
**Approach to
Population Census 2010:
Introduction**

1 APPROACH TO POPULATION CENSUS 2010: INTRODUCTION

1.1 WHAT IS A POPULATION CENSUS?

In its Principles and Recommendations for Population and Housing Censuses (2008), the United Nations (UN) defines a population census as “the total process of collecting, compiling, evaluating, analysing and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specific time, to all persons in a country or in a well-delimited part of a country.” (UN, 2008, p. 7)

1.2 IMPORTANCE OF THE POPULATION CENSUS IN SINGAPORE

Singapore conducts the population census once in ten years, during years ending with “0”. This is in line with the UN’s recommendation for countries to conduct the national censuses at least once every 10 years, in or close to years ending with “0”, to allow for better international comparability of census data.

The Census is the most comprehensive source of information providing a statistical profile of the population and households in Singapore. It collects information from the population and households and provides benchmark data for demographic and socio-economic statistics. The large coverage of the Census facilitates analyses on different population groups by fine disaggregation and by broad geographical area. Hence, the Census is considered an exercise of national importance, with data from the Census serving as key inputs for policy review and formulation.

1.3 REGISTER-BASED CENSUS

The Census of Population 2010 adopted a register-based approach with a large-scale sample survey. Under the register-based approach, the basic population statistics were compiled using administrative records from multiple sources. The merged administrative records provided the basic population count and characteristics such as age, sex, ethnic group, place of birth, type of dwelling and geographic distribution in Singapore.

Administrative information was obtained from the Department of Statistics (DOS)’s Household Registration Database (HRD). First set up in 1996 to provide basic demographic information on the population between censuses, the HRD was previously deployed in the conduct of the Census 2000. It captures the basic personal and demographic data of residents in Singapore and updates them by linking with existing government databases through unique identification numbers.

A sample enumeration of some 200,000 households was conducted to obtain additional information that was not available from administrative sources. The additional data required for in-depth studies included marital status and fertility,

education and language literacy, economic characteristics, mode of transport, religion, as well as housing and household characteristics.

Unlike in a traditional Census where everyone in Singapore had to be surveyed, the register-based Census provided for a full coverage on basic items through administrative records. Meanwhile, the sample survey supplements the administrative data with detailed survey information on selected topics. The use of well-developed and up-to-date administrative databases in the register-based Census resulted in reduced response burden for the population and savings arising from lower manpower and resource demands in carrying out the survey as part of Census taking.

1.4 CENSUS 2010 – CONCEPT AND COVERAGE

With the register-based approach, the Census 2010 adopted the de jure concept for Singapore’s population estimates based on a person’s place of usual residence. Under the de jure concept of “usual residence”, Singapore residents (citizens and permanent residents) with valid local addresses and who were not away from Singapore for a continuous period of 12 months or longer were included in the total population count. Non-residents comprising foreigners who were working, studying or living in Singapore but not granted permanent residence were also included in the total population. The transient population, such as tourists and short-term visitors, was excluded.

The Census reference date was set as 30 June 2010, in line with the mid-year reference point where administrative data are updated.

1.5 HISTORY OF CENSUS – HOW SINGAPORE’S CENSUSES EVOLVED

Census 2010 is the fifth population census carried out since Independence and the fourteenth in Singapore since census taking first began in 1871. It is also the second register-based Census conducted.

A summary of the history of the developments in census taking is provided:

HISTORY OF CENSUS TAKING IN SINGAPORE	
1871	First Census of Straits Settlements of Singapore
1881	Second Census of Straits Settlements of Singapore
1891	Third Census of Straits Settlements of Singapore
1901	Fourth Census of Straits Settlements of Singapore
1911	Fifth Census of Straits Settlements of Singapore
1921	First Statistics Ordinance on the establishment of a Statistical Bureau
1921	Sixth Census of Straits Settlements of Singapore
1931	Seventh Census of Straits Settlements of Singapore

HISTORY OF CENSUS TAKING IN SINGAPORE (cont'd)	
1947	Census of The Federation of Malaya and Colony of Singapore (8th in the series)
1957	Census of Population, Singapore (9th in the series)
1970	First Census of Population, Singapore after Independence (10th in the series)
1980	Second Census of Population, Singapore after Independence (11th in the series)
1990	Third Census of Population, Singapore after Independence (12th in the series)
2000	Fourth Census of Population, Singapore after Independence (13th in the series) <ul style="list-style-type: none"> - First register-based census - Internet enumeration first introduced as a third mode of submission in addition to telephone and field interviews
2010	Fifth Census of Population, Singapore after Independence (14th in the series)

1.6 THE TRI-MODAL DATA COLLECTION STRATEGY

To facilitate data collection for the sample enumeration, the Census 2010 adopted a tri-modal data collection strategy. The tri-modal approach was first successfully implemented in the Census 2000. This approach comprising Internet Enumeration, Computer-Assisted Telephone Interviewing (CATI) and face-to-face interviews was further refined in Census 2010 into a seamless integrated data collection process transferring data into a centralised database.

Internet Enumeration

The Internet enumeration was first made available to respondents in Census 2000. It is a convenient platform for respondents to provide their survey returns directly to the system without having to go through a third party (i.e. the interviewer). Available 24 hours a day, 7 days a week, Internet enumeration provided the flexibility for respondents to access the system at any time they desired to participate in Census 2010.

Computer-Assisted Telephone Interview

CATI is a tried-and-tested data collection strategy, having been deployed thrice in Census 2000 and General Household Surveys 1995 and 2005. For respondents who were unable to complete their returns via the Internet, CATI was an alternative for them to call the Census 2010 Hotline to provide their returns over the phone with the assistance of telephone interviewers. CATI interviewers also contacted households which did not complete their returns via the Internet by a stipulated date for telephone interviews.

Fieldwork

Fieldwork, or face-to-face interview, is the most traditional form among the three data collection modes. For households which did not respond via the Internet and cannot be contacted by CATI after several attempts, visits were made by field interviewers to conduct face-to-face interviews. Unlike the paper and pen approach previously adopted, Ultra-Mobile Personal Computers (UMPCs) were adopted for field enumeration in Census 2010.

The use of UMPCs in Census 2010 was an improvement from the deployment of Personal Digital Assistants (PDAs) in General Household Survey (GHS) 2005. With a Microsoft Office operating system, the platform for the application development of the fieldwork enumeration module in the UMPC was closer to the other collection and processing modules. This translated to savings in manpower deployed for the testing, problem identification and problem resolution. The UMPC also had a higher capacity compared to the PDA and facilitated more speedy response for the screen navigation. The longer battery life of the UMPC allowed it to last throughout the entire day of the enumeration without having to change a battery or charge the equipment. The larger screen of the UMPC improved readability for field interviewers.

The use of technology at fieldwork provided logistic convenience, eliminating the need for printing and transportation of hardcopy survey forms. Automatic branching of questions with consistency checks was also introduced to reduce back-end processing efforts with electronically coded data captured in the field.

1.7 LEGAL AUTHORITY

The Census 2010 was conducted under the Statistics Act (Chapter 317). All data collected are kept in confidence in accordance with the Statistics Act. Data provided for the Census 2010 are used solely for statistical purposes.

1.8 CENSUS PLANNING COMMITTEE AND BROAD SCHEDULE OF CENSUS ACTIVITIES

As the Census is the largest national statistical project to meet the data needs of the government and population, various Ministries were consulted and involved in its planning. The Census Planning Committee (CPC), chaired by then Permanent Secretary of Ministry of Trade and Industry, Mr Ravi Menon, was formed in June 2008 to provide overall guidance and direction for the Census 2010.

Reflecting the importance of the Census, key Ministries which use Census data for policy planning and evaluation were represented at the CPC. They included the Ministry of Community Development, Youth and Sports (MCYS), Ministry of Education (MOE), Ministry of Finance (MOF), Ministry of Home Affairs (MHA), Ministry of Manpower (MOM), Ministry of National Development (MND), Ministry of Trade and Industry (MTI) and the Prime Minister's Office (PMO). DOS served as

the secretariat of the CPC. The list of the members in the CPC can be found in Appendix A.

Planning for the Census 2010 started in DOS in January 2008. User consultation was carried out shortly after to seek inputs on the data items to be included in the Census questionnaire. Several rounds of review were conducted to study the relevance of the proposed topics at the national level and their suitability for inclusion in the Census. Areas for improvement were also identified from the previous Census to make refinements to the question phrasing and operational flow.

The Census 2010 was officially launched on 12 March 2010 and the survey collection was conducted from March to August 2010. The Advance Census Release providing basic demographic profile of the population as at June 2010 was released in end-August 2010. The detailed statistical releases from the Census findings were released by February 2011. A schedule of the key activities is given as follows:

Planning and Preparation	Time Period
Review of Census 2010 Approach and Budget	Jan – Jun 2008
Formation of Census Planning Committee	Jun 2008
Census Consultation and Review of Census Data Items	Jul – Nov 2008
Information Technology (IT) Tender Preparation and Award	Mar 2008 – Jan 2009
Development of Census 2010 IT System	Jan 2009 – Feb 2010
Census Headquarters Office Reconfiguration	Feb – Jun 2009
Design and Implementation of Census 2010 Website	Apr 2009 – Mar 2010
Sourcing and Setup of Regional Offices (ROs)	Jun 2009 – Mar 2010
Census 2010 Publicity	Sep 2009 – Sep 2010
First Publicity Initiative: Statistics Singapore Newsletter Article on Census 2010	Sep 2009
Pilot Test	Nov 2009
Sample Design and Selection	Nov – Dec 2009

Operations	Time Period
Recruitment of Telephone Interviewers, Field Interviewers, Coders and Editors	Feb – Apr 2010
Survey of Large Households	Feb 2010
Training of Staff	Mar – Apr 2010
Official Launch of Census 2010 and Press Briefing	12 Mar 2010
Data Collection	Mar – Aug 2010
Data Processing	Mar – Nov 2010
Data Dissemination	
Advance Census Release	Aug 2010
Detailed Statistical Releases	Jan – Feb 2011