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Background

1. In Macao, the first population census could date back to as early as 1867. Total population was 81,525 at that time, comprising a marine population of 15,590, sharing 19.1% of the total.
2. The latest population census, i.e. the 14th Population Census and the 4th Housing Census, was conducted in 2001. A total of 435,235 residents were enumerated; however, the marine population shrank to only 0.44 % of the total, or 1,898 persons.
3. Latest figure revealed that the resident population of Macao was estimated at 503,000 as at 30 June 2006.
4. In order to obtain up-to-date benchmark information on the population, it is common to carry out a population by-census between two population censuses. The first population by-census was conducted in 1996; thus, the second population by-census was held in August 2006. The next population census will be scheduled for 2011.

1) What do we want from the population census?

Relationship with Census Data Users

5. To ensure that the information obtained in the Population Census is relevant in meeting the needs of general public and the data users, Statistics and Census Service (DSEC) organizes consultation sessions with the stakeholders and data users for their views on the scope of information that should be made available in the census database;
6. After the consultation process, content of questionnaire is then finalized, the main intention is to achieve a balance between respondents' burden and strong data requirement; in addition to careful considerations on the introduction and testing of new questions, etc.; and
7. To provide assistance to data users in retrieving and utilization of the available population statistics.

Relationship with Data Suppliers

8. High-quality statistical data depends on the cooperation of the general public and the trust of the respondents. It requires efforts in explaining clearly the purposes for which the data are collected, the benefits that the resulting statistics are expected to yield and the measures taken to safeguard the confidentiality of data

provided. Therefore, various publicity programmes are launched to transmit these messages to the respondents; for instance, sessions on statistical literacy are organized to students of the primary and secondary schools, institutions of higher education, as well as members of the social interest groups. Besides, mass media is also used to the extent that the image of the NSO is enhanced.

Human Resources

9. The Population Census itself cannot be managed without an effective field organization, which can reduce the operating cost to the lowest possible margin. Alongside with the group of permanent staff to provide leadership, supervision and continuity, a larger group of temporary employees is contracted on a short-term basis; this combination of field organization offers a great deal of flexibility in the face of fluctuations in work flow;
10. To recruit a large group of short-term employees, a well-planned recruitment procedure and training scheme are needed beforehand to ensure the quality of human resources;
11. To satisfy the increasing demand of residents who are studying abroad and their wish to take up the post of the census enumerator during the summer vacation, the electronic application via the Internet is set up on DSEC website where the eligible candidates can opt to apply the post by electronic means. As a result, 99% of the applicants used e-application, which can streamline the screening and processing of the applications, improving significantly the timeliness of field workers' selection;
12. To ensure the procedures for data collection, verification, coding and storage of questionnaires will be properly implemented; a well-organized training programme is designed for each level of census officers. For instance, the interviewer's training programme aims to foster respondent cooperation, strengthening the capacity and interviewing technique of the enumerator who may, however, contend with the overwhelming resistance of the respondents in providing information.

Long Term Role of Population Census

13. Data collected from Population Census and by-census are benchmark information on the entire population, which are also the primary source of data for small geographical area and population subgroups. Combining this information with administrative records (e.g. live births, mortality, passenger movement, etc.) can monitor the gradual changes of the population and

compilation of respective indicators on the population. Furthermore, integrating these data with information obtained from other surveys (the sample household survey, in particular) can facilitate construction of a population database that help to conduct different types of social and economic studies;

14. Apart from conforming to international standards and recommendations, DSEC always compiles relevant statistics on emerging social and economic issues to stay abreast with the latest developments of the society.

2) What resources are available for use?

Application of Information Technology (IT)

15. DSEC is constantly looking for ways to improve the cost-effectiveness and efficiency of the resources and services; consequently, the application of IT is one area that cannot be ignored. In fact, in the past twenty years, DSEC has devoted significant resources to maximize its information system in enhancing the operation of all the statistical activities, by taking full advantage of IT to transform statistical operation in achieving high efficiency in sample design, data collection, processing, management and dissemination;
16. In order to reduce the time spent on data capturing and to avoid manual data input errors, the Optical Character Recognition (OCR) system was introduced in the 2001 Population Census where data of the completed questionnaires would be captured electronically. Encouraged by the results and the efficiency gain, DSEC continues to employ OCR in the 2006 By-census and in other statistical activities as well;
17. To reduce the volume of work and the processing costs, the Computer Assisted Telephone Interviewing (CATI) system developed in-house was first implemented in 1999 to combine interviewing, coding, data input, and verification in one step. In the 2001 Population Census, this system helped to handle inquiries of the general public, verification of enumerator's identity, as well as appointment scheduling and on-line interviews. In addition, the system also helps to reduce non-contact cases, thus increasing the response rate. At present, respondents accustom to use CATI for making appointment and inquiry purposes;
18. In view of the rapid development and prevalence of Internet, aside from releasing Census results in printed publications, DSEC uploads all summary findings and statistical tables to its Homepage { [HYPERLINK](#)

"http://www.dsec.gov.mo" } such that users can view or download the information in PDF formats. The statistical tables are also available in EXCEL format to facilitate further editing by users in their analytical work;

19. To meet the increasing demands of automated formats from the data users, Information Technology is further deployed in the dissemination of the Census results. The Geographic Information System (GIS) links the geographical area and demographic characteristics closely together that is capable of identifying the social and demographic characteristics of the population by geographical locations, with the support of the Population and Housing Census database.

Statistical Legislation

20. With the objective to uphold the confidence of the general public, to maintain high response and to obtain reliable data from our respondents, DSEC implements strict measures to guarantee protection of confidentiality of individual data collected. By law, it is an offence for census officers to disclose data relating to individual persons and households to any other unauthorized persons or entities. All information collected by DSEC is exclusively used for statistical compilation and statistical purposes only. Moreover, all the completed questionnaires will be destroyed within one year after data collection of the Census.

Professional Standards

21. To maintain the trust in official statistics, DSEC is vested with technical autonomy in the determination of the appropriate statistical methods, concepts and definitions used. This methodological independence is formally laid down in the statistical legislation that governs the basis of statistical activities in Macao.

3) How do we achieve the population census goals with what we have?

System of internal communication

22. As the population census invariably involves a huge team of staff at multi-levels, close cooperation in the areas of technology, methodology, production and public relations is essential to ensure that each phase of the census is properly resourced and organized and meeting the needs of others;
23. To achieve the population census goals, a core management team with

representatives from a variety of disciplines within DSEC meets periodically, to undertake the operational aspects of the census. The basic framework of tasks is identified and developed hierarchically in details so that the participating staff can acknowledge the responsibilities assigned, report and review the arrangements accordingly;

24. To mobilize the team spirit of the staff in DSEC, it is important to equip all of them with a profound understanding on the important relevance of the Census, their responsibilities, and how they can contribute, as a team, to the overall Census goals.

Work with other parts of government

25. To work with other government departments on achieving the census goals requires an ongoing communication process to foster understanding of the nature of decision-making and the needs for census data in supporting these decisions. Therefore, a range of channels such as meetings, seminars and promotional materials about the census are prepared.

4) What will be the impact on various parties, including data users, the Statistical Office managing the population census, other government agencies and the general public on achieving the goals/objectives?

26. An evaluation of the Census programme, carried out at the final stage, will identify the strength and weakness of each task, as well as the action points proposed for future operation. These materials deal with the management and execution of the entire Population Census, including detailed reports on actual experience of both the internal and external staff, will be beneficial to the subsequent census operations and other statistical projects;
27. The comprehensive sampling frame with complete, unduplicated, up-to-date coverage employed in population census can also serve as the primary sampling frame for other households surveys conducted in Macao, providing effective support for data collection and processing work;
28. Developments in Information Technology have greatly expanded the capabilities of DSEC and strengthened the informatics technology of its statistical infrastructure;
29. Population Census is the most important statistical operation, it provides a good opportunity for DSEC to promote statistical literacy, foster statistical participation and raise statistical awareness in advocating support of the community as a whole. As the level of public understanding increases, provision

of data to our statistical operations will gradually become a habitual and voluntary process;

30. Population Census is a complex, costly, visible, politically significant and socially sensitive operation that has to be completed within a strict timeframe. Therefore, good planning, management and execution of the every stage of work are critical and essential toward the successful conclusion of the operation. Needless to say, the challenges and difficulties encountered, as well as the experiences earned will be invaluable to both the staff and the NSO concerned.