

THE POPULATION CENSUS IN INDONESIA

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I. Background

The population census is the main source of population data that can describe the condition of the Indonesian population. Information from vital registration cannot provide the population data required. The population census can provide data down to the smallest administrative areas. The first population census in Indonesia was carried out by the Dutch colonial government in 1930. However, the population census conducted by BPS-Statistics Indonesia (henceforth BPS) actually started in 1961. Up to now, BPS has carried out five population censuses in 1961, 1971, 1980, 1990 and the most recent in 2000. Since 1980 the census has been conducted every ten years in the year ended by 0 (such as, 2010 and 2020). Since the 2000 Population Census, the implementation of every census in Indonesia will be based on Law number 16/1997 on Statistics.

The implementation of the population census has two important aspects in line with BPS' vision as the premier provider of quality statistical data. The first is that there is a need for the availability of reliable population data as a part of the national census and survey programs developed by BPS to provide comprehensive social and demographic statistical system. Secondly, to maintain the effective use of the data, data collected from the population census and other surveys must reflect demand-drive basic data needs, based on the appropriate priorities of the main stakeholders, both public and social sectors.

The objectives of this paper are as follows:

1. To describe a technical summary of the last population census in Indonesia.
2. To discuss experiences and issues of the implementation of the last census.
3. To evaluate possible changes in population statistical topics for further improvements in the 2010 population census.

II. Technical Summary of the 2000 Population Census

a). Data Collection Activity

The 2000 Population Census was a large-scale data collection activity that cost the government 298 420 billion rupiahs. The main objectives of the 2000 Population Census were as follows:

1. To provide basic data on demography and housing down to the lowest administrative area
2. To provide detailed demographic data for estimating demographic characteristics
3. To provide data on village facilities in all the regions, and
4. To construct a Master Sampling Frame that will be used for other censuses or surveys and to construct geographical information system.

Due to the immensity of this undertaking, the 2000 population census was divided into several stages spanning four budget years. Updating of maps, enumeration of village facilities, and updating of agricultural enterprises directory were conducted during the 1999 budget year. Listing of households, post enumeration survey, and preliminary data processing were done during the 2000 budget year. Further data processing as well as data analysis was implemented during the 2001 budget years. Analysis and publications were conducted during the 2002 budget year.

b). Coverage

The 2000 Population census covered all Indonesian citizens and expatriates who reside within the Indonesian geographical areas, those with permanent residence or those without permanent residence (homeless, refugee, sailor, isolated people and boat people). Members of the diplomatic corps and their family who were residing in Indonesian territory were excluded from the enumeration. However, the Indonesian diplomatic corps and their family living abroad were included in the enumeration.

Main activities in the 2000 Population Census were as follows:

1. Area mapping (province, regency/city, sub-regency, village, and enumeration area).

2. Housing census, which was a listing of buildings and households
3. Population census, which was an enumeration of population with permanent residence and population without permanent residence
4. Enumeration of village facilities which collects data on village facilities. Data collected includes street condition, the availability of electricity, education facility, health facility, house of worship, cooperation, etc.
5. Enumeration of population which aimed at obtaining demographic data classified by sex, age group, marital status, citizenship, education, mobility, main activity, main industry, occupation, and occupational status. Population indicators that can be obtained from the survey are fertility rate, contraceptive prevalence, infant and child mortality, and maternal mortality.

c). Planning and Field Organization

Activities included in the preparation of the 2000 Population Census were: development of instruments, technical team and inter-departmental meeting, pilot studies, general rehearsal, mapping, enumeration of village facilities, enumeration of population module survey, BPS provincial heads meeting and enumerators training.

- 1. Development of Instruments** – The development of the 2000 Population Census had started long before the pilot studies were conducted. Since the initial preparation three types of questionnaires were prepared: Questionnaires for building and household listing, questionnaires for individual/population characteristics with permanent residence, and questionnaire for population without permanent residence.
- 2. Technical Team and Inter-departmental Meeting** – To support the successful implementation of the census technical teams, comprised of officials from relevant directorates of BPS, were formed. This team was responsible for both the technical and administrative aspects of the census. In addition, other government institutions such as, the Ministry of Health, the National family Planning Board,

and the Department of Manpower, were also involved partly or as members of the steering committee for the 2000 Population Census.

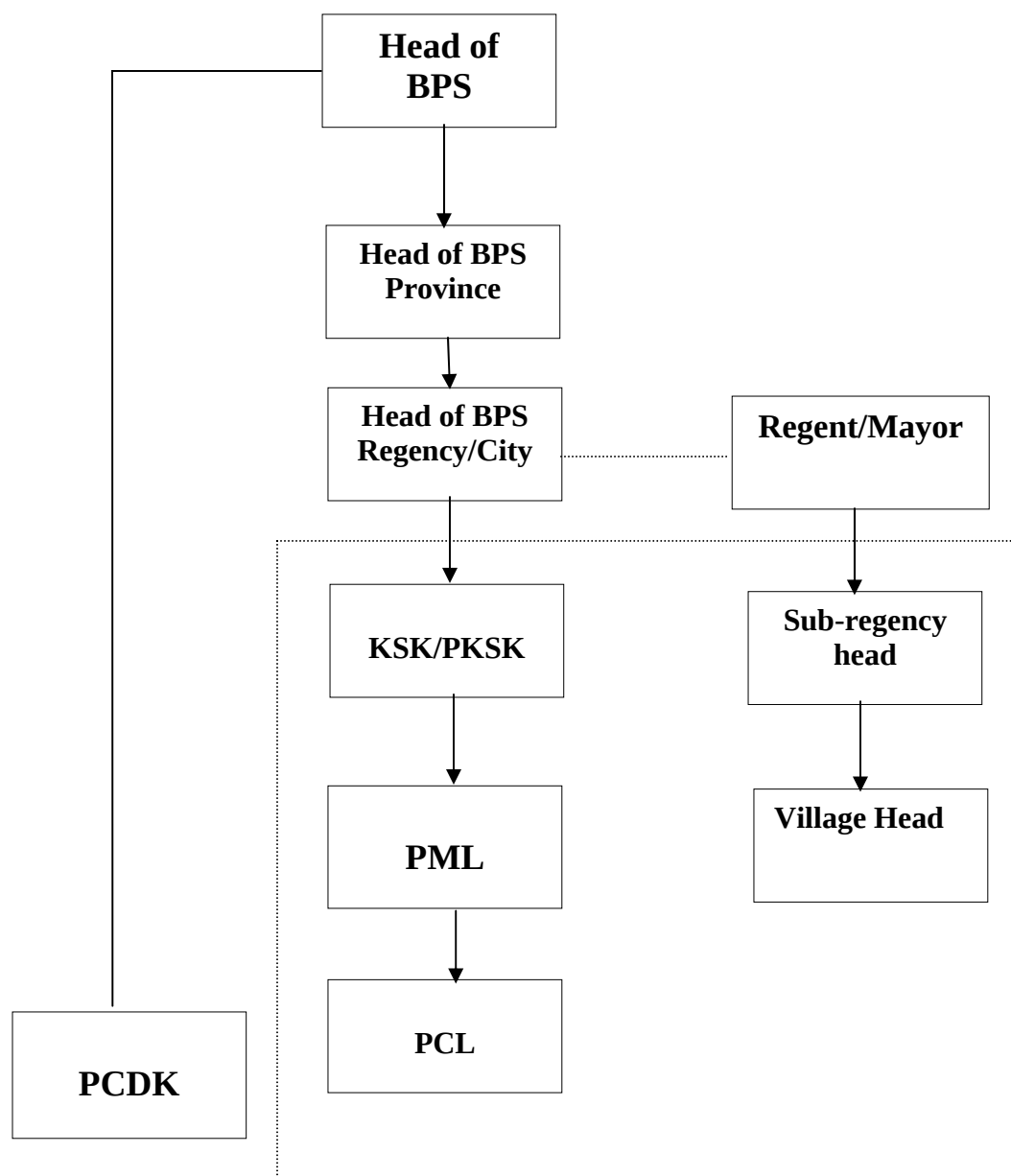
3. **Pilot Studies** – Pilot studies were conducted in several provinces to test the feasibility of the questionnaire paper, contents as well as data entry. Pilot study was first conducted in South Sumatera, Jakarta, Central Java, and South Kalimantan. There were other subsequent pilot studies financed by BPS and JICA.
4. **Enumeration Area Formation/Mapping** – Formation and Mapping of enumeration area were designed to assist the field work implementation. A village is divided into enumeration areas. Each enumeration area is occupied by approximately 80 to 120 households. A map was made for each of the enumeration area. Thus, each enumerator will know exactly the location of their respective working area and this will avoid duplication or under-enumeration.
5. **General Rehearsal** – general rehearsal of the 2000 conducted in 3 provinces: Jambi, East Java and East Nusa Tenggara. The order of all the activity was made the same as the real census. In addition, the rehearsal was also used to improve the questionnaire as well as the field work implementation.
6. **Village Facility Enumeration** – One of the most important activities of the 2000 Population Census was the enumeration of village facilities. The enumeration covered all villages in Indonesia, including Transmigration Residential Unit and Remote Area Community. The enumeration of village facilities has been conducted 1980 in conjunction with BPS censuses, such as the population census, The Agricultural Census, and the Economic Census.
7. **Enumeration of Population Module Survey** – The Population Module Survey was part of the 2000 Population Census activities. This survey was conducted to fulfill the need for detailed demographic data which can not be obtained from the 2000 Population Census. Data collected in this survey included demography, family planning, and labor force. The survey was conducted in the whole of Indonesia with a sample of 203 008 households. The enumeration was conducted in February 2000, and then was integrated with the 2000 National Socio-economic Survey (SUSENAS).

8. **Meeting of Provincial BPS Heads** – The meeting of BPS provincial heads was conducted in October 1999. Heads of BPS provincial offices as well as division heads involved in the 2000 Population Census were invited to BPS to synchronize understanding and perception, both in technical and administrative aspects of the census. In order for the field implementation to run smoothly, the meeting also discussed all possible problems regarding enumerator recruitment, training preparation, distribution of documents, and field enumeration.
9. **National Working Session of the 2000 Population Census** – The technical meeting for the implementing manager of the 2000 Population Census was conducted in February 2000. The objective of the meeting was to prepare the field preparation report of the census to the president of Indonesia. The meeting was also designed to finalize the field preparation and different methods of data processing.
10. **Recruitment of Enumerators** – The number of enumerators recruited for the 2000 population Census was 294 930 people. The enumerators ranged from BPS staffs and other government agencies to the local community who knew the area. The task of recruiting the enumerators fell to provincial and regency/city BPS offices. The recruitment of enumerators started at the beginning of 2000 and training started in February/march of the same year. Since the enumeration period was in June of that year, the enumerators were those willing to conduct the field work in June.
11. **Training of Enumerators** – Due to the large number of participants, training of enumerators was conducted in several stages. In the first stage, national level instructors were first trained. These instructors were in turn trained regional instructors recruited from provincial and regency/city BPS offices. Finally, the regional instructors had the task of training the enumerators. The total number of national instructors was 239 persons and regional instructors 7384 persons.
12. **Field Organization** – The 2000 Population Census required field officers which consist of:
 - a. Regional Instructor (INDA)
 - b. Sub-district Statistical coordinator (KSK)
 - c. Assistants of Sub-district Statistical Coordinator (PKSK)

- d.** Supervisor of Housing and Population Census (PML)
- e.** Enumerators of Housing and Population Census (PCL)
- f.** Enumerator for Special Areas (PCDK)
- g.** Enumerator of Village Facilities (PCL)
- h.** Supervisor of Population Module Survey (PML)
- i.** Enumerator of Population Module (PCL).

In addition to personnel from BPS and enumerators hired by BPS, the overall field organization also involved local government institutions relevant to the survey field implementation. Figure 1 show that in some cases, BPS had to coordinate activities with top officials from all the districts or regencies, sub-districts and village heads. In particular, coordination was essential for the field work involving the sub-regency coordinators and enumerators with officials at sub-regency and village level. The complete illustration of the field organization is listed below.

Figure 1. Field Organization Structure



Note: → Ordination line

..... Coordination line

KSK – Sub-district statistical coordinator

PKSK – Assistant KSK

PML – Census field supervisor

PCL – Enumerator

PCDK – Enumerators for special areas

III. Issues and Experiences in the 2000 Population Census

Field Experiences

Both the housing and population census was preceded by drawing and numbering the physical building, as well as placing stickers on every building to avoid under-enumeration and duplication. Several types of questionnaires were used in the enumeration. The first, called the SP2000-L1, was used for the listing of buildings and households. The second questionnaire, the SP2000-L2, was used to collect information from population with permanent residence status. Both the L1 and L2 were undertaken by complete enumerators (PCL). In cases where the respondents were non-permanent residents, a special questionnaire, the SP2000-PCDK, was used for the enumeration. Logically, enumerating this type of respondent required special enumerators, called PCDK to enumerate them.

For population with no permanent residence, a special team of enumerators were formed by officials from the provincial BPS office. This team was comprised of several elements such as BPS staff, the police, local government staff, and the social services officials. Population with no permanent residence such as refugees, isolated tribes and boat people were enumerated from the 1st to the 30th of June 2000, whereas the homeless and sailors in Indonesian registered ships were enumerated on the 30th of June.

The enumeration was conducted using two approaches:

1. *De Jure* – population were enumerated in a place where they usually live, which is a place where the population resided for six months or more, but those who lived for less than six months but intended to stay
2. *De Facto* – Population were enumerated in a place where they were found during the enumeration, such as the homeless, refugees, sailors, boat people, and people who were traveling and have yet to be enumerated.

In the field, enumerators also conducted the so-called **moment telling** where, one day after the census night the enumerator had to identify changes of three demographic components: birth, death and mobility. The changes were used as a base to revise previous information results. For instance, if there was birth, data on household member (new baby born) should have been added to the L1 and L2 questionnaires for the relevant household.

Data Processing

Data processing is an essential part of the 2000 Population Census between field enumeration and presentation of the results of the enumeration. The initial data processing was conducted by all regency/city BPS offices throughout Indonesia, specifically the population statistics sub-unit assisted by the statistical data processing sub-unit. The activities of the early phases of the data entry, especially for the L1 questionnaires, are as follows:

1. Document Receiving
2. Batching
3. Editing
4. Early data processing
5. Data entry files delivery phase I to BPS headquarters
6. Data entry phase II
7. Data entry files delivery phase II to BPS headquarters.

Data processing of the L2 questionnaires involved the use of scanners to capture the image of the L1 questionnaires. The regency BPS office also had the task of conducting data entry using this method. An additional computer was also needed to control the operation of the scanner. Moreover, software for the scanning process was also needed to operate the scanners. Thus, the data processing for the L1 questionnaires are as follows:

1. Document Receiving
2. Batching

3. Editing
4. Scanning
5. Recognition
6. Verification
7. Validation
8. Files delivery to BPS headquarters.

The scanning process was only conducted on the L2 questionnaires after the editing process. The scanning or the Optical Character Reader (OCR) was, at BPS, a revolutionary method to capture data automatically without the use of manual labor. In this way, it was hoped that data entry processing time as well as errors would be decreased substantially. The scanners were supposed to capture the information in the questionnaires into image files which would then be processed further into data. However, this novel way of capturing data did not come up to expectations. As will be shown later in this paper, the failure of using this method made it necessary for BPS to redo the data entry process using the traditional manual entry.

Selected Results of the 2000 Population Census

The result of the population census, which was the enumeration conducted from June 1st to June 30th 2000, were presented in several stages. The first stage was the announcement of preliminary results of the census. The second stage was the presentation of the final result of the census comprising of the final figure of the population, the executive summary, and figures classified by population characteristics at national level, and publications of figures for provincial level population characteristics.

The main publication of the 2000 Census consisted of 30 tables on population characteristics, including:

1. Population by age in a single year, urban/rural and sex
2. Population by age group and religion
3. Population by province and citizenship
4. Inter provincial lifetime migration stream

5. Average number of children ever born per women by province and age group.

Several information from the result of population census, are as follows:

1. Number of household 52,008 (thousands)
2. Sex ratio 100.5
3. Population growth 1,4 %
4. Total Fertility Rate (TFR) 2.33
5. Infant Mortality Rate (IMR) 41
6. Life expectancy 67.1.

Hindrance

Most of the problems encountered during the 2000 Population Census were basic problems which also faced by previous censuses. The main problems with the census were related to the political upheaval as a result of the 1998 economic crisis and the decentralization process. Riots and conflicts in many places within the Indonesian geographic area had hindered the census so severely that parts of the Indonesian population had to be estimated. In addition and not just related to the security problems, there were also the usual non-response problems that BPS had to face. There were an estimated 1.1 per cent non response due to refusal to be interviewed or could not be interviewed.

Another major problem that BPS had to take into account was the problem of using the latest technology in data processing. In the beginning, the use of scanners to process was hailed, at least in BPS at the time, as a technological innovation in data entry to minimize error and to speed up the data processing. As a point of fact, many errors did occur due to the problem of the scanner in trying to recognize the data. The mistakes in handwriting by field enumerators could not be resolved by the scanner because it simply failed to recognize them. In addition, in some cases, the scanner could not recognize the numbers in the questionnaire even though they followed the established procedures. To solve the problem, BPS had to re-enter the data all over again. As a result, the problems of data

entry error and time delay persisted and, perhaps even aggravated by the use of the scanners.

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Box 1. The Census of Poor Households in Indonesia (PSE05) 2005.

IV. Evaluation for further Improvement for the 2010 Population Census¹⁸⁶²

At this point in time the earliest date for the 2010 Population Census activity is in 2008, although there are talks of moving the time schedule a year earlier, i.e., 2007 and renaming the 2010 Population Census to the 2010 Population and Housing Census because of the inclusion of housing census as a major activity. In the meantime, even though, all of the planned activities for the 2010 Census will be based on the 2000 Census, it requires an overall network planning to monitor and evaluate each and every activity so that delays will be avoided. The 2010 Census is expected to cost approximately 1.8 trillion rupiahs or more than five times that of the 2000 Census. BPS' experience with the 2000 census have taught that even though it took three years to plan the 2000 Census, problems still occurred, so that optimum results could not be achieved. As explained earlier, a delay in one of the activities resulted in delays in other activities related to that particular activity and jeopardized the whole census process. To solve this problem the 2010 Census should be planned more thoroughly than before. Thus, there are hopes that with the network planning activities can be monitored and resolved earlier should there be delays in implementing an activity.

The network planning of the 2010 Census is designed to cover the entire census activities from 2008 to 2012, and also contains the names of work units responsible for each of the activity from BPS central down to the field worker in the regional offices. The activity will be divided into four distinct but interrelated phases covering the budget years of 2008/2009, 2009/2010, 2010/2011 and 2011/2012. The network planning of the 2010

Census will not only cover all the technical aspects of the activities, but also supporting administrative activities.

The network planning of the 2010 Population Census will produce several outputs, such as a list of activities or task sheet SP2010 that covers all the activity phases, starting date of activity, length of activity, end date of activities, preceding activity, and the unit responsible for the activity. In addition, the network planning will also produce a network diagram that describes the relationship between activities, duration of activity, critical point, critical cross link and slack. These outputs will be very beneficial in monitoring and evaluating the implementation of each and every phase of the SP2010 activities which will be conducted by BPS headquarters, provincial and regency/city offices, as well as sub-regency level coordinators and enumerators.

Major Activities of the 2010 Population Census

As mentioned earlier, the activities of the 2010 Population Census will be divided into four major phases based on the budget year from 2008 to 2012. Activities within the each of the budget years are listed in chronological order. These activities are listed below.

1. 2008/2009 Budget Year - this will be the initial phase of the census covering the preparation of the census, including pilot study and main data inventory to establish the enumeration area unit or census block. Activities covered in the pilot study will include:
 - a. Establishment and mapping of census blocks,
 - b. Instruments and methods of enumeration for housing, household and population
 - c. Field organization
 - d. Filling in information on the number of economic unit by sector based on the 2006 Economic Census from the enumeration area/work area to the 2010 Census blocks.
2. 2008/2009 Budget Year - this secondary phase of the census will still cover the preparation of the census:

- a. Mapping of administrative areas in rural areas and Jakarta,
 - b. Establishment and mapping of census blocks in rural areas and Jakarta
 - c. Initial rehearsal (gladi kotor) of the 2010 Census that covers the pre-testing of field organization, methodology, instruments, and data processing. In addition, there will also be a pre-test of village facility enumeration including its field organization, methodology of enumeration and instruments used.
3. 2009/2010 Budget Year - the third phase of the census will involve more activities than the first two phases. These activities are:
- a. General rehearsal of the 2010 Census and considered a miniature census complete from planning to tabulations
 - b. Mapping of urban administrative areas
 - c. Establishment and mapping of urban census blocks
 - d. Enumeration and data processing of village facilities (Podes)
 - e. Classification of villages by urban and rural
 - f. Implementation of the first stage of the population module survey
 - g. Training of the 2010 Census field workers
4. 2010/2011 Budget Year - this phase will be the climax of the 2010 Population Census and covers:
- a. Housing Census, enumeration of all buildings and households
 - b. Population Census, enumeration of all households and population
 - c. Data processing of the housing and population census
 - d. Implementation of the Post Enumeration Survey (PES)
 - e. Implementation of the second stage of the population module survey
 - f. Calculation of backward projection.
5. 2011/2012 Budget Year – based on the results of the census population projection for 2010 to 2020 will be calculated during this phase.

In addition to a more thorough planning, BPS is also considering the inclusion of more information in the census questionnaire to accommodate the Millennium Development Goals (MDG). The Indonesian government is committed to the achievement of the MDGs set forth by the United Nations. Some of the data needed are as follows:

- a. Gender equality and the empowerment of women
- b. Poverty alleviation
- c. Education for all
- d. Maternal health.

The inclusion of indicators that reflected the MDG target for Indonesia will help the government to implement appropriate measures to ensure that these targets are met in the future.

Other Considerations

Notwithstanding these new inclusions to the 2010 Population Census, there are also calls for the opposite direction. While provision for comprehensive and reliable population database is crucial for Indonesia, priorities need to be given in order to focus on strictly selective topics of population issues that are most relevant for Indonesian development agenda nowadays. Moreover, from the evaluation of various information collected in the 2000 Population Census compatible with the likely utilization of data by relevant stakeholders (both public and private sectors), there are urgent needs for reducing the length of questionnaires and for improving sampling methodologies in such a way that would ease respondent burden in providing information needed in the next population census.

Simplifying questionnaire designs in the next census may be done through intensive consultations with relevant stakeholders and thorough review of medium-and long-term development planning, in order to establish a list of issues, priorities and goals for population development programs in the coming years. The choice must be made between gaining more information and improving the quality of the data.

Other considerations which may affect the trade-off between bulk and quality should look at the major issues surrounding the population domain, such as:

1. National Population development strategy is to make Geographic Information System (GIS), to boost Welfare Statistics and poverty Statistics (table) and to improve the Demographic Frames
2. High dependence on socio-demographic factors among rural and urban population with the majority of being poor, and other of specific characteristics (education, health etc)
3. Decentralization process poses opportunities and challenges in light of the prospect of population development at regional levels
4. To change from using a block census as the ultimate sampling area to small area administration.

V. Concluding Remarks

BPS has conducted the population census 6 times since 1961. The most recent population census was the 2000 Population census, which included a census of housing. The census was successful in collecting data on the population and housing characteristics. Nonetheless, the 2000 Population Census also experienced several problems technically and administratively. The main problem faced during the census was the political instability in the country where many conflicts occurred in many parts of the country, particularly in Aceh, Maluku and Papua provinces. This created administrative problems, especially in relation to the allocation of funds and personnel, as well as delays in timetable and results. In addition, the use of scanners, initially thought as technological breakthrough, did not come up to expectations and, thus, also caused delays during the data processing.

Based on the experience of the 2000 Population Census, the 2010 Population census will be planned more thoroughly using a network planning approach. It is hoped that this network planning system can detect early problems and then be resolved earlier before the problem gets worse. One unfortunate experience was the failure of using scanners to process the data. If problems such as this can be detected early and resolved quickly, then it is hoped that any delay resulted from the problem can be minimized. The network planning should also put more emphasis on coordination between BPS and other relevant government institutions, particularly the local governments. The decentralization process has made the local government, especially regency/city governments, much more autonomous than before and BPS should include officials from the local government to coordinate efforts to make implementation of the census run more smoothly. Finally, due to the inclusion of a housing census, the 2010 Population Census, should be renamed the 2010 Population and Housing Census.