Evaluation of socioeconomic data collected from censuses

United Nations Statistics Division
Overview

1. Socioeconomic data from censuses – questions and definitions
2. Evaluation of socioeconomic data
   a) Household size and composition
   b) Marital status
   c) Literacy and school attendance
   d) Economic activity
Socioeconomic data from censuses

- The definitions used for socioeconomic indicators can have a significant impact on results
- Consistency in how the question is phrased and how respondents understand the terms is key for internal consistency of the data
- Close inspection of definitions used must accompany any use of outside data sources for comparison of results
What can be done to check data quality?

- Check the internal consistency of the data
  - Whether plausible when tabulated or cross-tabulated with other characteristics
- Compare with other sources (indirect comparison)
  - Make sure that definitions used are consistent
  - Graph the derived indicators
  - Cohort analysis of certain indicators
  - Disaggregate by sex and age
- Compare with other sources, direct comparison
  - Re-interview surveys, where people were re-interviewed and content of the census responses is verified
Main types of socioeconomic characteristics from censuses

- Household and family characteristics
  - Relationship to household head or other reference member
- Demographic and social characteristics
  - Age
  - Sex
  - Marital status
- Educational characteristics
  - Literacy
  - School attendance
  - Educational attainment
- Economic characteristics
  - Economic activity status (labor force participation)
  - Occupation
  - Industry
  - Status in employment

Core topics from the *Principles and Recommendations for Population and Housing Censuses, Rev. 2*
Household composition

- Most censuses use the household as the unit of enumeration
  - A “household” is typically defined by the common provision of food or other essentials
    - A household may consist of one person who provides for these essentials on his own
    - Not all household members (or even no household members) need be related
  - A “family” consists of individuals who are related by blood, adoption or marriage
    - Must contain at least 2 individuals
  - In many countries, there may be multiple family units residing in one household
Relation to head of household

- Because households may contain many types of family and non-family relationships, it is recommended that all individuals be identified in relation to the household head or other reference person.
  - The “head” of the household (or other reference person) should be defined in a way that makes most sense for local context – most important issue is consistency.

- Other members of the household are then defined based on the following categories:
  - Spouse; partner in a consensual union (cohabiting partner);
    child; spouse of child; grandchild or great-grandchild;
    parent or parent of spouse; other relative; domestic employee;
    other person not related to the reference person.
Marital status

- Determining who is “married” varies by context
  - In some societies, marriage is a multi-stage process
  - Increasing rates of unmarried cohabitation in some countries
  - Increasing rates of marital dissolution and/or failure to obtain legal divorces even when the relationship has ended (de facto separation)

- In relation to local laws and customs, it is recommended that categorizations of marital status include at least the following:
  - Never married; married; widowed (not remarried); divorced (not remarried); married but separated

Source: *Principles and Recommendations for Population and Housing Censuses, Rev.2*, United Nations, 2008
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 (1997 ISCED classification)
Economic activity

- 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

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?
Additional economic characteristics

- **Occupation** – type of work that the person performs (most recent ISCO classification)

- **Industry** – kind of production that the establishment in which the person works engages in (most recent ISIC classification)

- **Status in employment** – type of contract the person has with his place of work (ICSE from the ILO)
  - Recommended categories: Employee; Employer; Own-account worker; Contributing family worker; Members of producer cooperatives; Persons not classifiable by status

Source: *Principles and Recommendations for Population and Housing Censuses, Rev.2, United Nations, 2008*
Example: Egypt labor force measurement (2006)

Egypt Labor Market Panel Survey (ELMPS) 2006

vs. Egypt Census 2006
Evaluation of data
Household size – comparison with other sources

Data source:
graph produced based on data from the United Nations
Demographic Yearbook and
DHS STATcompiler
Household composition – female headship

Female headed households, percent of total households

Data source: graph produced based on data from the United Nations Demographic Yearbook and DHS STATcompiler
Household composition by age and sex (1)

Composition of enumerated males by age group and relation to household head, Uganda 2002

Data source: Graph produced based on data from the United Nations Demographic Yearbook
Household composition by age and sex (2)

Composition of enumerated females, by age and relation to household head, Uganda 2002

Data source:
Graph produced based on data from the United Nations Demographic Yearbook.

United Nations Workshop on Census Data Evaluation for English Speaking African Countries
Kampala, Uganda
12 – 16 November 2012
Marital status

Composition of Ugandan males, by age and marital status, 2002

Composition of Ugandan females, by age and marital status, 2002

Data source: Graph produced based on data from the United Nations *Demographic Yearbook*

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12 – 16 November 2012
Percent never married – comparison with outside sources

Source: United Nations Demographic Yearbook and DHS Uganda country reports

Table 6.1 Current marital status
Percent distribution of women and men by current marital status, according to age, Uganda 2000-2001

<table>
<thead>
<tr>
<th>Age</th>
<th>Never married</th>
<th>Married</th>
<th>Living together</th>
<th>Widowed</th>
<th>Divorced</th>
<th>Not living together</th>
<th>Total</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>WOMEN</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-19</td>
<td>67.7</td>
<td>16.7</td>
<td>12.2</td>
<td>0.0</td>
<td>0.1</td>
<td>3.2</td>
<td>100.0</td>
<td>1,615</td>
</tr>
<tr>
<td>20-24</td>
<td>15.3</td>
<td>47.4</td>
<td>29.1</td>
<td>0.7</td>
<td>0.8</td>
<td>6.7</td>
<td>100.0</td>
<td>1,504</td>
</tr>
<tr>
<td>25-29</td>
<td>6.2</td>
<td>55.2</td>
<td>25.1</td>
<td>0.7</td>
<td>2.4</td>
<td>10.2</td>
<td>100.0</td>
<td>1,441</td>
</tr>
<tr>
<td>30-34</td>
<td>2.6</td>
<td>55.3</td>
<td>26.8</td>
<td>4.0</td>
<td>1.3</td>
<td>10.1</td>
<td>100.0</td>
<td>983</td>
</tr>
<tr>
<td>35-39</td>
<td>2.2</td>
<td>56.6</td>
<td>23.9</td>
<td>6.4</td>
<td>4.1</td>
<td>9.7</td>
<td>100.0</td>
<td>810</td>
</tr>
<tr>
<td>40-44</td>
<td>0.6</td>
<td>56.4</td>
<td>19.1</td>
<td>9.3</td>
<td>2.2</td>
<td>12.3</td>
<td>100.0</td>
<td>570</td>
</tr>
<tr>
<td>45-49</td>
<td>0.5</td>
<td>52.3</td>
<td>18.0</td>
<td>13.4</td>
<td>4.5</td>
<td>11.4</td>
<td>100.0</td>
<td>423</td>
</tr>
<tr>
<td>Total</td>
<td>20.1</td>
<td>45.1</td>
<td>22.3</td>
<td>3.4</td>
<td>1.0</td>
<td>8.2</td>
<td>100.0</td>
<td>7,246</td>
</tr>
</tbody>
</table>
Singulate Mean Age at First Marriage (SMAFM)

- Technique for estimating the mean age at first marriage when actual dates of marriage are not available
  - Is 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)

Source: Wachter, Ken, *Essential Demographic Methods, Data from United Nations Demographic Yearbook*
### SMAFM calculation (2)

**Singulate Mean Age at First Marriage, Uganda 2002 Census**

<table>
<thead>
<tr>
<th>Age Range</th>
<th>Total women</th>
<th>Ever-married women</th>
<th>PEM = (2)/(1)</th>
<th>Sx = 1 - PEM/PEMult</th>
<th>n*Sx</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 4</td>
<td>2,272,297</td>
<td>0</td>
<td>0</td>
<td>1.000</td>
<td>5,000</td>
</tr>
<tr>
<td>5 - 9</td>
<td>2,002,895</td>
<td>0</td>
<td>0</td>
<td>1.000</td>
<td>5,000</td>
</tr>
<tr>
<td>10 - 14</td>
<td>1,751,983</td>
<td>41,360</td>
<td>0.024</td>
<td>0.976</td>
<td>4,878</td>
</tr>
<tr>
<td>15 - 19</td>
<td>1,363,664</td>
<td>411,065</td>
<td>0.297</td>
<td>0.704</td>
<td>3,470</td>
</tr>
<tr>
<td>20 - 24</td>
<td>1,192,989</td>
<td>888,888</td>
<td>0.753</td>
<td>0.247</td>
<td>1,121</td>
</tr>
<tr>
<td>25 - 29</td>
<td>946,960</td>
<td>948,839</td>
<td>0.896</td>
<td>0.107</td>
<td>0.385</td>
</tr>
<tr>
<td>30 - 34</td>
<td>711,636</td>
<td>668,129</td>
<td>0.939</td>
<td>0.061</td>
<td>0.156</td>
</tr>
<tr>
<td>35 - 39</td>
<td>528,430</td>
<td>506,944</td>
<td>0.960</td>
<td>0.008</td>
<td>0.060</td>
</tr>
<tr>
<td>40 - 44</td>
<td>427,753</td>
<td>413,149</td>
<td>0.966</td>
<td>0.005</td>
<td>0.026</td>
</tr>
<tr>
<td>45 - 49</td>
<td>286,083</td>
<td>276,787</td>
<td><strong>0.971</strong></td>
<td>0.000</td>
<td>0.001</td>
</tr>
</tbody>
</table>

**Total SMAFM = Σ n*Sx = 20.107**

![Microsoft Excel spreadsheet showing calculations for SMAFM, with data for different age ranges and corresponding calculations for each column.](image-url)
Literacy rate by sex and age, Namibia 1991 and 2001 censuses

Data source:
Graph produced based on data from the United Nations Demographic Yearbook
Literacy rate – cohort analysis

Literacy rates by sex and cohort of birth, Namibia 1991 and 2001 censuses
Literacy rate – comparison with other sources (1)

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

Data source:
United Nations
Demographic Yearbook and
DHS Namibia country reports

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Literacy rate – comparison with other sources (2)

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

- 1991 Census Female
- 2000/1 DHS Female
- 2001 Census Female
- 2006 DHS Female

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School attendance – common indicators

Gross Enrollment Ratio (GER) = Total number of students enrolled in a school level / Total population of age to be in that school level

Net Enrollment Ratio (NER) = Population of age $x - x+n$ enrolled in school / Total population age $x - x+n$
School attendance

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

Age

Percent attending

2001 Male
2001 Female
1991 Male
1991 Female

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Economic activity status – comparison with other sources

Unemployment rate – comparison with other sources

Unemployment rate by sex, Egyptian census and ELMPS

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Unemployment rate by age

Male unemployment rate by age, Egyptian census and ELMPS
2006 rounds

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Employment status – comparison with other sources

Employment status, females, Egyptian census and ELMPS

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