CENSUS 2011

How the count was done

THE SOUTH AFRICA I KNOW, THE HOME I UNDERSTAND

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Contents

List of tables

List of figures

EXECUTIVE SUMMARY

Introduction

Census 2011 was the third census to be conducted since the post-democratic elections in 1994. It was conducted from 9th to 31st October 2011. This section provides a summary of the various activities that were carried out prior to the finalisation of the results. They can be summarised as follows: Planning, Pre-enumeration, Enumeration, Processing and Editing.

Planning

This process involved the development of the overall strategy, the structure for the project, component plans and budget. These processes were started in 2003 and were subsequently reviewed in 2008, after the completion of the Community Survey in 2007. Methodologies and procedures were then developed and tested in a form of mini tests and pilot in 2008 and 2009 respectively. The findings from these tests helped to refine the plans and methods for the final test in 2010 called the "Dress Rehearsal". The latter was expected to be a replica of how the actual count was to be conducted in 2011, and therefore the timing had to be the same month as the main census, i.e. October month.

Pre- enumeration

The pre- enumeration phase mainly involved the final preparatory work before the actual count. It started with mass production of census instruments like questionnaires, manuals, field gear etc. The phase also involved acquisition of satellite offices required in the districts, recruitment of the 1st level of field management staff (District Census Coordinators - 130 DCC) and field work coordinators - 6000 FWC. These groups of people were then given intense training based on their key performance areas. At the same time the country was being sub-divided into small pockets called enumeration areas (EAs); the underlying principle for this sub-division is that an EA should be within reach of a fieldworker and all households in that EA can be covered within the allocated number of days. This process yielded 103 576 EAs. The other benefit for this sub-division is the finalisation of the distribution plan of all materials required in the provinces and districts. It also gives a better estimate of the number of field staff to recruit for the count. The pre-enumeration phase involved over 7 000 staff.

Enumeration

The enumeration phase, started with the training of supervisors as listers. Each person had to list all dwellings within an EA and had a minimum of 4 EAs to cover. These areas were called supervisory units. As they were listing, they were also expected to publicise the activities of the census within their supervisory units. Upon completion of listing, final adjustments of workload and number of enumerators required was finalised. Training of enumerators started in earnest, and it mainly covered how to complete the questionnaire and to read a map. The latter was to aid them to identify the boundaries of their assigned areas. An enumerator was also given a few days before the start of the count to update their orientation book with any developments that might have happened since listing, as well as introduce themselves to the communities they were to work with, through posters bearing their photos and special identification cards. On the night of the 9th October the actual count started with the homeless and special institutions given special attention. The enumeration phase was undertaken by an army of field staff in excess of 160 000, inclusive of management.

Data processing

The processing of over 15 million questionnaires commenced in January 2012, immediately after the completion of the reverse logistics in December 2011. Each box and its contents were assigned a store location in the processing centre via a store management system. Each time a box was required for any process it was called through this system. The processing phase was sub-divided in the following processes: *primary preparation* - where all completed questionnaires were grouped into clusters of 25 and the spine of the questionnaire cut off. *Secondary preparation* - where questionnaires were finally prepared for scanning, by removing foreign materials in between

pages and ensure that all pages are loose. *Scanning* - questionnaires were put through a scanner to create an electronic image. Finally *Tilling and completion* - where any unrecognised reading/ badly-read image by the scanner had to be verified by a data capturer. This process took 8 months. Over 2 000 data processors working 3 shifts per day were employed for this phase to ensure that 225 million single pages are accounted for.

Data editing and validation system

The execution of each phase of census operations introduces some form of errors in census data. Despite quality assurance methodologies embedded in all the phases; data collection, data capturing (both manual and automated), coding, and editing, a number of errors creep in and distort the collected information. To promote consistency and improve on data quality, editing is a paramount phase in identifying and minimising errors such as invalid values, inconsistent entries or unknown/missing values. The editing process for Census 2011 was based on defined rules (specifications).

The editing of census 2011 data involved a number of sequential processes: selection of members of the editing team, review of Census 2001 and 2007 Community Survey editing specifications, development of editing specifications for the Census 2011 pre-tests (2009 pilot and 2010 Dress Rehearsal), development of firewall editing specifications and finalisation of specifications for the main census.

Editing team

The Census 2011 editing team was drawn from various divisions of the organisation based on skills and experience in data editing. The team thus composed of subject matter specialists (demographers and programmers), managers as well as data processors.

Role of the team

Among other census activities, editing team roles and responsibilities included:

- Establishment of editing plan/schedule
- Formulation and application of clear and concise editing specifications
- Validation of census data using other data sources
- Ensuring of consistency of editing rules between censuses (2001 and 2011) where applicable
- Provision of imputation flags and rates
- Identification of errors and provide corrections where possible
- Review and refinement of the edit specifications based on edit trail evaluations, cross tabulations, and comparison of census data with other datasets
- Testing the specifications before confirming and applying them

Editing specification process commenced with activities relating to review of existing editing specifications guidelines. Census 2001 specifications as well as Community Survey 2007 survey specifications and UN handbook on census editing were reviewed to form the basis of the specifications.

Editing strategy for census 2011

The Census 2011 questionnaire was very complex, characterised by many sections, interlinked questions and skipping instructions. Editing of such complex, interlinked data items required application of a combination of editing techniques. Errors relating to structure were resolved using structural query language (SQL) in Oracle dataset. CSPro software was used to resolve content related errors. The strategy used for Census 2011 data editing was implementation of automated error detection and correction with minimal changes. Combinations of logical and dynamic imputation were used. Logical imputations were preferred, and in many cases substantial effort was undertaken to deduce a consistent value based on the rest of the household's information. To profile the extent of changes in the dataset and assess the effects of imputation, a set of imputation flags are included in the edited dataset. Imputation flags values include the following:

0 no imputation was performed; raw data were preserved

1 logical imputation was performed, raw data were blank

2 logical imputation was performed, raw data were not blank

3 hot-deck imputation was performed, raw data were blank

4 hot-deck imputation was performed, raw data were not blank

Independent monitoring and evaluation of Census field activities

Independent monitoring of the Census 2011 field activities was carried out by a team of statisticians from Monitoring and Evaluation division. These included field training, publicity, listing and enumeration. This was to make sure that the activities were implemented according to the plans and have independent reports on the same. They also conducted Census 2011 PES Verification study to identify the out-of-scope cases within the PES sample as reported in the Census 2011 PES listing summary books.

Post-enumeration survey (PES)

A post-enumeration survey (PES) is an independent sample survey that is conducted immediately after the completion of census enumeration in order to evaluate the coverage and content errors of the census. The PES for Census 2011 was undertaken shortly after the completion of census enumeration, from November to December 2011, in approximately 600 enumeration areas (EAs) (which later increased to 608 due to subdivision of large EAs). The main goal of the PES was to collect high quality data that would be compared with census data in order to determine how many people were missed in the census and how many were counted more than once.

A population census is a massive exercise, and while every effort is made to collect information on all individuals in the country, including the implementation of quality assurance measures, it is inevitable that some people will be missed and some will be counted more than once. A PES assists in identifying the following types of errors:

- Coverage error: this includes both erroneous omissions (e.g. a household that was not enumerated) and erroneous inclusions (e.g. a household that moved into the enumeration area (EA) after census but was still enumerated, or a household that was enumerated more than once).
- Content error: this refers to the errors on the reported characteristics of the people or households enumerated during census.

The errors may emanate from the following reasons:

- Failure to account for all inhabited areas in the EA frame;
- EA boundary problems;
- Incomplete listing of structures and failure to identify all dwellings within an EA;
- Failure to enumerate/visit all listed dwellings within an EA;
- Failure to identify all households within a dwelling unit in instances whereby a dwelling unit has more than one household;
- Failure to enumerate households (complete questionnaires) for all households due to refusals, unreturned questionnaires for self-enumeration, inability to contact households, etc);
- Failure to include all individuals within households;
- Failure to observe the inclusion rule based on a person's presence on census night (i.e. failure to apply the *de facto* rule accurately); and
- Lost questionnaires or damaged questionnaires that could not be processed.

Usually more people are missed during a census, so the census count of the population is lower than the true population. This difference is called net undercount. Rates of net undercount can vary significantly for different population groups depending on factors such as sex, age and geographic location. Stats SA obtains estimates of the net undercount, including the type and extent of content errors (reported characteristics of persons and households enumerated in the census) using information collected through the PES.

Estimation and tabulation

Coverage measures were calculated only for cases belonging to the PES universe.

The initial estimates – weighted estimates of total from the sample include the following:

a) Estimated number of non-movers;
b) Estimated number of out-movers;
c) Estimated number of matched non-movers;
d) Estimated number of matched out-movers;
e) Estimated number of in-movers;
f) Estimated number of erroneous inclusions in the census; and
g) Estimated number of correctly enumerated persons missed in the PES

Dual system estimation was used to arrive at the *true population* of the country. This means that two independent sources or 'systems' are used to arrive at the estimate of the *true population*: the census and the PES. Both estimates contribute to the dual-system estimate, which is more complete than either the census or the PES estimate alone. In the end, this *true population* is compared with the *census-enumerated population* and the difference is the net *undercount* (or *overcount*). The following table indicates the undercount rates as estimated by the PES.

Net Census Coverage Error: Total and Rate by Province

Province	Omission rate for persons	Omission rate for households
Western Cape	18,6	17,8
Eastern Cape	12,9	10,3
Northern Cape	13,4	14,8
Free State	10,1	9,4
KwaZulu-Natal	16,7	16,5
North West	14,9	17,0
Gauteng	14,7	15,2
Mpumalanga	15,5	14,4
Limpopo	10,0	9,6
All provinces	**14,6**	**14,3**

The adjustment procedure consisted of creating homogeneous adjustment classes with similar coverage rates and calculating a common undercount rate, adjustment factor and adjustment figure for each class separately. The adjusted figure for the total population was obtained by summing across the adjustment classes. In addition, only the population of households received adjustment classes. The totals for the balance of the population, namely people living in collective quarters and the homeless on the streets, were not adjusted.

Conclusion

The 2011 Census project had its own challenges and successes, like any other massive project. Be that as it may, the following are worth mentioning; the census fieldworkers who traverse the country to collect information from households and those that we lost in the process. The respondents who opened their doors and locked their dogs to aid the field staff to do their work, the processors who worked 24hrs/7days a week to ensure that the data can be released within a year of enumeration. The census management team who met daily for two years to steer the project forward, the Stats SA EXCO for the leadership they provided, the Statistics Council and in particular the sub-committee on population and social statistics for their continued guidance and support and finally the Minister in the Presidency: responsible for planning for the robust interrogation of the plans and guidance on this project. It is through such concerted efforts that as a country we can and will continuously improve on our endeavours.

Chapter 1: Planning phase

1.1 Initiating the process

Planning for Census 2011 began in April 2003. The plan was subsequently revised after conducting the Community Survey 2007. The initial work started by the in-depth analysis of lessons learnt from the Censuses of 1996 and 2001. The community survey was undertaken as an inter-censual; large household sample survey after the cabinet took a decision to postpone the census to 2011 based on advice from the Statistics Council and the organisation. There was a clear indication of lack of lead time to undertake proper planning coupled with lack of capacity within the organisation at that time to conduct a proper census.

The output from the analysis process of the past censuses formed the base for the first Census 2011 strategic plan and subsequent approaches therein.

1.2 The Statistics Council

There was a Census sub-committee constituted from the larger Statistics Council mainly from external experts and its main role was to give advice to the Minister and Statistician-General (SG) on census strategies, content, quality, process and methodologies. This committee played a critical role in reviewing the overall census road map on a continuous basis.

1.3 Local and International Assistance

Assistance was provided from various international census experts, specifically in data processing, editing and analysis. The experts were mainly from US, Kenya and UK. Local consultants were also brought on board to assist with the crafting of the overall census strategy, in the area of publicity and advocacy and also in the management of field logistics.

1.4 The Census Programme

Census 2011 consisted of various distinct sub-projects which required an integrated project management model for proper identification of specific tasks, timelines, risks and dependencies. This model was conceptualised during the 2001 Census and harnessed during Community Survey in 2007. However the team cells approach was predominantly used. This was a deliberate strategy adopted mainly because the project did not have sufficient and experienced personnel and also as a conduit of on-the-job training for new and existing personnel on all aspects of the project/statistical processes. Although the project governance model was component-based, the day-to-day methodological and operations processes were driven by teams who were headed by an expert in a specific line of expertise. The Census programme was divided into the first, second and third level hierarchy of sub-projects as follows:

1.5 First Level: Head office

1.5.1 Census 2011 management and operational structures

1.5.1.1 Project Management Office

The Census 2011 Project Management Office served as a nucleus of the project. It provided the Project Director and Management with the necessary layer of control between management and project teams – allowing management to concentrate on strategic issues whilst retaining control over the project activities. It served as a communication channel for project standards, guidelines and the dissemination of information in a dual manner between management and the project components.

The main function of the project management office was to provide support to project teams and staff. This was undertaken by ensuring that project deliverables are done on time, according to set standards, quality, uniformity across components and procedurally. The project management office also provided status and progress reports to managers, enabling them to make more informed and relevant decisions when required.

In addition to the project management office, head office was divided into three core components, five support components and other nine support components in the organisation. Each reflected an aspect of the value chain of the entire census process and required detailed planning and implementation.

1.5.1.2 Census Core components

- *Census Content Development and Products* – responsible for questionnaire design; tabulation plan; data editing and analysis; products and dissemination
- *Census Data Collection, Training and Field Logistics* – responsible for training of census field staff, and undertaking all the field logistics processes and enumeration.
- *Census Data Processing* – responsible for the processing of the census data

1.5.1.3 Census Support components

Census Resource Management – responsible for the procurement of goods and services, finances and logistics of the census project.

Census Mapping – responsible for demarcation of EAs, Geographic Information System (GIS), listing of EAs

Census Information, Communication and Technology (ICT) – responsible for all IT infrastructure and connectivity in district and satellite offices; and Census and Survey Administrative System (CSAS).

Census Publicity and Stakeholder Relations – responsible for communication, marketing and publicity of the census

Census Governance – responsible for risk management and process audits in the census project.

1.5.1.4 Stats SA Corporate Services Support

In order for the core components to operate effectively a series of administrative and support sub-projects in the organisation were availed, to ensure that whatever happens in the project is in line with organisational practices and policies. In fact all census support areas had dual reporting lines, thus within the project and organisation as a whole. These were:

- *Human Resources* – was responsible for recruitment of all the Census 2011 staff
- *Finance* – was responsible for all the project finances including payment of field staff
- *Facilities Management Logistics and Security* – was responsible for acquisition of district and satellite offices, the sourcing of field transportation, security and cleaning services in the district and satellite offices, accommodation and travel, airtime for census staff, and material distribution services/courier.
- *Supply Chain Management* – assisted with acquisition of training venues in district and satellite offices, tender processes and procurement of census field materials.
- *Human Capacity Development* – assisted with the capacity building programme (training of Field Work Coordinators) and training of census field staff.
- *Legal Services* – assisted with all the legal matters pertaining to the census project.

- *Governance* – assisted with risk identification, controls and management.
- *Provincial Coordination* – assisted with all the provincial and district/satellite offices operations and project implementation.
- *Other clusters in the organisation* – provided personnel to assist with census operations.

1.6 Second Level: Provincial offices

The provincial offices were responsible for the implementation and coordination of all census activities pertaining to the provinces and their associated district and satellite offices. In particular, the following are individual roles of the staff at provincial offices:

1.6.1 Core personnel

- *Provincial Executive Manager* – responsible for management of all Stats SA activities in the province.
- *Field Operations Manager* – responsible for management of all field operations in the province.
- *Provincial Census Operations* – responsible for the administration and management of the Census 2011 activities at provincial level.
- *Census Support Officers* – provide a supporting role on the management of Census 2011 activities in the province.
- *Geographical Information Specialist* – responsible for spatial technical support in the province.
- *Census Mapping Monitors* – responsible for mapping support in the province.

1.6.2 Support personnel

- *Corporate Services Manager* – provided support in all the provincial corporate services matters pertaining to finance, human resources, procurement etc.
- *State Accountants* – were responsible for all the provincial census finances.
- *Human Resources Officers* - were responsible for all the provincial census human resources matters.
- *Transport Officers* - were responsible for all the provincial census transport related matters.

1.7 Third Level: District/Satellite Offices

The district/satellite offices were responsible for the implementation of fieldwork operations. They operated with the following personnel:

- *District Manager* – overall management of the district and satellite offices
- *District Census Coordinator* –responsible for the overall administration, management and implementation of Census 2011 activities.
- *District Logistics Officer* – provided administrative and logistics support in the district/satellite office by ensuring that all Census 2011 activities were successfully implemented.
- *Data Capturers* – responsible for capturing Census 2011 data and any other related administrative duties.
- *Field staff-* were managed at the district level. They were the ones that mainly interacted with the public in terms of collection of information from the households. Field staff included:
    - *Fieldwork coordinator* (FWC)– responsible for coordination of all field activities including training of field staff, quality assurance and field management
    - *Fieldwork Supervisor (FWS)* – responsible for supervising the fieldworkers and checking quality of their work.
    - *Fieldworker (FW)* – responsible for collecting information from households within his/her enumeration area.

1.8 Planning Committees for Census 2011

1.8.1 National Advisory Committee

The purpose of this committee was to provide a forum that could be used to harness the wisdom and expertise of various stakeholders that are located in different sectors of the society in order to ensure that the project goal is achieved through the provision of technical, content, political and management advice to Stats SA throughout the census project. However, this committee did not take off due to operational constraints.

1.8.2 Project Steering Committee

The purpose of this committee was to provide high level project stakeholders with progress on the project and to discuss issues arising from the project that needed decision making from the members of the steering committee. Project Director or head of census or his nominated person often presented the project progress to the Project Steering Committee members. The Project Sponsor was the chair of the committee. However, the committee did not meet regularly. Hence its impact on the project was minimal.

1.8.3 Project Progress Monitoring Committee /the nerve centre (NC)

The NC was the nucleus of the project; it was chaired on a weekly basis and more frequently towards the beginning of enumeration by the Project Director. All component leaders and other resources within the project structure were members of this committee. All aspects of the project were interrogated against the baseline plans and intervention strategies put in place to address possible delays.

1.8.4 Project Technical Committee

The project technical committee's purpose was to discuss and approve all technical documents of the project as prepared by the components' working groups. Specifically these technical sessions discussed and agreed on methodological or technical processes and steps that might affect other components. These sessions were attended by the component leaders, their members and other members in the project structure who were associated with the topic of discussion.

1.8.5 Provincial Advisory Committees

The purpose of this committee's followed the same pattern as the national advisory committee. The committee's roles were to advise the provincial executive managers as regards the entire census undertaking from the planning, and implementation stages, and closure at the provincial level.

Chapter 2: Pre-enumeration phases

2.1 Overview

Pre-enumeration census operations included mapping and demarcation, listing, questionnaire development, logistics and procurement.

2.2 Demarcation

The main goal for the Geography Division was to implement and execute all geography activities according to agreed procedures and processes within prescribed timelines to ensure the successful implementation of Census 2011 activities. The division ensured that materials (Maps, EAs Summary Books etc.) were ready, training as well as listing coverage and ensure content was of high standard.

Demarcation formed a critical input into all upstream and downstream Census 2011 activities. The 2011 EA frame was a major determinant in the planning and provision of all allocated and required resources. The demarcation process involved subdividing the country into place names and Enumeration Areas based on specifications of administrative boundaries, size, and population density. The data used to demarcate was from Stats SA (Dwelling Frame data) and service providers' (External Data Sources). The data included Imagery, Address data (Place Names), Dwelling Frame (DF), Gated Communities, Sectional Title dwellings (units Counts and Cadastre) etc. Sub-place spatial boundaries were created first to form the base for Main Place and EA demarcation and the demarcation process adhered to specific demarcation rules and guidelines.

Demarcation produced 103 576 EAs for Census 2011, classified into 10 EA Types. The EAs were demarcated according to demarcation rules per EA Type. However, where the data were incomplete or missing, Spot 5 satellite images were used. This resulted in some large EAs that could only be confirmed during field verification. A strategy was put in place to split all large EAs during verification and listing fieldwork to ensure such EAs were manageable during enumeration. The table below shows the distribution of EAs per province by EA type.

Table 2.1: Distribution of EAs by EA type per province

Province	Formal residential	Informal residential	Traditional residential	Farm	Parks and recreation	Collective living quarters	Industrial	Small holding	Vacant	Commercial	Total
Western Cape	8 041	729	0	665	90	211	174	103	622	183	**10 818**
Eastern Cape	4 954	572	8 911	576	54	155	99	47	2 988	126	**18 482**
Northern Cape	1 432	56	287	769	16	50	42	27	359	22	**3 060**
Free State	3 912	227	519	662	33	130	127	56	557	68	**6 291**
KwaZulu-Natal	6 754	1 061	6 822	651	111	179	283	55	1 400	214	**17 530**
North West	2 514	184	2 959	472	38	159	107	154	586	66	**7 239**
Gauteng	15 082	2 123	224	125	67	549	499	647	1 042	492	**20 850**
Mpumalanga	3 198	277	2 761	466	95	137	175	80	483	98	**7 770**
Limpopo	1 700	119	7 541	730	53	117	90	66	1 060	60	**11 536**
Total	**47 587**	**5 348**	**30 024**	**5 116**	**557**	**1 687**	**1 596**	**1 235**	**9 097**	**1 329**	**103 576**

2.3 Map production

Maps were created and quality assured in-house for both A3 and A0 size maps. A total of 307 932 A3 size maps were created. There were three types of maps that were created: Index maps (103 576), Orientation maps (103 576) and Zoom-In maps (100 780). An External service provider (Data World) was brought on board to assist with the creation of these A3 size maps and was assisted by the Stats SA GIS staff. Automated tools were used to produce electronic pdf files. After the service provider had completed creating and quality assuring the maps for a particular local municipality, the maps were then handed over to the Stats SA GIS staff that in turn checked that all was in order before signing off the maps.

All maps for FWS and FWC units were created in-house by the Stats SA GIS staff using the automated tool. The maps were created per district and quality assured. In addition, planning maps were also created in-house and these included: National, Provincial, District and Local Municipality maps.

All maps for planning for FWS and FWC units were printed and quality assured in-house. The maps were printed and couriered to the District (DO)/Satellite Offices (SO).

2.4 EA Summary Book Production

The tender for production of EA Summary Books was awarded to an external Service Provider. A Stats SA team was deployed on site to monitor production and conduct quality assurance. The EA Summary Books were produced from 5 May to 22 July 2011. Two types of EA Summary Books were produced: 30 000 EA Summary Books without Maps; and 103 576 EA Summary Books with Maps for each EA. The service provider generated and quality assured the EA Summary Books per local municipality and handed over the books to the Stats SA team, which in turn checked that all the books were in order before sign-off.

2.5 Verification

Verification involved auditing, checking and updating newly demarcated EAs and place names to ensure that they conform to census requirements. Initially, around 30 000 EAs were verified during the Verification Project which was implemented from November 2010 to July 2011. However, all the outstanding EAs were verified during listing and enumeration fieldwork.

During verification some EAs were found to be larger than the recommended size in terms of Unit count, Dwelling unit and geographical size/area. Such EAs were recommended for splitting into two or more EAs. Large EAs were split with boundaries following identifiable features on the ground. However in certain EA types, large EAs were not split but earmarked for extra resources during Census 2011 fieldwork, e.g. SDIs, block of flats, hostels, hospitals, etc

2.6 Listing

After demarcation EAs were grouped into fieldwork supervisor (FWS) and fieldwork coordinator (FWC) units to facilitate fieldwork operations. Maps were then created in-house for all the FWS and FWC units.

A Fieldwork Supervisor Unit was a grouping of four or five adjacent EAs that were assigned to a single supervisor and his/her team of fieldworkers. To accommodate vacant and odd EAs that were left un-grouped, some FWS units consisted of five or six EAs (four EAs of the same type plus one or more vacant EAs). It was preferred that all FWS units consist of EAs of the same type, however in instances where this was impossible; FWS unit consisted of mixed EA type.

FWS units were further grouped into FWC units. A Fieldwork Coordinator unit was a grouping of 5 adjacent FWS units. One FWC was assigned a FWC unit. Five adjacent FWS units were grouped using an automated tool to form a FWC unit. After the creation of FWS and FWC unit, quality assurance was done to ensure that the output met set standards, and also to flag those FWCs with more than recommended EAs. FWS and FWC units were assigned unique numbers using an automated tool.

Listing involved the provision of EA Summary Book with updated backdrop (where possible), updated list of all structures and other census related information. Listing was a process whereby a register of all structures in a given EA was compiled by a Lister. It was an important phase of the project as it paved the way for effective and qualitative data collection process. A period of 18 days from 24 August to 10 September 2011 was assigned for listing operations. Listing fieldwork started at a very slow pace due to lack of resources particularly vehicles and other related fieldwork materials. There were insufficient FWCs and Listers recruited, hence some areas were only listed after the listing period and during enumeration. Listing fieldwork was organised as follows:

- 1 x Lister to list EAs within an FWS unit
- 1 x FWS Unit = 4 x EAs (So a Lister listed 4 EAs)
- 1 x FWC to coordinate 5 x FWS units
- 1 x FWC Unit = 5 x FWS = 20 EAs (So a FWC coordinated 5 x Listers)
- Each FWC reported to a DCC in the District or Satellite Office

Listing fieldwork was operationalised within each district or satellite office. Table 2 below shows the distribution of spatial entities as well as District and Satellite Offices per province.

Table 2.2: Distribution of Census 2011 Geographic entities per province

				Census Offices	
Province	**EAs**	**FWS Units**	**FWC Units**	**District**	**Satellite**
Western Cape	10 818	2 711	552	6	5
Eastern Cape	18 482	4 669	939	8	10
Northern Cape	3 060	755	153	6	5
Free State	6 291	1 595	323	5	4
KwaZulu-Natal	17 530	4 511	906	11	11
North West	7 239	1 873	376	5	5
Gauteng	20 850	5 230	1 048	5	21
Mpumalanga	7 770	1 982	399	5	3
Limpopo	11 536	2 915	586	5	5
National	**103 576**	**26 241**	**5 282**	**56**	**70**

Listing methodology ensured that the listing route was determined by the Lister. This approach allowed the serpentine listing of the dwelling units, other structures and prominent features. The list of dwellings was classified into five (5) different categories (Occupied dwelling units, Unoccupied dwelling units, Vacant dwelling units, Non-dwelling units and Special dwelling institutions) considered as habitat or possible habitat. Only those structures not classified as dwelling units (e.g. Shops, Town halls, Churches…) were considered out of scope of the enumeration frame.

Listing was done within prescribed standards and methodologies to ensure that data collection achieved the highest quality standards. There were insufficient Quality Assurance Monitors (QAMs), hence quality assurance was conducted in selected areas.

Head office and provincial staff as well as quality assurance monitors conducted quality assurance to ensure quality of listing output. Publicity and listing was conducted simultaneously at EA and dwelling unit level and probing for information on households (HHs) was conducted where necessary.

2.7 Census Questionnaires

Execution of a successful census hinges on well designed methodologies, particularly data collection instruments. To accomplish this, ample time and effort was dedicated to the development, design and testing of census methodologies. The processes involved in the development of the Census 2011 questionnaire were driven by four quality dimensions; accuracy, relevance, interpretability, and coherence. These processes included review of previous censuses' data items and questionnaires, identification and involvement of key stakeholders and benchmarking on international best practices

From the last two Censuses (1996 and 2001), and the 2007 Community Survey, some topics proved to be sensitive. These included: income, employment, mortality, fertility, disability and migration. The initial phases of Census 2011 planning pertaining to census content involved conducting research on some of the above topics to provide insights into the type of information that respondents are willing to provide, given certain questions. Findings from the research informed the first draft of the Census 2011 questionnaire.

2.8 Purpose

Data collection instruments, questionnaires in particular, must be developed and subjected to thorough testing and review processes to ensure that the final product solicits accurate information. The purpose of this section is to outline processes that were undertaken to develop, test and finalise Census 2011 questionnaires.

2.9 Questionnaire types

South Africa conducts a de-facto population and housing census. This means that all individuals are counted at the place where they spent the census night. Based on the location of persons on the reference night (census night), three sets of questionnaires were developed for Census 2011, each set administered to a targeted group. The three groups identified were:

- The population that live as households
- The population in collective living quarters
- The population in transit (departing) and those on holidays on reference night (9/10th October 2011)

Population living in households forms the basis for planning. The Household Questionnaire was designed to collect comprehensive information from this group. All people living in a household set-up, including those households that were found within an institution, such as staff residences, were counted using the Household Questionnaire A.

Another set of questions was developed to target the population living in collective living quarters (people that spent Census Night 9/10th October 2011 at the institution). Questionnaire C was administered to this group.

Population in transit (at points of entry and exit such as airports, harbours, border posts) on Census Night formed another group that required a different set of questions. Basic information was collected on this group using Questionnaire B. The homeless were also enumerated using this set of questions.

2.10 Questionnaire development processes

The development and design processes of Household Questionnaire (A) were executed in four different phases:

- Users' needs assessment phase and data items determination
- Design and development phase
- Questionnaire Testing/evaluation
- Final approval of the questionnaire

2.11 Users' needs assessment phase and data items determination

Population and housing censuses remain significant sources of the data on the size, distribution and characteristics of the population on the lowest geographical level of an area, as well as provision of unique solid framework to develop sampling frames for subsequent sample surveys in a country. Census data are of immense value on national, regional and global levels and this requires careful selection of census topics and questions that promote comparability on these levels. The determination of Census 2011 data items thus involved exercising international best practices;

- ✓ reviewing of both UN and African Core topics recommended in the United Nations' Principles and Recommendations for 2010 Round of Population and Housing Censuses and African countries
- ✓ engaging existing and potential census data users.

Stakeholder needs assessment is an international best practice in census planning which aims at producing census products that meet user needs. Stakeholders play a fundamental role in providing information on questions to be asked in a census. In 2008, the Content Development and Products Component assisted by Marketing and Stakeholder Relations Division, conducted nationwide user consultation workshops in the nine provinces. Both internal and external stakeholders were consulted to solicit input on Census 2011 content (questions).

Table 3 below gives a list of data items that were finally agreed upon. The table also provides the list of data items that were covered in Census 2001 and Community Survey 2007.

Table 2.3: Content for inclusion in Census 2011

Census 2001	Community Survey 2007	Census 2011
Demographics		
• Age • Sex • Relationship • Marital status • Population group • Language • Religion	• Age • Sex • Relationship • Marital status • Population group	• Age • Sex • Relationship • Marital status • Population group • Language
Migration		
• Place of birth • Country of birth • Citizenship • Place of usual residence • Country of usual residence • Province of usual residence • Main place of usual residence • Sub-place of usual residence • Province of previous residence • Country of previous residence • Main place of previous residence • Sub place of previous residence • Intercensal movement • Year of movement	• Province of birth • Main place of birth • Sub place of birth • Province of usual residence • Main place of usual residence • Sub-place of usual residence • Five years ago • Year of movement • Province of previous residence • Main place of previous residence • Sub-place of previous residence	• Country of birth • Province of birth • Citizenship • Country of usual residence • Province of usual residence • Municipality/magisterial district of usual residence • City/town/traditional area of usual residence • Province of previous residence • Country of previous residence • Municipality/magisterial district of previous residence • City/town/traditional area of previous residence • Year of movement to the current municipality/town of residence
Disability and Social grants		
• Disability	• Disability type • Disability intensity • Social grant • Type of social grant	• Health and functioning • Assistive devices and medication

Census 2001	Community Survey 2007	Census 2011
Parental survival and income		
• Father alive • Mother alive	• Father alive • Mother alive • Income	• Father alive • Mother alive • Income
Education		
• School attendance • Educational institution • Public or private • Level of Education • Field of education • Mode of transport to school	• School attendance • Educational institution • Public or private • Level of Education	• School attendance • Educational institution • Public or private • Level of Education • Field of education • Literacy
Employment		
• Employment status • Reason for not working • Active steps • Availability for work • Work status • Industry • Main goods or services • Occupation** • Hours worked • Place of work • Type of sector • Mode of transport to work • Income	• Employment status • Temporary absence from work • Reason for not working • Availability for work • Active steps seeking work • Main work activity** • Work status** • Industry** • Main goods or services • Type of sector	• Employment status • Temporary absence from work • Unemployment and economic inactivity • Reason for not working • Availability for work • Occupation** • Main work activity** • Industry** • Main goods or services • Type of sector
Fertility		
• Total children ever born • Total children surviving • Last child born • Date of birth of last born child • Sex of last child born • Last child born alive	• Ever given birth • Total children ever born • Total children surviving • Total children no longer alive • Date of birth of last born child • Sex of last child born • Last child born alive	• Children ever born • Age of mother at first birth • Total children ever born • Total children surviving • Total children no longer alive • Date of birth of last born child • Sex of last child born • Last child born alive
Housing, household goods and services		
• Type of living quarter • Type of main dwelling • More than one dwelling • Rooms • Tenure status • Sharing • Piped water • Source of water • Toilet facilities • Energy/fuel • Refuse disposal • Household goods and services	• Type of main dwelling • Rooms • Tenure status • Access to water • Service provider • Distance from water access point • Toilet facilities • Energy/fuel • Refuse disposal • Household goods and services	• Type of living quarter • Type of main dwelling • More than one dwelling • Rooms • Tenure status • Estimated value of property • Age of the property • Construction material • Access to piped water • Source of water • Reliability of water supply • Alternative water source • Toilet facilities • Energy/fuel • Refuse disposal • Household goods and services • Access to internet • Agricultural activities • Place where agricultural activities take place

Census 2001	Community Survey 2007	Census 2011
Mortality		
• Number of deaths • Name of the deceased • Date of death • Sex of the deceased • Age of the deceased • Cause of death	• Number of deaths • Name of the deceased • Date of death • Sex of the deceased • Age of the deceased • Cause of death • Pregnant at time of death	• Number of deaths • Name of deceased • Date of death • Sex of the deceased • Age of the deceased • Cause of death • Pregnant at time of death • Death during birth • Postnatal death

2.12 Design and development phase

The outcome of stakeholder consultation process was data items which formed the basis of questionnaire development and design processes. Accuracy of census data depends on well-designed instruments, particularly questionnaires. Resources and expertise pertaining to questionnaire design and development were of paramount importance in finalisation of Census 2011 questionnaires. Involvement of subject matter specialists played a vital role in ensuring that Census 2011 questionnaires were user friendly. Draft content (questions) and format were subjected to a series of tests to evaluate their applicability, acceptability and practicability in promoting accuracy, complete coverage and minimal printing costs.

2.13 Questionnaire testing/evaluation

Census 2011 questionnaire drafts were subjected to a number of qualitative and quantitative tests to ensure that new and revised questions are free from ambiguity. Behind-the-glass test technique; a process where cognitive interviews are administered, problems with specific questions are identified and discussed and recommendations are made was used to test the draft questionnaire. The Behind-the-glass tests were conducted in 2009 and the tests covered a full spectrum of South African society, from low-income rural to high-income urban. The sample was structured to include various Living Standards Measures (LSMs) and language groups in South Africa. Respondents selected for inclusion in the focus groups had to either be the household head or the person most likely to complete the questionnaire on behalf of the household. The draft questionnaire was further tested in the field through a number of tests; two mini tests and census pilot conducted in 2008 and 2009 respectively. With input from both the qualitative and quantitative tests, the draft questionnaires were improved and tested further in a Dress Rehearsal in 2010.

Reports from each test highlighted the challenge of long household questionnaire and its cost implications (questionnaire printing, completion and processing among others).

After Census 2009 Pilot debriefing, census management established a task team whose mandate was to re-engineer the questionnaire in order to address the above outlined challenges.

2.14 Questionnaire re-engineering

In order to address the issue of questionnaire length, the questionnaire team looked at the feasibility of using a long and short form questionnaire for Census 2011 by researching the use of this methodology within countries where it has already been implemented and looking at the advantages and disadvantages of this method against the traditional method of administering one questionnaire.

After undertaking thorough research, the team concluded that the use of a long and short form within Census 2011 would not be feasible due mainly to the following factors:

- This methodology has not been comprehensively tested in South Africa and given the short time frame and the major shift in methodology proposed by this design it would be premature to go into Census 2011 using this methodology.
- The foundation to successfully implementing this methodology requires a sampling frame which is up to date and accurate. Careful scrutiny of the South African EA frame is required to make sure that we have the necessary base to implement this methodology.

The team however, recommended that use of long and short form is a methodology that the organisation should aspire towards in future censuses and work should begin on trying to move in this direction. Use of a single long questionnaire was thus recommended for Census 2011. The pilot questionnaire was to be reviewed to minimise its length. The task team focused on two aspects of the questionnaire; the design/layout and the content. Part of the team worked on redesigning the questionnaire with the same content based on research on questionnaire design from other countries. The rest of the team worked on the content of the questionnaire, re-looking at instructions, skip patterns and investigating possibilities of reducing content through consultation with stakeholders. The output of this process was two prototypes; Prototype A and B

2.14.1 Prototype A

Prototype A was designed in portrait format and double sided, which effectively made the household questionnaire much shorter in terms of number of pages used (Pages reduced from 15 to 13).This prototype is A4 size making it much easier to handle in the field.

2.14.2 Prototype B

Using the Kenya census questionnaire as a model, the pilot questionnaire was incorporated into A3 landscape format. In prototype B, there was a complete rework of the design of the questionnaire, resulting into two A3 sized, double sided sheets of paper. However, concerns were raised about this type of questionnaire being cumbersome to handle during fieldwork and the format does not cater for self enumeration.

The Questionnaire team was also asked to review questionnaire instructions, question wording and content in consultation with relevant stakeholders. A number of refinements were made as a result. These refinements however, had minimal impact on the actual data variables in the questionnaire. The re-engineering process, particularly the change from landscape to portrait format, addressed the challenge on questionnaire length. Once Prototype B was ruled out of the question, more effort was put onto refining Prototype A. As a result two further prototypes were developed (one with Optical Mark Recognition (OMR) responses and one with Intelligent Character Recognition (ICR) responses). The Optical Mark Recognition prototype used a combination of marking with crosses where response categories were three or less, and codes where response categories were four or more. The Intelligent Character Recognition prototype used only codes on the questionnaire. However, it was felt by data processing that if the entire questionnaire was ICR, it would take much longer for processing as most of the images would have to go through error resolution. As a result a compromise was made where the questionnaire would combine both OMR and ICR. This prototype was then presented to the technical committee, where comments were made and implemented. This resulted in the adoption of the prototype and testing through behind-the-glass and the Census Dress Rehearsal in 2010. The final questionnaires were forwarded to the Census Management Committee for approval.

2.15 Questionnaire translations

Census taking in South Africa has to take into account of the country's language diversity if a complete count is to be realised. This necessitated the content team to embark on the process of translating questions into other official languages. Translation services were obtained from some Statistics South Africa employees and the Department of Arts and Culture, and a translation booklet and questionnaires were compiled for all official languages.

2.16 Publicity

Publicity is one of the fundamental phases in census undertaking. Publicity campaigns and advocacy programmes during a census are essential for educating the public on the benefits of conducting a census, and creating awareness to ensure that everybody gets ready to be counted. Census 2011 Communication Strategy and its implementation made strides in achieving these objectives. One of the lessons learnt from the previous census (2001) was the existence of hard to count communities that required targeted publicity campaigns. This resulted in formulation of a number of strategies.

The communication and advocacy campaign for Census 2011 was based on the following objectives:

- To raise awareness among all who live within the borders of South Africa about the upcoming Census 2011 and to encourage them to participate.
- To solicit support from all Statistics South Africa (Stats SA) staff and government employees to be Census 2011 messengers to the public.
- To market the census through exhibitions, sport activities, school-based activities and other activities where masses gathered to educate them about the benefits of a census.

Census 2011 publicity kick-off started with the national launch that was held at the Convention Centre in Johannesburg on the 10th of October 2010. This was followed by provincial launches, visits to local authorities, and meetings with civic and traditional leaders. The campaign was extended to the print media, radio and television advertising and talk shows.

Census 2011 Publicity campaigns were driven through a number of channels:

- Exhibitions throughout the country using events and promotions;
- Distribution of promotional items at national, provincial and district level through events such as stakeholder meetings and sports events;
- Media: Radio, outdoor, print and TV adverts that reached close to 35 million people across the country;
- Road shows;
- Vehicle branding with Census 2011 themes: “You count” and “The South Africa I know and the home I understand”
- Census logo, which was made up of tallies / stick markings forming a map of South Africa in the colours of the South African flag. The logo symbolized counting of every person living in South Africa across all the demographics of the rainbow nation. The Census logo became a brand for the campaign and was adapted in all forms of communication and advertising for the Census 2011;
- Sports. This activity was geared towards creating visibility of the Census 2011 brand using sports to create an active positive vibe in which to conduct the census. It was also a vehicle for the distribution of Census 2011 promotional items;
- Census Mondays, where all Stats SA staff wore Census 2011 T-shirts as part of the publicity campaign;
- Link to Census 2011 website on most government websites;
- Distribution of Census 2011 posters within all government departments;
- Regular census updates through Census Communication;
- Countdown events (100/50/20 days);
- Census awareness campaigns in different places (road tolls and major road intersections, international airports;
- Branding of lifts in all Stats SA buildings across the country;
- Census message on government employees’ pay slips
- Presentations made at all the provincial legislatures, SALGA provincial conferences and Municipal Manager’s Forum held in Cape Town;
- Formation of partnerships with key stakeholders. These included farming communities (one of the hard-to-count groups), community based organisations, other government departments;
- “Know your fieldworker” campaign, a programme that aimed at publicising the names and photos of fieldworkers in their respective enumeration areas throughout the country;
- Learner Ambassador Programme (LAP). The LAP had registers that were dropped by Fieldwork Coordinators to schools and each class was allocated one register where teachers had to record learners that were visited by Fieldworkers. After about a week, FWCs had to collect the registers from schools and use the registers to identify areas that had not been visited and act accordingly and;

- Census at School project. The Census at School project is a statistical literacy project that was planned to be conducted at all government registered schools throughout the country prior to enumeration fieldwork. The project targets learners in schools and information is collected from, and presented to them in a statistical format. After the exercise at school, learners were encouraged to go and discuss the exercise in their households, thus raising awareness of the process of collecting information in a census.

2.17 Census 2011 brand

Brand identity for Census 2011 in the form of a logo, promotional items and other advertising material was outsourced from Dzinge Productions. Stats SA appointed the company to provide creative advertising concepts and production services for the Census 2011 project. Services rendered included;

- Developed and produced communications and advertising material for the Census 2011 campaign on: TV, radio, print, magazine, outdoor, online as well as in-flight advertising
- Produced branding material and promotional items for the Census 2011 campaign
- Events filming and documentation of Census 2011 activities
- Vehicle branding
- Created and developed the Logo for Census 2011

Census branding played a crucial role in sensitising communities and eventually their participation in Census 2011.

2.18 General challenges

- The sign-off procedure within the organisation was a bit long due to the number of people authorised to sign off publicity material. This caused delays on delivery.
- Colour co-ordination on promotional items. The Census yellow colour was very challenging to work with; the shade would come out differently on different products, e.g. brochure yellow shade would be different from that of T-shirts etc.
- Branding of vehicles – Availability of cars for the full wrap branding took longer than expected as a result cars ended up having branded stickers on the sides
- Media-buying service-provider was appointed late and this delayed the flighting of the adverts.
- Brand ambassador programme did not yield expected results.
- ‘Know your enumerator’ campaign was moved from one section to another during the implementation phase and this move posed a number of challenges.

2.19 Recruitment of field staff

Human resources play a crucial role in census undertaking. The recruitment process needs to identify the right census staff in terms of numbers and quality for all census operations including management and field-related activities. In preparation for Census 2011, the following processes were undertaken;

2.20 Planning

HRM had to undertake a planning process for the recruitment for Census 2011 in order to ensure a successful execution of the project. The planning for the recruitment process started in 2010 and included developments of various strategies as well as integration processes with other stakeholders.

2.21 Development of strategies

The strategies that were developed and approved in 2011 were the following:

- Census 2011 HRM Strategy which described all the value chain activities of HRM throughout the Census 2011,
- Recruitment Plan outlined the roles and responsibilities, quantities and timelines throughout the recruitment process of the Census 2011,
- Shortened Disciplinary Procedure outlining the labour relations processes to be undertaken during the Census 2011.

2.22 Integration with stakeholders.

HR liaised with various stakeholders such as:

- SAQA for verification of qualifications of applicants,
- State Security Agency (SSA) for verification of criminal records, and
- National Treasury (SITA) for uploading of appointment data from the Census & Survey Administration System to Persal.

Action plans were developed with these stakeholders to agree on roles and responsibilities as well as timelines to be achieved.

2.23 Recruitment processes

The recruitment processes applied during Census 2011 were the following: the normal recruitment, through the database, through the Capacity Building Training Project, deployment of permanent staff, targeted recruitment and recruiting from employment agencies.

2.24 Normal recruitment process

The process involved the advertisement of positions in the media, competency exercises and interviews. This was done for positions such as District Logistics Officers, M&E Monitors and support services staff such as District HR Officers, State Accountants as well as ICT Technicians. Most of these were high level positions and also long term contracts.

This recruitment process started back in 2007 during the Community Survey for the HR Officers and State Accountants. The other categories were recruited from May 2011.

2.25 Census & Survey Administration System (CSAS) Database method

The Listers, Fieldwork Supervisors and Fieldworkers were recruited through a database method. The process started in 2010 with a national advert in newspapers to invite candidates to register on the CSAS database, which was to be used to source candidates for the Census 2011.

The database had a recruitment module which ranked 350 000 candidates per category according to the scores as per the criteria that is built within the system when applications are captured. Potential candidates were sourced per place name in their ranking order from this database.

2.26 Capacity Building Training Project

Fieldwork Coordinators were recruited through the capacity building training Project that started in January 2011 at Provincial level. The project involved a process where a pool of 3 000 candidates with tertiary qualifications were sourced from the database and trained on fieldwork and management issues.

2.27 Deployments of permanent staff

The positions of District Census Coordinators and Data Process Coordinators were filled by deploying permanent people to manage fieldwork and data processing activities at a district level as well as the Data Processing Centre for the period of the Census 2011 Project. There were 130 District Census Coordinators and 50 Process Coordinators. The main reason for deploying permanent staff was that, in previous Censuses contract staff appointed and this was difficult to hold people accountable, specifically for record management matters, and contract staff would leave after the project.

Other support services were provided by permanent staff such as HR and Finance who were deployed to the district offices to assist in corporate services activities during fieldwork.

2.28 Targeted recruitment process

There were cases where other areas did not have sufficient, or any applications in the database. Because the Census 2011 was to be a community based project where people were to be recruited from their local areas, a targeted recruitment exercise had to be undertaken for such areas. This was mainly for categories like Fieldwork Coordinators, Fieldwork Supervisors and Fieldworkers.

The targeted recruitment exercises involved Stats SA staff members distributing and collecting application forms from the specific community areas with the goal of increasing the pool on the database. This was done at public places such as community shopping centres, police stations, churches etc.

The targeted recruitment process also included exception appointments of people who were over 65 years of age, those without Matric as well as Foreign Nationals were required.

2.29 Recruitment through agencies

There was also recruitment through agencies for the Data Processors during data processing. Initially two agencies were contracted but at a later stage one withdrew.

2.30 Categories, duration of contract and numbers of people recruited

Various categories of people were employed on a contract basis during the Census 2011 Project. The following table shows the categories and total numbers:

Table 2.4: Staff recruited by number and duration of contract

Process/Activity	Category/Job title	Number required	Number recruited	Duration of contract
Fieldwork	Fieldwork Coordinators	5 292	5 216	4 Months
	M&E Monitors	400	374	8 Months
	Listers	26 241	24 482	3 Weeks
	Fieldwork Supervisors	26 241	26 113	1.5 Months
	Fieldworkers	120 861	109 496	1 Month
	District Logistics Officers	125	125	12 Months
	Census Support Officers	9	9	12 Months
	M&E Data Capturers	30	30	6 Months
Data Processing	Data Processors	960	2123	9 Months
PES	District Census Coordinators	13	13	4 Months
	Matching Supervisors	75	75	4 Months
	Quality Assurance Monitors	75	75	4 Months
	Matching Monitors	10	10	4 Months
	Matching Clerks	180	180	4 Months
	Warehouse Clerks	7	7	4 Months

Process/Activity	Category/Job title	Number required	Number recruited	Duration of contract
Support Services	ICT Technicians	120	110	9 Months
	District HR Officers	55	55	6- 12 Months
	District State Accountants	55	55	6 - 12 Months
	Registry Clerks	65	65	4 Months
	HR, Data Collection and M&E Data Capturers	612	612	4 Months
TOTAL		**181 426**	**169 225**	

2.31 Appointment types

The various categories were appointed on the following types of appointment:

2.32 Manual appointment – Persal payment

This is the appointments that are done manually on the Persal system and was used to appoint categories which were recruited through the normal recruitment process of advertising etc. The categories that were appointed through this were, Fieldwork Coordinators, HR Officers, State Accountants and ICT Technicians.

2.33 Uploading of appointment data from CSAS to Persal

Due to the large numbers for Listers, Fieldwork Supervisors and Fieldworkers, Stats SA collaborated with National Treasury (SITA) to upload the appointment data file from the CSAS database to Persal instead of manual appointments. The upload for the three categories was successful.

2.34 Challenges

- **Recruitment Process**

  - Late finalisation of place names and demarcations delayed the recruitment process
  - Insufficient applications in other areas
  - FWCs' involvement in HR matters
  - Changes to stipends impacted on adverts, morale of existing staff and the quality of their work
  - Stipends created inconsistencies for same type of jobs
  - Headhunting in areas was unnecessary
  - Involvement of non-HR staff e.g. Fieldwork Coordinators led to problems of nepotism and favouritism
  - Political interference in the recruitment process in some areas such as farm areas led to unnecessary relaxation of requirements
  - Candidates not disclosing information, e.g. that they were dismissed from the Public Service or misrepresentation with regard to qualifications

- **Verification of candidates**

  - Verification through SAQA and SSA took long, leading to people appointed before their verification, LR cases and irregular expenditure (258 000 verified through SSA and 58 000 through SAQA only in October 2011).

- **Deployments of permanent staff**

  - Deployment of HR staff not planned properly and communication thereof was on short notice
  - Deployments were too long and created family strains to deployees

- **CSAS Database**

  - Incomplete capturing of applications
  - Late enhancement of CSAS
  - System was slow especially with the appointment phase
  - Continuous changes of addresses by applicants leading to double capturing and continuous updates on the database.
  - Candidates no longer available on the database
  - Proximity of candidates sourced from the database (100km radius used) during data processing led to problems of absenteeism and late coming.
  - Database exhausted for certain skills such as data processing, candidates had to be sourced from tertiary institutions and recruitment agencies.

- **Appointments**

  - Appointment of candidates dismissed from other government departments.
  - Continuous and short notice extensions led to late appointments on Persal.
  - Multiple transactions e.g. leave discounting, nightshift allowances etc. on Persal blocking each other and delaying appointments.

- **Late and Over-payments**

  - There were late payments experienced as a result of late appointments, system problems due to amongst other things, terminations and extension processes as well as Persal closures during December 2011 and the implementation of general increases in August.
  - There were also overpayments especially with Fieldwork Coordinators who were paid by BAS and Persal.
  - Overpayments as a result of abscondments.

- **Terminations**

  - People declining and terminating their contracts leading to continuous replacements.

- **General**

  - Unavailability of resources in Districts for deployees
  - Changes of decisions and plans by Census Management affected process
  - Census Budget constraints led to HR Processes proceeding without confirmation of funds
  - Auditors visiting offices at the peak of our processes caused delays
  - Insufficient management of absenteeism led to a lot of leave without pay creating debts for employees.
  - Poor record keeping of the many applications received at District, Provincial and Head Offices.

- **Risks**

  - Non-verification of candidates may have caused the risk of employing people who were not supposed be employed.
  - Unavailability of people in other areas, e.g. farming communities

2.35 Finance

Logistically and administratively, the payment of massive field staff that were recruited for Census 2011 called for thorough planning and implementation of payment strategy. Hence the task of the human resource and finance sections was to appoint and pay approximately 150 000 field staff in the shortest possible time after completion of fieldwork.

Key strategic objectives relating to meeting financial obligations for Census 2011 included:

i. To establish a procedure to monitor, evaluate and verify the work performed and to thereby authorise payment, i.e. “the trigger to pay”.
ii. To pay appointed fieldworkers as per agreed pay dates i.e. 10 days after receipt of Census Payment Advices.
iii. To adhere to SARS requirements including registration of all fieldworkers as tax payers.
iv. To ensure that all payment transactions are adequately reconciled.

These key strategic objectives were drafted based on lessons learnt from Censuses 1996 and 2001 and Community Survey 2007. To achieve these objectives, a number of payment related processes were established and tested in the two Census 2011 Pre-tests; Pilot 2009 and Census Dress Rehearsal 2010.

2.36 Development of finance module

During the census planning phase, a finance module was added on Census and Survey Administration (CSAS); an in-house system that assists in managing the various recruitment processes to provide payment solutions for census field staff. Development of this module was outsourced and this resulted in reliance on consultants during implementation phase. Any scope changes such as adding of listing payments became costly and caused delays.

The developed finance module was tested by capturing applicants’ applications on CSAS for appointment, and payment information was uploaded on to Persal (the government payroll system). Persal then provided a data file for final payment disbursement to the service providers to effect payment. Use of Persal enabled a number of validations to prevent the appointment of applicants that were in contravention of regulations e.g. dismissed government employees. The system also assisted in avoiding irregular expenditure. The payment module was dependant on successful upload and importing of personnel information from CSAS to Persal and back.

2.37 Development of payment solution system

In addition to the finance module on CSAS, a contingency payment system (PS) was developed in-house for fieldworker payments. The system was developed to supplement the outsourced payment services from KTS. During its implementation, the system was user-friendly and specifically tailored to Census 2011 needs (e.g. specific limits on payments). Detailed processes and user manuals were available and users were trained in advance on how to operate it without major problems. Without this contingency system being in place, payment of the majority of enumerators in time would not be possible.

The internal payment system is not a payroll system. This resulted in certain tax issues (e.g. overtaxing in cases of persons older than 65 years, under taxing the top-up payments). To effect payment, the organisation outsourced three payment systems that were tested during the Census Dress Rehearsal. The testing included system coverage; countrywide payment system to facilitate disbursement of salaries to field staff including those without bank accounts. The payment solution was also tested to verify how long it would take to effect payment. The desired maximum period to make payments was 7 days after the data collection phase. KTS, the external payment partner was utilised in effecting payment of field staff. KTS used the debit card solution to facilitate payment. The payment solution accommodated field staff that did not have bank accounts. Use of debt card payment option as opposed to the opening of individual bank accounts for fieldworkers assisted in mitigating the risk associated with the FICA requirements where a number of requirements which fieldworkers may not have been able to meet. Having a partner ensured that Stats SA resources did not have to be involved in both the administration of cards and the processing of payments. This allowed permanent staff members to focus on their core duties and additional volume of transactions that came with Census as well as monitoring the payment aspects that were handled by the service provider.

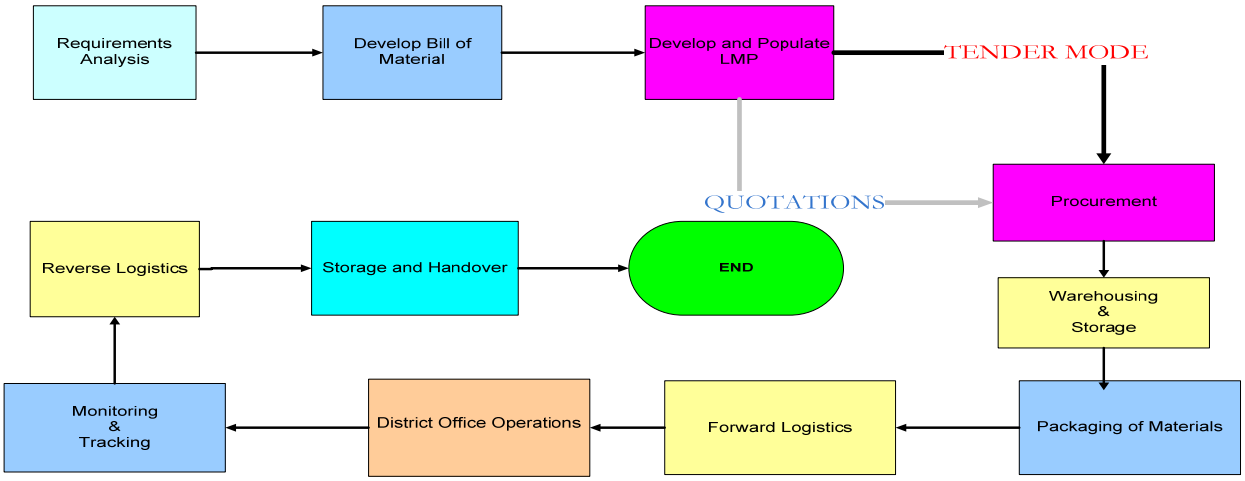
2.38 Logistics

2.38.1 Background

Census taking involves invariably has a major impact on logistics such as the acquisition of office space and the procurement of various materials and questionnaires to enable the performance of provinces and related district / satellite offices to effectively mobilise fieldwork operations according to set timelines. To ensure that the planning and implementation of Census 2011 forward and reverse logistics operations achieved the desired results, (materials delivered from a Pretoria based central Data Processing Center (DPC) to all remote Census offices (Forward Logistics) and subsequently returned (Reverse Logistics) according to the various project work-streams) a number of processes were executed based on systematic logistical plans. To achieve this goal, specific objectives were outlined:

- To provide adequate Census 2011 infrastructure for Provincial and District Offices;
- To procure cost-effective Census 2011 material through Census Resource Management (CRM);
- To provide efficient warehousing of all Publicity, Listing and Data Collection material;
- To provide guidelines on how to package and distribute material to and from provincial and district offices;
- To outline guidelines on how transportation for field staff will be allocated;
- To monitor and track Census 2011 material through Census and Survey Administration System (CSAS);

All activities relating to logistics were executed based on the process below:



All census work streams and provinces were requested to compile logistical requirements and specifications as prescribed in their operation plans. These requirements were then forwarded to the Census Logistics and Census Resource Management (CRM) work streams, and were captured on the Logistics Master Plan (LMP) and categorised the requirements based on defined groupings i.e. the Logistics Master Plan was used as a tool to record and manage all the project logistical requirements. It was designed to track and monitor the procurement of goods and services to ensure timeous delivery and monitored expenditure. The requirements included the identification and establishment of the following:

- Transport,
- Accommodation,
- Office space, furniture and equipments
- Training requirements,
- Bill of material (field materials)
- warehouse facility, storage depots
- safety and security requirements
- packaging procedures
- distribution route path (forward and reverse)

2.38.2 Bill of Material

After the requirements were analysed, a bill of material was developed. A bill of material refers to a complete list of all material items and services that were to be acquired for the census project. Based on the requirements defined by Census Logistics in the LMP, the mode of procurement of material was determined by tenders, quotations, and control committee or stock item material. Materials were sourced through the Supply Chain Management (SCM) based on their quantities.

2.39 The Logistics Master Plan

2.39.1 Procurement

Procurement processes included securing of office space, storage facilities, training manuals, questionnaires and field gear. Procurement was prioritised based on what items were needed first (e.g. training material was the first to be procured). In cases of tight timelines, prioritisation made it easier for suppliers to send material in staggered shipments rather than all at once. One of the main challenges relating to procurement was suppliers not adhering to timelines in delivery of materials (mainly printing of training manuals and field-gear materials).

2.39.2 Stock Control System

The distribution of the Census 2011 Bill of Material (BoM) was administered in a manner that ensured smooth operation of all fieldwork activities (inclusive of training programs) within the 9 provinces and related district and satellite offices. To ensure that specific material and stationery items were correctly distributed to all Census 2011 operational areas, while also maintaining control on stock levels within the central warehouse (DPC) storage area, it became necessary to implement a strict measure of control in the management of logistics inventory while also ensuring that material quantities are correctly allocated to the various operational activities.

Given the need to appropriately manage material inventory within the DPC while also ensuring that the packaging of materials to all Census 2011 operations within the 9 provinces was correctly administered, the implementation of a Stock Control System became of paramount importance to achieve the measures of control and management of stock during the forward logistics operation.

2.40 Forward Logistics

2.40.1 Distribution Service Provider

All questionnaires, manuals and maps were delivered to a central warehouse in Pretoria after printing. The distribution of materials to and from the districts/satellite offices was contracted to an external service provider. Containers were used to transport the materials to the district offices. The service provider also provided Stats SA with on-site support to ensure the smooth running of the distribution. Some of the containers were used as storage facilities in district/satellite offices where there was inadequate storage space.

These were then packed according to the need of each district and province and through the Census and Survey Administrative System, were dispatched to each district. The districts then packed them according to specified coordinators units. The coordinators dispatched them to their respective supervisors and then enumerators.

2.40.2 Transport Management

Transport Management is a function which allows organisations that rely on transportation in their business to remove or minimise the risks associated with vehicle investment. It also helps in improving efficiency and productivity by reducing the overall transportation costs and providing 100% compliance with outlined organisational policies. During Census 2011, the District Logistics Officer (DLO) was expected to assist the DCC and Provincial Transport Officer (PTO) with the co-ordination of transport and to ensure that the best and most economical use of vehicles is made at all times.

2.40.3 Training on census content and methodologies

The focal point in collecting quality information in a census lies in a well planned and executed training programme. The Census 2011 Training had a three pronged approach. The three streams of training were: (a) The Census 2011 Capacity Building Project; (b) The Project Management Training; and (c) The Census 2011 Field Training.

2.40.4 Capacity Building Training

The Census 2011 Capacity Building Training Project was put in place in January 2009 by the Census Senior Management (CSM) that was aimed at training about 6 000 District Trainers who were in turn supposed to train field staff (Fieldwork Coordinators, Listers, Fieldwork Supervisors and Fieldworkers) over a period of time prior to Census 2011 Project activities. This project was piloted in KwaZulu-Natal Province at eThekwini and Pietermaritzburg district offices. To identify and select who should be trained to become a District Trainer, criteria were used. The criteria were: the candidate must have been a graduate, not currently employed, has at least three years of training/teaching experience and/or has done education as one of his/her majors at the university, resides in that particular district where he/she will be working during Census 2011 and can at least speak one of the local languages spoken in the district or province where he/she comes from. The candidates, who applied and met the set criteria, were invited by the Provincial Human Resource Officers (HRO) from each district to come and attend a 12-days' training session. The trainees were trained on customer care, stress management, customer relations, communication skills; facilitation skills; time management; supervisory skills, fieldwork methodologies and procedures in relation to publicity, advocacy, map reading, listing, enumeration and non-response follow-up; fieldwork practice, quality assurance and progress reporting. Trainees were subject to continuous assessments where they were writing daily assessments and a final assessment on the last day of training. They were also assessed practically during fieldwork where they had to practice listing and administering of the census questionnaire from the enumeration areas that were selected near the venue where they were trained. In addition, the trainees had to be given a topic and prepare a training session where they had to practically make a presentation to their fellow trainees and were scored on the training skills, communication skills, time management and knowledge of the content from what they presented on. From the pilot exercise 68 candidates successfully completed the course as district trainers. The names of the successful candidates were sent to HRM and captured on the Census and Survey Administrative System (CSAS).

The CSM evaluated the outcome of the KZN pilot and some minor changes were made to the strategy that was in place. The training team was then sent into the provinces by CSM to roll out the programme. The programme kick-started and at each training session successful candidates were grouped into three: those who had an average score of 75% and above were captured on CSAS district trainers or Fieldwork Coordinators (FWCs) come Census 2011; those scoring 65–74% were captured as Listers or Fieldwork Supervisors and those from 55–64% as Fieldworkers.

2.40.5 Field Training

The Census 2011 Field Training was aimed at training Provincial Census Coordinators (PCCs), District Census Coordinators (DCCs), Fieldwork Coordinators (FWCs), Listers, Fieldwork Supervisors (FWSs) and Fieldworkers (FWs) prior to the start of fieldwork. The training approach was of a cascade nature at three levels national, provincial and district levels. What it meant was that staff members, who were trained at national level, train those at provincial level and those trained at the provincial level train those at the district level. That is, the PCCs and DCCs were trained at national level, who in turn trained FWCs at the provincial level and the FWCs trained both the Listers and FWs at the district level.

Prior to the three level of field training, a National Workshop was held for one week at Birchwood Hotel in Boksburg, Gauteng from 20–24 June where 597 Stats SA staff members had the Census 2011 information sharing session. The attendees amongst others included the Statistician-General (SG), Deputy Directors General (DDGs), and Executive Managers (EMs), component Managers, Field Operations Managers (FOMs), Provincial Census Managers (PCMs), Subject Matter Specialists and Professionals. The information that was shared during the National Workshop pertained to the Census 2011 project plans in relation to all census components and support sections of the organisation; the census approach (de-facto); the methodologies and procedures that will be followed during listing and enumeration fieldwork and the durations thereof; the methodologies with regards to

institutions and hard-to-count groups; and approach publicity and advocacy as well as marketing and communications that would take. Representatives from all census components and support sections of the organisation also presented their plans and how they are going to support the census, respectively. The components and support areas that were represented were Content Development and Products ; Census Communication, Public and Stakeholder Relations, Census Geography; Logistics; Enumeration; Data Processing; Monitoring and Evaluation; Post Enumeration Survey; Supply Chain Management, Human Resources Support; Finance, Payment and Remuneration of field staff; Information Technology and Communication; Project Management Office; Fleet Management and Logistics Support; Employment Assistance Programme; Asset Management; Security, Census 2011 Governance;; and Internal Audit of Census 2011. The provinces were also requested to present their readiness for the census activities. The workshop was facilitated by DDGs, EMs and Managers.

Immediately after the National Workshop, logistics training followed. The Logistics Training was conducted for 3 days from 27–29 June 2011. It was conducted at the national level and took place at Premier Hotel near O R Tambo International Airport in Gauteng province. The attendees were the District Census Coordinators (DCCs), District Logistics Officers (DLOs), Census Support Officers (CSOs) and District Managers. The trainees were trained by subject matter specialists from the Census Project Management Office, Logistics, Data Collection & Field training and Census Geo-Support components. The organisation's support components also sent specialists to equip the trainees on human resources and finance issues, travel and accommodation, asset management, vehicles, catering and service providers. Trainees received knowledge on Census 2011 overview which included the goal of census, its deliverables, the census governance model, high level process flow, provincial involvement and key timelines. They also had an overview on fieldwork processes, that is, publicity, advocacy, listing and enumeration. They were then trained on CSAS overview, forward and reverse logistics, packaging, movement and distribution of materials both at the warehouse and district offices, capturing of information with regards to material receipt and distribution, transport management, census governance, and progress reporting. They were also provided with practical training on completion of templates.

After the logistics training, training of field staff commenced right from the national training. The training of field staff had two phases namely, Publicity and Listing Training, and Enumeration Training and in each of the two phases three levels of training were conducted at national, provincial and district levels. The National Workshop was followed by the 6 days National Training on Publicity and Listing in August from 1–6 August 2011 where 350 staff members were trained on the basic Census 2011 concepts and definitions; map reading; publicity and listing; and the listing methodology. The trainees included amongst others Head Office staff members from different Census components and other Stats SA sections; Provincial Executive Managers (PEMs); Field Operations Managers; PCCs; DCCs; District Logistics Officers (DLOs); Census Support Officers (CSOs); and Geographic Information Specialists (GISs).

At the provincial level, 6 000 FWCs were trained by the 110 DCCs and 9 PCCs assisted by 200 Head Office Support Team (HOST) members, 18 Mapping Monitors (MMs) and 9 Geographic Information Systems Specialists (GISSs). On the corporate support side, professionals from finance, human resources, transport, supply chain management, and FMLS also trained FWCs on various aspects such as asset management, vehicle usage, recruitment and payment of field staff members.

At the district level, 30 000 Listers and an additional of 6 000 Listers (20% over training) were trained on publicity and listing methodologies and procedures. They were trained by the 6 000 FWCs and at the end of the 6 days training session only 30 000 Listers who were the top performers were recruited. The average pass mark was 60%. Trainees had to be assessed on a daily basis by writing knowledge assessments and at the end of the 6 days training an average was calculated from which the top best were selected. The trained candidates that were not successful were put on the waiting list waiting to be called in case some Listers resign, or do not appear for work, or have disciplinary problems, etc.

On completion of the district training, publicity and listing fieldwork was conducted for 30 days. . Thereafter the national training on enumeration was conducted for seven days from 5–11 September 2011. It was then difficult for the DCCs to attend the national training on enumeration. A decision was then taken by senior management to train all the Monitoring and Evaluation (M & E) monitors who were monitoring the publicity and listing fieldwork at that stage and after training them they were to go and train FWCs at the provincial level. Two-hundred and sixty (260)

M & E monitors were trained at the national level who in turn trained the 6 000 FWCs at the provincial level assisted by 200 HOST members, 18 MMs and 9 GISSs.

At the district level, the 6 000 FWCs trained 120 000 FWs and an additional of 24 000 (20% over training). In all the three levels of training, that is, national, provincial and district, the content that was covered was Map Reading, Publicity and Listing recap, methodologies and procedures for enumeration, questionnaire completion and error identification, role-plays on how to approach Gatekeepers, Dwelling Units and Households, Supervision of fieldwork, progress reporting, and field practice. Also trainees were trained on corporate issues that covered, human resources issues, finance in terms of payment of field staff, airtime, vehicles, travel and accommodation, security and roles and responsibilities.

2.40.6 Project Management Training

The Census Senior Management identified a gap at the district level in terms of management and took a decision to train all permanent staff members both from Head Office and Provincial Offices that were deployed as District Census Coordinators. The training also included the District Managers, District State Accountants and District Office Administrators. The Programme Office section which is the can carrier of project management training in the organisation organised a national training programme that was held at St. George Hotel where 56 District Managers, 110 District Census Coordinators and 56 District Office Administrators were trained for 11 days on project management principles and processes. The training programme had two sessions, the first training session was conducted in May 2011 and the attendees were 138 in number including District Managers, eight Head Office Project Management Office members, District State Accountants and District Human Resource Officers. The second training session was conducted at St. George Hotel in June 2011 and 124 staff members were trained which included seven census Project Management Office staff members. In both training sessions, the trainees were trained on project management principles in accordance with the adopted Stats SA PMFA covering the project management areas below:

- Time management
- Quality management
- Cost management
- Risk management
- HR management
- Communication management
- Document management
- Contract management
- Integration management
- Scope management

Furthermore, planning documents were developed for all District Offices based on Census 2011 main strategies and plans and Provincial Office Census 2011 plans and the reporting templates, which were to be utilised to report regularly.

Chapter 3: Enumeration

3.1 Overview

Census 2011 was a de facto census, which means that people were counted where they were found or stayed on the census night (the midnight of the 9th/10th October 2011), or, if they were not at the dwelling on the census night and were not enumerated elsewhere, where they returned to the next day. (This applied to people at work, at places of entertainment, or at events such as night vigils)

Prior to enumeration for Census 2011, the Fieldworkers (FWs) placed posters that bear their photos and enumeration period (10–31 October 2011) at visible places in the EAs allocated to them. The exercise was known as "Know Your Fieldwork Campaign (KYFC)." It was an exercise that was put in place to arouse awareness to the public countrywide that the count is going to begin and the person you see on the poster will be coming to your dwelling unit or household to collect information from the members of the household. This exercise was conducted by the Fieldworkers for three days assisted by their respective Fieldwork Supervisors (FWSs).

On the census night, enumeration of the special dwelling institutions (SDIs) was conducted. The SDIs included tourist hotels/motels that contain short term residents, residential hotels, hospitals and clinics, initiation schools, correctional centres – prisons, refugee camps, caravan parks, camp sites, holiday accommodations, army barracks, police quarters, marinas, ships, points of entry and exit (borders and airports), and truck parking areas. Questionnaire B was used to collect information from members of the institutions but also Questionnaire A was administered if a household was present at the site of the institution. For institutions like hotels, holiday accommodations, and army barracks, questionnaires were dropped by the Fieldwork Coordinator (FWC) to the manager of the institution and he/she was requested to distribute the questionnaires to guest or members of the institution for completion. The institution manager was also given Questionnaire C to be completed to capture the services of the institution. The FWC collected the completed questionnaires the following morning. On the other hand, the institutions such as correctional services centres, police cells, hospitals and clinics, the FWC collected the list of the inmates that had basic demographic information for all respondents that spent the census night in a particular institution. The list was then used to complete Questionnaire C. The homeless were visited by FWs at the places where they can be found such as verandas, passages, corners of buildings, abandoned buildings and cars, etc. and were counted using Questionnaire B.

Visiting households started on the 10th of October 2011. The FWs visited each and every dwelling unit in the EAs they were allocated and ensured that questionnaires were completed for each and every household that was found. Administering the questionnaire lasted for 21 days.

The EA Summary Book gave a clear indication of the area in which the enumerator was required to work. In addition to the maps, the book contained a list of all the dwellings in the EA, and their addresses where applicable, or else some other identifying description, and a route to follow through the EA. In communal living quarters, each room, ward, cell, dormitory or section was listed. For each listed dwelling or equivalent, the FWs were required to indicate in the book whether or not it was visited, and if so, the number of males and females counted in it. If the dwelling was not visited, a reason had to be given, for example, a vacant dwelling or unoccupied dwelling. Any extra dwellings found were to be added to the list and also enumerated.

Each FW was required to produce one or more completed questionnaires for each dwelling unit visited. This depended upon the number of households that were found in the dwelling unit. Households were encouraged to be interviewed by the FW if possible. Alternatively, a respondent could complete the questionnaire for collection later, where circumstances allowed. FWs carried translated questionnaires in the other ten official languages, to refer to where necessary. Some questionnaires were printed in the other ten languages, particularly Afrikaans and isiZulu.

During the enumeration process, a process of quality assurance was followed. The FWs had to ensure that work had no errors before handing it to their respective FWSs. The FWCs were required to check the work of the FWSs, and in turn the District Census Coordinators (DCCs) had to check the work handed in at their districts.

3.2 Coordination and quality control

The FWS's role was to ensure that the four FWs under his or her control completed their work and submitted accurate completed questionnaires and EA Summary Books. Among the tasks the FWS had to undertake included:

- Hand out and receive back all the materials, including blank and completed questionnaires;
- Check each returned questionnaire for omissions or anomalies, and attempt to have them rectified in the field;
- Visit houses where people refused to be interviewed to try and persuade them to cooperate;
- Check on all dwellings reported by FWs as vacant to ascertain if they were indeed vacant; and
- Carry out spot checks by visiting enumerated households to verify the quality of the FW's work.

In addition the FWS had to complete several control and reporting forms to monitor movement of the questionnaires, to report to management on daily progress and problems, and to assist in quality control.

The quality control procedure in particular proved onerous. The first three days of fieldwork were meant for close monitoring, error identification and correction of errors. The FWSs had no vehicles to drive around the four EAs except those who were working in farms, smallholdings, national parks and large traditional EAs. The FWS had then to work for the first day with two FWs one in the morning and the other in the afternoon. The FWS had to walk with each FW checking at least five questionnaires the FW completed on that day identifying errors and correcting them. On the same day in the afternoon he/she would go to another FW and do the same quality check. On the second day of fieldwork, the FWS had to walk with the other two FWs but before going with them to the households, he/she had to first check the five questionnaires each completed the previous day. The FWS correct errors and then walk with one in the morning and the other FW in the afternoon. This exercise enabled the team to correct errors at an early stage of the enumeration process. However, few FWSs implemented this quality control process due to the fact that in some training centres it was not emphasised.

The FWSs were required to complete forms reporting on the first questionnaires submitted by each enumerator, and later to visit randomly-chosen enumerated households in each EA and complete a single page control questionnaire against which to check the FW's work. The latter step was intended to in particular detect FWs who might be cutting corners or inventing data to keep up with the workload. In the event, few FWSs managed to find time to complete these tasks, in particular the extra visits.

The FWCs according to the quality control procedures, were required to check at least 50 questionnaires a day. The FWCs were required to take a daily sample of 10 questionnaires from each FWS (50 questionnaires) and check them. They were also responsible for receiving and checking the FWS's progress reports and reporting upwards on their entire FWC unit (20 EAs). However, much of the FWC's time was taken up in transporting staff and materials rather than supervising the quality and coverage of the data collection and supporting the FWSs with their workload. Supervision of the FWC unit by the FWC was further complicated due to the fact that in some instances two FWCs were sharing a vehicle and on the day the FWC had no vehicle his/her work was on stand still. In some areas FWCs received vehicles two weeks after the start of the enumeration exercise while in other areas those who had received vehicles refused to share their vehicles with others. This created constraints in managing quality in those areas.

3.3 Call Centre

The Call Centre was established to act as an information repository for all census-related queries, deal with all census-related queries and escalate where necessary and to provide a means of communication for the general public and field staff during field operations. A total number of 60 call centre agents were requested from HR.

3.4 Achievements

Achievements

Call handle rates

Period	Calls offered	Calls handled	% handled
01 Apr – 30 Sept	2167	1986	91
01 – 31 Oct	48722	31838	65
01 – 20 Nov	59542	39406	66
Total	110431	73230	66

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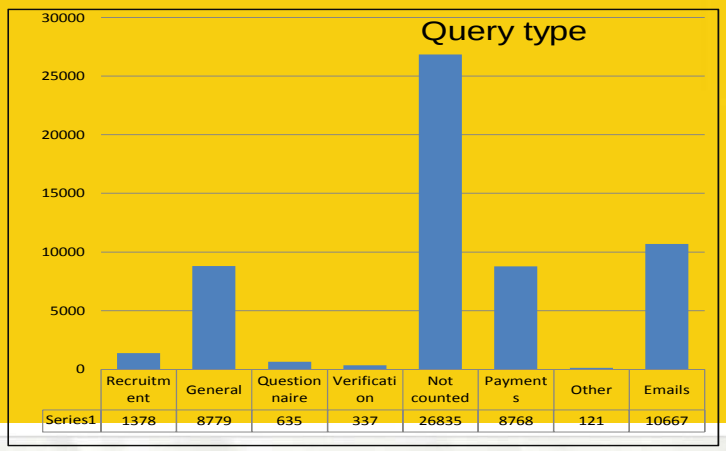
Achievements



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3.5 Challenges

- There was no baseline data to work from when planning
- Difficulty in finding sufficient human resources; e.g. there wasn't enough Afrikaans-speaking call centre agents
- Unexpected upsurge in 'not counted' calls overwhelmed call centre capacity
- District offices not following up on escalations of queries to head office.
- Inconsistent peaks in call volume made it very difficult to schedule shifts
- Various web-based systems could not be used as bandwidth issues made programmes slow and inefficient
- Process flows for escalations of information not in place before enumeration commencement
- Call centre systems not tested and signed off before roll out.

3.6 Non-response follow-up

Implementing the lessons learnt from the previous censuses, a non-response follow-up period was planned for Census 2011. The non-response follow-up process was planned to take 14 days from 31st October–13 November 2011. At the start of this process, the FWs contracts were terminated, this meant that FWSs and FWCs were required to revisit the households and resolve cases such as non-contacts, refusals and unoccupied dwellings and also to collect remaining questionnaires that were dropped by FWs to certain households for self-enumeration.

A call centre was also in operation where members of the public could call in to report that they had not been enumerated. Arrangements were then made for them to be visited. Some respondents reported themselves in person to provincial and district offices that they were not counted and were also included with their families in the count.

3.7 Payment of field staff members

Payment of field staff and suppliers was entirely coordinated by the Recruitment, Appointment, Administration, Payment, Termination and Reconciliation (RAAPTR) committee members who served as a nerve centre for monitoring implementation of payment processes. Payments to field staff and suppliers were successfully executed largely due to ample planning and testing of payment systems. Processing of payments to most field staff and suppliers was executed within the stipulated time (7 days after completion of work).

All contract staff members (FWCs, FWSs and FWs) were paid a stipend. A private company, KTS, was contracted to pay Listers and Fieldworkers. ATM cards were issued to each and every Lister/FW during training sessions and money was loaded on the cards after confirmation was received by the Finance section that the work had been completed satisfactorily. There were two phases of payments after listing and enumeration fieldwork. Unlike FWSs and FWs, the FWCs were paid by depositing their monthly stipend into their respective bank accounts.

3.8 Challenges

- Most of the payments to service providers were centralised at the head office and this led to overload with processing of invoices after the completion of the project. Due to high volume of invoices, the nerve centre requested for additional contract staff members to assist in the processing of invoices.
- Centralisation of certain operations by KTS was carried out at their Project Management Office at Centurion.
- KTS call centre was not adequately resourced, leading to queries not being handled appropriately.

3.9 Reverse logistics

All questionnaires (completed, unused and damaged) were returned to the district offices by FWCs and submitted to the DLOs. Thereafter the DLOs, after accounting for all the questionnaires, handed them to a private company that was contracted to transport them to the data processing warehouse in Pretoria.

Chapter 4: Data processing

4.1 Background

After enumeration, all completed, partly completed, damaged, and blank questionnaires were collected from all the 130 District Offices and sent to the Data Processing Centre (DPC) in Pretoria to begin the processing of data. At the DPC, data was extracted from completed questionnaires through a series of processes. The processes included content verification; primary preparation; secondary preparation; guillotining; scanning; tiling and completion; and coding.

4.2 Content Verification (CV)

Census questionnaire boxes were verified and separated according to type, filled, unfilled and damaged. After questionnaires were verified they were then linked to a particular box through the Census and Survey Administrative System (CSAS) and the box was allocated a shelf position storage number and thereafter taken to the store for storage.

4.3 Primary Preparation Process

During this process, questionnaires were checked and prepared to ensure that they are ready for the guillotining, secondary preparation and scanning processes. Questionnaires that needed to be keyed from paper and likely to have scanning problems (those that are torn or badly folded) were identified during this process. The process also entailed verifying the EA number that was written on the questionnaire by ascertaining if it is correct and taking corrective action if it is not. (This was done by allocating the questionnaire into the respective box, depending on the first digit of an EA number, e.g. if an EA number starts with 3, then the questionnaire would be allocated to Northern Cape)

4.4 Guillotining

This was the process where the spines of the questionnaires received from the primary preparation process were cut off with guillotining machines. The purpose of this process was to separate the pages so that they can be properly scanned.

4.5 Secondary Preparation Process

This process ensured that the questionnaires were stacked correctly so that they will be read by the scanner without paper jams, misfeed, or other mishaps.

4.6 Scanning and Capture

These processes were done through five sub-processes namely scanning of the questionnaire; questionnaire identification; character recognition; character confirmation (Tiling); data completion and coding.

There were also systems in place for tracking the movement of questionnaires and quality control. The systems included:

4.7 Document Management System

The Document Management System was used to locate the questionnaire box at any given time. Any box that entered or left the store was recorded on the pick-list (i.e. the box number, the destination, the person taking the box out, signatures of both the store clerk and the person receiving the box).

4.8 Questionnaire Tracking System

The questionnaire tracking system was put in place to locate the whereabouts of the questionnaire and its status at all times. At each stage of data processing, a code and description was allocated to each and every questionnaire as it moves from one point to the other. And every time the questionnaire moved its status was updated.

4.9 Image Tracking System

This was a system that knew where the image of the questionnaire page was located at any time. Each scanned batch received an image file in a directory for a specific scanner and each image was tracked from the scanner up until data capturing.

4.10 Image Quality Assurance System

This was a system that was identifying scanning problems in batches prior to making the batches available for processing on the data capturing system. The system prevented bad quality images from creating unnecessary work and to prevent images from causing delays in the downstream processes. Each scanned batch received an image file directory for that particular scanner. The Image QA Operator selected the next available batch for QA. The system was selecting a 105 random sample from every batch and if there were less than 10 images available for selection then all images were selected for inspection. On inspection the Image QA Operator indicated whether the image was OK (of good quality) or identifies and notes problems on the DPS System (e.g. image not eligible (too light), image too dark, image skew, image misfeed, images mixed, image orientation incorrect). A batch was rejected if any one of these problems were identified.

4.11 Data Quality Assurance System

This system was aimed at checking the quality of data from electronic images. Some values were out-of-range. The QA Operator selected values at random and compared them with the captured values in the database for accuracy. If the data accuracy was less than 95%, meaning it did not reach the threshold to pass the test, then the Data Processor was required to conduct an error resolution to fix the inconsistency between the two unmatched data. If the data accuracy was above 95%, then data continued to the Data Editing and Validation System.

4.12 Data Editing and Validation System

This system detected and corrected errors in accordance with a pre-defined set of edit specifications. Validation was to make sure that valid and consistent (not out of bound) data were captured. Raw data from capturing and Data QA System were run through an edit system to check for content and coverage errors. The errors were printed and given to data editing clerks to be rectified. Where computerized editing was in place, data was automatically fixed by the system in accordance with pre-defined rules.

4.13 Data capture

The backbone of the contractor's system was eFlow software that had been used successfully during Census 2001, Community Survey 2007, Census 2011 Pilot and Dress Rehearsal. However, the contractor also had to develop additional software to:

- Manage boxes received from the field and checked into the store. This system was called Census and Surveys Administrative System (CSAS);
- Control and track the processing of questionnaires, called the Document Management System (DMS) it was an in-house application;
- Consolidate the data received from eFlow software into database records for Questionnaires A, B and C plus the PES questionnaires; and
- Perform quality checks on the data before it was made available to Stats SA for final editing and analysis.

The business case and operational plan documents were compiled for data processing –guided by what transpired from the four tests – that is, the CS 2007, Census 2011 Pilot and the Census 2011 Dress Rehearsal. These documents defined the procedures, basic functionality and resources that would be required, as well as budgets, timelines and responsibilities of each party. The plan was reviewed and finalised after the Census 2011 Pilot.

The data processing of the Census 2011 Pilot was carried out on the Stats SA premises. For the main census, a new site in Pretoria, the Data Processing Centre (DPC), was acquired and equipped. The DPC accommodated more than 124 000 boxes of questionnaires, 14 scanners, 375 computer worker stations, four Guillotining machines, SAN and ORACLE servers and other peripheral equipment. New shelves that could accommodate 174 000 boxes and equipment had to be installed so that by the time boxes arrived from the field, they could be checked into the stores and processed.

Approximately 2 123 temporary personnel were employed to work in four shifts a day throughout the week, including weekends and public holidays, for just over six months (compared with the 1 000 and 5 000 used for the 2001 and 1996 Censuses, respectively). At the beginning of data capture in March 2012, each shift had 250 Data Processors but the number kept on increasing and in the last two months of the data capturing period (June – July) each shift had 375 Data Processors. All contracts were terminated at the end of July but 300 Data Processors were called back to finalise work that was remaining till the 15th of August 2012.

The basic data capture processes comprised the following:

- Preparing and scanning 15 821 302 million questionnaires received from 103 576 EAs. The scanned questionnaires are broken down as follows: 15 605 626 Questionnaire A (487 968 of these were in other languages other than English); 106 901 Questionnaire B; 13 712 Questionnaire C; and 95 063 PES. In total over 250 million images were scanned;
- Preparing 86 506 questionnaires that were captured through KFP broken down as 81 005 Questionnaire A (2 826 of these were in other languages); 3 278 Questionnaire B; and 2 223 Questionnaire C. There were no questionnaires from PES that were captured through KFP;
- Using eFlow software to extract the handwritten characters from the scanned images.
- Validating and correcting extracted data by using data processors rotated over different shifts.
- Performing independent data quality checks by typing and comparing the data values of randomly selected field values. A target accuracy of 97% had been set.

Questionnaire boxes from District Offices started arriving at the DPC early December and linkage of questionnaires in boxes/storage started on the 27th of January 2012. The initial plan was to complete data capture by December 2013, but this period was reduced to July 2012 by senior management and this created room to omit some processes. For example, processes such as image and data quality assurance, data editing and validation were left out because of the constraints of time.

Some of the problems and solutions during data capture included the following:

- The software that was developed for data processing was not fully tested during pilot, and the programmes proved to be unable to handle large quantities of data from the full census. As a result, systems were developed, tested and improved under live conditions.
- The DPC building was not ready by the time work had to start. The environmental test had not yet been conducted. The building was acquired in November 2011 and on the 3rd of December 2011 the set up of the building was started, that is, connections, putting equipments and machines in place and boxes had started coming in by then.
- Improved monitoring procedures were developed to ensure that operators produced work of the highest possible quality. In addition very high production rates were achieved.

4.14 Coding

The variables industry, occupation, countries, main place and municipalities were open ended questions that required to be coded. Each of these responses had to be linked to the international standard codes. Because of time constraints, industry and occupation responses were not coded; and countries, main place and municipalities were coded but not to completion and the percentage coded for each variable is unknown.

4.15 Training

Training of Data Processors was conducted in a staggered format where three specialists did various rounds of training depending on the groups that were invited to start work. Training focused on all processes from stores to tiling and completion. Content verification was left out since that processes were done immediately when the questionnaires arrived from the field. As work unfolded, the need for training both new staff and old staff members that was rotated between processes increased and the training team carried continuous training.

4.16 Data editing

The execution of each phase of census operations introduces some form of errors in census data. Despite quality assurance methodologies embedded in all the phases; data collection, data capturing (both manual and automated), coding, and editing, a number of errors creep in and distort the collected information. To promote consistency and improve on census data quality, editing is a paramount phase in identifying and minimising errors such as invalid values, inconsistent entries or unknown/missing values. The editing process for Census 2011 was based on defined rules (specifications).

The editing of Census 2011 involved a number of sequential processes: editing team selection, review of Census 2001, and 2007 Community Survey editing specifications, development of editing specifications for the Census 2011 pre-tests (2009 Pilot and 2010 Dress Rehearsal), development of firewall editing specifications and finalisation of specifications for the main census.

4.17 Editing team

Census 2011 editing team was drawn from various divisions of the organisation based on skills and experience in data editing. The team thus was composed of subject matter specialists (demographers and programmers), managers as well as data processors.

4.18 Role of the team

Among other census activities, editing team roles and responsibilities include:

- Establishment of editing plan/schedule
- Formulation and application of clear and concise editing specifications
- Validation of census data using other data sources
- Ensuring consistency of editing rules between Censuses (2001 and 2011) where applicable
- Provision of imputation flags and rates
- Identify errors and provide corrections where possible
- Review and refine the edit specifications based on edit trail evaluations, cross tabulations, and comparison of census data with other datasets
- Test specifications before confirming and applying them

Editing specification process commenced with activities relating to review of existing editing specifications guidelines. Census 2001 specifications as well as Community Survey 2007 survey specifications and the UN hand book on census editing were reviewed to form the basis of specifications development for Census 2011.

The review process of data editing specifications literature gave the editing team a background of data editing strategies and practices in the organisation. Using international standards as benchmark, initial rules were developed and tested using pilot and dress rehearsal data. The two datasets provided a starting point for development and improvement of editing specifications. However, due to time constraints, the editing specifications were never fully implemented on dress rehearsal as was planned. In order to continually test, improve and finalise Census 2011 editing specifications, a decision was made to apply the edits on a sample of the main census data.

4.19 Editing strategy

The Census 2011 questionnaire was very complex, characterised by many sections, interlinked questions and skipping instructions. Editing of such complex, interlinked data items required application of a combination of editing techniques. Errors relating to structure were resolved using structural query language (SQL) in Oracle dataset. CSPro software was used to resolve content related errors. The strategy for Census 2011 data editing was implementation of automated error detection and correction with minimal changes. Combinations of logical and dynamic imputation have been used to implement the editing strategy. Logical imputations were preferred, and in many cases substantial effort was undertaken to deduce a consistent value based on the rest of the household's information. To profile the extent of changes in the dataset and assess the effects of imputation, a set of imputation flags are included in the edited dataset. Imputation flags values include the following:

0 no imputation was performed; raw data were preserved

1 logical imputation was performed, raw data were blank

2 logical imputation was performed, raw data were not blank

3 hot-deck imputation was performed, raw data were blank

4 hot-deck imputation was performed, raw data were not blank

4.20 Summary

Data Processing of Census 2011 data was generally a success; however, there were some limitations. The linking of questionnaires was not done in the provinces as per plan, it was instead done for six weeks at the head office. This exercise reduced the processing period and resulted in the elimination of some processes. For example, the processes content verification, coding for occupation and industry, quality assurance for scanned data and Key from Paper 2 (part of QA for manual capturing) were all not done.

Chapter 5: Post-enumeration survey (PES)

5.1 Introduction

A post-enumeration survey (PES) is an independent sample survey that is conducted immediately after the completion of census enumeration in order to evaluate the coverage and content errors of the census. The PES for Census 2011 was undertaken shortly after the completion of census enumeration, from November to December 2011, in approximately 600 enumeration areas (EAs). The main goal of the PES was to collect high quality data that would be compared with census data in order to determine how many people were missed in the census and how many were counted more than once.

A population census is a massive exercise, and while every effort is made to collect information on all individuals in the country, including the implementation of quality assurance measures, it is inevitable that some people will be missed and some will be counted more than once. A PES assists in identifying the following types of errors:

- Coverage error: this includes both erroneous omissions (e.g. a household that was not enumerated) and erroneous inclusions (e.g. a household that moved into the enumeration area (EA) after census but was still enumerated, or a household that was enumerated more than once).
- Content error: this refers to the errors on the reported characteristics of the people or households enumerated during census.

The errors may emanate from the following reasons:

- Failure to account for all inhabited areas in the EA frame;
- EA boundary problems;
- Incomplete listing of structures and failure to identify all dwellings within an EA;
- Failure to enumerate/visit all listed dwellings within an EA;
- Failure to identify all households within a dwelling unit in instances whereby a dwelling unit has more than one household;
- Failure to enumerate households (complete questionnaires) for all households due to refusals, unreturned questionnaires for self-enumeration, inability to contact households, etc);
- Failure to include all individuals within households;
- Failure to observe the inclusion rule based on a person's presence on census night (i.e. failure to apply the *de facto* rule accurately); and
- Lost questionnaires or damaged questionnaires that could not be processed.

Usually more people are missed during a census, so the census count of the population is lower than the true population. This difference is called net undercount. Rates of net undercount can vary significantly for different population groups depending on factors such as sex, age and geographic location. Stats SA obtains estimates of the net undercount, including the type and extent of content errors (reported characteristics of persons and households enumerated in the census) using information collected through the PES.

5.2 Preparations for the PES

Planning involved the development of documents outlining the goal and objectives of the PES, timelines of the project, identification of resources (financial, human and otherwise) required for implementing the project, and the development of methodology documents. Timelines for the PES were synchronised with those of census to ensure the relevance of the project, and adhered to international best practice for maintaining a closed population between census and PES data collection, i.e. it should be carried out within a few months, preferably within six (6) months, after the completion of census fieldwork to ensure that the impact of natural population changes, such as births, deaths and migration, as well as lapses in respondent recall do not complicate the exercise. Activities of the PES included the following:

- Sampling: sample design and selection;
- Development of data collection methodologies: methods and procedures for data collection (publicity, listing and enumeration), including quality control measures applied during data collection;
- Development of matching and reconciliation procedures and systems: guidelines for matching, including rules for determining the match status of households and individuals, as well as computer-based system for capturing household and person records for matching purposes;

- Questionnaire development: selection of data items which allowed measurement of coverage and content, including layout design and printing of questionnaire;
- Data collection: publicity, listing and enumeration of households in selected enumeration areas (EAs);
- Matching and reconciliation: office matching (comparison) of census and PES household and person records, and revisits to households in order to confirm or get more information that might assist in matching unresolved cases; and
- Analysis and reporting: compilation of tables and report on PES results.

5.3 Methodology

The PES is an independent survey that replicates the census in sampled enumeration areas (EAs). The major assumption used in the PES is that the census and the PES are independent, the estimate of the percentage missed by the PES but found by the census, and the percentage missed by the census but found by the PES, can be used to construct estimates of the percentage missed by both PES and census. The PES sought to estimate the total number of persons and households in housing units on the night of 09–10 October 2011 (Census night). The units of observation were the persons who spent the Census night and/or the PES night in these living quarters.

5.4 Sampling

The sampling frame for the PES was the complete list of Census 2011 EAs, amounting to 103 576 EAs. The primary sampling units (PSUs) were the Census EAs. The principle for selecting the PES sample is that the EA boundaries for sampled EAs should have well-defined boundaries, and these boundaries should correspond with those of census EAs to allow for item-by-item comparison between the census and PES records. The stratification and sampling process followed will allow for the provision of estimates at national, provincial, urban (geography type = urban) and non-urban (geography type = farm and traditional) levels, but estimates will only be reliable at national and provincial levels. The sample of 600 EAs was selected and allocated to the provinces based on expected standard errors which were based on those obtained in PES 2001. Populations in institutions (other than Workers' Hostels), floating and homeless individuals were excluded from the PES sample.

5.5 Questionnaire development

The approach to questionnaire design focused on capturing the main elements for measuring coverage and content. Only a few elements from the Census 2011 questionnaire which were not likely to change within a short period (that is between the census and the PES reference nights) were retained. The questionnaire allowed for the classification of each listed person as 'non-mover', 'in-mover', 'out-mover', or 'out-of-scope', with regard to their household presence status on census night (09–10 October 2011). The data items for the PES questionnaire included first name and surname, date of birth, age, sex, population group and presence of person in dwelling unit on Census and/or PES night.

5.6 Fieldwork methodology

The PES replicated the Census in the sampled EAs, which meant that all methodologies and procedures for data collection were based on census methodologies and procedures. PES fieldwork was split into the following three (3) phases; publicity and listing, enumeration and mop-up operations.

- Publicity and listing were conducted at the same time. Publicity focused on informing and educating respondents and relevant stakeholders about the purpose of the PES to ensure successful coverage of all dwelling units (DUs) in selected EAs. Listing involved the recording of all structures (including all DUs, number of households in DUs and number of persons in households) in the sampled EAs in the EA Summary Books.
- Enumeration involved interviewing respondents and recording responses in the fields provided in the PES questionnaire. Self-enumeration for the PES was discouraged, but was used in instances where the respondent insisted on self-enumeration.
- Mop-up operations were conducted in the form of follow-up visits by senior field staff to households that could not be contacted during the enumeration period.

5.7 Matching and reconciliation methodology

The matching exercise involved the comparison of household and person records in census data and PES data. A two-way case-by-case matching was conducted using the two sources: PES questionnaires and census questionnaires. Reconciliation visits were conducted in order to confirm or get more information that would assist in matching unresolved cases, i.e. households or individuals enumerated in the census that did not correspond with households or individuals enumerated in the PES. Guidelines for matching, including rules for determining the match status of households and individuals, were developed. A computer-assisted manual matching system was developed for the capturing of data for matching purposes.

5.8 PES data collection

PES data collection commenced immediately after the completion of census fieldwork. The PES is a much smaller scale operation (and hence easier to control) than the census. These features enable the PES to deliver a more accurate estimate of the percentage of people and dwellings missed by the Census. PES data collection (field operations) was independent from census operations and the following measures were taken to maintain the operational independence of the PES:

- independent listing of enumeration areas (EAs) in the PES sample;
- using separate/independent office staff in the PES and census where possible;
- ensuring the PES interviewers were not employed as census field staff in the same area, and vice versa; and
- maintaining the confidentiality of the PES sample so that census field and office staff were not aware which areas are included in the PES.

Temporary personnel (Fieldworkers and Fieldwork Supervisors) were recruited from the EAs/districts in which they would be working and underwent rigorous training on fieldwork procedures to ensure that they deliver work of high quality at the end of the fieldwork phase. Experienced permanent staff from Household Surveys (based in provincial offices) was seconded to the project for the duration of data collection in supervisory positions to ensure high quality data and minimise costs. The PES followed the integrated approach towards fieldwork; whereby one (1) Fieldworker conducted publicity, listing and enumeration in one (1) EA. A total of 768 Fieldworkers and Fieldwork Supervisors were appointed for the collection of data in the 608 EAs (initially 600, but increased to 608 due to split EAs). A ratio of one (1) Fieldwork Supervisor for four (4) Fieldworkers was applied, but due to the spread of the sample in various districts, this ratio could not always be applied.

5.9 Matching and reconciliation

The matching process involved the comparison of household and person records in census data and PES data.
The main phases in the matching process were:

- Initial matching involved searching through the census records in order to find the corresponding cases from the PES enumeration records, and vice-versa (a two-way match);
- Capturing involved the capturing of PES and census information on a capturing tool which formed part of the computer-assisted manual matching system. Information for non-matched households and persons was also captured;
- Computer-assisted matching which was the automated assigning of an initial match status for the household and persons, and persons moving status. This process was done concurrently with the capturing process. Classifications from initial matching are as follows:

    1. Matched
    2. possible match

    In PES not in census:

    3. in PES not in census - definite non-match
    4. in PES not in census - insufficient or unclear information
    5. in-mover
    6. born after census
    7. in census not in PES;

- Reconciliation visits are follow-up visits to households in the PES sampled EAs. The purpose of reconciliation visits was to collect relevant information in order to determine the final match status of unresolved cases identified during initial matching. Cases of 'possible match', 'in PES not in census - insufficient or unclear information', and 'in census not in PES' were considered unresolved and were sent to the field for reconciliation; and
- Final matching involved to the use of the results obtained from the reconciliation visits and initial matching phases to assign a definite match status to each case. The table below illustrates the outcomes from final matching.

1. Matched

In PES not in census:

2. Missed in census
3. PES erroneous inclusion - cases in PES not in census that were outside the EA boundaries or otherwise erroneously included in PES
4. PES insufficient information - cases in PES not in census for which a final match status cannot be assigned due to insufficient information
5. In-mover
6. Born after census

In census not in PES:

7. Correctly enumerated in census, missed in PES
8. Census erroneous inclusion
9. Census insufficient information – cases in census not in PES for which a final match status cannot be assigned due to insufficient information

Estimation and tabulation

Coverage measures were calculated only for cases belonging to the PES universe. The initial estimates – weighted estimates of total from the sample include the following:

a) Estimated number of non-movers;
b) Estimated number of out-movers;
c) Estimated number of matched non-movers;
d) Estimated number of matched out-movers;
e) Estimated number on in-movers;
f) Estimated number of erroneous inclusions in the census; and
g) Estimated number of correctly enumerated persons missed in the PES

Dual system estimation was used to arrive at the *true population* of the country. This means that two independent sources or 'systems' are used to arrive at the estimate of the *true population*: the census and the PES. Both estimates contribute to the dual-system estimate, which is more complete than either the census or the PES estimate alone. In the end, this *true population* is compared with the *census-enumerated population* and the difference is the net *undercount* (or *overcount*). The following table indicates the undercount rates as estimated by the PES.

Table 5.1: Net census coverage error: Total and rate by province

Province	Omission rate for persons	Omission rate for households
Western Cape	18,6	17,8
Eastern Cape	12,9	10,3
Northern Cape	13,4	14,8
Free State	10,1	9,4
KwaZulu-Natal	16,7	16,5
North West	14,9	17,0
Gauteng	14,7	15,2
Mpumalanga	15,5	14,4
Limpopo	10,0	9,6
All provinces	**14,6**	**14,3**

The adjustment procedure consisted of creating homogeneous adjustment classes with similar coverage rates and calculating a common undercount rate, adjustment factor and adjustment figure for each class separately. The adjusted figure for the total population was obtained by summing across the adjustment classes. In addition, only the population of households received adjustment classes. The totals for the balance of the population, namely people living in collective quarters and the homeless on the streets, were not adjusted.

Chapter 6: Census 2011 monitoring & evaluation

6.1 Introduction

The division Survey Coordination, Monitoring and Evaluation (SCM&E) was tasked with the responsibility of monitoring of Census 2011 processes. This also entailed monitoring of all field activities which included field training, publicity, listing and enumeration. Considering the huge number of training venues, in particular at district level, and the number of EAs, monitoring could only be done on a sample basis.

A sample of 381 Fieldwork Coordinator Units, were covered across the country. A sample of the monitored EAs was scientifically selected proportion to size. The total of 55 districts was sampled and all of them having 381 M&E monitors across. Of the 103 576 total EAs, 7 220 EAs were sampled to be monitored which represented 7%. Monitoring was not only limited to sampled 7 220 EAs. A total of 381 M&E monitors and 31 coordinators were responsible for the monitoring activities in the field.

The monitoring of the field activities started on the 24th August and was completed on the 2nd of November 2011. The successes and challenges for each of the field phases of Census 2011 are identified and then recommendations are made for each phase. The comprehensive report is available with full details.

6.2 Training

Census data collection is the crucial process in the census project. In order to achieve results of good quality, training serves as the key in preparation for Census 2011 data collection. The plan was to have three levels of training: National, Provincial and District trainings. First level of training was conducted and it was intended to equip Monitoring and Evaluation Officers with the skill and knowledge of data collection methodologies and procedures as well as skill of imparting knowledge to the next level of trainees (Fieldwork Coordinators - trainees) who were supposed to train Fieldwork Supervisors and Fieldworkers at the third level.

Survey Coordination Monitoring and Evaluation (SCM&E) component monitored Census 2011 publicity and listing and data collection trainings. All of them were monitored at three levels with the exception of provincial data collection where monitors were trainers.

6.3 National Training

During national training for both publicity and listing and data collection; the successes were as follows: Availability of content specialists in different venues during training, the training venues were sufficient and conducive for training, the trainee workbook was very helpful, it aided understanding, most trainees had previous census and surveys experience and grasped content quickly and daily meetings with trainers and management for reporting feedback.

The challenges were that the slides used for training had some content mistakes (these were noted and rectified prior to the end of training), some trainees did not understand the completion of questionnaire and updating of summary book, all the trainees we expected to present even if they had limited understanding of the material and no feedback was given to individuals about their presentation skill.

6.4 Provincial Training

During the provincial training successes were that the programme started on time and was followed up to the last day, and where it wasn't the trainers did everything to catch up. Sentences on slides were easy to read and follow. The trainee workbook was very helpful, it aided understanding and it was utilised optimally in most cases. The trainees participated very well during training. Most trainees had previous census and surveys experiences and grasped content quickly.

The following were challenges that were reported by the different provinces: Going to the field without ID cards was a serious problem, signing contracts during the course of training disturbed the training programme, Cooperate Services presentations were not presented on the allocated slots; resulting in time consumption and disturbed the programme. Catering: managing a large group and ensuring that everyone is sufficiently catered for. Some groups were too big to be handled by the available trainers but due to unavailability of extra breakaway rooms there was no other option. Knowledge assessments could not be marked immediately due to the large number of trainees. Listing in informal and traditional areas was a challenge due to the nature of some structures.

6.5 District Training

The district trainings had successes because training continued although there was not sufficient training material provided in some areas. The trainees were patient to stay in the training venues throughout the training period, including weekends. Most of the average scores for the assessments were above 70%. The training worked to everybody's advantage both practically and theoretically, especial the practical side because during the field exercise trainees would actually identify their mistakes and fix them e.g. skip instruction.

The challenges were that dispatching of training material to all training venues was a challenge as some did not receive enough material. Some of the trainees did not have Grade 12/Matric. Most of the trainers had too much workload; they were expected to do many things at once: recruit, train, source venues and link trainees to EAs and attend to KTS as well as photo taking. Double bookings of some training venues – mainly community halls especially on weekends, thus trainers had to find alternative venues, which in most of the time were not adequate. The churches were not available for training on Sundays.

In most of the venues there were no tables at all so the clipboards were provided to trainees. There were still shortages of trainees/fieldworkers at the end of training, not all the numbers that they required were trained even overtraining was not possible. That led to appointing people who did not pass or people being given a brief crash course on questionnaire administration. Field practice was conducted without maps. This made it difficult for the trainees to locate and orientate themselves on the ground.

6.6 PES Provincial Training

The Post Enumeration Survey (PES) was also monitored and trainers were mostly permanent staff from the Survey Operations, who were well experienced in conducting training and data collection. They had been trained during the national training as preparation for the provincial training. Their experience and the training received made them confident enough to display sound knowledge and conduct good training.

The challenges were that the expected number of trainees that included overtraining was never reached. Lots of absenteeism on weekends was experienced. No availability of flip chart on the first three days of training. Employing people who had previous experience from other surveys proved to be a challenge because most of the time long discussions were held pertaining to methodologies used in other surveys before discussing the PES methodology. This resulted in confusions most of the time. Training continued without getting the required number of the trainees for overtraining.

6.7 Census 2011 Listing Monitoring Report

Listing is one of the processes that is monitored before actual enumeration to ensure adherence and compliance to set standards and proper implementation. Listing is the compilation of a register of all Dwelling Units, other structures and prominent features in a given EA. The monitoring of the Census 2011 listing phase took place from the 24th of August to the 24th of September 2011.

On the first day, none of the provinces managed to start. Only on the second and third day did 40% of the provinces manage to report that some work had been started. The 30th of August was day 6 of 18 days and the progress was at 3,9% EAs (or 4 083 EAs) complete which is 7% DUs of the required 38,9% DUs. Although the listing process was planned from the 24th of August to 10th of September 2011 it closed on the 24th of September 2011 due to slow progress, to give way for district training. Though there was a national call to end listing, the majority of the provinces continued to list. At the end of training not all provinces completed workload, Eastern Cape had the highest number followed by Limpopo. Free State was leading with the number of completed EAs.

6.8 Census 2011 Data Collection

Enumeration followed immediately after listing. The Census night was the mid-night between the 9th and the 10th of October 2011 and enumeration started from the 10th of October 2011. During Census night it was challenging because some FWCs were dropping questionnaires in the SDIs without explaining further about Census night. In some SDIs the guests left with the questionnaires, whereas in others the FWCs dropped only Questionnaires C as they did not understand how to differentiate between Questionnaires B and C. This happened in the majority of the provinces.

6.9 Detailed Questionnaire Completion Findings

6.9.1 Questionnaire Front Page

Most Fieldworkers were not filling information on the cover page: such as EA number, dwelling unit number, map reference number, response details. As a result of that if the questionnaires were misplaced it was difficult to be identified. Fieldworkers were also failing to differentiate between the household number and total number of households. In some cases fieldworkers were adding the total number of people living in the dwelling unit and gave it as total number of households.

6.9.2 Questionnaire Flap

On the flap, fieldworkers were forgetting to write zeros to precede the first digit denoting the age in completed years (e.g. for a person aged 7 years: 007 etc) . In some cases age was calculated from birth.

6.9.3 Section A (Demographics)

Fieldworkers were not asking about the marital status. They also experienced a problem asking the question regarding population group, because some of the respondents did not want to answer this question. The relationship question to the head of the household was asked the other way around. Language was taken as mother tongue (even infants were reported to speak the mother tongue)

6.9.4 Section B (Migration)

Census night was not used as reference night. A child born in 2009, for example, was recorded as having lived in an area since 2001. In this section most of fieldworkers were not following the skipping instructions as specified in the questionnaire.

6.9.5 Section C (General Health and Functioning)

In this section fieldworkers did not make a lot of errors because most of them understood the questions.

6.9.6 Section D (Parental Survival and Income)

Most of the fieldworkers managed to complete this section without making a lot of errors but some failed to understand the skipping instructions. However, Fieldworkers experienced problems when asking the question pertaining to income. Most of the respondents were not willing to answer this question because they were saying it is confidential they cannot reveal their income status.

6.9.7 Section E (Education)

Fieldworkers were not asking questions to older people e.g. from 40 years and above. They were also not following the skipping instructions instead they were asking all the questions.

6.9.8 Section F (Employment)

Most fieldworkers were not phrasing questions correctly and not following the skipping instructions.

6.9.9 Section G (Fertility)

Male fieldworkers did not feel free to ask questions on fertility instead they were leaving the whole part blank. Often fieldworkers just asked every woman the questions irrespective of a woman's age.

6.9.10 Section H (Housing, Household Goods and Services)

There was discrepancy in some of the summary books and questionnaires, for example description of the DU would be a big house on the cover and the EA summary book but would be one room with multiple use on Section H. Property values were often inflated.

Respondents were complaining about why they were being asked questions on household goods. They felt the question was irrelevant as they were expecting to be asked questions on the number of people not household goods and services.

6.9.11 Section I (Mortality)

Some of the fieldworkers were afraid to ask the question on whether the household had experienced any death in the last 12 months, because the respondents were saying that the question was personal and emotional.

6.10 Census 2011 Mop-Up Period

The period between the 1st and the 14th of November 2011 was scheduled for mop up. Just in 14 days, DUs completed increased from 81,4% to 94,2%, leaving only 5 262 (5,1%) EAs vacant, 26 003 (25,1%) EAs in progress and only 473 (0,5%) EAs being untouched.

6.11 Census 2011 Verification

To address quality concerns and to restore trust in the official statistics, the organisation in consultation with the key stakeholders introduced a number of approaches aimed at assisting in improving strategies for future censuses. These approaches included verification of non-response cases which were encountered during Census 2011. The non-response cases were categorised as follows: Non-contacts, Unoccupied Dwellings, Vacant Dwellings, New Dwellings under Construction and the Demolished Dwellings.

6.12 Sample and Methodology

Out of the 92 814 EAs only 81 873 EAs were identified to have the non-response cases. The verification sample was drawn from the 26 729 EAs that had more than 20% non-response cases. The verification process covered 1 104 EAs that had 48 120 cases.

The verification process was done through physical visits to the sampled out-of-scope cases in different Enumeration Areas (EAs) across the country. The verification exercise reference period was 10 October to 14 November 2011. Two categories were used: matched and unmatched statuses to classify the results. Census 2011 EA Summary Books were utilised to identify the cases in those sampled EAs.

6.13 Findings

Out of the 48 120 cases covered, 25 341(53%) were in agreement with what census found (matched); 16 276 (34%) were found to have a different status to that of Census 2011 (unmatched status). The 6 503 (13%) was unaccounted for, meaning not listed and or missed.

Gauteng had the highest contribution of out-of-scope cases at 31% and Northern Cape had the lowest at 2%. 11 725 (72%) out of 16 276 cases were reported to have been occupied during census. About 11 725 (24%) of the 48 120 cases claimed to have been enumerated during census.

6.14 PES Verification

The aim of the study was to identify the out-of-scope cases within the PES sample as reported in the PES listing summary books and verify them. This study formed part of the implementation of the Monitoring and Evaluation Framework for surveys.

Table 6.1: Findings

PES final result code by verified result code							
	Verified result code						
PES final result code	**Undefined**	**Complete/ Occupied**	**Unoccupied**	**Vacant**	**Demolished**	**NDUC**	**Total**
Undefined	134	259	49	356	130	138	1 066
Completed/ Occupied	3	112	4	6	0	0	125
Unoccupied	177	1 105	2 285	514	19	17	4 117
Vacant	64	361	102	1 520	31	18	2 096
Demolished	4	36	3	12	316	12	383
NDUC	14	117	34	38	12	629	844
Total	**396**	**1 990**	**2 477**	**2 446**	**508**	**814**	**8 631**

Out of 8 631 cases found within the EA boundary the following agreement between PES final result code and PES Verification study distribution of cases can be observed; 12,6% (134 out of 1 066) undefined, 89,6% (112 out of the 125) completed, 55,5% (2 285 out of 4 117) unoccupied, 72,5% (1 520 out of 2 096) vacant, 82,5% (316 out of 383) demolished and 74,5% (629 out of 844) NDUC.

The total number of verified cases are spread across the result codes as follows: 23,1% (1 990 out of 8 631) cases which were reported as completed or occupied compared to the 133 reported as complete that was randomly sampled, 4,6% (396 out of 8 631) were verified as undefined, followed by 28,7% (2 477 out of 8 631) unoccupied, 28,3% (2 446 out of 8 631) vacant, 5,9% (508 out of 8 361) and 9,4% (814 out of 8 361).

The table above shows that of the 1 066 that were classified as undefined 12,6% (134 out of 1 066) cases were verified as indeed undefined, followed by 24,3% (259 out of 1 066), 4,6% (49 out of 1 066), 33,4% (356 of 1 066), 12,2% (130 out of 1 066) and 12,9% (138 out of 1 066) were found to be completed/occupied, unoccupied, vacant, demolished and NDUC respectively.

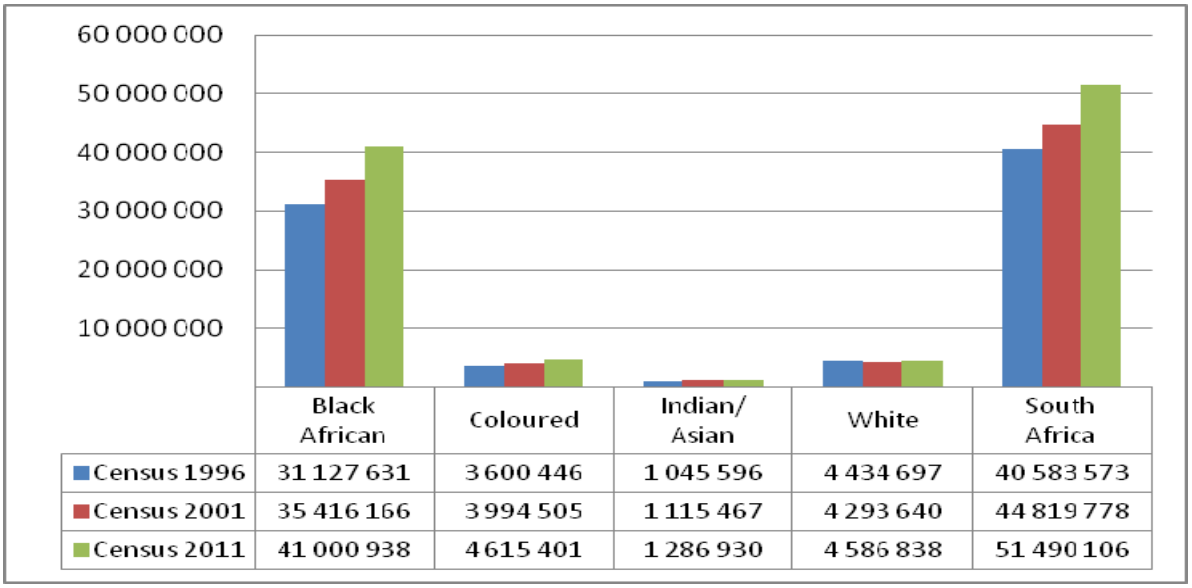
Chapter 7: Key results

7.1 Population

Table 7.1: Total population by province, Census 1996, 2001 and 2011

Province	Census 1996	Census 2001	Census 2011
Western Cape	3 956 875	4 524 335	5 822 734
Eastern Cape	6 147 244	6 278 651	6 562 053
Northern Cape	1 011 864	991 919	1 145 861
Free State	2 633 504	2 706 775	2 745 590
KwaZulu-Natal	8 572 302	9 584 129	10 267 300
North West	2 936 554	3 193 676	3 509 953
Gauteng	7 624 893	9 178 873	12 272 263
Mpumalanga	3 124 203	3 365 885	4 039 939
Limpopo	4 576 566	4 995 462	5 404 868
South Africa	**40 584 005**	**44 819 705**	**51 770 560**

Figure 7.1: Population distribution by population group



Census 2011 'Other' category excluded

Table 7.1 shows that the population increased by 4 million between 1996 and 2001 and by 7 million between 2001 and 2011. The population is also still dominantly composed of Black Africans.

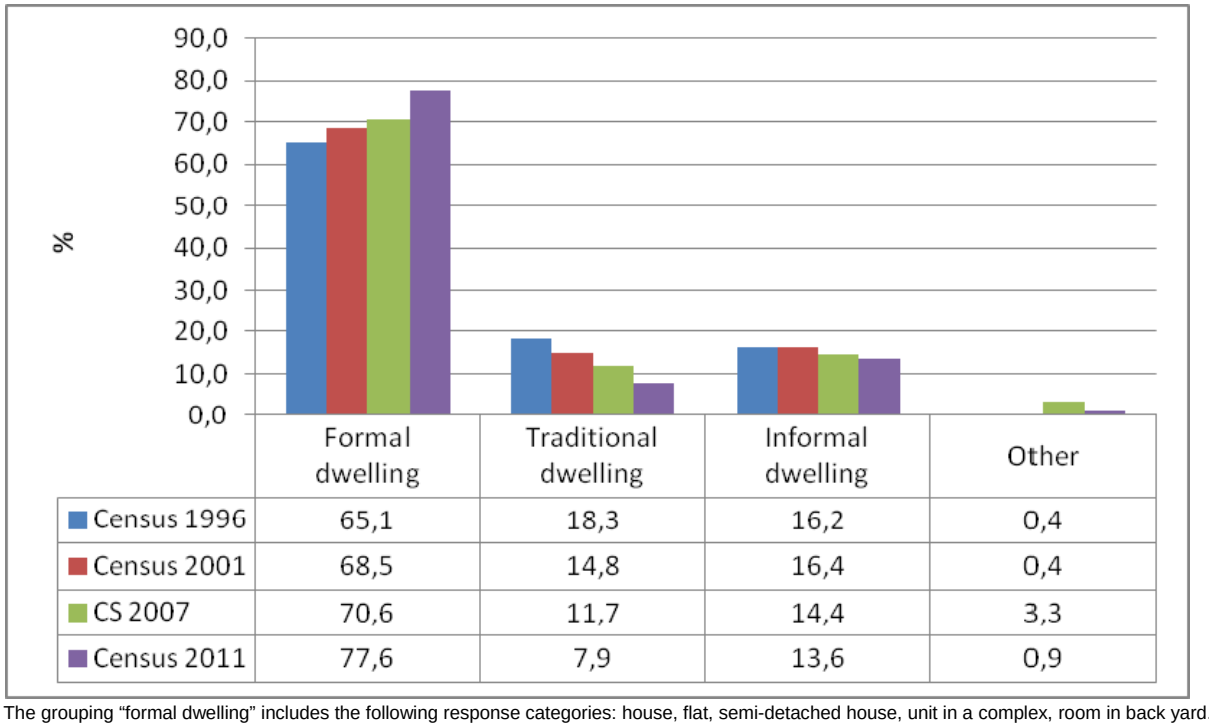
7.2 Households

Table 7.2: Household distribution by province: Census 2001, CS 2007 and Census 2011

Province	Census 2001		CS 2007		Census 2011	
	Households	(%)	Households	(%)	Households	(%)
Western Cape	1 173 304	10,5	1 369 180	11,0	1 634 000	11,3
Eastern Cape	1 481 640	13,2	1 586 739	12,7	1 687 385	11,7
Northern Cape	245 086	2,2	264 653	2,1	301 405	2,1
Free State	733 302	6,5	802 872	6,4	823 316	5,7
KwaZulu-Natal	2 117 274	18,9	2 234 129	17,9	2 539 429	17,6
North West	816 643	7,3	911 120	7,3	1 062 015	7,3
Gauteng	2 735 168	24,4	3 175 579	25,4	3 909 022	27,1
Mpumalanga	785 433	7,0	940 403	7,5	1 075 488	7,4
Limpopo	1 117 855	10,0	1 215 935	9,7	1 418 102	9,8
South Africa	**11 205 705**	**100,0**	**12 500 609**	**100,0**	**14 450 161**	**100,0**

Table 7.2 shows a steady growth in the number of households since Census 2001. Provincially, there is a decrease in the proportions of households in the Eastern Cape, while there is a slight increase or Gauteng.

Figure 7.2: Percentage distribution of households by type of main dwelling, 1996-2011



	Formal dwelling	Traditional dwelling	Informal dwelling	Other
Census 1996	65,1	18,3	16,2	0,4
Census 2001	68,5	14,8	16,4	0,4
CS 2007	70,6	11,7	14,4	3,3
Census 2011	77,6	7,9	13,6	0,9

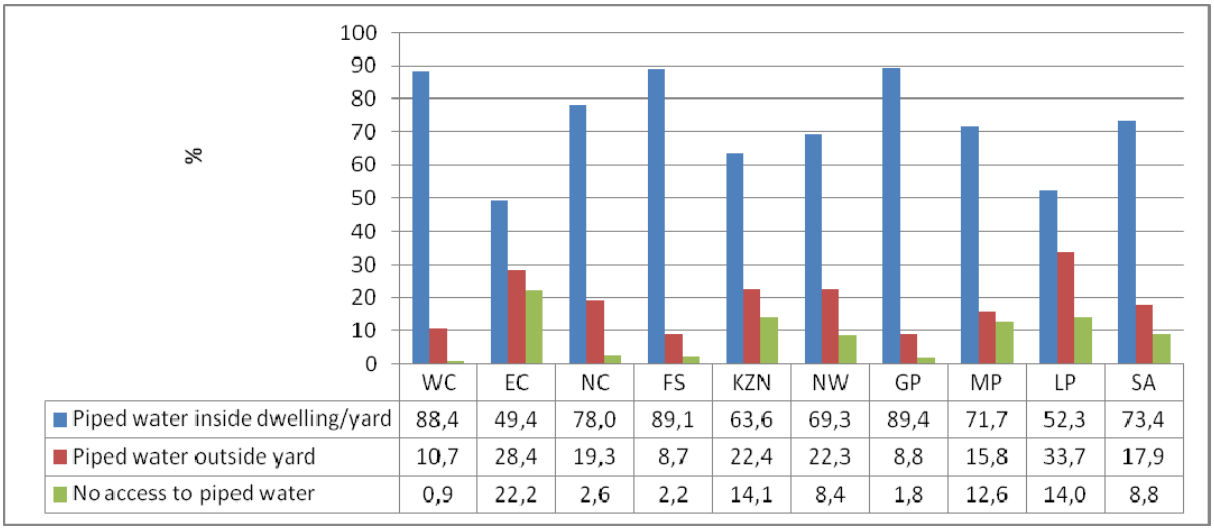
The grouping "formal dwelling" includes the following response categories: house, flat, semi-detached house, unit in a complex, room in back yard.

"Other" includes caravans

Data on unspecified for 1996 has been excluded

The above figure shows the distribution of households by type of main dwelling. The proportion of households living in formal structures increased significantly from 65,1% in 1996 to 77,6% in Census 2011. Over the period, the percentage of households residing in traditional dwellings declined from 18.3% in Census 1996 to 79% in 2011.

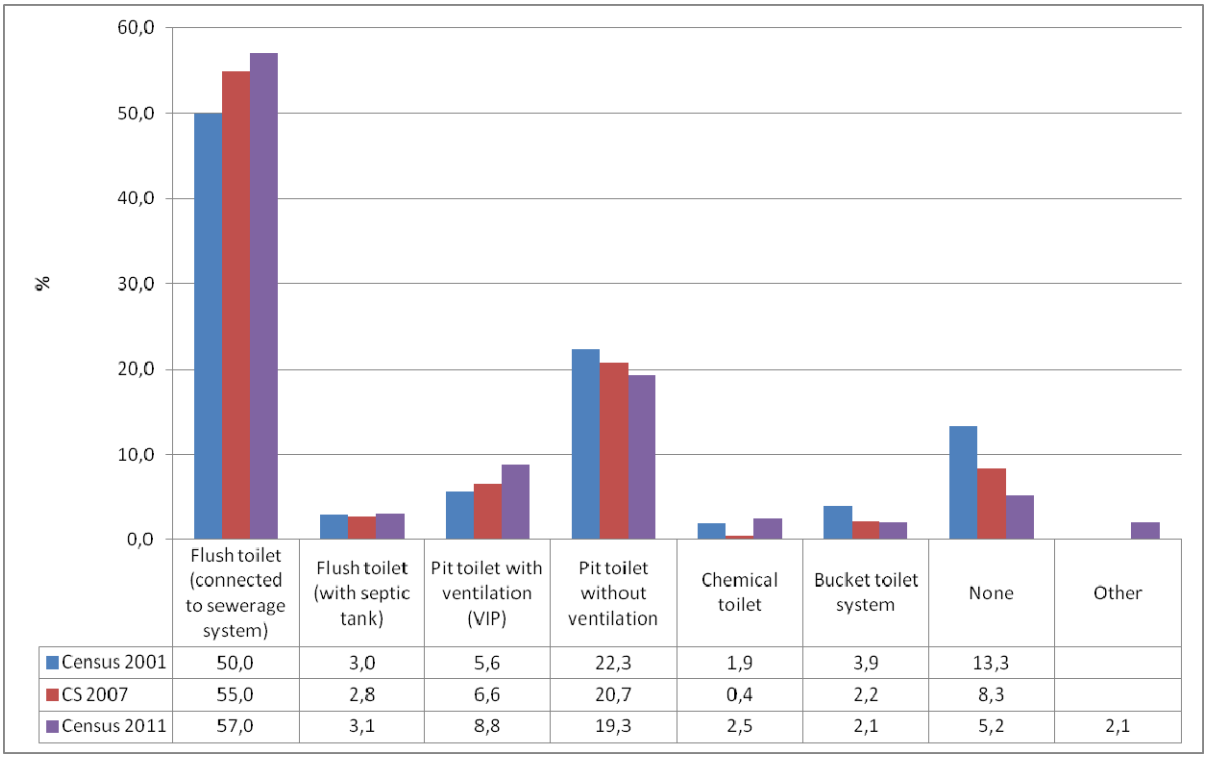
Figure 7.3: Percentage of households that have access to piped water by province, 2011



	WC	EC	NC	FS	KZN	NW	GP	MP	LP	SA
Piped water inside dwelling/yard	88,4	49,4	78,0	89,1	63,6	69,3	89,4	71,7	52,3	73,4
Piped water outside yard	10,7	28,4	19,3	8,7	22,4	22,3	8,8	15,8	33,7	17,9
No access to piped water	0,9	22,2	2,6	2,2	14,1	8,4	1,8	12,6	14,0	8,8

The above Figure 7.3 shows the proportion of households that have access to piped water within each province. The combination of piped water inside the dwelling and inside the yard has improved significantly in other provinces apart from Eastern Cape and Limpopo which have lowest the proportions.

Figure 7.4: Percentage distribution of households by type of toilet facility, 2011

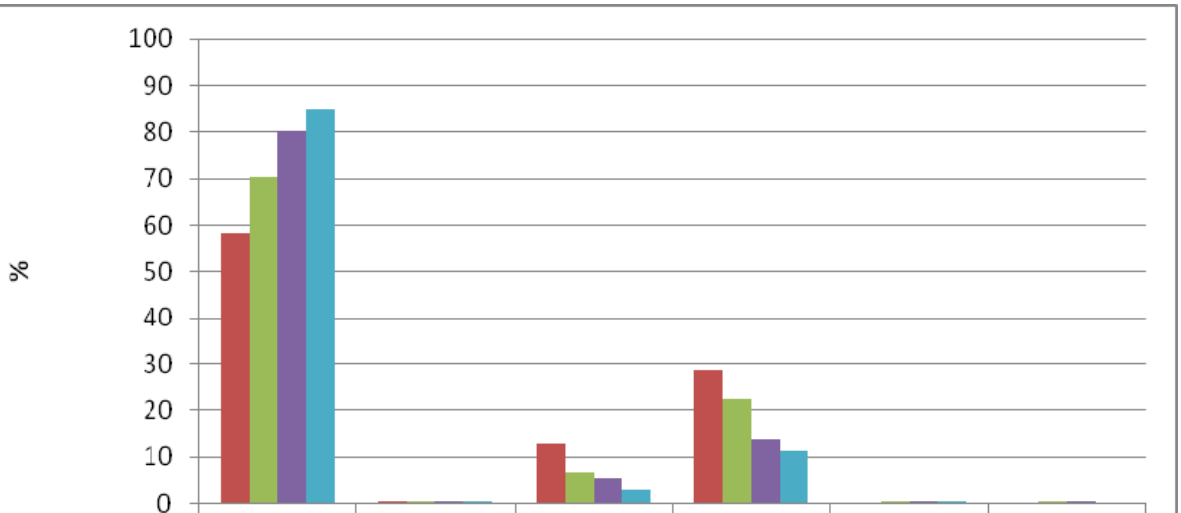


	Flush toilet (connected to sewerage system)	Flush toilet (with septic tank)	Pit toilet with ventilation (VIP)	Pit toilet without ventilation	Chemical toilet	Bucket toilet system	None	Other
Census 2001	50,0	3,0	5,6	22,3	1,9	3,9	13,3	
CS 2007	55,0	2,8	6,6	20,7	0,4	2,2	8,3	
Census 2011	57,0	3,1	8,8	19,3	2,5	2,1	5,2	2,1

According to the above graph, more than half of households (57%) have flush toilets connected to the sewage system.

The proportion of households using pit toilets without ventilation declined from 22,3% in Census 2001 to 19,3% in Census 2011and those decreased using the bucket toilet system halved (from 3,9% in 2001 to 2,1% in 2011). Those without toilets declined significantly to 5,2% in Census 2011 from 13.3% in 2001, an improvement from the proportions reported for both Census 2001 and CS 2007 (13,3% and 8,3% respectively).

Figure 7.5: Percentage distribution of households by type of energy used for lighting: 1996–2011



	Electricity	Gas	Paraffin	Candles	Solar	Other
Census 1996	58,2	0,4	12,7	28,7	0	0,0
Census 2001	70,2	0,3	6,6	22,4	0,2	0,3
CS 2007	80,1	0,2	5,3	13,7	0,2	0,5
Census 2011	84,7	0,2	3,0	11,4	0,4	

Category " None" is excluded from the figure for census 2011

As part of government policy to improve services, the use of electricity for lighting has increased significantly over the period 1996–2011. Figure 7.5 above shows that the proportion of households using electricity for lighting increased from 58,2% in 1996 to 84.7% in 2011 while the proportion using paraffin and candles has decreased.

7.3 Conclusion

Census 2011 field operations were executed to the best of the abilities of all teams that were involved despite all the challenges that were facing the census field operations, they were to an extent carried out successfully (all things considered). The lessons to be learned are to implement activities according to plans and honour start and end dates. Recruitment was also problematic because not the full complement of FWCs and Fieldworkers was recruited, hence the staggered recruitment had a negative impact on training, listing and enumeration for Census 2011. Listing and enumeration were not executed within the stipulated timelines in some provinces – hence listing and enumeration had to run concurrently in some EAs across provinces. At the end of mop-up period there were still some EAs not enumerated (untouched EAs).

It would be very beneficial for the next census and also for Stats SA household surveys if all the challenges and successes may be considered as lessons learnt in the planning for the next census, also there needs to be a significant improvement in the quality of the census field activities.

What may be lessons learnt from both verification projects are that many of the unoccupied DUs were indeed occupied during census and results code on the cover page of questionnaires may not be the true reflection of that questionnaire administration. The findings show that some of the questionnaires with response codes of falling under out-of-scope cases had usable information inside.

Annexure: Terms and definitions

Assistive devices and medication

A person who uses eyeglasses or a hearing aid or walking stick/frame or a wheelchair or chronic medication as enablers in correcting for certain impairments.

Bucket toilet system

A toilet system with a pail or other removable receptacle placed directly under the toilet seat, and where no water or chemicals are used.

Census (Population Census)

The process of counting the number of people, at a given point in time in a country, and collecting information about their demographic, social and economic characteristics. After data collection, the process includes the processing, analysis and dissemination of the information collected.

Census night

The night before census day. It is the decisive point of time for being included in the census (midnight on that night).

Collective living quarters/ communal living quarters

Structurally separate and independent places of abode intended for habitation by large groups of individuals or several households. Such quarters usually have certain common facilities, such as cooking and ablution facilities, lounges or dormitories which are shared by the occupants. Collective living quarters may be further classified into hotels, rooming houses and other lodging houses, institutions and camps.

Living quarters where certain facilities are shared by groups of individuals or households. They can be divided into: (a) hotels, motels, guesthouses, etc.; (b) workers' hostels and students' residences; and (c) institutions.

Confidentiality

A property of data indicating the extent to which their unauthorised disclosure could be prejudicial or harmful to the interest of the source or other relevant parties.

Converted hostels

Hostels where the accommodation has been converted into self-contained units for households

De facto census

A census in which people are enumerated according to where they were on census night.

De jure census

A census in which people are enumerated according to where they usually live.

Disability

Difficulties encountered in functioning due to body impairments or activity limitation, with or without assistive devices.

Domestic worker

Person employed to work in a household as a cleaner, cook, nanny, gardener, driver, etc. If a domestic worker lives in the same house as the employers, e.g. in a spare bedroom, does not get a form of salary in cash, and shares meals and other resources with the household, then he/she should be treated as part of the main household.

Dwelling unit

Structure or part of a structure or group of structures occupied or meant to be occupied by one or more than one household. Includes structure or part of structure which is vacant and/or under construction, but can be lived in at the time of the survey. Includes units in collective living quarters, unlike housing units. Dwelling units may therefore comprise housing units plus units in collective living quarters when applicable. (Examples of each are a house, a group of huts, and a flat.)

A dwelling unit has a separate entrance from outside or from a common space, as in a block of flats.

Premises not intended for use as living quarters, but used for human habitation at the time of the census, such as a barn, warehouse, etc., are also classified as dwelling units for census purposes.

Enumeration area

An enumeration area (EA) is the smallest geographical unit (piece of land) into which the country is divided for census or survey purposes. EAs typically contain between 100 and 250 households. Each EA is expected to have clearly defined boundaries.

Formal dwelling

A structure built according to approved plans, i.e. house on a separate stand, flat or apartment, townhouse, room in a backyard or rooms or flat-let elsewhere.

Formal sector

Sector of employment made up of all employing businesses that are registered in any way.

Health and functioning

Whether a person has difficulty in seeing, hearing, communicating, walking or climbing stairs, remembering or concentrating, and self-care such as washing all over, dressing or feeding.

Household

A household is a group of persons who live together and provide themselves jointly with food or other essentials for living, or a single person who lives alone. Note that a household is not necessarily the same as a family.

Household head

A person recognised as such by household, usually the main decision-maker, or the person who owns or rents the dwelling, or the person who is the main breadwinner. The head can be either male or female. If two people are equal decision-makers, the oldest can be named as the household head.

Household income

All receipts by all members of a household, in cash and in kind, in exchange for employment, or in return for capital investment, or receipts obtained from other sources such as pension.

Informal dwelling

Makeshift structure not approved by a local authority and not intended as a permanent dwelling. Typically built with found materials (corrugated iron, cardboard, plastic, etc.). Contrasted with formal dwelling and traditional dwelling.

Informal sector

A subset of unincorporated enterprises comprising those that produce at least some output for the market; and are less than a specialised size in terms of the number of persons engaged or of employees employed on a continuous basis; and/or not registered under specific forms of national legislation, such as factories, or commercial acts, social security laws, professional groups' regulatory acts, or similar acts, laws or regulations established by national legislative bodies.

Labour absorption rate

The proportion of the working-age population that is employed.

Labour force

All employed and unemployed persons of working age.

Not economically active population

People who are not available for work such as full-time scholars and students, full-time homemakers, those who are retired and those who are unable or unwilling to work.

Overcount

The number of persons or households inadvertently counted twice in a census.

Post-enumeration survey

A sample survey conducted immediately after a census to evaluate the census. Results are used to make adjustments for the census undercount or overcount.

Proxy

A person who answers on behalf of another person (who is absent or ill, for example). For a census, a proxy is the person that answered on behalf of other members of the household.

Reference period

The period of time (day, week, month, or year) for which information is relevant. The reference period for Census 2011 was 9–10 October 2011.

Respondents

The person (or persons) responding in this interview should be a member (members) of the household and be in a position to answer the questions. This will preferably be any responsible adult. For the rest of the questionnaire the respondents should answer these questions for themselves, if possible.

Sex

Biological distinction between males and females.

Traditional dwelling

A dwelling made primarily of clay, mud, reeds or other locally available natural materials. This is a general term that includes huts, rondavels, etc. Such dwellings can be found as single units or in clusters.

Transient

For the purposes of a census, a transient is a person who was travelling on census night (9–10 October), e.g. those at airports, harbours, border posts, people in tourist hotels, camping sites, caravan parks, the homeless and long-distance truck/bus and taxi drivers.

Undercount

The number of people or households that were not counted in a census.

Unspecified

All cases whereby an answer was expected but was left blank during enumeration.

Unoccupied dwelling

A dwelling whose inhabitants are absent at the time of the visit or during the reference period, during a census or survey, e.g. respondents on holiday or migrant workers.

Visitor

By definition of a household, a person visiting or staying with a household who is not a usual member of the household, that is, does not stay in the household four nights a week on average.

Wattle and daub

Traditional construction method whereby walls are built with wooden sticks/poles and covered with mud or a mixture of mud and clay.

Note

For a complete list of concepts, refer to metadata document