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SINGAPORE CENSUS OF POPULATION, 2000
- The First Register-Based Census

Singapore Department of Statistics

INTRODUCTION

1 Singapore's first census was taken in April 1871 as part of the Straits Settlement Census. Since then, regular censuses were undertaken at ten-year intervals up to 1931. The Second World War delayed the next censuses till 1947 and 1957. Singapore's first population census after independence was conducted in 1970 in line with United Nations' recommendations to designate years ending in "0" as census years. The next two censuses were conducted in 1980 and 1990.

THE 1970 AND 1980 CENSUS

2 The 1970 and 1980 Censuses followed a traditional fieldwork approach. In the first stage, houses were numbered to ensure complete coverage. The second stage involved a large number of field interviewers visiting the households to collect the information with paper forms and pens. The large volume of information collected was then processed through a cycle of coding, data entry, verification and table generation.

THE 1990 CENSUS

3 The 1990 Census capitalised on the potential of the Unique Identification Number (UIN) for record linking and made use of the People Hub set up in mid 1980s as the basis of conducting the census. Information captured in People Hub was merged with a few other administrative databases and pre-printed onto census forms for verification with respondents. Field interviewers were employed to verify and collect additional information from the households. For data processing, the 1990 Census made use of the then database technology running on a Fujitsu mainframe.

CENSUS 2000 – A REGISTER-BASED CENSUS

4 Since 1990 Census was the first time that a database was used to conduct the Census, the information was verified with those collected from the field. The results confirmed that most of the general characteristics of the population did not show significant differences between database and census.

5 Following this, a Household Registration Database (HRD) was set up. Information in the HRD originated from administrative sources and the 1990 Census. It is updated regularly by administrative data from various sources.

6 Since 1980, the Singapore Department of Statistics had also maintained an up-to-date database on dwellings. In 1996, this database was upgraded and renamed National Database on Dwellings (NDD). The NDD and HRD together give a physical location for every household in Singapore.

7 The NDD and HRD therefore laid the foundation for Singapore to conduct a register-based census. With the basic or core items on individuals and houses being available from the HRD and NDD, it would suffice to conduct a “register-based census” in the year 2000. Data on the basic characteristics of the population will be extracted from the HRD and NDD. Only additional data items that are not available in the HRD and NDD will be collected from a large sample of the population. Experience from the past censuses and sample surveys indicated that a 20% sample would provide sufficient details for in-depth studies and meet the need of the majority of users.

HOUSEHOLD REGISTRATION DATABASE (HRD)

8 The HRD was established in March 1996 to capture the basic personal and demographic information on all Singapore citizens and permanent residents. This database contains principal data items and subsidiary data items. The principal items include:

- Unique Identification Number (UIN)
- Residential Status
- Household Indicator
- Name
- Sex
- Date of Birth
- Marital Status
- Ethnic Group
- Dialect Group
- Country of Birth
- Citizenship
- Address

The main subsidiary items are:

- Type of Dwelling
- Qualification Attained and Date Attained
- Education Attending and Date Attending
- Field of Study
- Date of Death

9 The UIN is a unique number that appears on the birth certificate and identity card of every Singapore citizen or permanent resident. This UIN is widely used when an individual applies for school enrolment, passport, driving license and many others. The UIN made the set up of HRD possible. It is the key for the linking and merging of official databases in Singapore. The UIN is a nine-byte field with a check digit.

Set Up and Maintenance

10 A one-off extraction of records was made from the People Hub as at end June 1995 and matched with relevant data from 1990 Census of Population. Thereafter, the following updates to the database are made with respect to individual records:

<i>Quarterly Update</i>	<i>Source</i>
• Live Births	Singapore Immigration and Registration
• Deaths	Singapore Immigration and Registration
• Immigration	Singapore Immigration and Registration
• Emigration	Singapore Immigration and Registration
• Marriages	Registry of Marriages and Registry of Muslim Marriages
• Change of Address	Singapore Immigration and Registration
• Formation of Households	derived from parent-child and spouse linkage

<i>Annual Update</i>	<i>Source</i>
• Divorces	Subordinate Courts and Syariah Court
• Education Attending / Qualifications	Ministry of Education Institute of Technical Education Nanyang Polytechnic Ngee Ann Polytechnic Singapore Polytechnic Temasek Polytechnic Nanyang Technological University National University of Singapore Public Service Division Ministry of Defence

NATIONAL DATABASE ON DWELLINGS (NDD)

11 The NDD was set up in 1983 using the records of all dwelling units listed during the 1980 Census of Population. This database was later upgraded in 1995.

12 The NDD contains information on type of dwelling, census district and address in national coded address format form for all residential dwelling units in Singapore. It was enhanced in 1998 to include additional housing attributes such as property tax rate, annual valuation of property, water and electricity consumption data, motor vehicle ownership data, telephone and telecommunications expenditure data. These additional data were included to improve systems integration among government databases.

13 Such systems integration is possible as the residential addresses in Singapore are stored uniquely in the national coded address format. The national coded address format consists of address type, house or block number, street code, storey, unit number and postal code.

Set Up and Maintenance

14 A one-off extraction of records was made from the residential addresses found during the 1980 Census of Population. Subsequent updates from information supplied by various government departments are done monthly. Fieldwork is also conducted to verify some doubtful records.

CONCLUSION

15 In deciding to move towards the register-based census approach, Singapore Department of Statistics had studied three key issues. First, the quality of administrative data in Singapore is sufficiently high to produce an accurate count of the population and its basic characteristics. Secondly, the legal framework and data confidentiality practices in Singapore permit the sharing of various administrative information. Finally, the cost savings in adopting this approach are substantial. It is estimated that the operational cost of conducting a register-based census, coupled with a large-scale survey, is only 40 per cent of the cost of a full scale census.

16 The register-based approach to Census 2000, supplemented by a large-scale survey, will mark a watershed in the history of census taking in Singapore. For the first time since 1871, information will no longer be “canvassed” from the entire population.

17 Beyond 2000, the Singapore Department of Statistics will look into a system of continuous measurement of the population by further integrating the records of the HRD and the NDD. A system of regular small-scale surveys will be put in place to collect information not obtainable from administrative sources and to monitor population and social trends of current interest.