

Appendix

Sources of Demographic Statistics

INTRODUCTION

Since the establishment of Singapore in 1819, there has accumulated over the years a mass of population statistics collected in censuses held from time to time. A brief survey of the sources, methods of collection and reliability of these statistics is presented here. The census records can be conveniently divided into three periods, namely, 1824–70, 1871–1947 and 1957–90. The first pertains to the period when some form of census was undertaken, usually by the police at very short irregular intervals, and the second and third to the time when proper and systematic censuses by trained enumerators were taken at regular and longer intervals. The third period is differentiated from the second by the censuses conducted separately for Singapore and not as part of the pan-Malayan region. By and large, the census records for the second and third periods are by far more comprehensive and reliable than those for the first period. Apart from this, the original published results of the censuses taken in the last two periods are still available but those of the censuses taken prior to 1871 are apparently lost; what is left are the figures quoted by various writers in their published works.

THE 1824–70 PERIOD

The taking of a census of the population in Singapore dates as far back as January 1824 when the first census of the whole island was carried out. Besides the figures quoted by various writers subsequently, nothing is known about this first population count. Following this, many other counts were taken, at first every year and then at longer intervals. T.J. Newbold, writing about the population

of Singapore in 1839, was able to collect the figures of eleven censuses taken annually between 1824 and 1836, except in 1835 when no census was taken.¹ The figures are classified by sex and race only, and they are rather defective. H. Marriott was of the opinion that the “figures for these early censuses cannot, however, be regarded as very accurate. In 1833... they were collected by the two constables who were attached to the Settlement and who had many other duties to perform. No fixed principle was adopted with regard to the headings ‘Europeans’, ‘Native Christians’ and ‘Tndo-Britons’. Some enumerating officers appeared to have included as ‘Europeans’ all who wore European clothes”.²

During the two-and-a-half decades between the eleventh census of 1836 and the end of this period, only three censuses were held. The figures of these three censuses of 1840, 1849 and 1860 were collected by T. Braddell in his valuable work on *Statistics of the British Possession in the Straits of Malacca*, giving the breakdown of sex and race only.³ These figures were later quoted by Marriott in his study of the peoples of Singapore published in 1921. Very little is known of these three censuses except that, according to Marriott, the 1860 census was conducted by the police and, in his opinion, the figures of this particular census were absolutely unreliable.⁴ Again, the 1871 Census Committee has this to say about the 1860 census: “We are inclined to agree with the statement made by Sir Harry Ord in his despatch to the Secretary of State on the 27 August, 1869, that no great reliance can be placed upon the returns of population stated to have taken in that year (1860), so that for any purpose of comparison now, they are of little or no value. There is a remarkable increase in the number of Malays, for which no adequate reason can be offered: the influx to the Settlement of 8,362 since 1860, is scarcely probable, while the Chinese race would appear to have increased by only 4,529 in the eleven years, which is still more improbable when the large increase in Excise forms since 1860 is taken into consideration. These discrepancies would tend greatly to show that the returns of 1860 are altogether unreliable”.⁵

Apart from being somewhat inaccurate, the population statistics collected in these early censuses only included the bare characteristics of sex and race. Information on other characteristics normally collected in a population census of today is unobtainable. These early population counts, though of considerable historical interest, poses very limited value in terms of demographic analysis.

THE 1871–1947 PERIOD

Following the transfer of the settlement of Singapore from the India Office to the Colonial Office on 15 April 1867, the first proper census of Singapore as

understood in the modern form was conducted in 1871. The year coincided with the decennial censuses taken in England and its other colonial territories. This first properly organized census of Singapore was taken by a committee of three census officers as part of the wider census of the Straits Settlements. The census report, comprising a brief three-page text and fourteen pages of tables, was submitted by the committee to the Colonial Secretary, Straits Settlements, and appeared in the 1871 Blue Book.⁶ Besides sex and race, the tables contain information on age, occupation, town-country divisions, and houses. The age groupings are in terms of Under 10, 10–14, 15–19, and ten-year groups up to 89. As for occupation, the attempt to produce an exhaustive tabulation yields a long list of hundreds of occupations, with doubtful accuracy and utility.

The first island-wide census appeared to have been greeted with considerable apprehension among the local inhabitants who were under the wrong impression that the census was a preliminary to capitation tax. At one stage, the fear was so strong among the people that placards were put up by them in the town, urging all residents to resist the enumerators, who were mainly government employees. Under these circumstances, the reliability of the statistics collected was undoubtedly questionable. Even the census officers confessed that they “would not claim for them complete accuracy”, but ventured to say that “they approximate very nearly to the truth”.⁷

The next decennial census of Singapore in 1881 was carried out exactly along the same lines as the previous census, and the report by the six-man committee was published in the 1881 Blue Book. In addition to the usual account of the census administration and procedure, there was for the first time a write-up of the results of the census in this report. No new tables were added to those of 1871 but the age groupings were broken down further; single years for ages below six and quinary age groups for other ages up to 59. In planning the census, considerable publicity was given prior to the actual enumeration to try to eliminate the impression, prevalent in 1871, that the census had anything to do with the imposition of a tax. The co-operation of the inhabitants was consequently more forthcoming. The members of the census committee claimed that they “have every reason to believe that a really good Census has been taken, and that the numbers given fairly represent the population of the Settlement”.⁸

In 1891 the population of Singapore was again enumerated as part of the census of the Straits Settlement, but this time the entire census operation was entrusted to a superintendent who was also responsible for producing the report. In this report, the first part presents the population and the census administration in the Straits Settlements as a whole, followed by three other parts in similar format dealing with each of the Settlements of Singapore, Penang and Malacca,

respectively. The data on occupation were dispensed with because the government felt "that the value of such returns is not great, owing to the constant changes of occupation that occur among the Native Populations, especially among the Chinese".⁹ Furthermore, the age classification was drastically compressed, with single years for the ages below 5, and quinary age groups between 5 and 20, and 20 and over as the last group. It appears that the emphasis in the census was on quality rather than quantity.

The 1901 census of Singapore was taken along the same lines as the previous decennial census, and the written text and tables of the report followed the general pattern of the previous report. One additional table on married men was included, but the superintendent opined that it was of little value in view of the great confusion regarding the term "married" among the different races. There was no uniformity in the age groupings adopted in the various censuses taken thus far; in this census the age classification was widened, with quinary age groups for ages below 20, and other ages up to 40 in ten-year groupings. For the same reason as in 1891, no information on occupation was collected. In 1911, the population of Singapore was enumerated on the same basis as the previous two decennial censuses, but with some enlargement of the scope of the whole census. New items on the place of birth, religion and industry were included, and occupation was reintroduced. The data on birthplace proved to be fairly reliable and of some value in the study of immigration, while the information on religion was confusing and of little value. The data on industry and occupation appeared to provide a more detailed analysis of the labour force, but the distinction between the two classifications is not sufficiently clear. The 1911 census seems to be a more ambitious undertaking, and the form and content of its report differ significantly from those of previous reports.

A major change was introduced in 1921 when the population of Singapore was first enumerated as part of the census of the whole of Malaya, consisting of the Straits Settlements, the Federated Malay States, and the Unfederated Malay States. The innovation of putting the whole census of Malaya in the charge of a single superintendent ensured uniformity of definition and items to be included for the pan-Malayan region. In the census report, comments and tables relating to Singapore were included. In addition to the items covered in the 1911 census, information on literacy (ability to read and write) and language (ability to speak) was introduced for the first time. The next decennial census of Singapore in 1931 was conducted along the same lines and the items covered were exactly identical. However, this census report had an extra section on certain problems of vital statistics.

A population census of the Municipality of Singapore was conducted in 1936, but the records and report of this particular census are difficult to trace. A census was originally planned for April 1941, but with increasing difficulties arising from the commencement of World War II in Europe the project was abandoned. The long series of decennial censuses since 1871 was thus broken. During the Japanese Occupation in 1942–45, a registration system of the entire population was enforced by the Japanese authorities, but these records, not available now, were for food rationing, military conscription, and security reasons.

After the war, the population of Singapore was enumerated in 1947 as part of the whole census of Malaya under a superintendent responsible for the census operation and the report. In this first post-war census, information on religion and language was omitted because of practical difficulties and doubtful utility of the results. But then three new items on household, the number of children ever born, and the year of first arrival of foreign-born persons were included for the first time. The information on the year of first arrival of foreign-born persons was meant to supplement that on birthplace for the purpose of studying migration, while the information on the number of children ever born is extremely useful in the study of fertility. In contrast to the manual method of processing the results in the earlier censuses, a mechanical method using punched cards was employed to process the results of this census.

THE 1957–2010 PERIOD

The beginning of a series of censuses conducted independently in Singapore, not as part of Malaya or the Straits Settlements as in the early days, was instituted in 1957. However, the censuses of Singapore and the Federation of Malaya were held on the same day and some form of cooperation was maintained between the two census authorities. Another new feature of the Singapore census was the formation of a Standing Technical Committee on Census Matters, responsible for planning and offering advice on all matters connected with the population census.

In this census, some new developments in census methodology were introduced. By far the most important innovation was the use of the labour force approach to identify and separate the population ten years of age and over into economically active and economically inactive persons, with the former group further broken down into those employed and those unemployed. The statistics are of much better quality and value compared with those gathered under the older gainful worker approach used in previous censuses, though some practical difficulties were encountered in the application of the newer concept. The

method of collecting age statistics was also improved with the introduction of the animal-year method of collecting the age statistics of the Chinese population. Briefly, the new method involves the gathering of extra information on the Chinese date of birth and converting the age calculated from the Chinese traditional system of reckoning age to the Western system of reckoning age. The results of the new method surpassed everyone's expectations, in that not only errors arising out of the Chinese system of counting age but also errors emanating from digital preference and overstatement or understatement of ages were substantially eliminated.¹⁰ Another innovation was the timely publication of seventeen Preliminary Releases which gave detailed results in advance of the publication of the full census report.

In comparison with the 1947 Census, some changes in the items were introduced. The item on the number of children borne by women was omitted; the information would have been useful for studying fertility and testing the under-registration of births.¹¹ The item on language (ability to speak) was re-introduced. One completely new item on the place of usual residence was included for the first time, but appeared to be of little value because almost all persons enumerated had their residence at the place of enumeration. Information on age by very fine groupings — by single months below the age of one, and single years from 1 to 99 — was made available for the first time, thus, apart from other uses, allowing the analysis of digital preference and other errors in age statistics. On the whole, the tables incorporated in the census report were much more exhaustive than those of other censuses hitherto attempted in Singapore. However, the final census report was published many years later in 1964.

The 1970 Census witnessed further advancement in the history of census taking in Singapore in terms of the wider coverage of subject matter, use of sampling, and application of computer to generate the statistics. With the exception of the item on secondary occupation, all other items which were collected in the previous censuses was included in this census. In addition, new items on the type of age statement, citizenship, residential status, and country of origin (for foreign-born) were introduced. Information on the name and address of employer was also collected for the first time, and served to cross-check the accuracy of the items on occupation and industry. Information on the type of census house was also included. Items on the number of children born and still living, first asked in the 1947 Census but discarded in the 1957 Census, were re-introduced but on a sample basis. In the sample enumeration, further details on the year of first marriage (or age at first marriage), educational characteristics, characteristics of unemployed persons, and housing conditions were collected.

The results of the census were processed by computer and an interim release providing very basic information on the population by census division/district, race and quinary age group was published in late 1970. But the complete results were only made available more than three years later in two volumes published towards the end of 1973. Volume I contains the administrative report and the general review of the census results, while Volume II contains the detailed statistical tables from the main and sample enumerations. The long delay in releasing the tables created some difficulties for census users who were not given access to these data soon after the completion of the fieldwork.

The 1980 Census continued to adopt the previous procedure whereby the more important items were included in the main enumeration on a 100 per cent basis, and other items in a 20 per cent sample enumeration. Not surprisingly, this census was subjected to certain changes in the items included in the enumeration schedule. Three items used in the previous census were excluded, namely, place of usual residence, animal year of birth (according to the Chinese horoscope signs), and country of origin. The many new items in this census included income from work, address of work-place or school, usual mode of transport to work or school, languages and dialects spoken at home, and religion. The first three items were introduced for the first time in a population census in Singapore.

A user-friendly publication programme of releasing the statistics and findings was adopted to satisfy the varied needs of the different types of users. To enable users to gain earlier access to the census data, the statistical tables pertaining to different topics were published as and when they became available. A total of nine such statistical releases were published within a ten-month period, beginning from December 1980. Another innovation was the commissioning of specialists to prepare eight monographs to present the major findings of the census, the first of which, on *Demographic Trends in Singapore*, was published in February 1982. The third component of the publication programme was the release of the *Administrative Report* in late 1983, providing a detailed account of the census organization and operation, a brief analysis of the census results, and some important statistical tables.

The census conducted in June 1990 incorporated some valuable changes with regard to field-work and coverage. Prior to the commencement of the 1990 Census field-work, certain information already captured in the various government databases was utilized to pre-print some relevant particulars onto the personal and household schedules for the respondents to update or verify. This technique saves considerable time and effort during the field-work stage. Another important departure from previous censuses was the enumeration of Singapore citizens and permanent residents living abroad during the time of the census.

The inclusion of these persons required the addition of a new item on country currently present in. Other new items included in the census were the number of leisure hours, participation in sports/leisure activities, participation in arts activities, watching arts events, participation in voluntary social activities, and leisure activities. However, particulars pertaining to these non-traditional census items were collected from a small 2 per cent sample of the population.

A publication programme somewhat similar to that adopted in the previous decennial census was employed to make available to users the results and findings of the 1990 Census. The first publication, entitled *Advance Data Release* provided a few very basic results of the census and was released about a year later in 1991. The detailed results covering various topics were made available in six statistical releases published over a period of some three years from 1992 to 1994. The findings of the census were embodied in six census monographs, the first published in 1994 and the last in 1996. An obvious shortcoming of the 1990 census was the much longer time taken to release the results and findings to interested users. Another problem was the presentation of most statistical tables in terms of resident population rather than total population. This implies that it is difficult, if not possible, to examine the many important characteristics of the total population in 1990 and to compare these characteristics on a time-series basis in conjunction with the results of previous censuses.

More important changes were introduced in the latest census conducted on 30 June 2000. With regard to the method of collecting the information, a few data items were compiled from administrative records and the other data items were collected by means of a sample. Data on six basic items pertaining to sex, date of birth, age, ethnic group, marital status, and citizenship were compiled from the Household Registration Data (HRD) base. The HRD is a central population register of citizens and permanent residents maintained by the Department of Statistics, with the information being updated quarterly from various administrative records. The other data items were collected from a 20 per cent sample of households by a combination of internet, telephone and face-to-face interview.

Out of the list of 54 data items included in the census in the 2000 census, 15 were new items meant to gather information on educational upgrading, job mobility, home upgrading, overseas travel, and financial support for the elderly. Two items concerning age of mother when first child was born and income from all sources were dropped. The census results were made available in seven census reports, with the first entitled *Advance Data Release* published some nine months after the census. The *Statistical Release* Nos. 1 to 5 were published within a year, and the final one on the administrative report appearing

another year later. On the whole, the census results were made available to users sooner than in the previous census. It is important to bear in mind that all the published statistics in the reports refer to the resident population (2,735,368), and similar figures for the non-resident population (754,524) were not published. This necessarily implies that one can only study the resident population and not the total population of Singapore.

The methodology employed in conducting the latest decennial census of population held on 30 January 2011 was essentially similar to that adopted in the previous census. Since most of the important changes have been introduced in the last census, only minor adjustments were required to be made in the latest one. Among the 58 data items included, not more than 9 basic items like sex, age, ethnic group, etc. were extracted from the Household Registration Data (HRD) maintained and regularly updated by the Department of Statistics. The other 49 data items were collected from a large-scale sample survey of some 200,000 households. The collection of data in the sample survey was based on a tri-model procedure that involved computer-assisted telephone interview, ultra-mobile personal computer, and face-to-face interview.

The whole census operation was designed to reduce the burden imposed on the respondents, overcome the acute manpower shortage, achieve timeliness in the compilation of the statistics, and minimize the cost of conducting the population census. The census results were quite promptly published in 5 reports well within twelve months from the date of the census. As in the past, the published statistics in these reports are for the 3,771,721 resident population only, and similar figures for the 1,394,400 non-resident population were not published. What is meant is that detailed figures for the total population of Singapore are not available.

Notes

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2. H. Hayes Marriott, "The Peoples of Singapore", in *One Hundred Years of Singapore*, edited by Makepeace, Brooke and Braddell (London: John Murray, 1921).
3. T. Braddell, *Statistics of the British Possessions in the Straits of Malacca* (Pinang: Pinang Gazette Printing Office, 1861).
4. Marriott, op. cit.
5. J.F.A. McNair, C.B. Waller, and A. Knight, *Report of the Census Officers for the Settlement of Singapore*, 1871 Blue Book (Singapore: Straits Settlement Government Press, 1872).
6. McNair, Waller and Knight, op. cit.

7. Ibid.
8. S. Dunlop, W.A. Pickering, V. Cousins, H. Hewetson, A. Knight and A.P. Talbot, Report on the Census of Singapore, 1881, 1881 Blue Book (Singapore: Straits Settlement Government Press, 1882).
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11. Saw Swee-Hock, "A Note on the Under-Registration of Birth in Malaya During the Intercensal Period 1947–1957", *Population Studies* 18, no. 1 (July 1964).