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FOR THE CARIBBEAN

The use of census data for national development planning

Focus on the 2010 population
and housing census

Kristin Fox



UNITED NATIONS

E C L A C

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This document has been prepared by Kristin Helen Fox, Consultant of the Statistics Unit, Economic Commission for Latin America and the Caribbean (ECLAC) subregional headquarters for the Caribbean.

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Abstract

For many Caribbean countries the only mechanisms in place to systematically collect information on socio-demographic, economic, environmental and other issues of national importance are the Population and Housing Census and the Country Poverty Assessment studies. Country Poverty Assessment studies, however, have limitations of sample size and therefore do not provide information on relatively rare events nor can it provide small area data. Consequently, the Population and Housing Census is often the only source of valuable information needed for planning and management, and research. The purpose of this document is to examine the conduct of the 2010/11 Census with a view to promoting wider dissemination of the data.

The information for this study was obtained using a mixed approach including literature review especially of United Nations organisations and the World Bank documents, informal interviews, and personal knowledge and experience in the area of data dissemination.

CARICOM countries have made strides in the conduct of the Census, having (a) adopted a Common Framework for Gathering, Processing and Disseminating the 2010 Round of Population & Housing Census data to ensure region wide comparability, and (b) implemented several actions to advance the process. As a result, some CARICOM countries have published at least preliminary results as static web files as the first step in dissemination within about 2 years. Unfortunately, for other CARICOM countries, timeliness is still an issue.

However, only four countries embraced other mechanisms for web dissemination of aggregate data and only Jamaica disseminates microdata. Given the plethora of mechanisms for disseminating Census data confidentially, most CARICOM countries are yet to embrace the possibilities and take advantage the tools available internationally. This represents a significant loss of valuable information and data to policy makers, planners, managers and the research community of the Caribbean and indeed, internationally. The obstacles to use of Census data such as legal, technical and financial can and must be addressed once the political and psychological obstacles are overcome.

I. Introduction

For many Caribbean countries the only mechanisms in place to systematically collect information on socio-demographic, economic, environmental and other issues of national importance are the Population and Housing Census and the Country Poverty Assessment studies. Country Poverty Assessment studies, however, have limitations of sample size and therefore do not provide information on relatively rare events nor can it provide small area data. Consequently, the Population and Housing Census is often the only source of valuable information needed for planning and management, and research. However, in spite of this, most, if not all of the countries have experienced challenges in the conduct of the Census, both in the range and quality of the data, and in the processing and dissemination of the information. The purpose of this report is to examine the issue of dissemination of Population and Housing Census data with special reference to the 2010 round of Caribbean Population and Housing Census, hereafter called the '2010/2011 Census'. The specific objectives of this report are:

- To examine the need in the Caribbean for more accurate and timely data to facilitate planning, management decisions, research and other decisions;
- To examine the need for any large scale survey or census to include a thorough data dissemination plan;
- To examine the need and possibilities for disseminating and marketing data to maximize the usefulness of the results of expensive data collection such as the Population and Housing Censuses.

“A census is not complete until the information collected is made available to potential users in a form suited to their needs. A wide range of statistical products can be made available to the public, the private sector, government agencies, local authorities and the academic and research communities.”¹

The information for this study was obtained using a mixed approach including literature review, informal interviews, and personal knowledge and experience in the area of data dissemination.

¹ United Nations Principles and Recommendations for Population and Housing Censuses, Rev. 2.

Dissemination of survey data is highly topical and a number of United Nations organisations and the World Bank are involved in various aspects of dissemination. Therefore a number of the ideas/recommendations have been drawn from these reports including.

- Baer, P. (2008). Principles of Dissemination and Marketing of Statistical Information
- United Nations Economic Commission for Europe. (2007). Managing Statistical Confidentiality and Microdata Access: Principles and Guidelines of Good Practice.
- United Nations Economic Commission for Europe. (2010). Data Dissemination on 2008 General Population Census of Cambodia.
- United Nations Statistics Division. (2011). Emerging Trends in Census Data Dissemination.
- UN Statistic Division. (2011). Learning Centre on Population and Housing Census Data Dissemination, including CensusInfo.
- United Nations. (2010) Handbook On Population And Housing Census Editing Revision 1. Studies in Methods Series F No. 82/Rev.1.
- DuPriez, O., Boyko, E. (2010). Dissemination of Microdata Files. Principle, Procedures and Practice. International Household Survey Network. IHSN Working Paper No. 005.

The report is divided as follows:

- The conduct of the 2010/11 census;
- Timeliness, accuracy and breadth in relation to the 2010/2011 Census;
- Current Situation regarding Dissemination and Utilization of Caribbean Population Census Data;
- Use and Usefulness of Population and Housing Censuses;
- Dissemination and marketing and the dissemination strategy/plan;
- Methods of dissemination

It concludes with recommendations for promoting dissemination of Caribbean Census data.

II. Conduct of the 2010/2011 population and housing censuses

As a direct response to the experiences faced by the Caribbean in the 2000 Population and Housing Census, the Caribbean Community (CARICOM) developed and adopted a Common Framework for Gathering, Processing and Disseminating the 2010 Round of Population & Housing Census data to ensure region wide comparability. To this end, they decided to develop common methodologies; disseminate recommendations and best practices; support implementation of technical recommendations, and promote tools that facilitate open access to the data and improve dissemination. In 2008, the Project Coordinating Unit was established at the CARICOM Secretariat to oversee the implementation of the Framework. The three broad components of the Common Framework were: a common questionnaire, common methodologies for implementation of the census and common tool for data access and dissemination.

In support of these components, CARICOM undertook a number of capacity building exercises to support the preparation and conduct of the 2010/2011 Census including:

- A Census Symposium to review the experiences of the previous Census in preparation for the upcoming round.
- Workshops to strengthen demographic analysis in the Region.
- A Regional Workshop on Census Cartography and Management
- Establishment of Resource Consortium
- Training on IT aspects of data capturing, cleaning, tabulation, e-publishing and mapping results
- Workshops on Census Organisation and Administration and Common Methodologies
- CensusInfo training workshop
- Training-of-Trainers (TOT) workshop to train personnel on the common census methodologies.

All CARICOM countries participated in and contributed to the development of the first two components and participated in the activities organized by CARICOM, including training. The common

questionnaire included core questions under the following areas for the individuals: personal characteristics; migration (birthplace and residence); disability; education; training; economic activity (15 years and over); marital and union status (15 years and over); fertility (females 14+); access to the internet; income; census night. Core questions on housing included: characteristics of occupied building; characteristics of occupied dwelling unit and land tenancy; housing units by facilities available for use; housing units by facilities available for use; international migration; the environment and crime. Non-core questions included further elaboration of the areas listed and health related issues. The extent to which the standardised questionnaire was used in the conduct of the censuses cannot be determined at this time. However, since all countries were involved in its development, it is unlikely that there would have been major departures from the standardised questionnaire.

CSPro, a public domain software, is used primarily for data entry, editing, tabulation, and dissemination for management of Caribbean Census data. Both ECLAC and UNFPA have provided training in the use of this free software. CARICOM is currently proceeding with the dissemination of the data online using a Census e-portal and is providing support to countries to disseminate nationally using a CensusInfo (Harrison, 2013). Other international agencies such as ECLAC are also involved in dissemination, primarily through the use of REDATAM.

III. Caribbean population and housing census data: timeliness, accuracy and breadth

This section examines the issues of timeliness, accuracy and breadth of data with specific reference to the 2010/2011 Census. In particular, it addresses the need in the Caribbean for more accurate and timely data of a much broader scope, that is more easily accessible and able to facilitate planning, management decisions, research and other decisions.

A. Timeliness

“Data delayed is data denied”²

No one can gainsay the importance of timeliness of data but what is ‘timeliness’. Several definitions of data timeliness have been put forward (See Box 1).

BOX 1 SELECTED DEFINITIONS OF THE DATA QUALITY DIMENSION - TIMELINESS

Ballou et al. (1985), Ballou et al. (1998). Timeliness: “the recorded value is not out of date [...]. A stored value, or any data item, that has become outdated is in error in that it differs from the current (correct) value.”

Wang et al. (1996) Timeliness: “The extent to which the age of the data is appropriate for the task at hand.”

Redman (1996) Currency: “degree to which a datum in question is up-to-date. A datum value is up-to-date if it is correct in spite of possible discrepancies caused by time-related changes to the correct value.” (own translation)

Hinrichs (2002) Timeliness: “Property that the attributes or tuples respectively of a data product correspond to the current state of the discourse world, i.e. they are not out-dated”

Price et al. (2005) Timeliness: “The currency (age) of data is appropriate to their use”

Batini et al. (2006) Timeliness: “Timeliness expresses how current data are for the task at hand.”

Heinrich et al. (2007a), Heinrich et al. (2007b). Timeliness: “Timeliness can be interpreted as the probability that an attribute value is still up-to-date”.

Source: Heinrich, B., H. Klier, M. (2009) ‘A Novel Data Quality Metric For Timeliness Considering Supplemental Data’. Presented at 17th European Conference on Information Systems, 2009

² Execution-MiH. Data quality definition- what is data quality? <<http://www.executionmih.com/data-quality/accuracy-consistency-audit.php>>.

All point to the importance of accessibility of data while still relevant, but when is data no longer relevant? A study carried out by the US Bureau of Census as far back as 1970, found that users felt that the US census reports were not timely because ‘it often takes up to 2 years before much of the data is published’ (US Bureau of Census, 1970). Yet, in the Caribbean, it is not unusual for publications to take several years. Table 1 is an example of the lag time between data collection and report publications and it shows that even with improvements in technology, the lag time actually increased between 1960 and 2000. For most Caribbean countries, the 2000 census reports were not published until a CARICOM initiative which began in 2006 with publications finalised in 2009.

TABLE 1
CENSUS YEARS AND YEAR OF PUBLICATION OF RESULTS IN
TRINIDAD AND TOBAGO, 1960 -2010

Census	Year last document published	Lag time (years)
1960	1963	3
1970	1973	3
1980	1984	4
1990	1995	5
2000	2006	6

Source: CSO. Unpublished data, 2007

Generally speaking, the time lag between the end of the census itself and the publication of the first results reflects the time needed to carry out the post-enumeration census exercise, to process the questionnaires, to carry out complex statistical processes to produce population estimates adjusted for under and over-coverage, and to fully quality assure the estimates. This is highly dependent on the availability of key personnel who understand the intricacies and nuances of census data, the completeness and accuracy of the completed questionnaires and the availability of up to date ICT hardware and software. The Caribbean has achieved some improvements and to date, 10 Caribbean countries, including associate members have already published at least the preliminary results of the 2010/11 census online as PDF or Excel files. However, in the age of rising user expectations with users often expecting ‘real time’ results, timeliness becomes even more important. Again, in the USA, users stated that the 2000 census results were available in a shorter time ‘beyond their expectations’ - one year, but users still hoped that the results would have been made available sooner (Kavaliunas, J. 2002). Further, users expect not only direct results from a census, but the opportunity to manipulate data for their specific needs. Therefore, Caribbean countries cannot feel satisfied or complacent with having published demographic reports in a timely fashion. Furthermore, only 7 of the 14 CARICOM member countries that conducted their Census in 2010- 2011 have published any report. Any measure of timeliness must include publicly available data whether as aggregate data or as microdata.

B. Accuracy

Accuracy of census data is dependent on a number of factors including, inter alia: coverage errors and content errors. For the most part, the post-enumeration exercise is undertaken to minimise coverage errors. Content errors may be due to a number of factors including errors in questionnaire design, enumerator errors, respondent errors, coding errors, data entry errors, and computer editing and tabulation errors. (United Nations, 2010). Errors are inescapable but actions undertaken under the CARICOM Common Framework should contribute to minimisation of these errors. With the introduction of standardised questionnaire it is expected that errors in questionnaire design would be minimal. Training targeting different aspects of the census process including field work have also been implemented under the framework and therefore it is expected that there should be improvements there. However, in the 2010/11 Census, problems of non-response were experienced as the social environment in many areas was unfavourable. Consequently, respondent errors may actually have increased in this round of the Census, at least in some countries.

Census data is only as good as the data collected. However, the quality of the information can also be affected by errors in data entry, computer editing and tabulation procedures. Improved technology, namely scanning, should improve the quality of the processing but while it increases the speed with which data are entered, a number of errors may arise from handwriting differences or other markings on the questionnaire/form. Therefore, good data editing becomes critical and requires that ICT personnel understand the census process and the editing requirements of census data. At least one country has identified a problem in this regard in which the ICT department appears not to have a proper understanding of data processing as it relates to survey/census data and statistics.

C. Can census data be of a broader scope?

The purpose of the Population and Housing Census is to provide information on the size, distribution and characteristics of a country's population. While it may seem like a golden opportunity to obtain data on a range of issues, there is likely to be a trade-off with accuracy and timeliness. Longer interviews are more likely to lead to interviewer and respondent fatigue, and this could affect both the accuracy and timeliness of the data. Also, particularly difficult or sensitive questions may affect response levels and therefore would have an adverse effect on the whole census. Furthermore, surveys of a broader scope will only be useful if the data are disseminated and analysed, in a timely manner. The Census cannot be all things to be all people so it is important that a broad based committee at the country level determines the priority issues to be included, in addition to the core topics and considers the implications, both positive and negative for the conduct of the Census.

IV. Dissemination and utilization of Caribbean population and housing census data

Utilisation is obviously related to dissemination and the marketing of the information. In the absence of/or with limited dissemination, utilisation must be limited. Dissemination of Population and Housing Census information for Caribbean countries has traditionally been in paper form and more recently as static web census reports; or through international agencies and archives. Of the 15 CARICOM countries listed as member states, 11 had websites dedicated to the functions of the National Statistical Office (NSO). However, there is considerable variation in the content of these websites (Table 2). Most of the countries that have a report for the 2010/11 census have static web dissemination of the results.

There is action by the countries themselves to produce interactive databases using REDATAM. St. Vincent and the Grenadines, St. Lucia, Trinidad and Tobago and Belize have interactive online databases of the 2001 census. Saint Lucia has made the 2010 census data available online via the REDATAM platform; Trinidad and Tobago are in the process of converting their database. Jamaica provides downloadable Excel files of aggregated data.

A search of the internet identified a number of international archives catering to census data but the Caribbean region is notably absent from these archives. UN reports always have missing data for the Caribbean. A number of other online repositories including CARICOM, ECLAC have some aggregated data, but generally speaking, the data is sparse and there is no consistency in terms of what is reported and the years of reporting. Also, many do not state the source of the data and they are not particularly user-friendly. One of the challenges in the Caribbean is the unavailability of data for reporting in relation to the many international agreements to which our governments are signatories. There is need for better identification of these needs by building of better relationships between producers and users of data.

TABLE 2
CARICOM COUNTRIES NSO WEBSITE AND AVAILABILITY OF CENSUS INFORMATION
2000 AND 2010 ROUNDS

Country	Website	Date of Census	Data available/format	
			2000 Census round	2010 Census round
Antigua and Barbuda	http://www.antigua.gov.ag/	2011	Yes/HTM	Yes/Slideshare
The Bahamas	statistics.bahamas.gov.bs/	2010	Yes/PDF	Yes/PDF
Barbados	www.barstats.gov.bb/	2010	No	No
Belize	www.statisticsbelize.org.bz/	2010	Yes/REDATAM	Yes/PDF
Dominica	No	2011	No	No
Grenada	No	2011	No	No
Guyana	www.statisticsguyana.gov.gy/	2012	Yes/PDF	No
Haiti	No	2013	No	No
Jamaica	http://stainja.gov.jm/	2011	Yes/Excel	Yes/ Excel
Montserrat	www.gov.ms/	2011	No	Yes/PDF
Saint Kitts and Nevis	No	2011	No	No
Saint Lucia	www.stats.gov.lc/	2010	Yes/ REDATAM	Yes/ Excel, REDATAM
Saint Vincent and the Grenadines	http://www.stats.gov.vc/	2011	Yes/ REDATAM	No ^a
Suriname	www.statistics-suriname.org/	2012	No	Yes, PDF
Trinidad and Tobago	www.cso.gov.tt/	2011	Yes/ REDATAM	Yes/PDF

Source: Author on the basis of information obtained from internet searches and published information.

^a Data damaged by fire. <http://www.caribbean360.com/index.php/news/st_vincent_news/510786.html#axzz2TU1uiPoc>.

Dissemination of microdata has also been limited. The Jamaican Population Census microdata for 1982, 1991 and 2001 have been archived at the Sir Arthur Lewis Institute of Social and Economic Studies (SALISES), University of the West Indies (Mona) and through that medium, dissemination has taken place but marketing of the databases has been limited. Integrated Public Use Microdata Series (IPUMS) is also a repository for census data internationally, but very few Caribbean databases can be found there (Table 3).

TABLE 3
AVAILABILITY OF CARIBBEAN POPULATION AND HOUSING CENSUS MICRODATA

Country	Data Archive	
	IPUMS	SALISES
Jamaica	1982, 1991, 2001	1982, 1991, 2001
St. Lucia	1980, 1991	-
Cuba	2002	-
Puerto Rico	1970, 1980, 1990, 2000, 2005	-

Source: :Author on the basis of information obtained from internet searches and the data archives

It is impossible to assess the extent to which Caribbean Population and Housing data have been utilised in the past. Most local and international agencies use them as background information or in their publications of official statistics although there are often differences between the reports. Over the past 10 years, the SALISES databank has had 32 requests for the Jamaica Population and Housing Census microdata 1982-2001 (Table 4). Most of the requests have been from students, both locally and abroad, requiring the data for theses, research papers and course assignments. Lecturers have also used the data for peer review articles, while other researchers have used them for research projects. When one considers that no marketing of the databases has been done, these represent a meaningful contribution to

research and training, and demonstrate the potential of Population and Housing Census data if a comprehensive dissemination and marketing strategy is embarked upon.

TABLE 4
UTILISATION OF JAMAICAN POPULATION AND HOUSING CENSUS DATA
DISSEMINATED BY SALISES

Year of Census	Number of Requests ^a	Purpose
1982	9	Theses/ research papers – 8; Research – 4
1991	7	Course assignments – 17
2001	20	Research projects – 3

Source: SALISES Databank Database.

^a Some requests were for more than one census year

A. Usefulness of housing and population census data

‘Only used statistical information is useful statistical information’ (Baer, 2008). Possibilities for use of census data are wide but depend on the content of the questionnaire and the quality and timeliness of the data. An analytical review of the use of US census data stated that ‘policy makers at all levels of government, as well as private businesses, households, researchers, and non-profit organizations, rely on an accurate census in myriad ways that range far beyond the single fact of how many people live in each state’ (Council of Economic Advisors, 2000).

A review of the use of Jamaica census data supplied by the SALISES Databank shows the diversity of topics (Table 5). A search on the Internet adds considerably to this compendium with research ranging from the simple to the complex in terms of the degree of statistical analysis and in the range of subject matter. Some of these are shown in Table 5. The State of New Jersey website listed 50 ways in which the Population and Housing Census can be used (Annex 2). Together, these provide a glimpse into the possibilities of the use and usefulness of Census data.

TABLE 5
EXAMPLES OF HOW POPULATION AND HOUSING CENSUS DATA HAVE BEEN USED
INTERNATIONALLY

Data source	Topic
Jamaica Population and Housing Census	Water Quality Pattern & Equity in Jamaica
Jamaica Population and Housing Census	Disaster Risk Reduction Risk Atlas
Jamaica Population and Housing Census	Caribbean Seismic Atlas
Jamaica Population and Housing Census	The role of internal migration in shaping different patterns of rural and urban population structures in Jamaica, 1982-2001
Census microdata from Kenya, Mexico and Vietnam	Health workforce characteristics at the sub-national level
USA Population and Housing Census	Using Census Data to Identify Areas of High-Transit Propensity
USA Population and Housing Census	Using Census Data for Transportation Applications
Census data from several countries	The positivity effect in aging
Census microdata from Tunisia and Indonesia	Success stories in gender and health
USA Population and Housing Census	Synthetic Survey of Income and Program Participation
CARICOM Population Censuses	Gender Indicators (ECLAC)

Source: Author on the basis of information obtained from internet searches and published information

However, these analyses were only possible because data were made available either in the form of microdata or as aggregate data at the community level (spatial analysis). Given the importance of empirical information for planning and decision making at national and local level, these types of analysis could enhance these activities in the Caribbean. As Eelan (2001) stated ‘census users need not

only direct results from a census, but also findings and recommendations based on the research of census data. Universities, governmental and private research institutes and non-governmental organizations (NGOs) take on this role’.

B. Dissemination and marketing

‘Marketing statistical information is about learning how to satisfy existing information needs with the information material that already is provided by official statistics’ (Baer, P. 2008). Marketing statistical information requires that relationships with users are developed and that potential users can learn how to find statistical information and understand the role of statistical information in decision making. But in order to market properly we need to know who both users and potential users are, and what they are using and what they need. Knowledge of these issues will help those disseminating the information to (a) improve the range of services offered to existing users, and (b) to target potential users. Census information has a wide range of users including: the media, government bodies at national and local levels, the research community, educational institutions, Non-governmental agencies (NGO), and businesses. It is only through consultation with users and potential users about their data needs and requirements for census information that we can adequately develop relevant product and services.

C. Data dissemination strategy/plan

The development of a dissemination strategy and plan that defines the scope and type of products is important at the planning stages of the population census because it will to some extent influence the questionnaire design and will necessitate the allocation of human and financial resources. However, even in the absence of a dissemination strategy at the outset, it is possible to achieve successful dissemination especially if done as a collaborative exercise between personnel with different responsibilities within the NSO. Collaboration is of paramount importance because persons with responsibility for communication and marketing of statistical products do not necessarily understand or have knowledge of the issues, tools etc. for disseminating data and therefore have to be advised regarding these matters. Collaboration with regional and international agencies can provide both technical and financial assistance. Marketing of Caribbean census data does not appear to be a conscious exercise and would definitely require a new approach to dissemination.

The dissemination strategy should include:

- A dissemination policy – guiding principles for dissemination is needed. These must conform with national laws but must embrace the idea of equitability of dissemination to ensure optimal use.
- Goals for dissemination of census data/information
- Identification of users and potential users and their data needs
- Nature of outputs e.g. tabular and graphical reports, administrative, thematic and analytical reports, interactive databases, spatial data and maps, customised reports and microdata.
- Strategies for monitoring the implementation of the plan

The United Nations (2011) listed a number of problematic issues that limit optimal dissemination and subsequent utilisation of census data. These include:

- making the data visible;
- creating awareness and interest in the data;
- identifying data users and their needs;
- presenting the right data with the right context to meet users’ needs – to be user-oriented;
- taking advantage of advances in ICT to make the data more accessible and better presented;

- taking advantage of the spatial dimension of census data;
- ensuring data confidentiality and managing pressure of timely/fast dissemination, while ensuring the quality of statistics.

All of these issues apply at least to some degree to Caribbean countries and they should be addressed as part of the strategy and plan for data dissemination. A comprehensive plan with details of the output to be produced, the methods of dissemination, and timelines for dissemination should emanate from the strategy. The plan should include timelines, responsibilities and financial implications/budget.

Unfortunately for this report, little information was available regarding whether CARICOM countries have developed their own dissemination strategy. The Statistical institute of Jamaica does not have a specific strategy for the dissemination of the 2011 Census and states that it would follow whatever strategy it has for other databases. A search of the internet revealed that the NSO of Trinidad and Tobago had listed methods and software that it planned to use for dissemination of the 2011 Census data, although this was not stated as their dissemination strategy (Annex 3). An example of a dissemination strategy is shown in Annex 4.

D. Methods of dissemination

There are several levels of data dissemination and several options for dissemination at each level so to a large extent, dissemination will depend on availability of resources, and political will. UN Statistic Division (2011) identified several methods of dissemination of Census data as follows:

- Static web dissemination
- Interactive on-line databases
- Dissemination of micro-data
- GIS web-based data presentation
- Use of social media/networking
- Use of mobile technology (SMS, etc.)

1. Static Web Dissemination

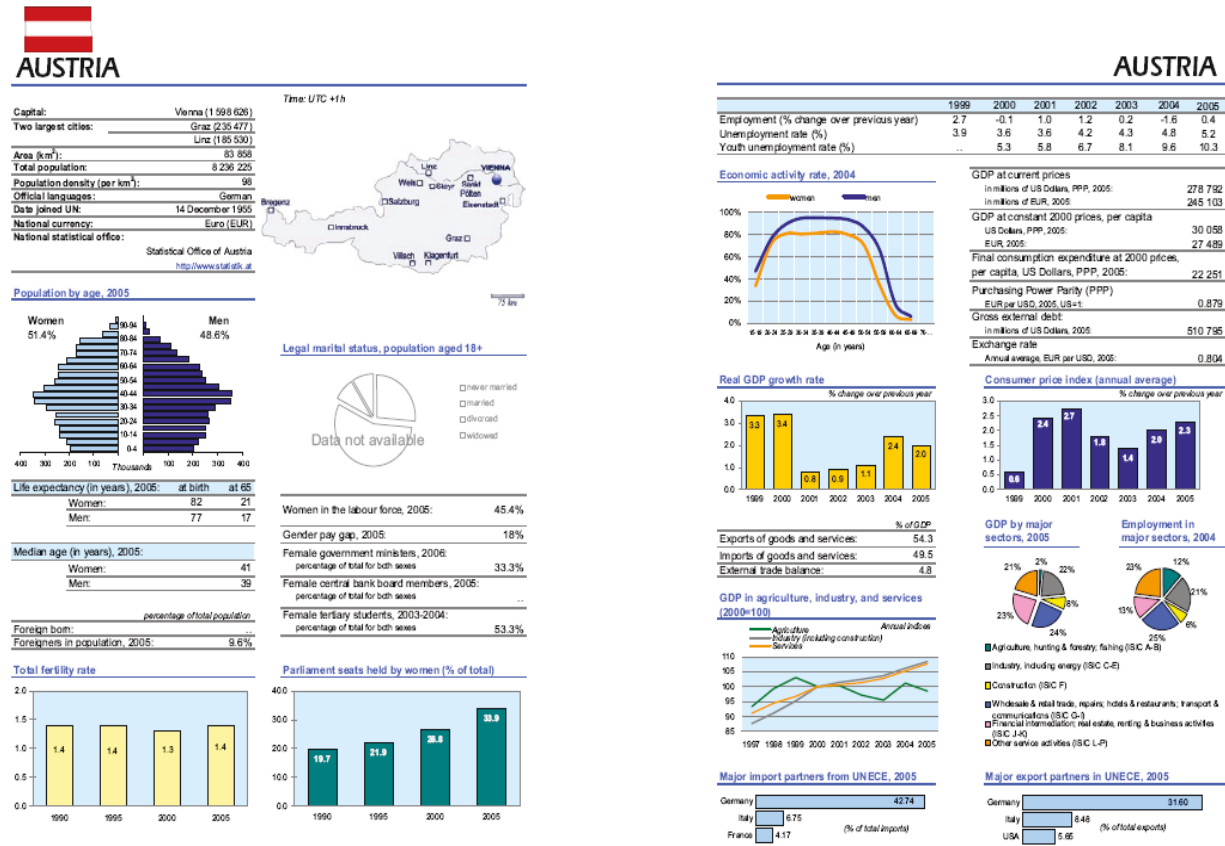
Static web dissemination is useful for delivery of key demographic and other information generated by the NSO in its analysis in a cheap and timely manner. At present most, if not all, CARICOM countries published the 2001 report in this manner and all the reports for 2010/2011 Census have been mounted, mainly as PDF files. The use of PDF files facilitates quick dissemination but it should not be seen as the end all of dissemination. Many of these files are extremely large and are not user friendly. Tabular and graphic representation of the data is far more appealing to the general public (see Figure 1).

However, static web dissemination does not allow users to easily download, nor can data be manipulated. Furthermore, and updates of the information by the owners, have to be done manually.

2. Downloadable Aggregate Data

The posting online of Microsoft Excel files is probably the simplest method of providing downloadable aggregate Census data. Although the software is not cheap, it can be considered a more cost efficient method of sharing data because it is routinely installed in most computers. Also, there is open source software e.g. OpenOffice Calc that can read Excel files. Therefore the main disadvantage for posting excel files is that the user has to download the whole file and may not be familiar with Excel.

FIGURE 1
EXAMPLE OF GOOD STATIC WEB DISSEMINATION



Source: Vale, S. (2008).

3. Interactive online databases

There are several software tools developed to enable users to generate their own indicators, tables and/or maps. Currently, the most popular ones for managing Census data are REDATAM and CensusInfo. Table 6 shows the features of both CensusInfo and REDATAM. Both these are free interactive tools but there are important differences and there are advantages of each.

The main advantage of REDATAM is that its start-point in the microdata and tables or indicators do not have to be developed by those mounting the information. It therefore allows the user to generate new indicators and customise tables, graphs and maps. REDATAM provides data security and restrictions for the data using encrypted data compression, passwords and deletion of sensible variables so it is impossible for users to access data on individual persons or households,

On the other hand, the start point for CensusInfo is aggregated data from which tables and graphs and maps can be generated. Therefore, although the software can generate user defined tables or graphs, the indicators have to be in the database for it to do so. However, it has a number of user friendly features for presentation of the information generated.

CensusInfo is easier to use and persons with only basic computer and statistical literacy skills can utilise it. This is true both for setting up the database and for accessing the information. REDATAM requires a higher level of computer and statistical literacy but is a more powerful data analysis tool. REDATAM has the additional advantage of providing archival services.

The decision regarding which tool to use must reside with the country's NSO but it must be noted that the REDATAM and CensusInfo will appeal to different audiences. Therefore the NSO must know who its users and potential users are, when making a decision regarding which tool to use or whether to use both. Where CensusInfo is being used, CARICOM must ensure that the indicators are standardised across the region to ensure comparability between countries.

TABLE 6
COMPARISON BETWEEN CENSUS DATA DISSEMINATION SOFTWARE PACKAGES, CENSUSINFO AND REDATAM

Application characteristic	CensusInfo	REDATAM (REtrieval of DATa for small Areas by Microcomputer
License	Owned by UN, distributed royalty-free to all end-users	Version free of charge for Download (www.eclac.org/REDATAM)
Database management		
Type of data	Aggregated data.	Individual data.
Data processing	Easily handles data disaggregated by geographical area and subgroups.	It allows processing of microdata and aggregated data, organized hierarchically, by using REDATAM programs or easy tabulations
Data consistency checks	Yes, Database administration application allows editing of indicator values. Does not facilitate consistency edits for microdata	A procedural language can be used to check consistency, but doesn't facilitate editing of data
On-line data entry	Yes, through database administration application	No
System user defined data/indicator	Yes, based on database template methodology	The Process module is for data processing and indicators generation. The xPlan module provides the user with a template for on-line indicators generation
Metadata storage	Yes with admin-defined tags. In CensusInfo Admin application	Metadata is part of the dictionary and can be accessed any time in the Process module or in the xPlan web applications.
Common database elements across databases	Yes, supports SDMX-compliant registry to normalize database dimensions. CensusInfo Registry allows for importable global database elements	Data is organized through entities/ levels and entity elements in a hierarchical structure

Table 6 (continued)

Application characteristic	CensusInfo	REDATAM (REtrieval of DATa for small Areas by Microcomputer)
Data presentation		
Tables	Yes, user-defined content for rows and columns. Instant table preview as well as customizable table editing features, Includes frequency tables, crosstabs and histograms	Yes, user defined output tables with up to five dimensions. Geographic area lists to link with other GIS
Graphs	Yes, editing features available for customization. Includes pyramid charts as well as standard bar, column, line and pie charts	Yes, editing features available for customization. Includes pyramid charts as well as standard bar, column, line and pie charts
Maps	Yes, basic map editing features allow users to change labelling, colours, legend and display multiple themes. Contains features including drill-down, time series, maps, raster maps, etc.	Yes, uses in-house developed mapping display and reads shape files. Allows users to change labelling, colours, legend and display multiple themes.
Custom report builder	Yes with user-defined content. Formatted tables can be saved as report layouts	Using block programming or assistants formatted tabulations can be created
Allows creation of interactive web enabled animated presentation using database	Yes, including searching gallery, profiles and data visualizers. di Book, di Video and di Visualizer all allow for animated data display and visualization	No, needs programming or application development
Interactive representation of data on CD-ROM	Yes. Tables can easily be saved to a Gallery	Yes. applications for microdata or aggregated data processing and tables creation can be distributed on a CD or through the Web
Interactive representation of data on the web	Yes (cross-browser-compatibility). Tables can easily be saved to an online Gallery, database can be uploaded online	Yes. Using Web Server all REDATAM applications allows on-line microdata or aggregated data processing and tables can be displayed on graphs or maps through the Internet
Data import capability		
SPSS	Yes, from SPO, CSV, XLS. Via specialized data exchange utility	Yes. These should be converted into REDATAM format
SAS	Yes, using standardized data format. Via specialized data exchange utility	The dictionary of the SAS file should be converted into SPSS or CSPro for a REDATAM database creation
CsPro	Yes, from HTML. Via specialized data exchange utility	Yes. These should be converted into REDATAM format
Microsoft Excel	Yes, using standardized data format. New utility allows for seamless import of CSV data into CensusInfo	Excel data should be saved as DBF before the REDATAM database creation
REDATAM	No	
DATA EXPORT CAPABILITY		
SPSS	Yes, using standardized data format	No
SAS	Yes, using standardized data format	No
PDF	Yes	No
Microsoft Excel	Yes, using standardized data format	Yes, only aggregated data (tables), never the microdata (confidentiality is kept)
Publishing utilities		
Standard Profiles		No
Multi-Media	di Books, di Video, side bar, PPT output	No
Print	posters, brochures	No
Knowledge and support		
Help desk availability	Yes 24x7 in English, French and Spanish	Yes, via email to the REDATAM Development Team
Expertise required to develop database	Basic desktop computer literacy with e-learning courses available and extensive technical documentation	Database management, programming expertise are required
Expertise required to implement online version	Basic web administration knowledge required with web implementation technical guidelines	Database management, programming expertise are required

Table 6 (concluded)

Application characteristic	CensusInfo	REDATAM (REtrieval of DATa for small Areas by Microcomputer)
Training required for database creation (time)	1-5 days depending on level; standardize training courses with agenda, curriculum, exercises available	A five day training course is available
Training required for web implementation (time)	1-5 days depending on level; standardize training courses with agenda, curriculum, exercises available	A five day training course is available
Software maintenance		
Regular software maintenance facility	Yes with online updates. Live Update feature available	Latest updates are available online
Year of latest Update	2010	2011 (REDATAM+SP V5Rev04)
Operating systems supported		
Microsoft Windows	XP/Vista/Win7	2000/XP/Vista/Windows7
Apple Macintosh	Supported on Macs with Win environment	No
Linux	Web application only	No
Utilizes open source technology	Yes, web version of OpenCensusInfo. Based on OpenDevInfo released in 2010	No

Source: Adapted from: Comparison between Census software packages in the context of data dissemination Prepared by DevInfo Support Group (DSG) and UN Statistics Division (DESA/UNSD) - last updated 5 August 2011

D. Dissemination of microdata

Although National Statistical Offices (NSOs) often produce a wide range of tabular output to give users highlights and a broad overview of the census results, they cannot identify and address all the research questions that can be answered through the analysis of census data. Dissemination of microdata facilitates more sophisticated analysis of social and economic issues, but it also has other uses. It reduces the duplication of data collection activities and improves the harmonization and comparability of studies. Furthermore, feedback from users can help to improve the reliability of the data and force producers to pay greater attention to quality.

Dissemination of microdata is a sensitive issue anywhere in the world because once the data drilled down to the local level, anonymity cannot be assured. However, this should not be a reason not to disseminate microdata. As Li Li (2006) aptly stated ‘non accessibility to microdata forced users to conduct their own surveys and resulted in duplicated activities and great waste of money and time , at the same time, the existing datasets remained under-exploited, which in turn limited the return of data collection investment and the improvement of statistical capability.’ The main obstacles to dissemination of microdata are legal obstacles which in many countries are outdated; technical and financial including in-house capacity to handle the complex aspects of microdata dissemination such as data anonymization and preparation of metadata; political obstacles, and psychological obstacles (Hunegnaw, 2011).

The 35th Standing Committee of Caribbean Statisticians adopts the following position:

- Access to all statistical data, whether microdata or tabular data, shall be strictly in accordance with the Statistics Acts of CARICOM Member States and Associate Members;
- Encourages Member States and Associate Members to establish mechanisms for disclosure prevention, such as data anonymisation and to provide access to microdata under controlled conditions, such as microdata laboratories; and
- Encourages international organisations to build capacity at the national level and support the establishment of these mechanisms in CARICOM Member States and Associate Members.

Based on the position adopted, it is reasonable to assume that the committee supports dissemination and encourages member states to actively pursue mechanisms to dissemination Census data.

Several different approaches to the issue of maintaining confidentiality have been used and can be categorised into legal and technical arrangements. Legal arrangements can be either through legislation or through a contractual/legally enforceable arrangement that is a precondition for access. Many data archives require that potential users sign an application form which includes a number conditions under which persons can use the datasets.

Technical arrangements fall into two broad groups – special access facilities and anonymisation techniques.

1. Special access

Special access to microdata has been possible through data laboratories or safe sites and through remote access facilities (RAF).

An example of data laboratories is the arrangement that the US Census Bureau has in which it partners with various universities, research institutions, and agencies to form a nationwide network of secure data centres. At these secure centres, qualified researchers with approved projects can perform statistical analysis on selected internal microdata from the Census Bureau and other statistical agencies.

With Remote Access Facilities, the user is provided with a synthetic dataset that replicates the structure and content of the actual dataset. The user can then develop a program to analyse the data, transmit the program to the staff of the RAF. Once the program is run against the actual dataset, the results are vetted for disclosure and sent to the user. In this way, the user never has access to the microdata. But this requires more technical staff at the facilities. Some data producers provide researchers with access to microdata by engaging them as temporary staff. This makes them subject to the same secrecy provisions as permanent staff of the data producing agency.

2. Anonymisation

Anonymisation of microdata is the process by which identifying characteristics are removed or modified so that individual entities cannot be identified. It can be done in a number of ways from the simple, to the complex which may require intricate statistical imputations. Some of the simple methods include removing direct identifiers – names, addresses, local area identifications e.g. enumeration districts, or providing samples of the data. Removal of local area identification is only practical if spatial analysis is not being undertaken. The main problem with the provision of samples is the extent to which results will coincide with total data. Also researchers often decide to use Census data precisely because of the large number of respondents, but as the sample is increased the likelihood of breaches also increases. Other statistical disclosure limitation techniques include data reduction, data perturbation and synthetic data.

a) Data reduction

Data reduction aim at increasing the number of individuals in the sample sharing the same or similar identifying characteristics presented and avoids the presence of unique or rare recognizable individuals. Options for data reduction include:

- Top and bottom coding - Restricting the upper or lower ranges of a continuous variable e.g. age, income to hide outliers
- Local suppression – Replacing one or more variable in a record with a missing value.
- Regrouping into larger groups e.g. age group rather than single ages, occupational groups rather than occupation.

b) Data perturbation

Data perturbation modifies variables in the original dataset so that even if an intruder is able to identify the unit he/she cannot be confident that the disclosed information is consistent with the original data. Methods of data perturbation include:

- Micro-aggregation - Aggregating across small groups of respondents and replacing one individual's reported value with the average (also called blurring). This can only be applied to continuous data.
- Data swapping - Swapping or rank swapping (also called switching), swapping values of subsets of variables between pairs of units
- Post-randomisation – Selecting variables at random and imputing a value for them
- Adding noise - Adding or multiplying a variable by random numbers
- Resampling – Drawing a sample from the original dataset, finding the mean values for all the continuous variables and replacing the values in the sample with the means. The sample is then reintroduced into the original dataset.

c) Synthetic data

The production of synthetic data is a highly technical exercise but it results in an artificial dataset which produces the same results as the original dataset. Few researchers want to use such datasets but they are useful for RAF as test microdata.

Releasing synthetic data has an impact on:

- Respondents - more confidence that their data are protected.
- Data users - more useful, easier to use data.
- Intruders – much more difficult because no actual data is released
- Agency - can release more data, but must invest in developing the methods to create synthetic data and would have to educate users on the benefits and limitations of synthetic data.

A search of the Internet shows that a few researchers are embracing the idea of using synthetic data and articles have been published in peer review journals. However, the technology/research is not at a stage where synthetic data can routinely be considered an option.

3. Anonymisation Tools

There is some free software which CARICOM countries could use to anonymise their microdata. These include:

- Statistical Disclosure Control - SDCMicro “SDCMicro is an R-based open-source software for the generation of protected microdata for researchers and public use. The package provides multiple options for reducing the statistical disclosure risk in categorical or continuous variables. SDCMicro can be used from the R command line interface or by using the application's graphical user interface (GUI). The package can also be used in batch-mode from other software.” (ISHN website)
- μ -Argus is an interactive package which goes through a number of steps in order to produce an anonymised microdata file and a data process report.
- Data Swapping Toolkit (DSTK) which performs and analyzes data swapping on categorical data. Additional information available from National Institute of Statistical Sciences .

4. Production of Metadata

Metadata is ‘data about data’. It is descriptive information about a dataset and should have the following components :

- Explanatory material which gives information about data collection methods, dataset structure, technical information, variables and values, coding and classification scheme, information about derived variables, weighting, data sources and confidentiality and anonymisation.
- Contextual information which provides a description of the originating project, provenance of the dataset, serial and time-series datasets.
- Cataloguing material to provide a bibliographical record of the dataset and to act as a formal record for long term preservation.

Preparation of metadata is time consuming but necessary to ensure optimal and accurate representation of microdata. IHSN Microdata Management Toolkit, also known as Nesstar Publisher, is software which facilitates documentation of metadata for censuses and other surveys.

5. Dissemination of Microdata at the SALISES Databank

At present, the SALISES Databank is the only data archive catering exclusively to Caribbean datasets. It has a number of procedures to ensure confidentiality of data. These include:

- Legally enforceable arrangements. All users must sign an application form before receiving data. The application form includes a confidentiality clause and obligations to report errors in the data and submit a copy of the final report.
- An abstract/research proposal is required and is vetted to ensure that it is a bona fide study.
- The complete datasets are never given, only selected variables pertinent to the research being pursued. This is true of all datasets, not only the Population and Housing Census datasets.
- Requests for the complete dataset are referred to the owners of the data.
- Datasets that are given to the Databank with identifiers such as names, addresses, ED numbers or any other obvious identifier are stripped and unique identifiers are given to each unit.
- Certain variables are regrouped e.g. occupation.

It uses IHSN/Nesstar software for development and web dissemination of the metadata but is limited by the lack/inadequacy of information provided by owners of the datasets.

6. GIS Web based data presentation

One of the first exercises in the Census process is the mapping of the country. Most Caribbean countries have benefitted from Geographical Information systems (GIS) which have facilitated this exercise for the 2010/2011 Census and importantly, can facilitate the geospatial dissemination of census data. There are several geographical products including Maps Products, Digital Geographic Database for Dissemination and Dynamic Census Atlases and Internet mapping. Given the costs associated with developing geographical products and the importance of a National Spatial Data Infrastructure (NSDI), it is important the NSOs collaborates with other institutions within their country to establish a comprehensive approach sharing geographical data.

The United Nations initiative on Global Geospatial Information Management (UN-GGIM) aims at playing a leading role in setting the agenda for the development of global geospatial information and to promote its use to address key global challenges.

7. Use of social media/networking, mobile technology (sms, etc.)

Social media networking tools have been used by some Caribbean countries to promote participation in the 2010/2011 Census. However, the utility of these media are underexplored. Facebook and Twitter can be used both to impart information and as a means of marketing Census products. Furthermore, feedback from users and potential users can help NSOs to improve the quality and range of the Census products.

V. Conclusion

This report examined the issue of dissemination of Population and Housing Census data with special reference to the 2010 round of Caribbean Population and Housing Census, hereafter called the '2010/2011 Census'. The information for this study was obtained using a mixed approach including literature review, informal interviews, and personal knowledge and experience in the area of data dissemination.

CARICOM countries have made strides in the conduct of the Census, having (a) adopted a Common Framework for Gathering, Processing and Disseminating the 2010 Round of Population & Housing Census data to ensure region wide comparability, and (b) implemented several actions to advance the process. As a result, some CARICOM countries have published at least preliminary results which have been uploaded on the Web in PDF or Excel, as the first step in dissemination within about 2 years after the field work. Unfortunately, for other CARICOM countries, timeliness is still an issue.

In spite of the added value achieved when Census data are disseminated, only four countries embraced other mechanisms for dissemination. St. Lucia, St. Vincent, and Belize used REDATAM to disseminate Census information, while Jamaica disseminated aggregate data as Excel files at the STATIN website and microdata through the SALISES Databank. However, given the plethora of mechanisms for disseminating Census data confidentially, most CARICOM countries are yet to embrace the possibilities and take advantage the tools available internationally. This represents a significant loss of valuable information and data to policy makers, planners, managers and the research community of the Caribbean and indeed, internationally. The obstacles to use of Census data such as legal, technical and financial can and must be addressed once the political and psychological obstacles are overcome.

Marketing of dissemination and the dissemination strategy/plan for Census are both relatively new concepts for NSOs in the Caribbean. Nevertheless, they are important for successful dissemination of Census data, especially in an environment of increasing demand for data across the society. A comprehensive marketing and dissemination strategy requires collaboration between persons within the NSOs with different skill sets in communication and marketing, statistics and IT. It is important, also, that these persons have knowledge of the wide ranging options available to them for dissemination of Census data to a variety of audiences using a variety of tools. Therefore, the decision should not be whether to market and disseminate but rather how best to market and disseminate with the resources

available, given the demands of users and potential users, and the benefits to be derived from dissemination of Census data.

There are several levels of data dissemination and several options for dissemination at each level so to a large extent, dissemination will depend on availability of resources, and political will. Methods of dissemination include: static web dissemination; interactive on-line databases; dissemination of micro-data; GIS web-based data presentation; use of social media/networking and use of mobile technology (SMS, etc.). It is likely that a comprehensive strategy would embrace all these options but individual CARICOM countries may not have the capacity to implement them. Therefore, regional cooperation and utilisation of existing mechanisms within the region should be considered to maximise dissemination activities.

The use and usefulness of Census data for decision making, planning, monitoring and research in all sectors of the society should not be underestimated and the limited dissemination of Census information by CARICOM countries has denied potential users that opportunity. Therefore it is imperative that CARICOM states adopt a very proactive stance on dissemination of future censuses to maximize their use.

VI. Recommendations

Based on the findings of this report, the following recommendations are being made.

A. Conduct of CARICOM Censuses

- CARICOM NSOs must take advantage of the census process as an opportunity to obtain data on as wide a range of issues as is possible, while ensuring accuracy and timeliness of data.
- CARICOM countries must address the issue of timeliness of the Census report, while ensuring accuracy of results.

B. Marketing and Dissemination of Census data

- Given the importance of dissemination of Census data, NSOs must develop the political will to do so, must develop awareness of the link between evidence based decision-making, data availability and good governance, and must build capacity in order to address potential obstacles to dissemination.
- CARICOM countries must develop a marketing strategy to promote the use of Census data at all levels of society.
- As part of that strategy, there must be consultation with users, including regional and international partners, and potential users about their data needs and requirements for census information.
- CARICOM countries must develop a dissemination strategy that defines a dissemination policy, scope of dissemination and type of products to be disseminated.
- Relevant product and services must be developed in response to the needs and requirements of users of census data.
- NSO must develop comprehensive dissemination plan with details of the output to be produced, the methods of dissemination, and timelines for dissemination should emanate from

the strategy. The plan should include timelines, responsibilities and financial implications/budget.

- Dissemination of Census data should incorporate all methods for dissemination, including social media, as these appeal to different users and have different uses.
- NSOs should collaborate with other organizations, locally, regionally and internationally in order to ensure optimal use of available resources for dissemination. Some of these include:
 - CARICOM for standardization of regional activities, CensusInfo and the Census E portal,
 - ECLAC for REDATAM;
 - United Nations initiative on Global Geospatial Information Management;
 - The International Household Survey Network (IHSN) for its data anonymisation tools;
 - The Sir Arthur Lewis Institute of Social and Economic Studies Databank which produces metadata, and stores, and disseminates microdata.

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Annexes

Annex 1.

List of CARICOM countries with 2010/2011 Census Reports on the Internet

Antigua & Barbuda

Aruba

Bahamas

Bermuda

Cayman Islands

Jamaica

Montserrat

St. Lucia

St. Vincent

Suriname

Trinidad and Tobago

Annex 2

50 Ways Census Data Are Used

1. Decision making at all levels of government.
2. Drawing political or geographical boundaries.
3. Attracting new businesses to local areas.
4. Distributing over \$300 billion in federal funds and even more in state funds.
5. Forecasting future transportation needs for all segments of the population.
6. Planning for hospitals, nursing homes, clinics, and the location of other health services.
7. Forecasting future housing needs for all segments of the population.
8. Directing funds for services for people in poverty.
9. Designing public safety strategies.
10. Development of rural areas.
11. Analyzing local trends.
12. Estimating the number of people displaced by natural disasters.
13. Developing assistance programs for particular sub-groups.
14. Creating maps to speed emergency services to households in need of assistance.
15. Delivering goods and services to local markets.
16. Designing facilities for people with disabilities, the elderly, or children.
17. Planning future government services.
18. Planning investments and evaluating financial risk.
19. Publishing economic and statistical reports about the country and its people.
20. Facilitating scientific research.
21. Developing “intelligent” maps for government and business.
22. Providing proof of age, relationship, or residence certificates provided by the Census Bureau.
23. Distributing medical research.
24. Reapportioning seats in the House of Representatives.
25. Planning and researching for media as backup for news stories.
26. Providing evidence in litigation involving land use, voting rights, and equal opportunity.
27. Drawing school district boundaries.
28. Planning budgets for government at all levels.
29. Spotting trends in the economic well-being of the nation.
30. Planning for public transportation services.
31. Planning health and educational services for people with disabilities.
32. Establishing fair market rents and enforcing fair lending practices.
33. Directing services to children and adults with limited English language proficiency.
34. Planning urban land use.

35. Planning outreach strategies.
36. Understanding labor supply.
37. Assessing the potential for spread of communicable diseases.
38. Analyzing military potential.
39. Making business decisions.
40. Understanding consumer needs.
41. Planning for congregations.
42. Locating factory sites and distribution centers.
43. Distributing catalogs and developing direct mail pieces.
44. Setting a standard for creating both public and private sector surveys.
45. Evaluating programs in different geographic areas.
46. Providing genealogical research.
47. Planning for school projects.
48. Developing adult education programs.
49. Researching historical subject areas.
50. Determining areas eligible for housing assistance and rehabilitation loans.

Annex 3

Census 2011 Dissemination Strategy for Trinidad and Tobago

The results of the Census are released to the main stakeholders including the Media in a Data Dissemination Seminar.

- Press releases
- Via the CSO's website www.cso.gov.tt
- Printed Publications
- National Demographic Reports
- Gender Bulletins
- Printed Maps
- Interactive Digital Maps
- Other Geographic Information Systems media

Software To Be Used For Data Processing and Dissemination

- Microsoft SQL
- Microsoft Excel
- SPSS
- REDATAM:
- cTTinfo (DEVINFO based)
- ARC GIS :The GIS Unit uses Census data and generates maps

Source: <http://unstats.un.org/unsd/demographic/meetings/wshops/Chile_31May11/docs/country/trinidadtobago-s8.pdf>.

Annex 4

Census 2011 Dissemination Strategy for Ireland

Summary

1. Background

The Census 2011 Dissemination Strategy, the details of which are set out below, has been drawn up following a public consultation with our users. The responses to this consultation were summarised and presented to the Census Advisory Group (CAG) at a meeting in April 2010 at which the planned approach was agreed. The Senior Management Committee subsequently endorsed the strategy. This document describes all the key products that will be produced.

2. Hard copy publications

The 2006 thematic publications (13 in total) will be replaced by a combination of census releases and web-only tables. Four key publications, namely the Preliminary Report, the Principal Demographic Results, Population by Area (to reflect the role this volume plays in the work of the Constituency Commission) and the Principal Socio-economic Results, will continue to be published in hard copy format. All the tables in these publications will also be produced as web tables.

3. Census Releases

The 2011 census data will be disseminated by way of Census Releases, organised thematically. Each release will contain a number of key tables on the theme in question, and be prefaced by interpretation and analysis. A combination of comparisons with earlier censuses, analysis against other related variables, graphs and thematic maps will also be provided. Each release will be accompanied by the dissemination of the related detailed tables on the web with directions and instructions on how to access the tables.

The Census Advisory Group will be further consulted regarding the content of the releases, along with the proposed timetable and the order that the various releases will be published (bearing in mind the strong demand to bring forward the release of the socio-economic variables).

4. Web only tables

The majority of census tables will be released in web (interactive) table format only, using the PC-Axis software. It is envisaged that the full set of 2006 tables will be replicated and additional tables provided. Historical data presently in Beyond 20/20 format will be migrated across to PC Axis in 2013.

5. Small Area Population Statistics (SAPS)

The geographic areas for which the SAPS tables will be produced will be expanded to include 19,000 newly devised Small Areas, while the content will also be reviewed with a particular focus on avoiding disclosure. The 2011 SAPS tables will again be organised by both area (using the SAPMAP tool) and theme (using PC Axis). Certain 2006 tables that were released for Towns as part of the thematic publications will be incorporated into the SAPS tables so that all the data for a particular town will be accessible together.

6. Population Profiles

A new product, entitled Population Profiles, that will provide a summary profile for particular geographic areas, e.g. Towns, Electoral Divisions etc. will be provided for Census 2011. This new product will comprise a two page report covering a selection of key variables, a small map, some summary tables and charts.

7. Micro data

A 10% anonymised household sample will be lodged with the University of Minnesota's Integrated Public Use Microdata Series (IPUMS). This will supplement the samples provided for the censuses from 1971 to 2006 inclusive. A 2011 POWCAR file along the lines of the successful 2006 file but expanded to include place of school or college, will also be provided.

8. Special tabulations

A large number of special tabulations are produced for users whose needs are not met by the published data and this service will continue. This is the only product for which charging on a cost recovery basis will apply.

9. Time Series

A limited number of census tables are currently released through the databank as time series. These tables (47 in total) cover a range of topics from housing to industry, with time series of varying periods: 5 tables go back to 1841, 9 tables go back to 1926, 6 go back to 1981, and others to various years depending on when particular questions were introduced to the Census. It is intended to expand the number of tables available in this time series.

10. Hypercubes

Ireland will participate in the Eurostat Census Hub project which entails the production of multi-dimensional tables (hypercubes) covering common census variables in all 27 member states of the EU. These data cubes, which will reside on the databases of individual national statistics offices, will be capable of receiving requests from a central Eurostat database and responding with the appropriate data.

11. Timetable

It is planned to publish the detailed Census 2011 publication timetable in September 2011 by which time it should be clear if the census processing is on track for a December 2011 finish. The overall strategic goal is to publish the Principal Demographic Results within one year of census date and to conclude all outputs by the end of 2012.

12. Publicity

A Guide to Census data will be prepared and published on the web site, along with a video walking people through the various products and services. Census division will actively publicise the release of the data and will hold presentation days in various Government Departments to educate users on what data is available and how to access it. We will also use our contacts with the Local Government Management Services Board to publicise the release of the census data among Local Authorities, in public libraries and with the public at large.

Source: <http://www.cso.ie/en/media/csoie/census/documents/2011_Dissemination_Stra



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