Identification of Census Indicators for CensusInfo

1. Introduction

CensusInfo is a powerful tool to disseminate detailed statistics for various geographical levels with high-quality tables, maps and graphs. Users can easily get demographic, social and economic characteristics of population and housing of the national and lower geographic level with well designed tables, maps and graphs. Dissemination of census data associated with graphing and mapping facilities will greatly increase the usefulness of census data.

The primary objective of CensusInfo is to improve the dissemination and utilization of population and housing census results at any geographical level with the mapping and graphs facilities. It is designed to disseminate the census results in the forms of indicators and tables that census users can easily and quickly access data in all of its customized disaggregations: by national and various sub-national levels; and by time period for comparison purposes. CensusInfo software allows to disseminate data for on-line and desktop application with support of multiple languages and to exchange census data with other software applications.

CensusInfo is strongly recommended to the national statistics organizations to disseminate the census information for small geographic area (administrative units) with standardized tables and indicators in order to increase comparability of census information all over the country and to increase the use of census information effectively for national and local activities/programs.

As a first step of the implementation of CensusInfo, the set of the indicators for the census data has to be determined carefully by considering the development programs and needs of the users. This report presents the possible set of the indicators that can be derived from the census data taking into account the topics given in the United Nations Principles and Recommendations for Population and Housing Census, Rev 2. In addition, metadata for the indicators are presented in the document.

2. Objectives of Census Indicators

The CensusInfo is designed for the list of indicators/values that can be used to evaluate demographic, social and economic characteristics of population and housing in relation with the development programs of the country. Producing indicators from the same source (population and housing census) with same definitions/classifications for geographic areas in the country, increases the quality of work on monitoring the changes and variations within the country.

Main objectives of census indicators are likely to be followings;

- Report the main results of population and housing characteristics to decision makers and users,
- Increase the usefulness of census information for national and local development programs,

- Facilitate the decision-making process at all level of administrative units,
- Increase the awareness of census users on policy-oriented indicators based on census topics.

3. Preparation of Census Indicators

Preparing census indicators is an extremely important task for the national statistics offices. Design and content of the topics and indicators should be determined in collaboration with the related national organizations and principal users (exp. ministries, state planning office, municipalities, and local authorities). The team work is necessary for well-designed indicators. Demographers and other subject-matter specialists who have the expertise in interpreting the census results should be involved in this process.

The conceptual meaning of an indicator may be given as "*a number or ratio (a value on a scale of measurement) derived from a series of observed facts*". This definition is widely used for many sets of indicators developed by international organizations, for example MDG indicators, sustainable development indicators. Indicators can be expressed in different ways and expressed as counts, percentage, ratios, proportion, rates or averages.

The measurement of count gives an idea about the number of events that took place or number of people reached without indicating the total possible number such as number of students in secondary school, number of females working in non-agricultural sector, elderly female population who live alone, etc.

Other types of indicators (ratio, rate, proportion, etc) give the idea about the frequency of concerned event, what was achieved or what should be achieved in relation to the denominator or total possible number, such as enrolment ratio, infant mortality rate, unemployment rate, migration rate, etc.

In preparing the list of indicators, the project team should consider or taking into account followings:
- the basic results of census on population and housing characteristics on the smallest geographical level,
- the national and sub-national development programs like improving literacy, health status of children, labor force participation, housing conditions,
- a set of indicators determined (international and national) for monitoring and implementing specific projects in the country (exp. millennium development indicators, sustainable indicators, indicators on women status).

After drafting the possible list of indicators by the project team, all indicators can be calculated and metadata should be clarified. It is very important to decide the best way of describing indicators (percentage, proportion, rate, ratio, etc) and the best method for reliable information. Sometimes the indirect demographic techniques or some adjustments might be better method

instead of direct calculation (particularly for fertility and mortality). Also, if the results of indicators are somehow very high or low than the expected value compared to the results of other sources and/or previous censuses; data quality, coverage of events should be re-checked before dissemination.

After calculating the indicators and evaluating their limitations (if exist), the list of the indicators can be finalized by the national statistical office in collaboration with the related institutions/organizations. This collaboration will also help to promote the understanding of census indicators by main users.

4. Proposed Indicators for CensusInfo

The possible set of the indicators with sectors and sub-sectors are prepared in line with the core topics given in the United Nations Principles and Recommendations for Population and Housing Census, Rev 2. The list of indicators given in this document is recommended by United Nations Statistics Division to help countries in setting up their own indicators for using the CensusInfo. Countries can improve the indicators according to their priorities and needs. It is also strongly suggested that CensusInfo should be implemented for different level of geographic areas from regions to small area.

4.1. Sectors, Sub-sectors and Indicators for CensusInfo

TOPICS	SUB-TOPICS	INDICATORS
POPULATION CHARACTERISTICS		
Geographical characteristics		- Population - Urban population - Rural population *Population density* *Proportion of urban population* *Proportion of rural population*
Internal migration characteristics	**Duration of residence**	- Population by duration of residence; - less than 1 year 1-4 years 5-9 years 10 years or more *Proportion of population by duration of residence;* *less than 1 year* *1-4 years* *5-9 years* *10 years or more*

	Place of residence at a specified date in the past	• In-migrants • Out-migrants • Net migration • *In-migration rate* • *Out-migration rate* • *Net migration rate*
International migration characteristics	**Country of birth**	• Foreign-born population • Foreign-born population by age • *Proportion of foreign-born population* • *Proportion of foreign-born population by age*
	Citizenship	• Foreign population • Foreign population by age • *Proportion of foreign population* • *Proportion of foreign population by age*

	Year or period of arrival	• Immigrants by period of arrival;
		    o less than 1 year
		    o 1-4 years
		    o 5-9 years
		    o 10 years or more
		• *Proportion of immigrants by period of arrival;*
		    o less than 1 year
		    o 1-4 years
		    o 5-9 years
		    o 10 years or more

Household and family characteristics	**Size of household**	• Households • Households by size • Proportion of households by size • *Average household size*
	Household and family composition	• Single person households • Nuclear households • Extended households • Composite households • *Proportion of single person households* • *Proportion of nuclear households* • *Proportion of extended households* • *Proportion of composite households*
Demographic	**Sex**	• Population by sex

		• *Proportion of population by sex* • *Sex ratio*
	Age	• Population by age • *Proportion of population by age* • *Age dependency ratio* • *Child dependency ratio* • *Old-age dependency ratio*
and social characteristics	**Marital status**	• Single (never married) population by age • Married population by age • Widowed and not remarried population by age • Divorced and not remarried population by age • Married but separated population by age • *Proportion of single(never married) population by age* • *Proportion of married population by age* • *Proportion of widowed and not remarried population by age* • *Proportion of divorced and not remarried population by age* • *Proportion of married but separated population by age*
Fertility and mortality	**Children ever born alive**	• *Average number of children ever born alive by age of mother*
	Births in the past 12 months	• Births in the past 12 months • Births in the past 12 months by age of mother
	Fertility rates	• *Crude birth rate* • *Total fertility rate* • *Age-specific fertility rate*
	Household deaths in the past 12 months	• Deaths in the past 12 months • Deaths in the past 12 months by age
	Mortality rates	• *Crude death rate* • *Infant mortality rate (MDG)* • *Child mortality rate (MDG)* • *Life expectancy at birth*
Educational	**Literacy**	• Literate population (15 years old and over)

characteristics		• Literate population 15-24 years old • *Adult literacy rate (15 years old and over)* • *Literacy rate for population 15-24 years old (MDG)* • *Ratio of literate women to men 15-24 years old*
	School attendance	• Students attending primary education • Students attending secondary education • Students attending post-secondary education • *Gross attendance ratio in primary education* • *Gross attendance ratio in secondary education* • *Gross attendance ratio in post-secondary education* • *Net attendance ratio in primary education* • *Net attendance ratio in secondary education* • *Net attendance ratio in post-secondary education* • *Ratio of girls to boys in primary education (MDG)* • *Ratio of girls to boys in secondary education (MDG)* • *Ratio of girls to boys in post-secondary education (MDG)*
	Educational attainment	• Population with no schooling • Population with incomplete primary education • Population completed primary education • Population completed secondary education • Population completed post-secondary education • *Proportion of population with no schooling* • *Proportion of population with incomplete primary education* • *Proportion of population completed primary education* • *Proportion of population completed secondary education* • *Proportion of population completed post-secondary education*
Economic characteristics	**Activity status**	• Active population by age • *Activity rate by age* • *Employment-to-population ratio (MDG)*
	Unemployment	• Unemployed population by age • *Unemployment rate by age*
	Occupation	• Employed population by occupation (ISCO Level 1)

		o Managers o Professionals o Technicians and associate professionals o Clerical support workers o Service and sales workers o Skilled agricultural, forestry and fishery workers o Craft and related trades workers o Plant and machine operators, and assemblers o Elementary workers o Armed forces officers • *Proportion of employed population by occupation (ISCO Level 1)*

	Industry	• Employed population by industry (High-level SNA/ISIC aggregation)
		   o Population employed in agriculture, forestry and fishing
		   o Population employed in manufacturing, mining and quarrying and other industrial activities
		   o Population employed in construction
		   o Population employed in wholesale and retail trade, transportation and storage, accommodation and food service activities
		   o Population employed in information and communication
		   o Population employed in financial and insurance activities
		   o Population employed in real estate activities
		   o Population employed in professional, scientific, technical, administrative and support service activities
		   o Population employed in public administration and defense, education, human health and social work activities
		   o Other service activities
		• *Proportion of employed population by industry (High-level SNA/ISIC aggregation)*

	Status in employment	• Employees • Employers

		• Own-account workers • Contributing family workers • Members of producers` cooperatives • Workers not classifiable by status • *Proportion of employees* • *Proportion of employers* • *Proportion of own-account workers* • *Proportion of contributing family workers* • *Proportion of members of producers` cooperatives* • *Proportion of workers not classifiable by status* • *Share of women in wage employment in non-agricultural sector (MDG)* • *Proportion of own-account and contributing family workers in total employment (MDG)*
Disability characteristics	**Disability status**	• Population with disabilities • *Proportion of population with disabilities* • Population with disabilities by age • *Proportion of population with disabilities by age*
	Type of disability	• Population with walking disability • Population with seeing disability • Population with hearing disability • Population with cognition disability • *Proportion of population with walking disability* • *Proportion of population with seeing disability* • *Proportion of population with hearing disability* • *Proportion of population with cognition disability*
HOUSING CHARACTERISTICS		
Type of living quarters		• Conventional dwellings • Non-conventional dwellings • Collective living quarters • *Proportion of conventional dwellings* • *Proportion of non-conventional dwellings* • *Proportion of collective living quarters* • Population living in conventional dwellings • Population living in non-conventional dwellings • Population living in collective living quarters • *Proportion of population living in conventional dwellings* • *Proportion of population living in non-conventional dwellings*

		• *Proportion of population living in collective quarters*
Occupancy status		• Occupied dwellings • Vacant dwellings • *Proportion of occupied dwellings* • *Proportion of vacant dwellings*
Type of Ownership		• Owner-occupied housing units • Non owner-occupied housing units • *Proportion of owner-occupied housing units* • *Proportion of non owner-occupied housing units*
Number of rooms		• Housing units by number of rooms • *Proportion of housing units by number of room* • *Average number of rooms*
Water Supply System		• Housing units with piped water inside the unit • Housing units with piped water outside the unit but within 200 meters • Housing units with other type of water supply • *Proportion of housing units with piped water inside the unit* • *Proportion of housing units with piped water outside the but within 200 meters* • *Proportion of housing units with other type of water supply*
Main source of drinking water		• Housing units with piped water for drinking inside the unit • Housing units with piped water for drinking outside the unit but within 200 meters • Housing units with other source for drinking water • Housing units with access to improved drinking water sources. • *Proportion of housing units with piped water for drinking inside the unit* • *Proportion of housing units with piped water for drinking outside the but within 200 meters* • *Proportion of housing units with other source for drinking water* • Housing units with improved drinking water source • Population using improved drinking water sources • *Proportion of housing units with improved drinking water sources* • *Proportion of population using improved drinking water sources (MDG)*

Type of Toilet		• Housing units with toilet within the unit • Housing units with toilet outside the unit • Housing units with no toilet available • *Proportion of housing units with toilet within the unit* • *Proportion of housing units with toilet outside the unit* • *Proportion of housing units with no toilet available*
Sewage disposal		• Housing units with piped system connected to a public sewage disposal plant • Housing units with piped system connected to an individual sewage disposal • Housing units with other types of disposal system • Housing units with no disposal system • *Proportion of housing units with piped system connected to a public sewage disposal plant* • *Proportion of housing units with piped system connected to an individual sewage disposal* • *Proportion of housing units with other types of disposal system* • *Proportion of housing units with no disposal system* • Housing units with improved sanitation system. • *Proportion of housing units with improved sanitation system*
Bathing Facilities		• Housing units with fixed bath or shower within the unit • Housing units with fixed bath or shower available outside the unit • Housing units with no fixed bath or shower available • *Proportion of housing units with fixed bath or shower within the unit* • *Proportion of housing units with fixed bath or shower available outside the units* • *Proportion of housing units with no fixed bath or shower available*
Availability of kitchen		• Housing units with kitchen within the unit • Housing units with other space for cooking within the unit • Housing units without kitchen or other space for cooking within the unit • *Proportion of housing units with kitchen within the unit* • *Proportion of housing units with other space for*

		cooking within the unit • *Proportion of housing units without kitchen or other space for cooking within the unit*
Fuel used for cooking		• Housing units with occupants using gas for cooking • Housing units with occupants using electricity for cooking • Housing units with occupants using liquefied petroleum gas for cooking • Housing units with occupants using kerosene/paraffin for cooking • Housing units with occupants using oil for cooking • Housing units with occupants using coal for cooking • Housing units with occupants using firewood for cooking • Housing units with occupants using charcoal for cooking • Housing units with occupants using animal dung for cooking • Housing units with occupants using crop residues for cooking • Housing units with occupants using other fuel for cooking • *Proportion of housing units with occupants using gas for cooking* • *Proportion of housing units with occupants using electricity for cooking* • *Proportion of housing units with occupants using liquefied petroleum gas for cooking* • *Proportion of housing units with occupants using kerosene/paraffin for cooking* • *Proportion of housing with occupants units using oil for cooking* • *Proportion of housing units with occupants using coal for cooking* • *Proportion of housing units with occupants using firewood for cooking* • *Proportion of housing units with occupants using charcoal for cooking* • *Proportion of housing units with occupants using animal dung for cooking* • *Proportion of housing units with occupants using crop residues for cooking* • *Proportion of housing units with occupants using other fuel for cooking*

		• Housing units with occupants using solid fuels for cooking • *Proportion of housing units with occupants using solid fuels for cooking* • Population using solid fuels for cooking • *Proportion of population using solid fuels for cooking*
Type of lighting		• Housing units with electricity for lighting • Housing units with occupants using gas for lighting • Housing units with occupants using oil lamp for lighting • Housing units with occupants using other type for lighting • *Proportion of housing units with electricity for lighting* • *Proportion of housing units with occupants using gas for lighting* • *Proportion of housing units with occupants using oil lamp for lighting* • *Proportion of housing units with occupants using other type for lighting* • Population using electricity for lighting • *Proportion of population using electricity for lighting*
Main type of solid waste disposal		• Housing units with solid waste collected on a regular basis by authorized collectors • Housing units with solid waste collected on an irregular basis by authorized collectors • Housing units with solid waste collected by self-appointed collectors • Housing units with occupants dispose of solid waste in a local dump supervised by authorities • Housing units with occupants dispose of solid waste in a local dump not supervised by authorities • Housing units with occupants burn solid waste • Housing units with occupants bury solid waste • Housing units with occupants dispose solid waste into river/sea/creek/pond • Housing units with occupants compost solid waste • Housing units with other arrangement • *Proportion of housing units with solid waste collected on a regular basis by authorized collectors* • *Proportion of housing units with solid waste collected on an irregular basis by authorized collectors*

		• *Proportion of housing units with solid waste collected by self-appointed collectors* • *Proportion of housing units with occupants dispose of solid waste in a local dump supervised by authorities* • *Proportion of housing units with occupants dispose of solid waste in a local dump not supervised by authorities* • *Proportion of housing units with occupants burn solid waste* • *Proportion of housing units with occupants bury solid waste* • *Proportion of housing units with occupants dispose solid waste into river/sea/creek/pond* • *Proportion of housing units with occupants compost solid waste* • *Proportion of housing units with other arrangement*

4.2 Sub-groups for the indicators

The indicators in the CensusInfo can be given for different sub-groups. Sub-groups are mainly considered as the breakdowns that are expected to have significant variations for a specific indicator. Most of the indicators for population characteristics differ by age, sex and urban-rural, therefore they are considered as sub-groups for those indicators. In the CensusInfo template, sub-groups are mainly given by sex, age group and rural/urban. For some other indicators like duration of residence, number of rooms, household size; sub-groups are considered as categories of these indicators.

It should be emphasized that urban-rural, sex and age are also considered as census indicators for the census topics of geographical characteristics, sex and age. It is very important that the indicators and sub-groups should be identified by considering the content of each census topic independently. This approach is more applicable and understandable for users and also more adequate for dissemination of census data.

4.3. Metadata

Metadata is descriptive information for the indicators. Main purpose of metadata is to inform users about the content, definition, quality and condition of the data/indicators.

Possible components for census indicators are given below;

Definition and classification: Definition of concepts and indicators and their practical implementation is explained in detail to allow users to understand what statistics are collected. It should also include the definitions for specific conditions or specific population groups. Classifications used for census topic (i.e. marital status, educational attainment, disability,

occupation, industry) are given with referring to international classifications (if exists) like ISCED 97, ISCO 2008, ISIC Rev 4.

Method of computation: Method of computation of indicators is explained clearly and step by step. If any adjustment or indirect techniques is used for incomplete or defective data, the techniques used for estimating indicators are explained in this section.

Comments and limitations: For some indicators, if there are some comments related with data quality, coverage, difficulties in the process of data collection/capture and if there are some limitations compared to recommended definitions/classifications, the explanations are given in this section.

Geographical breakdown: The indicators are disseminated for different geographic levels in CensusInfo. In order to inform users about the geographical levels that the indicators are given, geographical breakdowns for each indicator will be explained in this section.