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The 2000 Census in Zambia*

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A. Strategies for involving stakeholders in census activities

1. Introduction

1. Stakeholders in Zambia's census programmes have played a very influential role. The influence of stakeholders was particularly useful for the 2000 census programme, when the Ministry of Finance and Economic Development did not consider the 2000 census a sufficiently important activity to finance it with the tight financial resources of the government. Stakeholders comprising all government ministries and regional administrative offices gave overwhelming endorsement for the 2000 census programme when they were consulted by the cabinet. Other stakeholders such as donors, researchers, industry, non-governmental organizations (NGOs) and the media, lobbied for the census to be undertaken despite the impact of its cost on the tight government budget. Stakeholders saw the census as very essential at the crucial time when the country was implementing major economic and democratic reforms. Census data were essential to facilitate rational reforms.

2. Building consensus among stakeholders

2. The principles and recommendations of census topics made by the United Nations satisfy most of the data needs of the stakeholders for censuses of population and housing in Zambia. However, all stakeholders were emphatic that census data disseminated late were of little value to them. They further reiterated that data from censuses should be available for all levels of governance and administration. As a result, the data from the 2000 census are to be made available by ward, constituency, district, province and chiefs' areas. Previously data were available only for districts and provinces. Although data could be estimated for the other levels of governing and administration from the previous censuses, the maps were not specifically drawn to allow for data desegregation below the district level—that is, for constituencies, wards and chiefs' areas.

3. In November 1997 major stakeholders—the Ministry of Local Government and Housing, the Ministry of Lands, the Electoral Commission of Zambia and the Central Statistical Office—agreed to harmonize the parallel systems of their maps to ensure that all governing and administrative areas were identified by common boundaries. In this way, the references on electoral maps, local government maps, general maps and statistical maps of the areas covered by all levels of governing and administration would be the same. As a result of this agreement, duplication in data-collection efforts has been minimized because data collected using any system of maps can be mutually shared and refer to the same areas without ambiguity.

4. The Central Statistical Office has also committed itself to the demands of the stakeholders to disseminate all the census data within 12 months after data collection instead of the five years it took for the 1969, 1980 and 1990 censuses. Already, data capture has been completed in two and one half months. Monitoring of the progress of other census activities shows that the Central Statistical Office is on course to satisfy the demands of the stakeholders.

5. In order not to overload the 2000 census, the Central Statistical Office has agreed with the stakeholders on a 10-year programme of data collection using the census, periodic household surveys and data collection from other records. The objective is to maintain stability in data-collection instruments to facilitate effective management of the data-collection system. However, one-time needs of stakeholders have been accommodated in the 2000 census. Stakeholders contributed to the cost of collecting data that are not regularly included in the census programme.

6. In order to facilitate the planning of the 2001 presidential, Parliamentary and local government elections, the Electoral Commission requested that the 2000 census collect data on persons eligible to vote

but who do not have cards for voting. The data would enable the Commission to plan effectively to issue such persons with voting cards. In addition, a question was included to identify refugees so that the needs of the numerous refugees who are in Zambia could be catered for. Questions to create a sample frame for the agriculture census were also included. The 2000 census questionnaire also included answer categories recommended by the Southern African Development Community for its member states.

7. Stakeholders participated in the development of census instruments, such as the enumerators' manual, questionnaires and specifications for tabulation. This was done through committees, working groups and focal persons. Similarly, the stakeholders will be involved in the analysis and dissemination of the census data.

3. Conclusion

8. Stakeholders ensured that the 2000 census was made a high priority for government financing. They also ensured that data dissemination is timely and that data are sufficiently disaggregated for governing and administration. The stakeholders are also participating in the implementation of the 2000 census programme through their personnel and by contributing to some costs.

B. Sources of demographic and social statistics in zambia

1. Introduction

9. In Zambia, demographic and social statistics are obtained from censuses, sample surveys and administrative records. Censuses are held every 10 years. Demographic and health surveys are held periodically at intervals of two years or five years, while living conditions surveys are held every two years. A number of social indicators, such as education, employment, marriages, gender and incomes, are compiled monthly and quarterly from administrative records. The Central Statistical Office collects these data through the national statistical service, which it coordinates.

10. Under the Census and Statistics Act, Chapter 425 of the Laws of Zambia, the Department of Census and Statistics, also known as the Central Statistical Office, is empowered to carry out censuses and surveys in any part of the country. The Act provides for the taking of a census, collection of statistics and publication of statistical information and for matters incidental to the foregoing. The Central Statistical Office has focused on censuses and surveys for which it is better placed to carry out than any other institutions in the national statistical service. Research and planning units, which are part of the national statistical service, are located in the Ministries of Labour and Social Security, Tourism, Community Development and Social Welfare, Health, Education, Local Government and Housing, and Home Affairs. They compile social indicators from administrative records monthly and quarterly on indicators pertinent to their policy frameworks to facilitate the implementation of their work programmes. The indicators from the research and planning units of the ministries are published by the Central Statistical Office.

2. Choosing methods of demographic and social data collection

11. The primary factor considered before collecting data from a source is the accuracy of the data. The most reliable data sources for demographic and social statistics in Zambia are household surveys and population censuses. Data from these sources are representative of the whole population. However, these data sources are also the most expensive. Strong stakeholder interest in indicators from these sources has ensured generous support by the stakeholders towards the costs of maintaining a regular programme of censuses and household surveys. The periodic censuses and surveys provide data on the demographic and social indicators required by the stakeholders to implement their programmes.

12. The programme of household surveys to collect demographic and social indicators became extensive in the 1990s. An element of duplication in the collection of data has been noticed, and respondents are increasingly becoming irritated with enumerator visits. Currently the Central Statistical Office is

rationalizing data collection in the household survey for the 2000 to 2010 intercensal surveys programme. The programme of demographic and health surveys will combine elements of epidemiological sentinel surveillance surveys for HIV/AIDS and syphilis. The programme for collecting living conditions indicators will be combined with household budget surveys and nutrition surveys.

13. In this way, duplication in collecting certain indicators, especially background demographic and sexual indicators, in what used to be parallel surveys for health, sentinel surveillance, living conditions and nutrition surveys will be reduced. As a result, respondent fatigue will also be minimized, as will irritation caused by repeated enumerator visits. This rationalization will also minimize costs of data collection.

14. The Central Statistical Office is also implementing cost-cutting measures in collecting demographic and social data from administrative records in the planning and research offices of ministries. Capacity for statistical analysis in these offices has been improved so that costs of transmitting data for analysis to the Central Statistical Office would no longer be incurred.

15. Whereas costs for collecting data from this source are being reduced, the paucity of data from this source does not allow for the computation of statistical indicators which are representative of the regional or national populations. The majority of activities and events which should be documented in Zambia are not recorded in administrative records because they are carried out outside the modern formal sector, resulting in the paucity of data from this source. As a result, demographic and social data from administrative records are used only to compile process indicators to monitor operations of implementing programmes in the ministries and the sectors they cover.

3. Conclusion

16. In the foreseeable future, censuses and household surveys will continue to be the most reliable data sources for demographic and social indicators in Zambia. Although improvements have been made in the coverage of health and education data, demographic and social indicators compiled from administrative records would still be unrepresentative of the regional and national populations.

C. Adapting new technologies to census operations

1. Introduction

17. In the planning stage of the 2000 census, reviews of the technologies used for data capture in past censuses showed that if they were used again, the release of census results would be untimely, about five years after the census, as occurred in the past.

18. If the government mainframe computer were used, the census would not be a top priority job for processing as experienced in the 1969 and 1980 censuses. If processing on microcomputers was adopted, as was done in the 1990 census, the current International Monetary Fund/World Bank-sponsored economic reform programme would make it difficult to access funds to carry out capital works to rehabilitate or build offices to house the 150 microcomputers required to complete data processing in the required six months. Further, the fiscal restrictions of the economic reform programme would make it difficult to pay motivational wages to the data-entry staff and manual editors.

19. Coupled with these constraints, the government budget for 2001, when data-processing activities would be carried out, could be under severe pressure from May 2001 because of three major extra activities that the government would support—namely, the 2001 presidential, Parliamentary and local government elections, the summit meeting of the heads of state of the Organization of African Unity and the promotion of the 2001 total eclipse of the sun.

20. The challenge for census management was to find a data-processing approach which would enable the census data to be captured within six months after census enumeration to avoid running into the most difficult phase of the 2001 government budget and to enable the constrained wage budget to be exhausted within a short period so that operators could receive a motivational wage. After reviewing all technologies used for data capture in Zambia, it was discovered that scanners had been used to capture data for the government mainframe computer since 1977, and the Examinations Council of Zambia had been using optical mark readers (OMR) to mark examinations since 1977.

2. Adapting optical mark readers for 2000 census data capture

21. The best local expertise in the use of optical mark readers was available at the Examinations Council of Zambia. With this expertise and that of Data and Research Services of the United Kingdom, who manufacture the scanners and associated software, appropriate modification to the hardware at the Examinations Council of Zambia and customized software suitable for census data capture were developed. The cost of scanning hardware modification was US\$140,000. This was cheaper than the cost of rehabilitating offices for microcomputer rooms, setting up a microcomputers network and microcomputers hardware, estimated at US\$325,855. The cost of printing optical-mark-readable questionnaires was much cheaper than the traditional questionnaires for data capture by microcomputers because the precision printing for optical-mark-readable forms required only one fifth of the amount of paper the traditional questionnaire would take up. Overall, the estimated cost of optical-mark data processing was cheaper than the traditional approach of microcomputers.

3. Outsourcing

22. All the major components of the data-processing component were outsourced to the Examinations Council of Zambia and Data and Research Services of the United Kingdom. The Examinations Council of Zambia has programmers, analysts and operators trained in optical-mark-reader software, application and maintenance of equipment supplied by Data and Research Services. Therefore, local capacity for this technology option was available in Zambia. Overall supervision was done by the Central Statistical Office staff attached to the subcontractors. After data capture was completed, the Central Statistical Office took possession of all printouts and storage media of the data to ensure confidentiality and prevent misuse of the data.

4. Lessons

23. Advance and detailed planning is required to use optical-mark-reader technology for census data capture. Perfect synchronization with other aspects of the census operation is extremely important; otherwise, this method of data capture will fail. The right kind of paper has to be used to print the questionnaires. Pencils, bags, folders and transportation used should leave the form in a good state so that it can be scanned. Synchronization of operations in the 2000 Zambia census was attained adequately such that practices at one stage of the census operation were not a hindrance to the next stage of operation.

24. Considering that the forms could be scanned only page by page, each page of a household form should have had an identifier to link it to the household so that all information could be merged by household and by individual. Otherwise, records could exist in the database without being associated with a particular household or individual. Although scanning was completed within two and one half months, during which 11,628,911 forms were scanned, records for about 665,335 persons could not be linked to a household. It took another two and one half months to edit the incomplete or wrong identifier numbers manually. As a result, it took six months to complete data capture instead of the projected two months. Were it not for this problem, data capture would have been completed within two and one half months. It is essential to pre-print identifiers.

25. Despite this problem, the time to complete data capture by scanning was considerably shorter than the two years it took to complete by the keyboard method for the 1980 and 1990 censuses.

5. Conclusion

26. The constant advances in technology can be adapted for census use if they are comparable in cost to technologies which are currently being used and the technologies can be managed with existing skills of the statistical office or local subcontractors. Statistical offices should also be willing to adapt advances in technology for census use. Donors and international agencies should also desist from discouraging capable countries from adapting new technologies.

D. Experience with post-enumeration surveys in zambia

1. Introduction

27. Three post-enumeration surveys (PES's) have been carried out in Zambia. The first, after the 1980 census, was not adequately planned for and was not successfully completed. After fieldwork the 1980 PES was abandoned. The 1980 PES was designed as a survey to be implemented by experienced enumerators. Estimates from the survey would then be compared with census estimates. The survey and census estimates would then be compared to assess the coverage and content errors of the census. The design was not based on the dual-estimation procedure.

28. After the lessons of the unsuccessful 1980 census PES, the 1990 census PES was conducted successfully, using the dual-estimation procedures. Pre-test evaluation of the 1990 PES showed that match rates for the de jure population were higher than those of the de facto population due to the permanency of the de jure population and the lower coverage of the de facto population. As a result, the 1990 census PES was designed to match the de jure population. To facilitate the matching of the de jure population, both the de jure and de facto populations were enumerated in the 1990 census. After the 1990 census PES, the coverage rate indicated that the de jure population of 7.8 million reflected the population of Zambia more accurately than the de facto population enumerated at 7.3 million.

29. As a result of the usefulness of the 1990 census PES, planning for the 2000 census included plans for the post-enumeration survey. Unlike in 1990, when the decision to implement the pre-tested PES was made after enormous logistical difficulties were experienced during census fieldwork, the decision to implement the 2000 census PES was made earlier. In the preparatory stages of the census it was apparent that not all enumeration area maps would be updated. Some enumeration area maps were created by census enumeration supervisors in the field. Thus, the potential for undercoverage was there.

2. Implementation of the 2000 post-enumeration survey

30. The 2000 census PES was designed to evaluate census coverage and selected content errors at the national and provincial levels. The primary objective of the PES is to guide users of the 2000 census data on its accuracy. The results of the PES might also be used to adjust the census estimates of population size if need be, although no specific plans have been made in this regard.

31. The PES is being implemented by a team which did not take part in the 2000 census to ensure independence of the PES and the census. After the end of census enumeration in November 2000, the PES enumeration was carried out in February 2001. First-stage matching was to be completed within three months—by the end of July—after which a subsample of the unreconciled cases would be followed up for resolution in the field. The start of matching was delayed because scanning of census questionnaires was delayed by two months.

32. In the early stages of matching, the pace was slow because not all census forms were available. Some of the census forms were held up by the data-processing unit for manual editing because they could not be scanned. Apart from these operational hitches, the household listings and maps were good enough to facilitate smooth matching. Further, most of the PES questionnaires had census household numbers

transcribed onto them from census listing stickers left on doors of households during the census. This enables census households to be identified easily for matching.

3. Conclusion

33. A well-planned PES is necessary in a census setting where preparatory activities cannot be completed perfectly. In such a setting, there is a high probability that underenumeration would occur. If underenumeration was significant (more than 5 per cent), the PES results would be needed to improve confidence in the census results and to guide census data users about the usefulness of the census results. In case census enumeration coverage is extremely poor, the PES results could be used to adjust the census estimates. Other methods to evaluate the census coverage are not as effective as the PES.

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