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FUTURE PLANS AND INNOVATION CENSUSES SOUTH AFRICA'S STORY

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Topic	Future Plans and Innovation in Censuses – South Africa's Story
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1. Introduction

South African has just recently completed its 2011 Census programme and the final results were released on the 30th October 2012. This was achieved within 12 months from the completion of enumeration and was a momentous achievement for the country and the organisation.

In preparing for this document, entitled "Future Plans and Innovation in Censuses – South Africa's Story", we will take you through some of the innovations within the 2011 census and the roadmap for future plans and innovations towards census 2021

2. South African Census 2011

South Africa undertook its 3rd Census, post democratic elections in 1994, from 9th to 31st October 2011. The Census, which took many years to plan and execute, harvested many new innovations which ensured an efficient and effective national undertaking. Although they existed in various processes and phases of the project, we have selected the key interventions in this regard and discuss them briefly below.

3. Questionnaire Design

3.1. The census was conducted primarily with the manual completion of questionnaires. Questionnaires were split into various types based on households, institutions or tourists and transients. The paper was designed to be scannable, with key design around unique form identification. Each questionnaire had 16 pages with unique identification per page per questionnaire. This was done with the use of barcodes and all identification was done via code 3 of 9 format barcodes with a built in validation check digit. This had two benefits, namely

3.1.1. Validation check digit – The last digit in the barcode was a check digit for all the other digits of the barcode. For example, in a barcode A1142782992, the last digit (2) is the check digit for all the other 10 digits. The check digit would ensure that the correct value was typed in any downstream process. If any digit was mis-keyed, the algorithm that validates the check digit would fail the barcode and the questionnaire would be reprocessed. This was especially beneficial when using KFP systems.

3.1.2. Geographically independent processing – The questionnaire barcode was made the primary key identifier of every questionnaire until the final dataset was produced. In this way, no time was wasted in trying to correct the geographical hierarchy (e.g. State, Enumeration Area, Household Number, Dwelling Unit Number) before the questionnaire could be processed. This all occurred during and in many cases after the questionnaire was processed and relayed back with the correct geography.

3.2. The aforementioned steps ensured tight management of instruments in the field and post data collection and will be implemented in Census 2021

4. Recruitment and Training

4.1. In any project with a densely distributed base of operations, localised activities are a key step towards ensuring success. Localised recruitment in a census is crucial to ensure that the primary face of the census, namely the fieldworker, is known within their community and conversant with local issues and challenges. Ensuring you get the right person is difficult without proper systems and processes.

4.2. For Census 2011, we started canvassing for fieldworkers a year ahead of the actual main census. Application forms were distributed and prospective fieldworkers completed the forms and submitted them to a regional office. These applications were then captured into a central repository (aka CSAS aka Census and Surveys Administration System). All applications were then electronically profiled and ranked within the geographically demarcated areas of work. For South Africa, this was within 103,576 EAs. After being categorised, the highest ranked candidates who met the minimum requirements were called to attend training within the nearest venue to their allocated EA. This led to having nearly 3,000 training venues. We over trained approximately 20% more fieldworkers to cater for replacements and dropouts, if they

should occur. With electronic profiling, one could ascertain problem areas quite early into the process and ensure proper intervention mechanisms could be put into place early into the process. The electronic profiling also aided the security clearance process for our field staff, all possible applicants who have passed our assessment tools had their credentials verified by security agencies to avoid criminals being deployed as field workers.

4.3. In summary, localised recruitment with electronic profiling can greatly ease administrative burden and assist in ensuring the right people are in the right place to achieve the objectives of the project.

5. Multi-Mode or Multi-Channel Data Collection

5.1. South Africa only employed physical instruments for the collection of its census data for Census 2011; however the advent of new technologies and means of communication cannot be ignored for future censuses. The next step in this regard, is multi-mode or multi-channel data collection which is the undertaking of data collection by way of multiple instruments and tools i.e. the enumeration of households by way of a physical instrument with the allowance of internet completion as an option in addition to the usage of digital devices as a collection tool. The implementation of one basic method or tool does allow for consistency; however a greater coverage can be achieved with multiple tools that can be efficient in their management and application. For example, in South Africa, which has been slowly correcting imbalances of the past, 20% of households do not have access to electricity and this cannot easily be migrated towards using an electronic device to aid in digital data collection, however urban areas which historically have a higher undercount rate, will greatly benefit from the application of digital data collection devices in the future.

5.2. South Africa will thus apply multi-mode and multi-channel data collection methodologies in the next census

6. Fieldwork Monitoring

6.1. Censuses by their very nature are highly intensive and time-critical projects. In Census 2011, the fieldwork was conducted over 21 days with the bulk of the 156,000 fieldworkers in the field. Within that time, one needs to be aware of problems and

challenges very quickly to ensure proper troubleshooting mechanisms are in place. Real time reporting would be ideal but challenging to implement especially with the numbers at hand.

6.2. A novel method of cellular technology was used in the Census 2011 to ensure as close to as real time reporting was in place to help monitor progress. South Africa has a very low internet penetration rate but an impressive 90% penetration rate when it comes to cell phone access. SMS (Short Message Service) and USSD (Unstructured Supplementary Service Data) were utilised to monitor fieldwork operations. Each fieldworker registered themselves using their own cell phones by dialling a specific number with key information. This information was validated and verified before linking and connecting the fieldworker to the census reporting system. Each fieldworker reported the total number of completed dwelling units daily at 6pm via the Census system. At peak times, the system accepted over 100,000 reports in 10 minutes, with no actual inhouse overhead required to manage this information. Enumerators were also rewarded with 'airtime' on a bi weekly basis subject to their consistent and accurate reporting. Those fieldworkers without cell phones sent reports through their supervisors and colleagues but with the cost of basic cell phones today starting at 10 US dollars, access has become mainstream.

6.3. The usage of bulk SMSs also allowed one to directly communicate with fieldworkers in cases where a need arose to ensure the right message is being conveyed. For example, if an issue which was identified during data collection required a clear guideline and alert to be issued to all fieldworkers, an sms was then sent to all fieldworkers with the alert information within a matter of minutes. This activity cost no more than 3,000 US dollars at a time, but when one is spending millions of dollars per day during data collection, this costs become negligible.

6.4. Cell phones have become a part of each and every one of our lives and we should look at using such tools to the benfit of a census. In Census 2021, we envisage to use this technology in other avenues in the administration of the census.

7. Dissemination

7.1. Stats SA generally releases statistical releases via printed form and the web; however with a census being so critical to a citizen and his/her relationship to the state, it is important to try and impart such knowledge to the general public out there. During the

release and dissemination phase of Census 2011, we undertook a few new ways of ensuring the public was informed, namely

7.1.1. Social Media – Twitter, Facebook, Mxit etc. Key statements and facts were released on an hourly basis with linkages to the raw data.

7.1.2. Mobile Device applications – Development of application on the various mobile and tablet platforms. Apps for iOS and Android were released with either bundled data or copies of the key statistical releases.

7.1.3. Development of a Mobisite to ensure cell phone users can access statistical data via their mobile browsers

7.1.4. Web based mapping and geography products that are user driven to even allow a user to generate their own tables and maps of the country.

8. Conclusion

8.1. The use of modern technology can aid the management and coordination of large and complex operations like the census. However key considerations must be given to local conditions/set-ups to maximise usage. In addition appropriate testing must be done before fully implementing such technologies.

8.2. South Africa (Stats SA in particular) would like to share and learn from other countries that have deployed technology in their census/surveys especially during enumeration. We believe it is through continous improvements in the collection process that as Statistical Agencies we will remain relevant to the users, by providing accurate and timely data and therefore enhance evidence decision making process.