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Re-engineering the 2011 Population Census in Hong Kong

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Abstract

With changing lifestyle of Hong Kong people, census taking by the traditional interviewer method is increasingly difficult. This paper will address the business process re-engineering (BPR) initiatives for the upcoming 2011 Population Census in Hong Kong. The experiences from previous population censuses/by-census, particularly the 2006 Population By-census, are considered as a valuable source of change drivers. A host of BPR initiatives for the 2011 Population Census is in the pipeline. Among others, a more cost-efficient and client-oriented multi-modal data collection approach will be introduced. Besides, the fieldwork control system and the quality assurance system will be strengthened through more extensive use of ICT and administrative data. On the publicity aspect, a multi-faceted programme is being contemplated so as to heighten public awareness and bolster response to the census. On the methodological front, the use of administrative data and more advanced techniques to enhance the utilisation of census data will be explored.

INTRODUCTION

It has been established practice since 1961 for Hong Kong (HK) to conduct a population census once every ten years and a by-census in the middle of the intercensal period. A population census is a complete headcount of the population. A population by-census differs from a population census in that during a by-census, only a large sample of the population is enumerated to obtain their detailed characteristics (for instance, in the 2006 Population By-census, a 1-in-10 sample was used). The size and characteristics of the entire population are then inferred from the sample results in accordance with statistical theory.

2. The aim of conducting censuses and by-censuses is to obtain up-to-date information on the population of HK, which is vital to government planning and policy formulation, particularly in such fields as education, housing, transport, medical and social services. The data are also important to the private sector for formulating business strategies and to academic researchers for conducting social economic studies.

3. The next population census will be conducted in 2011. To tie in with the changing lifestyle of Hong Kong people and the advancement of ICT, an array of business processing reengineering (BPR) initiatives is in the pipeline for the upcoming 2011 Population Census. The design for 2011 Population Census is built upon the experience of previous censuses generally and the evaluative feedback from the 2006 Population By-census specifically. This paper provides an overview of major re-engineering initiatives for the next population census from four perspectives viz. operational design; implementation design; publicity design; data analysis, research and dissemination.

ON OPERATIONAL DESIGN

4. In designing the approach for the upcoming census, various alternatives

have been explored and evaluated to identify the most cost effective and practicable implementation approach for smooth operation. Major improvement areas in respect of operational design are highlighted below:

Multi-modal data collection approach

5. In the past population censuses/by-censuses, data were collected basically by face-to-face interviews, where enumerators visited all households to interview persons therein one by one. In the 2006 Population By-census, apart from the traditional “interviewer” method, e-questionnaires were also available upon request to facilitate the public in providing the information required.

6. In light of the changing lifestyle of Hong Kong people and advancement of technology, new and additional means for data collection from the households will be introduced in the 2011 Population Census. Under the new multi-modal data collection approach, e-reporting on the Internet and postal return will be rolled out, along with the traditional “interviewer” method.

Data collection period

7. The past population censuses and by-censuses were conducted in March of the relevant year when the census/by-census period, which normally lasted 9 to 13 days, were declared school holidays and some school premises were hired as field centres. In recent years, there were some concerns from different sectors on the declaration of school holidays in March to facilitate the population censuses/by-censuses because of disruption to the normal school calendars. In this regard, we adopted a new approach in the 2006 Population By-census by conducting the data collection work in the school summer holidays in July-August and achieved very satisfactory results. This move not only avoided the disruption to school calendar but also help to secure a large pool of enumerators (who were mostly students) during the summer time.

8. Given the proven experience of setting the census operation period in summer holidays in July-August and after due consideration of the various factors, the data collection period for the upcoming 2011 Population Census will be extended to 45 days, tentatively set from 19 June (Sunday) to 2 August 2011

(Tuesday).

9. The adoption of a longer data collection period coupled with the new multi-modal data collection approach will increase the chance of contacting the households successfully during the holiday season in the summer. It is planned to promote postal return and self-enumeration on the Internet in the first part of census period, whereas the more costly interviewer method will be activated at the latter part of the census period for the remaining households. This staggered arrangement over a longer data collection period is considered more flexible and cost-effective.

ON IMPLEMENTATION DESIGN

Recruitment and Training of Temporary Field Workers

10. The data collection work for each round of population census/by-census will require many temporary field workers (mostly teachers and students). In previous censuses/by-censuses, recruitment was through submission of paper application forms, thus entailing heavy workload in data input within a very short period of time. This was especially so when there were some 80 000 applications received for the some 5 000 posts for temporary field workers in the 2006 Population By-census. In order to streamline the process, an e-application platform will be developed for the 2011 Population Census to process the applications.

11. In terms of selection of suitable candidates, the selection process in past population census/by-census was predominately based on written test on census knowledge and observation on the class performance. However, this might not fully reflect the suitability of candidates in such aspects as personality and attitude. For the upcoming census, it is planned to put the pre-training Census materials on the Department's thematic website for self-learning by candidates before they attend online test on Census knowledge, aptitude and personality. Professional service in designing and/or running the test at affordable cost would be explored. After this first stage of screening, eligible applicants will be invited to a briefing session for further selection. Their census knowledge, personality, class performance and verbal/written expressions will be tested/observed at the briefing. The scores for each part of the online test would

help differentiate the suitable applicants for different posts (e.g. higher scores for Assistant Chief Enumerators).

Fieldwork control and communication

12. Close and comprehensive monitoring of fieldwork progress is important for the management particularly in view of the relatively short data collection period in population census/by-census. Managing the fieldwork progress of voluminous cases within a short period is always a challenge in conducting population census. There is always a dilemma of collecting timely but brief information or less timely but more detailed information in monitoring fieldwork process.

13. Riding on the advance of IT usage in HK, a two-pronged approach will be introduced in updating fieldwork process for the 2011 Population Census. In Stage 1, enumerators are required to provide summary reporting (e.g. number of cases completed, number of cases in progress) of their work twice a day by using their mobile phones¹, say, to send SMS to the office. This will facilitate senior management to be kept posted of the most up-to-date progress of fieldwork on the same day. In Stage 2, enumerators have to hand in a more detailed daily report sheet to report their work done on previous day. To speed up data processing, the daily report sheets will be processed by using ICR and hence the detailed progress reports can be generated for analysis and review within a time-lag of about one day.

14. Personal safety, conduct and discipline of a large pool of temporary enumerators are common issues arose from population censuses/by-censuses. To this end, it is contemplated to deploy location-based service (LBS) to help locate the whereabouts of enumerators at real time by using their mobile phones during the census operation period. Through real time positioning and

¹ The penetration rate of mobile phone in Hong Kong is among the highest in Asia. Each temporary enumerator will likely use his / her own mobile phone with the SIM card provided by the Census and Statistics Department during census period. Mobile messages gateway services (e.g. two-way Short Message Services (SMS)) will be used through enumerators' mobile phones to transmit / disseminate unclassified information (e.g. weather information and urgent message to specific enumerator) immediately.

automatic mapping of the whereabouts of enumerators with their assignment areas on location map, the enumerator's location history can be made available for monitoring and sample checking.

Strengthen data quality

15. In previous population censuses/by-censuses, the data collected were subject to basic cursory checks on spot and in field centres with a view to identifying major erroneous entries. Data capturing and more thorough computer validation were then performed after conclusion of fieldwork operation. Past experiences indicate that there would unavoidably be some dubious cases identified in the process of computer validation which might not be followed-up or verified with respondents readily after the census period. This could have certain impact on the quality of data.

16. Instead of processing the data in a sequential manner, a parallel processing approach will be adopted in the 2011 Population Census. Under this new approach, the completed questionnaires collected through different channels will be dispatched to the central processing area on a daily basis for data capturing and validation. The validation report will be sent to the subject enumerators for follow-up with the respondents for dubious entries. Besides, the information is also useful to help identify common faults in the early stage of enumeration.

17. Aside from advancing the computer validation process, the quality assurance mechanism will be strengthened to further enhance the data quality. The use of supplementary information to facilitate the census enumerators (who comprise basically students) in field enumeration is being contemplated. For instance, the enumerators are required to furnish specific supplementary data listed in preset checklists for special cases which warrant more field attention (e.g. distinction of non-contact from unoccupied quarters).

Dynamic questionnaire tracking

18. The above idea of switching from serial processing to parallel processing sounds simple. Yet the risk of moving a large volume of questionnaires between field centers scattered in the territory and central processing area must be managed carefully. To this end, the computer system has to be strengthened with a view to providing a comprehensive tracking mechanism for tracking the movement history and whereabouts of the questionnaires at different check points.

ON PUBLICITY DESIGN

Comprehensive publicity programme

19. Analysis of the responding pattern of recent rounds of population censuses/by-censuses indicated that it is increasingly difficult for enumerators to make contact with households. The increasing non-contact rates were partly due to the high mobility of Hong Kong people and partly due to the increasing public concern of personal data privacy. The success of the census and the quality of the information will largely depend on the cooperation of the public and their willingness to provide the requested information. Therefore, every effort has to be made to boost the awareness of the public and solicit support of respondents from all walks of life.

20. To enlist the territory-wide support to the 2011 Population Census, a comprehensive publicity programme will be mounted as in the previous population censuses/by-censuses. But apart from the multi-faceted public relations campaign (such as conducting briefings to schools and different organisations; sending appeal letters, leaflets and posters to various parties; distributing promotion kits to schools; launching a thematic website, issuing press release; organizing press conferences; advertising on TV, radio, newspapers, public transport carriers), a strategic publicity programme targeting at primary and secondary schools students is being planned.

Census Ambassadors

21. The future is in the hands of our youths. What young people are putting into their heads today is in essence what they would put into action tomorrow. While it is our established endeavour to promote statistical literacy in the society, we consider it a golden opportunity to make use of the 2011 Population Census to deepen our ties with the community and particularly with the young generation. In light of the above, appointment of “Census Ambassadors” in primary and secondary schools as well as youth uniformed groups will be one of our promotional activities in the population census campaigns. The “Census Ambassadors Scheme” will serve the dual objectives of promoting civic awareness and responsibility amongst the young generation through their participation in the Census; and encouraging the appointed ambassadors to solicit the active participation of their families and friends in the 11C.

Inclusion of census activities as part of the school curriculum

22. In Hong Kong, a new senior secondary curriculum will be put in place in the academic year 2009/10. The career-related experiences (e.g. job attachment) under the new senior secondary curriculum in Hong Kong will provide a window of opportunity for our planned strategic partnership with the schools by including our publicity/PR programmes. This initiative is seen as “win-win” in the sense that the students can take this opportunity to broaden their horizons and commit themselves as well as their family members to fulfill the civic obligation of duly responding to census on one hand, while on the other hand we can promote the conduct of census and statistical literacy.

ON DATA ANALYSIS, RESEARCH AND DATA DISSEMINATION

More thematic analysis

23. Undoubtedly, the datasets available from the Population Censuses/By-censuses are very rich and they can be applied to various studies on topics of public interest. For each round of Population Census and

By-census, a series of thematic reports on various population subgroups (such as the youth, the elderly, ethnic minorities, single parents and new arrivals from the Mainland of China) would be published.

24. With the significant changes in the social and economic structure of Hong Kong in recent years, it is expected there will be mounting demand for in-depth analysis on various social issues. To this end, we will further “mine” the wealth of information available from population census to support more thematic analyses.

Methodological researches

25. On the methodological front, we will explore more advanced techniques to further enhance the data quality of population census. A host of research studies is in the pipeline. These include, among others, potential sources of administrative records to support field operation and statistical processing, enhancement of imputation methodology, refinement of sampling scheme by also making use of administrative registers from other departments (e.g. Housing Department) for sample selection.

Data dissemination

26. Managing the variety of data users and their different needs and preferences for data and statistics is one of the challenges in data dissemination. As time progresses, the census products have been evolved from pre-defined statistical tables and CD-ROM in early 1990s to the more dynamic modes nowadays. To tie in with this trend, we have launched two interactive applications in 2008, namely, the “Statistics on Map” dashboards and the “Interactive Data Dissemination Services”. For academic users demanding more in-depth analysis of census data, they can use our on-site self-help tabulation services. Meanwhile, application of appropriate statistical disclosure methodology is being explored with a view to furthering the release of census microdata.

CONCLUDING REMARKS

27. The above-mentioned reengineering initiatives just form part of the total package of census planning. In fact, there are a lot of planning, research and evaluation work in the pipeline. A host of research work is being undertaken with a view to exploring the use of more administrative records to support fieldwork operation and statistical processing. Among others, the use of public housing records to enhance the sampling scheme, the use of education enrollment records to enhance the population estimates at school-age, the use of passenger movement records to enhance the population estimates pertaining to mobile residents are being actively explored.

28. The 2011 Population Census in Hong Kong is a colossal and complex statistical undertaking. Reengineering the census is full of challenges. Because of the vast scale of population census, minute problems can amplify quickly and emerge as big problems. Very often, an issue in one operation would have a downward spiral effect on other operations. Sound risk management is therefore of paramount importance. To take forward the re-engineering initiatives, we will take a cautious and vigorous approach to test, review and revise the improvement initiatives in a stepwise manner. Besides, contingency plan will be devised to mitigate the potential risks and to ensure a successful census.