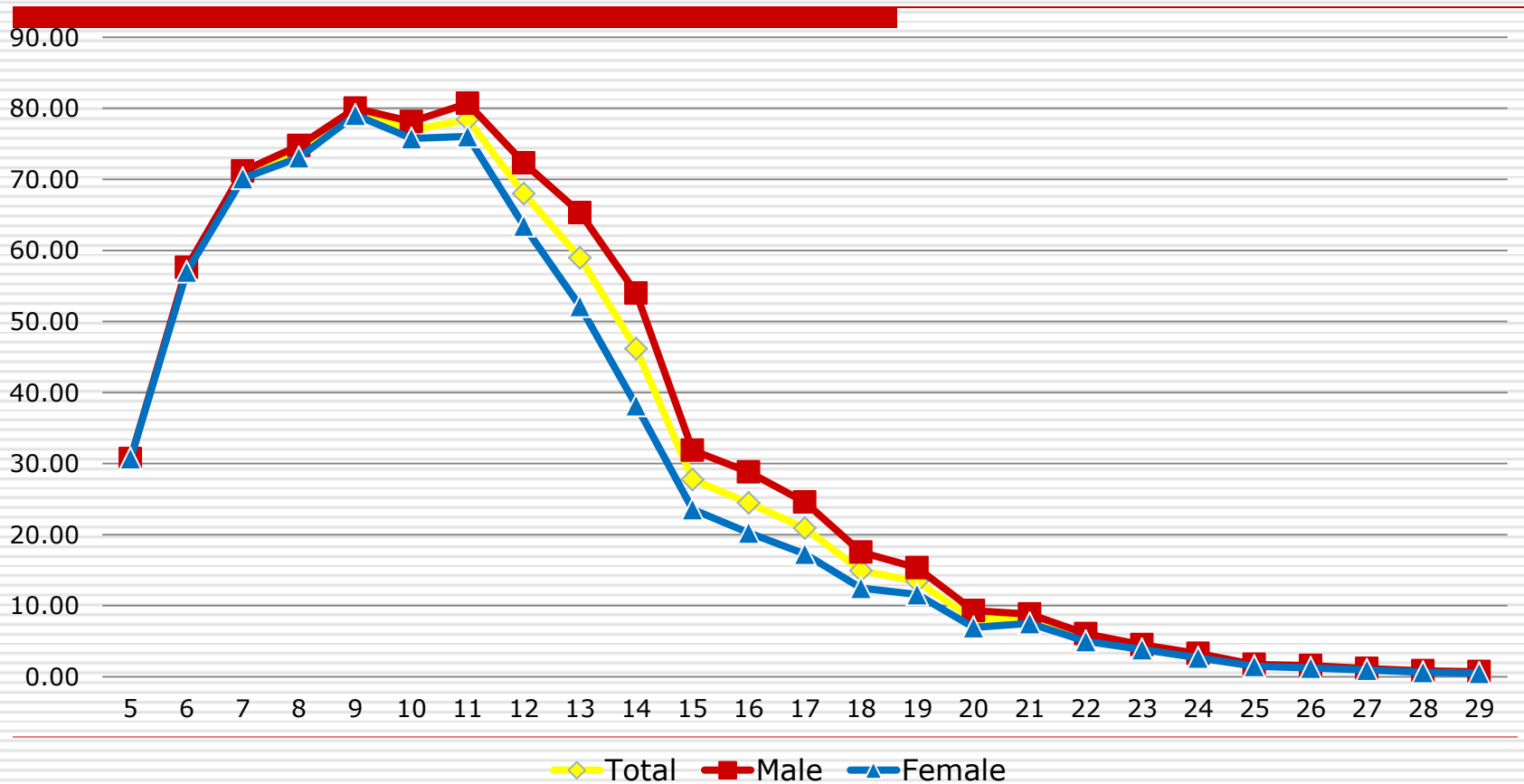


**Percent of children attending school, by sex and age, Namibian
1991 and 2001 censuses**





Percentage of students attending school by age and sex, Myanmar, 1983





Gross attendance ratio

$$GAR_h^t = \frac{A_h^t}{P_{h,a}^t} \times 100$$

$P_{h,a}^t$

GAR_h^t : Gross attendance ratio
at level of education
h in the year t

A_h^t : Students at the level of
education h in the year t

$P_{h,a}^t$: Population in age group a
which officially
corresponds to the level of
education h in year t



Net attendance rate

$$NAR_h^t = \frac{A_{h,a}^t}{P_{h,a}^t} \times 100$$

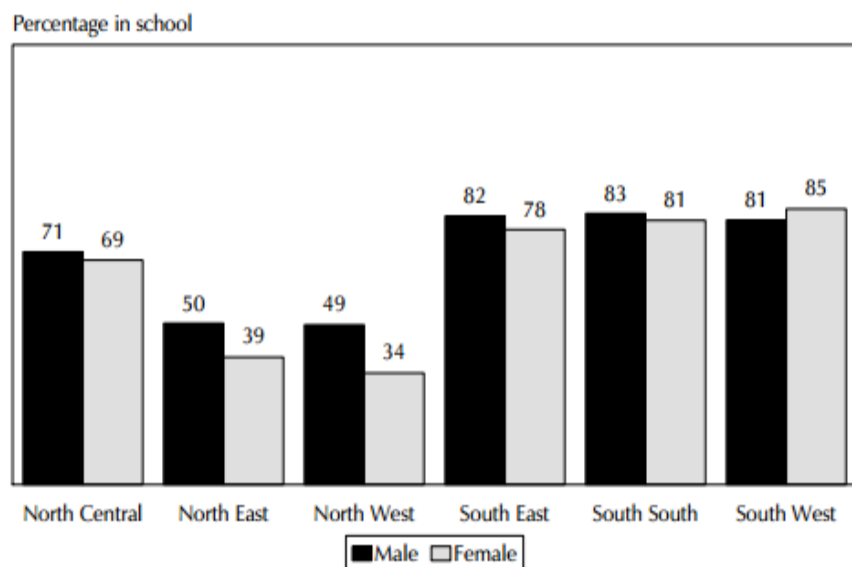
NAR_h^t : Net attendance rate
at level of education
h in the year t

$A_{h,a}^t$: Students of the population
of age group a at level of
education h in the year t

$P_{h,a}^t$: Population in age group a
which officially
corresponds to the level of
education h in year t

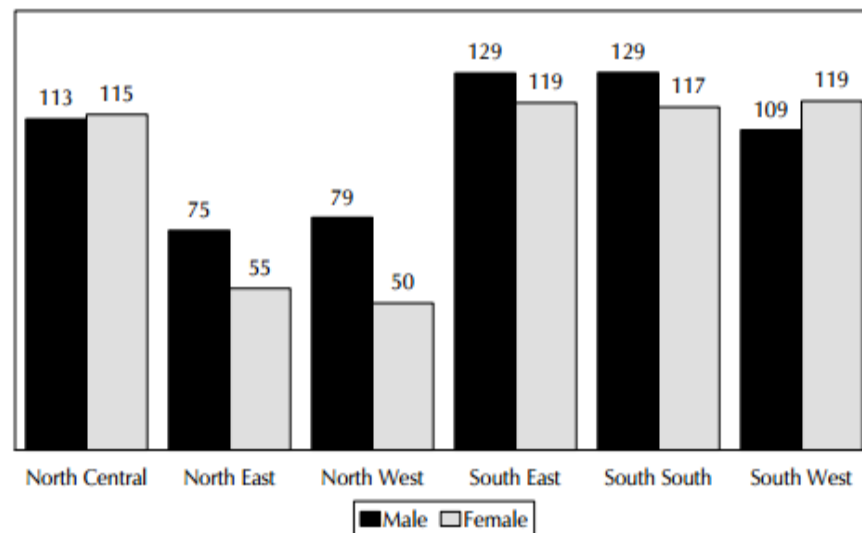


Figure 5.1
Primary Net Attendance Ratio, by Region and Sex



Nigeria DHS 2003

Figure 5.2
Primary Gross Attendance Ratio, by Region and Sex



Nigeria DHS 2003



Marital status

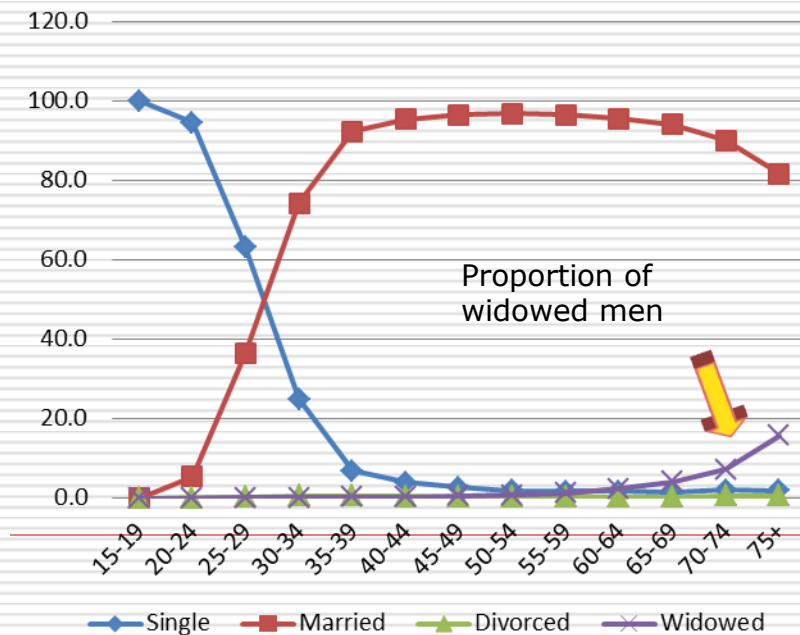
- ❑ Marital status is the personal status of each individual in relation to the marriage laws or customs of the country. The categories of marital status should at least include the following:
 - Single (never married)
 - Married
 - Married but separated-comprise both legally and de facto separated
 - Widowed and not married
 - Divorced and not married
-



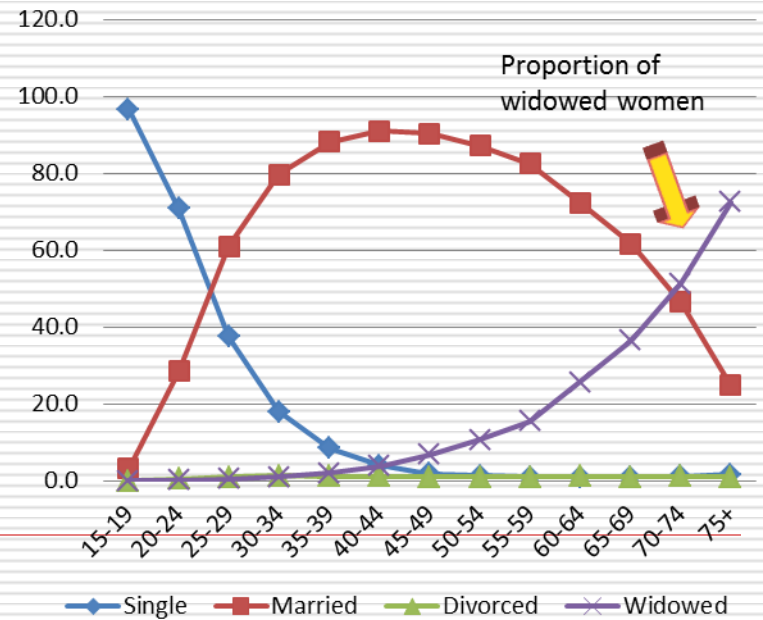
Marital status

1994 Population and Housing Census of Tunisia

Percentage of population by marital status and age, Male



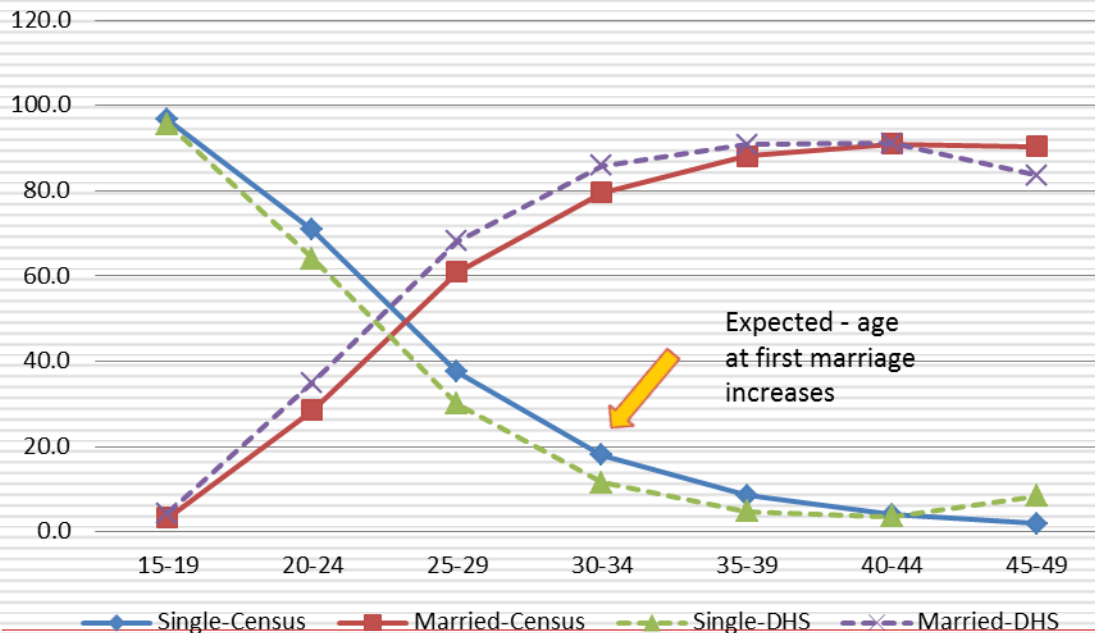
Percentage of population by marital status and age, Female





Comparison with survey data

Percentage of never married and married women, Tunisia, Census 1994 and DHS 1988



- Very similar patten between the census and DHS
- Slight difference in the last age group



Singulate Mean Age at First Marriage (SMAFM)

- ❑ Technique for estimating the mean age at first marriage when actual dates of marriage are not available
 - a period measure (uses a synthetic cohort)
 - ❑ Very simple data requirements:
 - Total number of women by 5-year age groups
 - Total number of ever-married women by 5-year age groups
-



SMAFM calculation (1)

Microsoft Excel

Uganda_HH.xls

	A	B	C	D	E	F	G
1	Singulate Mean Age at First Marriage, Uganda 2002						
2							
3	Age	Total women	Ever-married women	PEM_x = (2)/(1)	S_x	n S_x	
4		(1)	(2)	(3)			
5	0 - 4	2,272,297	0	0			
6	5 - 9	2,002,895	0	0			
7	10 - 14	1,751,983	41,360	0.024			
8	15 - 19	1,383,564	411,065	0.297			
9	20 - 24	1,192,989	898,688	0.753			
10	25 - 29	946,960	848,639	0.896			
11	30 - 34	711,656	668,129	0.939			
12	35 - 39	528,430	506,944	0.959			
13	40 - 44	427,753	413,149	0.966			
14	45 - 49	285,083	276,787	0.971			
15							
16							
17							
18							
19							
20							

Uganda HH comp Marriage SMAFM

Ready NUM

PEM_{ult}

Source: Wachter, Ken, *Essential Demographic Methods*, Data from United Nations *Demographic Yearbook*



SMAFM calculation (2)

Microsoft Excel

Uganda_HH.xls

Singulate Mean Age at First Marriage, Uganda 2002 Census

Age	Total women (1)	Ever-married women (2)	PEM _x = (2)/(1) (3)	S _x = 1 - PEM _x /PEM _{mult} (4)	n*S _x (5)
0 - 4	2,272,297	0	0	1.000	5.000
5 - 9	2,002,895	0	0	1.000	5.000
10 - 14	1,751,983	41,360	0.024	0.976	4.878
15 - 19	1,383,564	411,065	0.297	0.694	3.470
20 - 24	1,192,989	898,688	0.753	0.224	1.121
25 - 29	946,960	848,639	0.896	0.077	0.385
30 - 34	711,656	668,129	0.939	0.033	0.166
35 - 39	528,430	506,944	0.959	0.012	0.060
40 - 44	427,753	413,149	0.966	0.005	0.026
45 - 49	285,083	276,787	0.971	0.000	0.001
			SMAFM =	Σ n*S _x	20.107

Ready NUM



SMAM, Myanmar, 1973 -2007

Table 3.2 Singulate Mean Age at Marriage and Proportion Never Married from the 1973 and 1983 Censuses, 1991 PCFS, 1997, 2001 and 2007 FRHS

	Female						Male					
	1973 Census	1983 Census	1991 PCFS	1997 FRHS	2001 FRHS	2007 FRHS	1973 Census	1983 Census	1991 PCFS	1997 FRHS	2001 FRHS	2007 FRHS
SMAM												
Union	21.2	22.4	24.5	26.0	25.8	26.1	23.8	24.5	26.3	27.6	27.6	27.6
Urban	21.9	23.3	26.3	28.0	27.2	26.7	24.9	25.7	28.1	29.7	29.1	28.8
Rural	21.0	22.1	23.7	25.3	25.3	26.0	23.4	24.1	25.6	26.8	27.1	27.3



Economic activity

- ❑ Two concepts of the economically active population can be distinguished:
 - (a) *The usually active population, measured in relation to a long reference period such as a year*
 - (b) *The currently active population (or, equivalently, the labour force), measured in relation to a short reference period such as one week or one day*
-



Economic activity

- ❑ Current activity status – a person's relationship to economic activity during a short reference period (typically a week)
 - **Employed** – a person who worked a defined, minimum amount of time over the reference period (may be as little as an hour)
 - **Unemployed** – a person who did not work the minimum amount of time during the reference period but was willing and able to work and looking for a job
 - **Inactive** (out of labor force) – a person who did not work the minimum amount of time during the reference period and did not want to work/was not looking for work
 - ❑ Both the employed and the unemployed are economically active!
 - Employed + unemployed = labor force
-

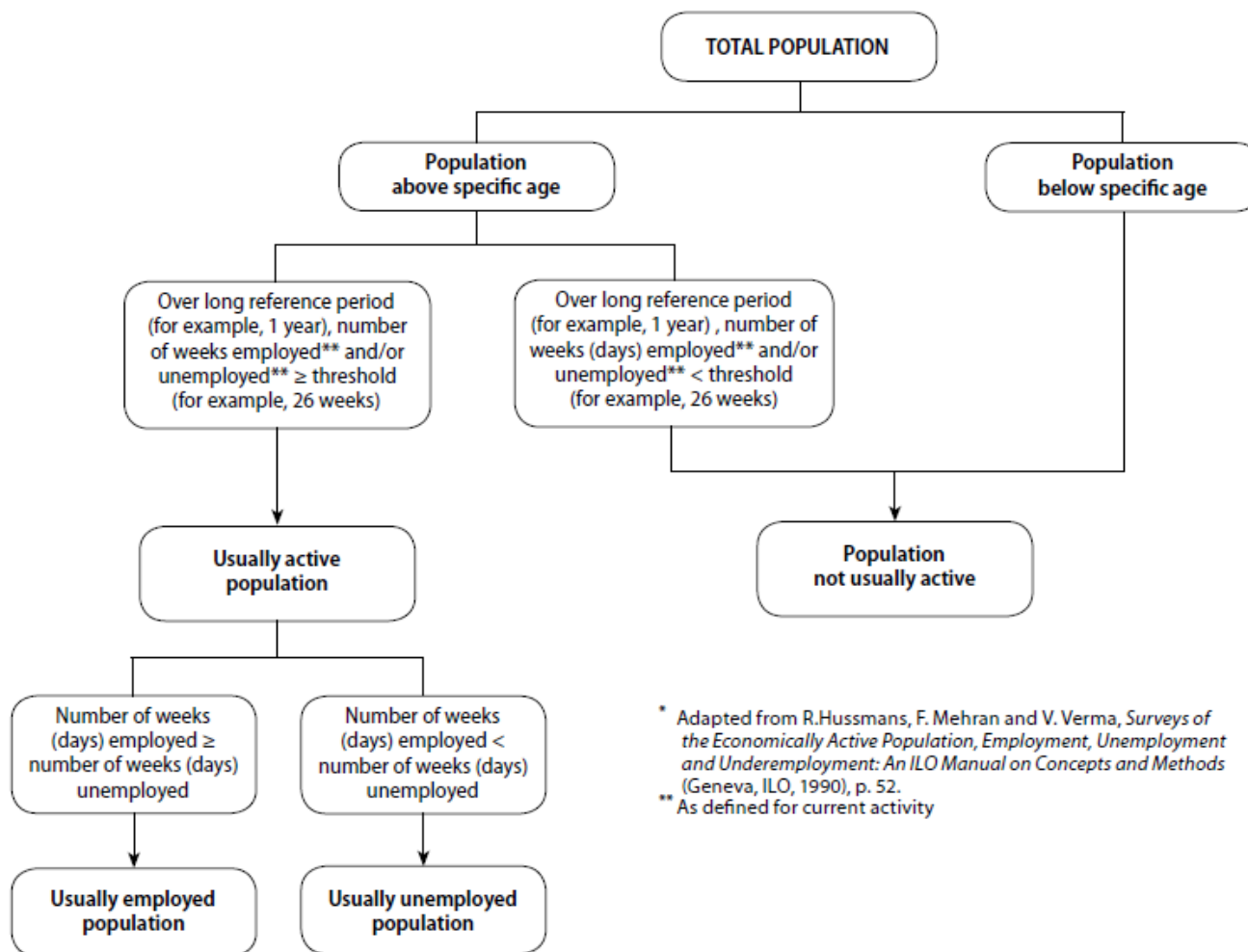


Economic activity

- ❑ Usual activity status – The usually active population comprises all persons above a specified age whose main activity status, as determined in terms of the total number of weeks or days during a long specified period (such as the preceding 12 months or the preceding calendar year) was employed and/or unemployed
 - Usually employed population: number of weeks or days employed is more than unemployed
 - Usually unemployed population: number of weeks or days employed is less than unemployed
 - ❑ Both the employed and the unemployed are economically active!
-



Figure 5
Usually active population*



* Adapted from R.Hussmans, F. Mehran and V. Verma, *Surveys of the Economically Active Population, Employment, Unemployment and Underemployment: An ILO Manual on Concepts and Methods* (Geneva, ILO, 1990), p. 52.

** As defined for current activity



Economic activity

- ❑ Difficulties:
 - What does “work” mean?
 - ❑ Goods and services produced for the market
 - ❑ Goods produced for own-use (replacing need to buy on market)
 - In practice, this is quite difficult to measure, especially in areas with large agricultural or informal economies
 - Women’s home-based production in particular is often undercounted in surveys
 - What does “looking for a job” mean?
 - ❑ E.g. some persons may have registered at a government labor office months ago, but done nothing else. Are they looking for a job?
-



Available data in the 2014 census

- ❑ Activity status-Q22
 - Employee (Government)
 - Employee (Private)
 - Employer
 - Own account worker
 - Contributing family worker
 - Sought work
 - Did not seek work
 - Full time student
 - Household work
 - Pensioner, retired and elderly person
 - Disabled
 - Other
-



Available data in the 2014 census

❑ **Employed**

1. Employee (Government)
2. Employee (Private)
3. Employer
4. Own account worker
5. Contributing family worker

❑ **Unemployed**

1. Sought work

❑ **Population not in labor force**

1. Did not seek work
2. Full time student
3. Household work
4. Pensioner, retired and elderly person
5. Disabled
6. Other



Basic indicators

- ❑ Labor force participation rate

$$LFPR = \frac{\text{Number of persons employed} + \text{Number of persons unemployed}}{\text{Number of persons in the working age population}} \times 100$$

- ❑ Unemployment rate

$$UR = \frac{\text{Number of unemployed persons in the working age population}}{\text{Total number of persons in the labor force}} \times 100$$

Source: Decent work indicators, Guidelines for producers and users of statistical and legal framework indicators, ILO Manual, Second version, 2013



Basic indicators

- ❑ Age-specific labor force participation rate

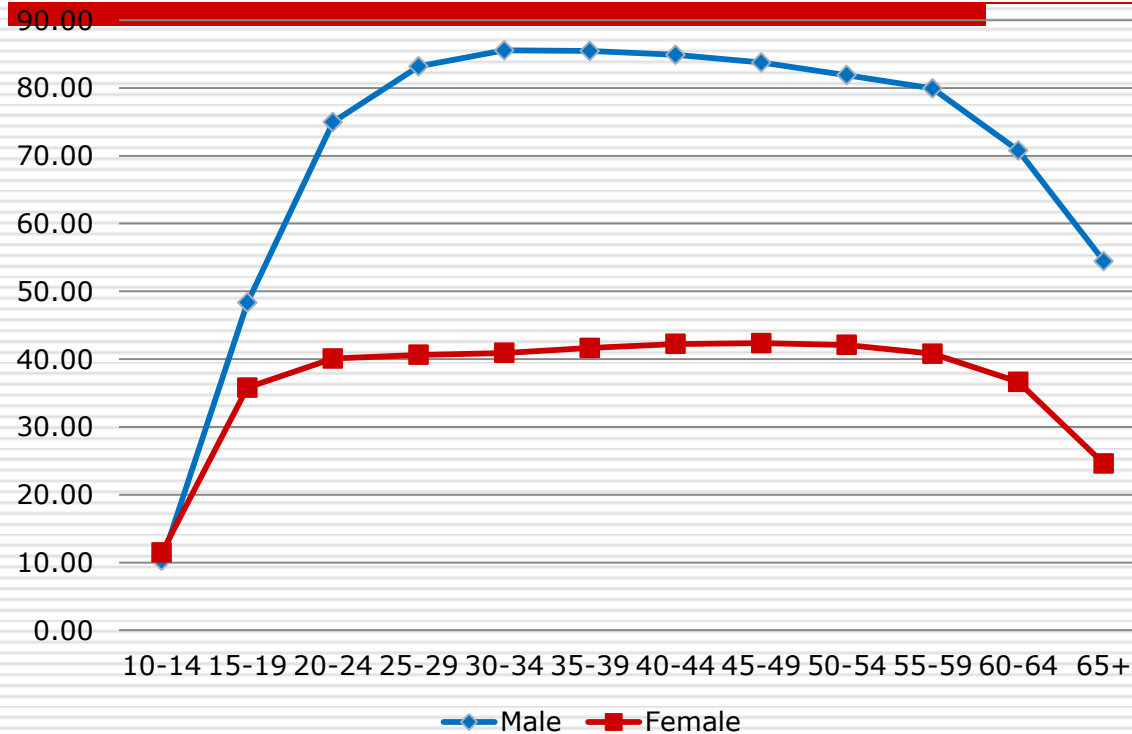
$$LFPR(a) = \frac{\text{Number of persons employed}(a) + \text{Number of persons unemployed}(a)}{\text{Number of persons in the working age population}(a)} \times 100$$

- ❑ Age specific unemployment rate

$$UR(a) = \frac{\text{Number of unemployed persons in the working age population}(a)}{\text{Total number of persons in the labor force}(a)} \times 100$$



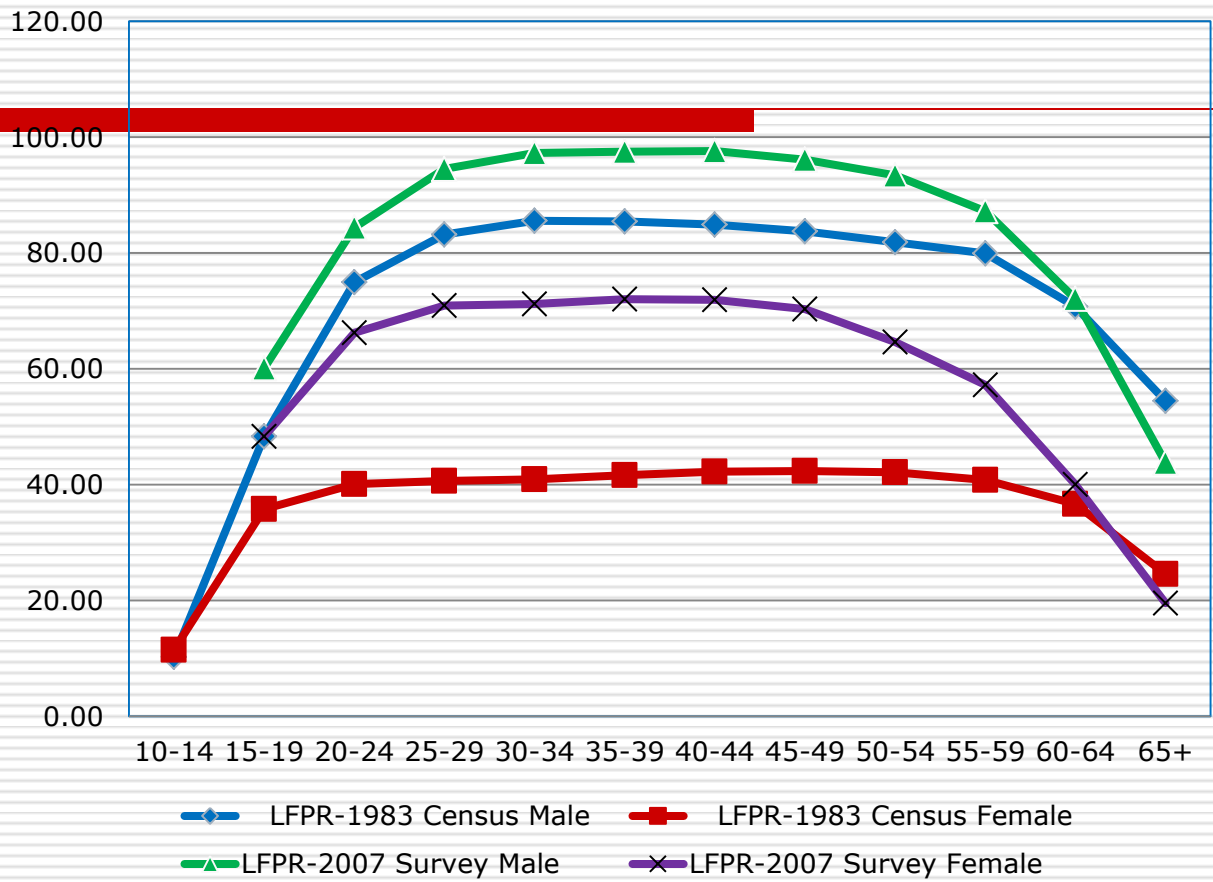
Labor force participation rate (%), Myanmar, 1983



LFPR for working age
population (10-64)
Male % 63.09
Female % 34.98

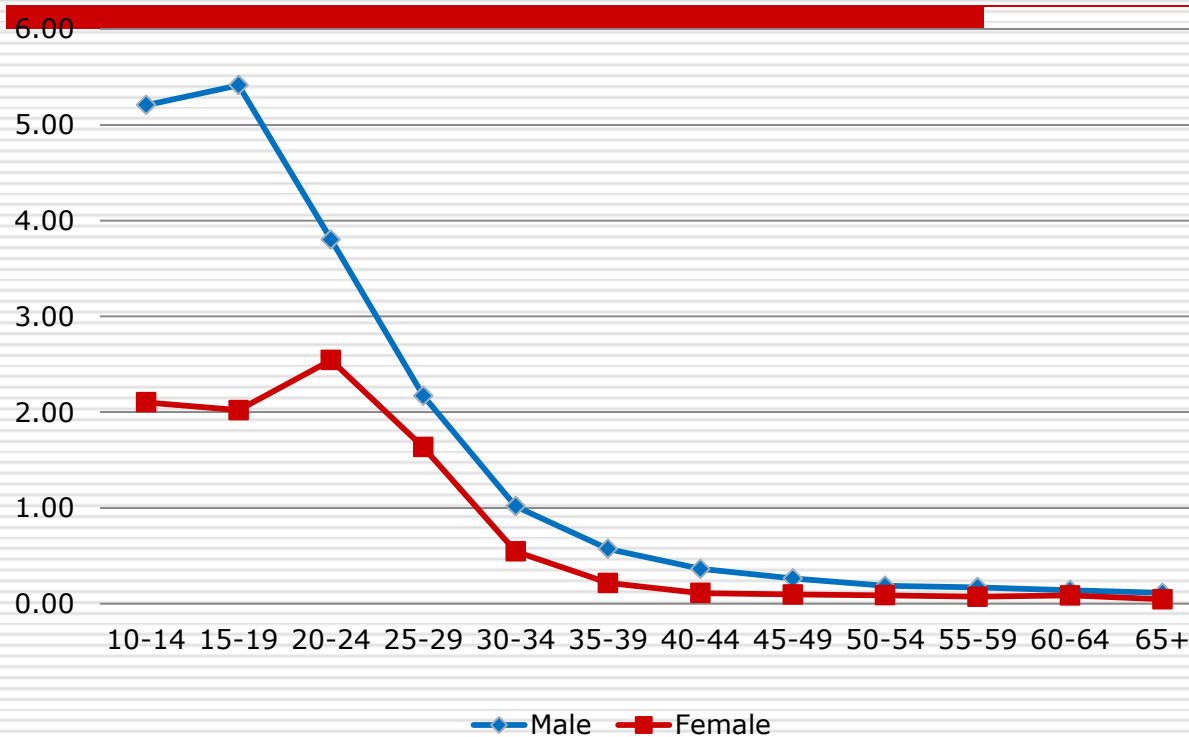


Labor Force Participation Rate, Myanmar





Unemployment rate (%), Myanmar, 1983



Unemployment
rate for working
age population

Male % 2.00

Female % 1.17



Basic indicators

❑ Employment to population ratio

$$EPR = \frac{\text{Number of employed persons in the working age population}}{\text{Total number of persons in working age population}} \times 100$$

❑ EPR, Myanmar, 1983

Total : % 48.07

Male : % 61.83

Female: % 34.57



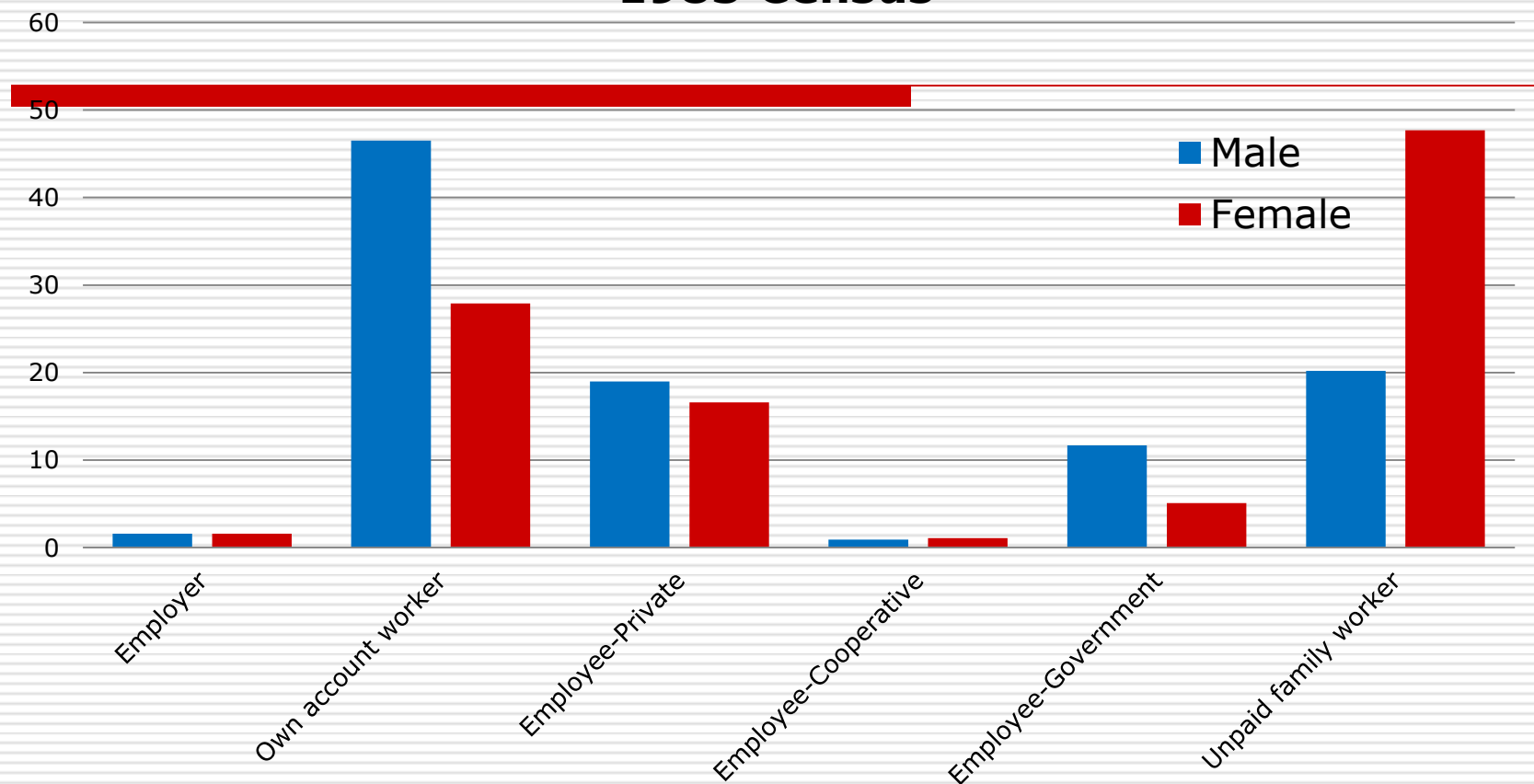
Employment status

- ❑ Status in employment refers to the type of explicit or implicit contract of employment with other persons or organizations
 - ❑ Care should be taken to ensure that an economically active person is classified by status in employment on the basis of the same job(s) as used for classifying the person by "*occupation*", "*industry*" and "*sector*"
 - ❑ Recommended classification
 - (a) *Employees*
 - (b) *Employers*
 - (c) *Own-account workers*
 - (d) *Contributing family workers*
 - (e) *Members of producers' cooperatives*
 - (f) *Persons not classifiable by status*
-



Percentage distribution of employment status, 1983 Census

United Nations Statistics Division





Some remarks

- ❑ Census results are closely connected with other areas of statistical activities, therefore supplementary information about the census should be provided to the users for clarification of comparability of census data with previous censuses and other data sources
 - ❑ Further analysis for interpreting the findings
-



References

- *Principles and Recommendations for Population and Housing Censuses Revision 2, 2008, United Nations,*
<http://unstats.un.org/unsd/demographic/sources/census/census3.htm>
- *The Methods and Materials of Demography, Siegel and Swanson, 2004*
- *Educational Indicators Technical Guidelines, 2009, UNESCO*
<http://www.uis.unesco.org/Library/Documents/eiguide09-en.pdf>
- *Decent Work Indicators, Guidelines for Producers and Users of Statistical and Legal Framework Indicators, Second version, 2013, ILO*
<http://www.ilo.org/global/standards/subjects-covered-by-international-labour-standards/lang--en/index.htm>