

Malaysian Population Census: Review of Enumeration Strategies and Topics

Abdul Rahman Hasan and Norfariza Hanim Kasim¹

Abstract

Population censuses should be undertaken at regular intervals so that comparable information is made available in a fixed sequence. Since independence, Malaysia has been regularly conducting population censuses in years ending "0" except for 1991. This paper highlights enumeration strategies and topics included in the previous censuses. It recommends that enumeration strategies and topics for inclusion in the next census be examined further in the light of development in ICT and changes in the Malaysian life styles in the 21st century.

Introduction

Statistics are used to shape many of the decisions by the governments that affect the lives of the people. According to the World Bank (2000), statistics are needed to identify the issues, set goals and monitor progress. It further said that without good statistics, the development process is blind, i.e. policy makers cannot learn from their mistakes and the public cannot hold them accountable.

Thus, statistics from the outcome of the population censuses are used for policy-making, planning and administrative purposes. Information on the size, ethnic composition, distribution and characteristics of the population is essential for assessing economic, social and demographic development. Population data are also used in policy development and in management and evaluation of programmes in various fields such as education, employment and manpower, family development, housing, education, health, rural development and transportation. Businessmen also use census information to decide where to set up their shops and what products to sell. Many community organisations use census information when they are applying for resources or for monitoring public schemes.

The population census is the largest statistical collection undertaken by the Department of Statistics, Malaysia (DOSM). It involves various tasks which includes budgeting, designing enumeration strategies, field organisation, mapping, framing census schedules, trial censuses, identification of topics and classifications, processing, tabulation plans and data dissemination. This paper attempts to discuss two activities in census preparation i.e. the enumeration strategies employed and topics which were included in the previous censuses. This seeks to assist in the preparation of the next census which is scheduled in 2010.

¹ Abdul Rahman Hasan is presently the Director of Research and Development Division and Norfariza Hanim Kasim is the Assistant Director of Population and Housing Census Division.

History of Malaysia's population census

Historically, the conduct of population census was associated with tax collection by the ruler. The word "census" originated from the Latin word *censure*, which means "to tax". Archaeologists have found ancient records from Egyptians dating back as far as 3000 BC. In the era of Yunani civilization, a census was instituted in order to determine the number of people who can be employed in the army.

Most countries in the modern world conduct population census in a certain time period. Some countries do once in five years and some in interval of ten years. In U.S.A. for example, the Constitution states that the census has to be done once in ten years. Its first census was carried out in 1790.

In the case of Malaysia, the history of census taking started only in the early 20th century with limited coverage. The first comprehensive census was taken on 5th April 1891 covering the Straits Settlements of Penang, Malacca and Singapore, and the Protected Malay States of Perak, Pahang, Negeri Sembilan and Selangor (Merewether, ESQ, 1892). The second census was conducted in 1901 followed by the third in 1911. By the time of the fourth census in 1921, it had covered the whole of Peninsular Malaysia which comprised the Straits Settlements, the Federated Malay States, the Unfederated Malay States and Brunei.

The 1931 and 1947 censuses were again conducted by the British government and the last census conducted by them was in 1957 before the Federation of Malaya achieved independence on 31st August 1957. The first census conducted by the Government of Malaysia was in 1970 followed by 1980, 1991 and 2000 which covered all states in Peninsular Malaysia, Sabah and Sarawak.

At every census taken in British Malaya before the census of 1921, census operations in the Straits Settlements, the Federated Malay States and each of the other Malay States were independently conducted (Vlieland, 1932 - Superintendent of the Census 1931). However, with the successful census operation in 1921, the Colonial administration entrusted the operation of the census in British Malaya to the Superintendent of Census. After independence, census taking is a federal responsibility and the legal basis for the census is provided under the Census Act 1960, which empowers the government to conduct censuses from time to time. The responsibility of conducting these censuses is vested with DOSM whereby the Chief Statistician is appointed as the Commissioner of Census.

Palmore et. al. (1973 cited in Fernandez et. al. 1976) using estimates of the population in Penang and Malacca for the years from 1817 to 1891, and enumerations in the six Federated Malay States after 1891, estimated that the population of Peninsular Malaysia has been growing at rates higher than 2 percent per year for 150 years. A complete census for Peninsular Malaysia in 1911 recorded a population of 2,339,051 and the last census in 2000 recorded a population of 18,523,642 for Peninsular Malaysia (Department of Statistics, 2001), which translates to a growth of 2.3 percent per annum within a period of 89 years. The 1970 census recorded the population of Malaysia as 10,436,276 and for the year 2000 as 23,274,690, a growth of about 2.7 percent per annum within a period of 30 years. This growth was mainly due to natural increase.

Census reference day

One of the area of concerns in census collection is fixing the census day. A census day is chosen to indicate that each person who is alive up to the census day is counted in the total population even though the actual enumeration might take place some time after the census day and the person may have died in the interim. Similarly, babies born after the census day are excluded from the count even though they are alive when the enumeration takes place.

Selecting a census reference day is not an easy task. Various factors have to be considered as the main aim of census is to count every individual who is an inhabitant of Malaysia on that census reference day. Ideally, the census reference day should fall on a day where population movement is at its minimum. In the 1931 census, Vlieland (1932) wrote that the census day was pre-determined by the British authorities as it has been laid down that the census throughout the British Empire must be taken between 15 February and 15 June. In the 1970 census, according to Giles (1974), who was the census adviser to DOSM, two important factors that influenced the choice of the census day were the paddy harvest seasons and weather.

However, for the 2000 census, a different set of factors were taken into consideration before the census reference day was adopted. In a country like Malaysia which is located in the tropics and experiences tropical climate throughout the year with the south-west monsoon from May to September and north-east monsoon from November to March, a census day during the rainy season should be avoided as this will disturb the field operations. As Malaysians are becoming wealthier nowadays, school holidays should also be avoided as during this period, a lot of movements take place. Other factors that should be considered are public holidays, festive seasons, the fasting month or the *Haj* month during which a sizeable number of Muslims perform the pilgrimage. Another important factor is to ensure that the census day does not coincide with the period of national elections as most of the officers in the districts will be burdened with extra work.

Taking into consideration the reasons above, the previous committees on census decided the census day as stated in Table 1 below :

Table 1: Census date by year of population census in Malaysia

Year	Census Day
1891	5 April
1901	n.a.
1911	n.a.
1921	n.a.
1931	1 April
1947	23 September
1957	17 June
1970	24 August
1980	10 June
1991	14 August
2000	5 July

It can be summarised from the above that the census day falls between the months of April to September. After independence, all the four censuses were conducted between June to August. This could be due to another factor i.e. the census day should be nearer to the mid-year population. This will ensure that only minimum adjustment on births and deaths are involved in the preparation of base data for yearly population estimates.

Stages of enumeration

The choice of a system of enumeration depends on factors such as the quality and availability of enumerators, type of terrain to be covered, available budget, scope of enquiry and the educational level of the population.

The 1957 census was conducted in three stages. Firstly, there was a numbering and listing of all living quarters. The next stage was a preliminary enumeration of the population followed by the final stage which was the final enumeration of the population. Nevertheless this approach has its weaknesses as many enumerators did not bother to even undertake the third stage (Giles, 1974). Thus, censuses in 1970, 1980 and 1991 employed the two stage system. The first stage was the usual house listing operations (questions on living quarters were also asked).

The second stage started right after census day and information was obtained on those people who slept in the household on census night. The enumerators took about two weeks to complete their assignments. In a two stage system census, the extent of population mobility between census night and the time that enumerators called at is an important factor that contributed to the completeness of enumeration. By means of publicity with special emphasis given to census night through radio, TV, newspapers and rural information services, the concept of census night was put across to the people. The problem of mobility of people who stayed in lodging houses, hotels, etc. was countered by making special arrangements for these types of living quarters (Giles, 1974). This approach did not affect the quality of data very much as Mohd. Shamsuddin (1989) pointed that the quality of data from Malaysia censuses of 1970 and 1980 was good.

The evaluation of census coverage for 1991 by DOSM also showed that under-enumeration was about 4.4 percent with the rates varying from 2.2 percent to 6.6 percent (Department of Statistics, 1995). It appears that states with a higher degree of urbanisation such as Wilayah Persekutuan Kuala Lumpur, Selangor and Penang had higher rates compared to the less developed states such as Kelantan and Kedah.

On the other hand, census 2000 employed only a one stage system where listing of living quarters and interviews with respondents to obtain related information were implemented through a consolidated questionnaire. This approach has indirectly reduced the cost and processing time.

A *de facto* approach was used in counting people on the census day for the censuses prior to the 2000 census. Based on this approach, the counting of people was based on where he/she slept during the census night. In census 1991, the enumeration of people based on the *de jure* approach was instituted. It was found that based on this approach, the population count was higher than the *de facto* approach, i.e. about 5 percent. Since the rate of under enumeration of these two censuses was about 4

percent, the census committee on the 2000 census recommended that the *de jure* approach be used. More importantly, this approach is advantageous for migration analysis, to reflect the actual population in a locality and to act as a bench mark for population estimates after census. It also causes less hassle in counting people on the road, vessels, train, hotels etc. during census night.

Method of enumeration

To enumerate people, few strategies can be applied. The most employed is the face to face interview. In some countries, e.g. Australia, the drop off method is used where the enumerators call on the households and ask them to fill up the questionnaire. The completed questionnaire will be collected later (Australian Bureau of Census, 2006). Another method used is mail-out and mail-back whereby questionnaires are sent to the respondents. After answering the questions, the respondents will mail back the completed questionnaires using prepaid envelopes. This method is used by the US Bureau of Census. With the advance of ICT, recent census in some countries uses the internet in soliciting information from respondents. Singapore is one of the countries that used this approach in the 2000 census.

In the context of Malaysia, we are still using the face to face interview. However, with the fast pace in socio-economic development that has resulted in a change of life style and family structure, this approach needs to be reviewed in the coming census. Experiences from the labour force survey using face to face interview showed that 16 percent of non-response in the urban areas of Selangor in 2005 was due to the difficulty to contact the respondents. This was despite the enumerators making many attempts to reach them. Face to face interview will really hit a real challenge in the coming census with the mushrooming of condominiums and apartments in recent years.

What are then the alternatives? Self enumeration may be a good alternative. Although it involves a number of problems, it is attractive because it is less costly. One of the first questions that have to be asked is "Whether self enumeration can be implemented for the whole population or at least for some groups of people?"

The feasibility of self enumeration depends on the general level of literacy of the population. In Malaysia, the level of literacy is more than 90 percent. In the urban areas, about 95 percent of the population from age 10 years and above are able to read and write (National Library Malaysia, 2006). Thus, DOSM should review this self enumeration approach at least in the areas covered by Local Authorities of which about 50 percent of the Malaysia population reside according to the 2000 census. An enumerator will have to establish whether a responsible person in the household could read and write. He/she may not necessarily be the head of the household but is more likely to be the older son or daughter. The self enumeration form will be left with him and will be collected later. However, in a multi-lingual society like Malaysia, the questionnaire should also be printed in at least four languages i.e. Malay, English, Chinese and Tamil. To facilitate the smooth implementation of self enumeration, DOSM should set up CALL CENTRE or CENSUS HELP LINE. These services provide information to the general public on the census as well as enable the public to make inquiries on issues which relate to the completion of census forms.

Another method of enumeration is internet based. The internet based census form (e-census) is an interactive web-based application. Although DOSM lacks experience in implementing this approach, it is worth considering. As compared to the traditional means, e-census will ease the collection of census forms from households in areas that are difficult to enumerate, such as in condominiums and apartment buildings.

Topics covered

According to the United Nations (1997), four criteria have to be fulfilled before deciding on the final topics to be included in the population census. Census questions should take into consideration the needs of a broad range of data users in the country, the maximum degree of international comparability, the ability of the public to have adequate information on the topics and budget for conducting the census.

Table 2 shows a comparison of the topics canvassed in the main questionnaire from the four previous censuses which were conducted in 1970, 1980, 1991 and 2000.

Table 2 : Topics covered in the population and housing censuses of 1970, 1980, 1991 and 2000, Malaysia

CENSUS TOPICS	1970	1980	1991	2000
(A) POPULATION				
GEOGRAPHIC CHARACTERISTICS				
Place where person was found on Census Day	✓	✓	✓	x
Place of usual residence at time of Census Day	x	x	✓	✓
DEMOGRAPHIC AND SOCIAL CHARACTERISTICS				
Sex	✓	✓	✓	✓
Age	✓	✓	✓	✓
Date of Birth	✓	✓	✓	✓
Marital Status	✓	✓	✓	✓
Ethnicity	✓	✓	✓	✓
Religion	✓	✓	✓	✓
Citizenship / residence status	✓	✓	✓	✓
Identity Card (Colour)	✓	✓	x	x
Language Spoken	✓	✓	x	x
Disability	✓	✓	x	✓
FERTILITY AND MORTALITY				
Number of children born alive	✓	✓	x	✓
Number of children living	✓	✓	x	✓
Age at first marriage	x	✓	x	x
Number of times married	✓	✓	x	x
Number of years married	✓	x	x	x
MIGRATION CHARACTERISTICS				
Birthplace	✓	✓	✓	✓
Period of residence in Malaysia	✓	✓	x	x
Period of residence in present locality	✓	✓	x	x
Place of last previous residence	x	✓	x	x
Reason for migration	x	✓	x	x
Place of residence five years ago	x	x	✓	✓
Year of first arrival in Malaysia	✓	x	x	✓
EDUCATION CHARACTERISTICS				
Literacy	✓	✓	x	✓
School attendance	✓	✓	✓	✓
Highest level of schooling attained	✓	✓	✓	✓
Highest educational certificate obtained	✓	✓	✓	✓
Vocational training	x	✓	x	✓
Field of study	x	x	x	✓
Place obtained cert. / diploma / degree	x	x	x	✓

CENSUS TOPICS	1970	1980	1991	2000
Type of economic activity (during previous week)	✓	✓	✓	✓
Number of hours worked (during previous week)	x	x	✓	x
Type of economic activity (during last twelve months)	✓	✓	x	x
Occupation	✓	✓	✓	✓
Industry	✓	✓	✓	✓
Employment status	✓	✓	✓	✓
Sector	x	x	x	✓
TOPIC (A) - TOTAL	28	30	19	26
(B) HOUSEHOLD				
HOUSEHOLD CHARACTERISTICS				
Relationship to head of household	✓	✓	✓	✓
Number of persons in household	✓	✓	✓	✓
Type of occupancy	✓	x	x	x
Rent (furnished/unfurnished)	✓	x	x	✓
Main cooking fuel	✓	x	x	x
Household equipment	✓	✓ ^(a)	✓ ^(a)	✓ ^(a)
Household income	✓	✓	x	x
TOPIC (B) - TOTAL	7	4	3	4
(C) LIVING QUARTERS				
Location of living quarters	✓	✓	✓	✓
Type of living quarters	✓	✓	✓	✓
Type of foundation	✓	x	x	x
Construction material of outer walls	✓	✓	✓	✓
Construction material of roof	✓	✓	x	x
Condition	✓	✓	x	x
Year (period) of construction	✓	✓	✓	x
Type of ownership (tenure)	✓	✓	✓	✓
Type of water supply	✓	✓	✓	✓
Type of lighting	✓	✓	✓	✓
Type of toilet facility	✓	✓	✓	✓
Bathing facility	✓	✓	x	x
Cooking facility	✓	✓	x	x
No. of bedroom	✓	x	✓	✓
Garbage collection facility	x	x	x	✓
No. of persons	✓	✓	✓	✓
No. of household	✓	✓	✓	✓
TOPIC (C) - TOTAL	17	14	11	11
GRAND TOTAL [(A) + (B) + (C)]	51	48	33	41

(a) This topic was canvassed in the household section of the questionnaire in the population census.

It can be observed that the topics canvassed in the 1970, 1980, 1991 and 2000 censuses were not the same. Questions were dropped or added on in the censuses after several rounds of discussions between the Main Users and the Technical Committee of the Censuses. For example in the 2000 census, there were 41 topics compared to 33 topics in the 1991 census. Additional topics in the 2000 census were on disability, children ever born, children living, year of first arrival in Malaysia, literacy, field of education, place for obtaining certificate/diploma/degree, sector of employment, types of occupancy and garbage collection.

The trend of putting more questions in the census as shown by topics selected for the 2000 census has to be revisited. The census is not the only means to satisfy every user's needs. Some of the information needed can be addressed through other means. Take for example, on the topic of disability, the quality of reporting is questionable because of the sensitivity of the question. An important lesson from previous censuses is that long questions can lead to enumerators trying to modify the questions because of the shorter time allocated for field operations and also due to respondents' fatigue.

Conclusions

The population of a country is basic to the production of material wealth. In order to plan for the future and to implement economic and social development, it is necessary to have reliable and detail data on the size, distribution and composition of the population for the whole country and individual small localities.

Thus, it is timely that DOSM look into the possibility of conducting a population census in year 2010. Conducting such massive statistical operation requires comprehensive planning and support from relevant ministries/agencies and the public. Based on the review of the enumeration strategies and topics identified in the previous censuses, it can be said that the enumeration strategies adopted and topics selected vary depending upon the time a particular census is carried out. Hence, it is recommended that new strategies be adopted by DOSM for the coming census so as to be in tandem with societal needs and technological advancement.

References

- Australian Bureau of Statistics. (2006). *How Australia takes a census*. Australian Bureau of Statistics, Canberra. Australia.
- Department of Statistics. (1995). *Evaluation of coverage and content errors of the 1991 population census*. Kuala Lumpur.
- Department of Statistics. (2001). *Population distribution and basic demographic characteristics*. Putrajaya.
- Department of Statistics. (2004). *Laporan Teknikal dan Pentadbiran, Banci Penduduk dan Perumahan 2000*. Putrajaya.
- Fernandez D. R., Hawley A.H. and Pridaza S. (1976). *The population of Malaysia, research paper no.10*. Department of Statistics Malaysia, Kuala Lumpur.
- Giles. (1974). *Technical report on 1970 Population and Housing Census of Malaysia*. Department of Statistics Malaysia. Kuala Lumpur.
- Merewether Esq. (1892). *Report on the CENSUS of the STRAITS SETTLEMENTS*. Government Printing Office, Singapore.
- Mohd. Shamsuddin. (1989). *Banci Penduduk: Satu Pemerhatian Mengenai Ukuran Kebolehppercayaan Data dalam Penduduk Semenanjung Malaysia* disunting oleh Hairi Abdullah. Universiti Kebangsaan Malaysia, Bangi.
- National Library Malaysia. (2006). *Profil Membaca Rakyat Malaysia 2005*. Kuala Lumpur
- Palmore J., Chander R. and Fernandez D. Z. (1973). *The demographic situation in Malaysia*. A paper presented at the Annual Meeting of the Population Association of America April 1973, cited in Fernandez at. al.
- United Nations. (1997). *Principles and recommendations for population and housing census, rev. 1*. Series M No. 67/Rev.1. New York.
- Vlieland C. A. (1932). *A report on the 1931 census and certain problems of vital statistics*. Millbank, Westminster, S. W. I.
- World Bank. (2000). *Report on development indicator*. Washington, D. C.