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In-depth analysis of the General Household Survey data

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Foreword

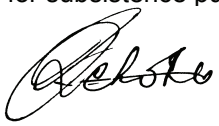
This, the fourth volume in the General Household Survey (GHS) series focuses on agriculture and food security. It follows on three predecessor reports which covered Social Grants, Housing, and Water and Sanitation. All these are available on the website of Stats SA, www.statssa.gov.za. I trust you will find these series enlightening and enabling you to know and understand South Africa.

The right to food is a basic human right that is entrenched in the constitution of the Republic of South Africa (No 8 of 1996). The constitution obliges the State to take all necessary steps to enable residents to meet their own basic food needs. As signatory to the Millennium Development Goals the country has committed itself to achieve the goals and targets set out in the document, including halving the proportion of people who suffer from hunger by 2015. The eradication of hunger, and poverty, is a particularly important development objective as good nutrition is vital for improved health and human capital outcomes.

Although South Africa is maintaining its ability to meet national food requirements, large scale inequality and poverty mean that many households do not enjoy food security or adequate access to food. A number of households live in a state of chronic poverty thus increasing their vulnerability to hunger and food insecurity. Furthermore they do not have access to a diet that is sufficiently diverse to allow adequate nutrition.Despite large declines in the vulnerability to hunger of South African households over the past decade, from 23,8% in 2002 to 11,5% in 2011, a large percentage of households (21,1%) continue to experience difficulty to access food. Inadequate access to food is particularly high in Northwest (32,9%) and Northern Cape (29,7%). Households in Limpopo, itself a relatively poor province compared to others, reports better access to food in comparison to any other province, and this includes wealthy provinces such as Gauteng and Western Cape.

Urbanisation and declining agrarian activities in significant parts of the country, including the subsistence sector, have transformed the South African economy into a wage economy in which most households are net consumers of purchased food, rather than producers thereof. Access to food has thus become a function of household cash income and thus cash deficit households are more likely to experience inadequate access to food. In addition, the report finds that a properly diversified diet is positively related to household income and as such households in quintile 5 are much more likely to have consumed food from all nine food categories than households in quintile 1. Less than 50% of households consumed food from all nine selected food categories in the report and 28% of households in quintile 1 consumed food from less than 7 food groups. While almost two thirds (62,6%) of South African households receive salaries or wages, it is disconcerting to note that 44,8% of households are poor enough to receive social grants. Households headed by black Africans and those headed by females remain most vulnerable to hunger and inadequate access to food.

Less than a quarter of households in South Africa are involved in agricultural activities, including doing agriculture as a hobby. This figure contains a large variation in the extent to which households practise agriculture across provinces. Households in the predominantly urban provinces such as Gauteng (5,9%) and Western Cape (7,3%) are least likely to participate in agriculture while households in the more rural provinces of Limpopo (52,7%), Eastern Cape (37%) and Mpumalanga (33,9%) are most likely to engage in agriculture. Less than 2% of households in South African practise agriculture as smallholders. The highest percentage is noted in Northern Cape (4,7%), followed by Northwest (3,9%) and KwaZulu-Natal (2,6%). The smallest percentage of smallholders are observed in Gauteng (0,1%) and Western Cape (0,6%). Subsistence farming is much more prevalent with 18,4% of households practicing this form of agriculture. Households in Limpopo (49,4%), Eastern Cape (33,2%) and Mpumalanga (30,8%) are most likely to engage in subsistence farming. Only 2,5% of households in Western Cape and Gauteng are involved in agriculture for subsistence purposes



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Glossary of abbreviations

DAFF	Department of Agriculture, Forestry and Fisheries
DOA	Department of Agriculture
FAO	Food and Agricultural Organisation of the United Nations
HSRC	Human Sciences Research Council
IFSS	Integrated Food Security Strategy
MDG	Millennium Development Goals

Glossary of concepts

Smallholders are households that engage in agriculture for a main or additional source of income.

Subsistence households engage in agriculture to produce food as a main or additional source of food.

Complex households consist of all households in which one or more non-related individuals are considered members of the household.

Household head is the main decision-maker, or the person who owns or rents the dwelling, or the person who is the main breadwinner.

Household income refers to receipts by all household 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 pensions etc.

Household is a group of persons who live together and provide themselves jointly with food and/or other essentials for living, or a single person who lives alone.

> **Note:** The persons basically occupy a common dwelling unit (or part of it) for at least four nights in a week on average during the past four weeks prior to the survey interview, sharing resources as a unit. Other explanatory phrases can be 'eating from the same pot' and 'cook and eat together'.
>
> Persons who occupy the same dwelling unit but do not share food or other essentials, are regarded as separate households. For example, people who share a dwelling unit, but buy food separately, and generally provide for themselves separately, are regarded as separate households within the same dwelling unit. Conversely, a household may occupy more than one structure.
>
> If persons on a plot, stand or yard eat together, but sleep in separate structures (e.g. a room at the back of the house for single young male members of a family), all these persons should be regarded as one household.

Hygienic toilet facility refers to flush toilet, chemical toilet or pit latrine with ventilation pipe.

Informal dwelling is a makeshift structure not erected according to approved architectural plans, for example *shack*s or shanties in *informal settlement*s or in backyards

Nuclear households are households consisting of heads of households, and/or their spouses and/or offspring.

Piped water in dwelling or on site is piped water inside the household's own dwelling or in their yard. It excludes water from a neighbour's tap or a public tap that is not on site.

1. Introduction

The right to food is entrenched in Section 27 of the Constitution of the Republic of South Africa (No 8 of 1996). The constitution obliges the State to take all necessary steps, including passing legislation and taking other measures, to enable citizens to meet their basic food needs. The first MDG goal aims to halve the proportion of people who suffer from hunger as well as poverty between 1990 and 2015. The eradication of hunger is a particularly important development goal, as good nutrition is essential to make improvements in health and human capacity needed to achieve many of the other MDGs. Ensuring universal food security has been a priority policy objective in South Africa since the early nineties. In order to achieve this Government implemented a variety of policies and programmes and increased spending on social programmes across all spheres of government. A national food security strategy, in the form of the integrated Food Security Strategy (IFSS) was adopted in 2002 to align various programmes and policies. Despite these attempts, various figures published over the past 20 years have revealed unacceptably high levels of hunger and food insecurity in South Africa.

Reliable and adequately detailed information about the food security situation of South Africa's population is essential for the development of policies and programmes to reduce food insecurity and hunger. This report will focus on data derived from the General Household Survey as a tool to provide such data.

2. Overview of livelihoods and food security

2.1 Livelihoods

According to the original Chambers and Conway definition "*a livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks maintain or enhance its capabilities and assets and provide sustainable livelihood opportunities for the next generation and which contributes net benefits to other livelihoods at the local and global levels in the short and medium term"* (World Vision, 2006: 28).

Households attempt to diversify their livelihood strategies by optimising the use of their capabilities and assets. Households with well-diversified assets and livelihood strategies can cope better than those with a more limited asset base and few livelihood resources (De Satgé, 2002), thus creating a veritable safety net for these households. Diversified sources could include a combination of salaries or wages obtained through employment, remittances, social grants, and even income or perhaps food generated through agricultural activity.

Households have different capacities to make a living and these are closely linked to household assets or resources. DFID and Oxfam (in De Satgé, 2002:61) divide assets into five types of capital, of which most are measured in the General Household Survey (GHS) to at least some extent, namely:

- *Human capital* includes the education, health status of household members and the ability of households to leverage income through employment.
- *Social capital* includes all social resources, such as social networks, which households can draw upon to attain their goals. Unfortunately social capital is not measured in the GHS.
- *Natural capital* refers to the land and natural resources to which households have access. Limited information is available from the GHS.
- *Physical capital* is essential to achieve livelihood goals and include access to basic services such as water, sanitation and electricity, as well as equipment and mediums of communication.

- *Financial capital* include income from a variety of sources, including wages, salaries and remittances, as well as the cash value of entitlements such as livestock, crops and other inputs.

Using available assets and capabilities, households attempt to achieve their livelihood goals by engaging in a variety of productive activities. These activities can be as diverse as contributing to the household income through employment, including remittances; engaging in crop and livestock production; running a business, or even caring for young or infirm household members. It is important to note that the ownership of livestock does not necessarily represent a livelihood activity (World Vision, 2006: 32).

Although this report cannot completely do justice to livelihoods due to data limitations, the concept provides a vital perspective on the ways in which households utilize their assets and capabilities to achieve their desired goals, including attaining food security. It also provides a conceptual framework within which households' vulnerability to shocks and stresses, and ultimately the attainment of food security can be understood. Vulnerability refers to the characteristics that limit a household's capacity to anticipate, manage, resist or recover from hazards, while resilience is a measure of the household's ability to absorb shocks and stresses. Even the best laid strategies can be derailed by sudden shocks such as the death of economically active household members, retrenchment, or sudden illness or injuries. This is particularly true if households are already being exposed to stresses such as food insecurity or limited access to basic services over prolonged periods of time.

2.2 Food security

The term food security was first introduced at the 1974 World Food Conference where it was defined in international and national terms as: " …[the] availability at all times of adequate world supplies of basic food stuffs…to sustain a steady expansion of food consumption…and to offset fluctuation in production and price". Over the past 30 years emphasis has, however, shifted to concern about access to food on individual and household level. In addition, focus has increasingly moved away from the narrow notion of food to the broader concept of livelihoods. It has also become acceptable to use subjective perceptions of those affected by food insecurity in addition to objective criteria (Hart, 2009:9).

Following these changes, a much more comprehensive definition of food security was adopted at the 1996 World Food Summit, namely:

> *"Food security exists, at the individual, household, national, regional, and global levels when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for a healthy and active life"* (FAO, 2001).

According to the FAO (2006), the definition has four interconnected dimensions or components, namely:

1. *Availability of food*: Effective or continuous availability of food in sufficient quantities and of appropriate quality.
2. *Access to food*: Ability of states and households to obtain food on a sustainable basis. Households need to have access to adequate resources and entitlements (ability to grow and/or purchase food, or to receive food) that enable them to acquire enough food for a nutritious diet. Access to food therefore refers to the ability to access food, as well as the selection and preparation of food.
3. *Utilisation of food* refers to food safety and quality and holds that individuals should be able to select, store, prepare, distribute and eat food in ways that ensure adequate nutritional absorption for all household members. The achievement of nutritional absorption is influenced by the availability of safe water, sanitation, refrigeration, and health care services.

4. *Stability of availability and access to food:* This refers to sustained access to nutritious food despite suffering shocks such as conflict, droughts, or death or unemployment at a household level.

Food insecurity occurs when one or more of these dimensions are weakened. These dimensions are interconnected and no single element can assure food security on its own. Inversely, food security on one dimension does not imply the same on another level.

The World Bank *Report on Poverty and Hunger* (1986) introduced a temporal distinction between chronic and transitory food insecurity. The report defines chronic food insecurity as a long-term event that is closely linked to chronic poverty, a lack of assets, and structural deficiencies in the economy of local food systems. By contrast, transitory food insecurity typically refers to short periods of extreme food insecurity which are often caused by climatic shocks, natural disasters or economic shocks and which tend to be more unpredictable and sudden. Seasonal or cyclical food insecurity is a third temporal feature which happens just before the harvest when food supplies are limited and food prices are high (Hart, 2009:10). Chronic food insecurity is considered more moderate than transitory food insecurity and is often referred to as moderate food insecurity. By contrast, transitory food insecurity, also referred to as acute food insecurity, is considered to have a greater severity and food gap (World Food Programme, 2005).

The focus on the timing and duration of food insecurity is often accompanied by an examination of the intensity of food insecurity. While the temporal dimensions can explain the nature and causes of food insecurity, a focus on the intensity can provide information on the magnitude of the food gap (WFP, 2005). Acute shocks can either cause households that are able to meet their minimum food needs at normal times to suffer food insecurity, or more seriously, increase the severity of food insecurity of households which had already been suffering moderate chronic food insecurity (Hart, 2009: 12). According to Devereux (2009) households' ability to deal with sudden shocks are severely eroded by gradual processes such as the loss of land and the impact of illness. According to Devereux (2006) households' vulnerability to chronic and transitory food insecurity is often inseparable. The intensity of food insecurity experienced by these households often fluctuates between moderate and severe. When a household's livelihood strategy does not enable the households to prepare for future shocks or gradual changes through the accumulation of resources, households will become more vulnerable to severe food insecurity.

2.3 Measurement of food security

A growing acceptance of subjective measures or perceptions of food security or insecurity accompanied the growing understanding of the multiple dimensions of food insecurity and its complex causes (Maxwell in Hart, 2009: 16). Although objective measures and associated indicators of food security, such as daily calorie intake and anthropometric indicators, remain important, these measures are not flawless (see Devereux, 2006:4). Minimum energy requirements based on the age and gender distributions of individual countries were introduced by the FAO and the United States Department of Agriculture (USDA). According to the FAO this value ranges between 1600 to 2000 kilocalories (kCal) per person per day, depending on the country, while the USDA have established a constant cut-off point of 2100 kCal per person per day.

A variety of survey instruments have been used since the early nineties to study food insecurity in South Africa. Although instruments have focussed on malnutrition, energy availability, food poverty and experiences of hunger, the results have according to Hendriks (in Hart, 2009: 35) not contributed meaningfully to a comprehensive understanding of complex food security. According to Hendriks most of the current studies do not enable researchers to accurately determine the prevalence of different types of food security, while also not being able to assist with the accurate identification of households that are at risk. The use of income and expenditure data, though closely associated with hunger and

food security, have similarly been questioned as these measures do not make adequate providsion for the role and existence of social networks (Spiegel in Hart, 2009: 31)

Unfortunately the General Household Survey (GHS) does not provide any information on micronutrients, the quantity or quality of food consumed, or intra-household consumption patterns. However, questions from the GHS allow the report to develop a relatively comprehensive overview of household livelihood strategies in conjunction with information on hunger and complex access to food. Questions on self-reported experiences of hunger among adults and children in households during the preceding 12 months have been part of the GHS since 2002. These questions were expanded in 2009 with the inclusion of a battery of questions adapted from the Household Food Insecurity (Access) Scale (or HFIAS) aimed at assessing whether households have experienced problems with accessing food during the prior 30 days (see Coates, Swindale and Bilinsky, 2007 for the nine questions used in the HFIAS tool). The version used in the GHS is scaled down, consisting of four incidence questions followed by four frequency questions. The battery of questions attempts to establish the changes households have made in their diet or consumption of food as a result of limited resources to acquire food. Whereas the HFIAS contains questions related to three of the dimensions of food security described earlier, the battery of questions used in the GHS primarily focusses on access and utilisation. This report will therefore refer to the *complex access to food* as opposed to *food security/insecurity*.

Like the original, the adjusted tool measures the access to food during the previous 30 days as self-reported by households. The following procedure was used for scoring: zero was attributed if the event described by the question never occurred; 1 point if it occurred; and another point if it occurred five or more days during the past 30 days. For each household the score correspond to the sum of these points and could range from 0 to 8. The results are presented as categorical designations, namely: Adequate access to food (score 0-1); inadequate access to food (score 2-5); and severely inadequate access to food (score 6-8). These scores were developed specifically for this set of questions since no universally accepted approach exists to set cut-off points used to create the designations (Coates et al, 2007).

Although the HFIAS questions were developed for household-level surveys such as the GHS, it is important to emphasize some limitations. The first limitation is that the results only allow us to understand the household situation within the context of a larger group, such as nationally or by province or population group. In addition, the questions do not focus on the intra-household distribution of food and the findings cannot identify reasons why households are food insecure.

2.4 The livelihoods and food security situation in South Africa

Although South Africa has managed to maintain its ability to meet national food requirements (Department of Agriculture, 2002: 20), large numbers of households do not enjoy food security. The 2005 National Food Consumption Survey found that 52% of households experienced hunger and that at least a third of households were at risk (Labadarios in Hart, 2009). South Africa is characterised by high levels of income poverty and inequality (Altman, Hart, Jacobs, 2009: 345) and poor households often suffer inadequate or unstable food supplies as well as poor nutrition. According to the Department of Agriculture (2002: 19) these households are often characterised by high unemployment, inadequate safety nets, insufficient capital or access to land, and meagre purchasing power.

Poverty and food insecurity in South Africa are some of the legacies of race-based socio-economic development practices that were enforced throughout history. The industrial development and resultant urbanisation that took place during the 20th century devastated African farming and stripped households from agricultural and rural capital, wealth, and farming expertise (DOA, 2002: 19). The loss of households' livelihoods and assets made it very difficult to deal with shocks (Drimie in Hart,

2009: 21), thereby increasing households' vulnerability to hunger. African households were historically forced to live in areas that were too far from markets to develop a sustainable agricultural industry, forcing particularly men to sell their labour as migrant labourers in cities. Unemployment and widespread poverty, combined to the historical loss of land and farming acumen will continue to drive food insecurity among black people in South Africa.

Apartheid transformed livelihood systems in South Africa, causing households in rural and urban areas to rely on non-agricultural sources of income to purchase food (Hart, 2009: 10). According to Baiphethi and Jacobs (2009:5) market purchases are becoming increasingly important for urban and rural households. They estimate that many households purchase up to 90% of their food and that food expenditure could amount to 60-80% of the total household income for low-income households. Increases in the cost of food and energy will increasingly force poor households to spend a larger proportion of household expenditure on food, leading to less diverse, lower quality diets that are less likely to provide sufficient nutrients.

Although poverty is a widespread problem in South Africa, it is unevenly distributed in terms of spread and intensity. The most urbanised provinces, Gauteng and Western Cape, tend to have the lowest percentage of poor households, while the majority of poor households are found in the predominantly rural provinces of Limpopo, Mpumalanga and Eastern Cape. According to the FAO (2009), poor households, especially those headed by females are most likely to be affected by food insecurity.

Achieving food security requires that households have adequate resources to obtain appropriate foods for a nutritious diet, that the aggregate availability of physical supplies of food is sufficient, and that households are able to utilize food. The latter requires that households have access to essential nutrients, potable water, adequate sanitation and the appropriate knowledge about optimum food utilisation.

Food security has to be addressed within the context of other developmental issues such as poverty, increasing commodity prices, including electricity, sources of income, social protection, rural and urban development, changing household structures, health, access to land, water and sanitation, education to name a few. South Africa faces a wide spectrum of food security challenges that include high levels of poverty, unemployment, inadequate safety nets, and unstable household food production. Poverty stricken households lack money to buy food. These households are constrained by the inability to secure employment or to generate income. Poor households are typically characterised by few income-earners and many dependents, and are particularly vulnerable to economic shocks.

Since 1994, Government has attempted to address these challenges by increasing spending on a variety of social programmes, including school feeding schemes, free health services for children younger than 6 years, health services for pregnant and lactating women, and well-targeted cash transfers or social grants (DoA, 2002:12). Social grants have been shown to benefit poor and vulnerable people and their broader households by, inter alia, elevating consumption, welfare and access to social services, by improving the ability of households to deal with risk and insecurity, by facilitating the development of local markets, and increasing investments in productive assets and activities (Neves, Samson, Van Niekerk, Hlatshwayo and du Toit, 2009). In fact, Van der Berg (in Altman, Hart and Jacobs, 2009) argues that social grants have been the most important contributor to reducing poverty and food insecurity.

Although social grants have played a vital role in improving food security among poor households, the current high levels are arguably not sustainable. Small-scale agricultural activity is often mooted as a potentially sustainable contributor to food security (Altman, Hart and Jacobs, 2009). Most households

are presently net consumers of purchased food, and most households either do not produce food themselves or produce too little food to meet their household needs (DOA, 2002).

2.5 Integrated Food Security Strategy

The IFSS was adopted in 2002 to 'streamline, harmonize and integrate' a diversity of food security programmes being implemented across departments into a single strategy (Department of Agriculture, 2002). The strategy aims to eradicate hunger, malnutrition and food security by 2015 and outlines the following strategic objectives:

- To increase household food production and trading
- To improve income generation and job creation opportunities
- To improve nutrition and food safety
- To increase safety nets and food emergencies management systems
- To improve analysis and information management systems
- To provide capacity building
- To hold stakeholder dialogue

The strategy follows a development approach which focuses on household food security and which targets household food insecurity by attempting to provide households with access to productive resources; income and job opportunities; empowerment to have nutritious and safe food; and if all else fails, temporary relief measures (DOA, 2002: 14). One of the primary objectives of the IFSS is to increase the participation of food insecure households, particularly those in rural areas, in agricultural activities (DOA, 2002: 28). This could be achieved by addressing household food production, trade and distribution by, inter alia, improving access to land, technology, credit and training, enhancing the ownership and exchange entitlements of the poor in the trade of agriculture; enhancing access to food production and processing technologies; commercializing agriculture to increase income and employment generation among food-insecure households; and improving productive resources and inputs as well as input and output markets. This policy is in line with the FAO's "twin-track" approach which attempts to improve rural development and to enhance rural productivity without neglecting the emphasis on facilitating direct and immediate access to food.

According to Jacobs, Aliber, Hart and O'Donovan (2008) many of the programmes implemented by the Department of Agriculture (land redistribution, natural resource management and land care) inadvertently advantage better resourced households and groups rather than poor ones.

3. Contribution of agriculture to food security

3.1.1 Role of agriculture

Smallholder and subsistence farmers have largely been neglected by policy makers despite the fact that subsistence/smallholder production in particularly rural areas could greatly mitigate households' vulnerability to food insecurity (Altman et al, 2009). Although studies suggest that rural households have historically been able to produce most of their own food, rural and urban households in South Africa have increasingly become net consumers rather than producers of food. Unlike their counterparts in the rest of sub-Saharan Africa, rural households in South Africa are much more likely to purchase food and much less likely to exploit the environment to generate income or to produce food. Although households are continually looking at opportunities to diversify their livelihoods and lessening their reliance on cash markets, households generally engage in activities aimed at maximizing their non-agricultural sources of income (Baiphethi and Jacobs, 2009:7). Rebuilding agriculture and specifically the role of small scale and subsistence farmers in rural and urban areas is a serious challenge.

Agriculture comprises crops, livestock and the utilisation of forestry and fishery resources and encompasses the production of food, fibre and related products. The agricultural sector is divided into commercial and subsistence sectors at two ends of the spectrum, flanking emerging/small scale farmers in between (DOA, 2002).

Although the focus in this section will fall on households engaging in agriculture in rural areas, evidence from the rest of the continent has identified a vibrant urban farming dimension. According to Maxwell (in Baiphethi and Jacobs, 2009:16) urban farmers engage in agriculture to produce food as a main source of income, for home consumption, to supplement existing diets through subsistence farming, or as only source of food.

Not much is known about the smallholder and subsistence agricultural sector besides the fact that the sector is relatively poorly organised and under resourced. A 1998 Eskom survey identified 2,1 million small scale and emerging farmers in South Africa. By 2007 approximately 240 000 black farmers provided a livelihood to about a million household members while employing up to half a million workers. According to this report, 3 million small scale farmers produced food to meet household consumption needs (Aliber and Hart, 2009). Despite misgivings about the production potential of the sector, Aliber and Hart (2009) argue that the sheer number of households involved in this form of agriculture necessitates support.

3.1.2 Contribution of subsistence agriculture

Altman et al (2009: 17) emphasize that households that engage in subsistence agriculture are not necessarily more food secure as many households engage in subsistence farming as an additional livelihood strategy. Using the Labour Force Survey, Aliber (2009) shows a marked increase in the number of black households that practised agriculture between 2001 and 2004. He finds that the increase in the number of households that do agriculture as ‘an extra source of food’ has been at the expense of households that engage in agriculture as ‘a main source of food’, perhaps because agriculture is being practised less intensively in the wake of other cash generating activities. His analysis explains significant variations in the number of agriculturally active households by arguing that households treat agriculture as a residual activity to be engaged in when needed. While it is clear that subsistence agriculture can play an important role in the creation of livelihoods, this can only be done if the productivity of Subsistence/Smallholder agriculture can be improved (Ruel et al in Baiphethi and Jacobs, 2009:5)

According to Altman et al (2009) women make up 61% of all individuals involved in agriculture. Although women are particularly active in semi-subsistence agriculture (as an extra source of food), black women are just as likely to be commercially orientated than black men.

Aliber and Hart (2009) concludes that present agricultural support seem to benefit a small number of households with access to water and that support programmes will have to be expanded to include activities conducted in diverse contexts; the promotion of appropriate crops and livestock; improving productivity while maintaining existing production capacity; and finally, to assist farmers to move into commercial and market orientated production as well.

3.1.3 Contribution of smallholder agriculture

Misselhorn (in Matshe, 2009:488) identifies seven drivers of food insecurity for rural smallholder households. His list identifies the climate/environment as the most important driver, followed by poverty, property rights, human capital, market access and unemployment. Households face a diverse set of challenges which necessitate a variety of solutions.

Informal markets involving a large number of small traders are common across South Africa and women comprise roughly two-thirds of the sellers. Although much of the produce is sourced from

smallholders (Baiphethi and Jacobs, 2009:10), smallholders are unable to compete with large commercial ventures in terms of price and volume. When agriculture does not allow rural households a sufficient livelihood, often due to poor market access and low productivity, households start to engage in more than one livelihood production activity (Matshe, 2009: 492), often increasing their reliance on non-farm sources of income. Given all the challenges faced by rural households, it is not surprising to learn that there has been a decline in the agricultural production in the former home lands (Aliber, 2009; Baiphethi and Jacobs, 2009:20).

Policies need to improve sustainable access to these markets for smallholders. Providing input support to households has been shown to increase production and food security. The appropriate support will however depend upon the particular context within which smallholder households operate.

4. Objectives of this volume

The General Household Survey (GHS) is one of the sources of official statistics and contributes, amongst other things, towards the monitoring of selected indicators in relation to the performance of various government departments. It has been conducted since 2002 by Statistics South Africa (Stats SA). The survey is specifically designed to measure the multiple facets of the living conditions of South African households and it covers six broad areas, namely: education, health and social development, housing, household access to services and facilities, food security and agriculture.

This volume focuses on information related to food security and agriculture that was collected between 2002 and 2011 as part of the GHS series. Since a more comprehensive battery of questions measuring complex access to food was introduced in 2009, the study will specifically focus on this period.

The report will outline factors that influence food security at household, provincial and national levels, and will particularly focus on poor households.

The report will address the following specific objectives:

1. To describe the livelihoods and food security status of South African households in general, focussing on differences between households with adequate and inadequate access to food;

2. To explore food access amongst poor households in urban and rural areas and to investigate the use of agriculture as a livelihood strategy;

3. To identify changes in the access to food status reported by households common to the 2010 and 2011 GHS data files. After identifying households that have remained in the sample, the report will identify households whose food security status has changed (i.e. improved or deteriorated), before attempting to identify characteristics that have contributed to the changes, such as loss of income or changes in the household size.

4. The report will next focus on a household Dietary diversity scale which will measure the variety of food types that households have consumed in the week before the 2010 survey, the previous time the question was asked. Household dietary diversity is expected to be higher for food secure households. This question is an attempt to measure the nutritional adequacy of household diets as a diet will be considered nutritionally inadequate if all food groups are not consumed.

5. After establishing some of the characteristics of food secure and insecure households, the next step is to establish the extent to which agriculture can contribute to food security,

particularly in poor households, and to identify households that are successfully engaged in agriculture. In the absence of adequate employment opportunities and an increasingly strained social protection system, increasing agricultural production is generally considered an important mechanism to improve food security in urban and rural areas.

6. The report will finally outline the access to food of poor households that are involved in small holder or subsistence agriculture in rural and urban areas respectively. This section will attempt to establish the characteristics of households that are engaged and not engaged in agriculture with a view to identify policy issues that could be addressed to make agriculture possible.

5. Methodology and data

This study used the GHS 2002–2011 data series as indicated in the objectives. The 2008 to 2011 studies were based on a multi-stage design which is based on a stratified design with probability proportional to size selection of primary sampling units (PSUs) at the first stage and sampling of dwelling units (DUs) with systematic sampling at the second stage. After allocating the sample to the provinces, the sample was further stratified by geography (primary stratification), and by population attributes using the Census 2001 data (secondary stratification). Survey officers employed and trained by Stats SA visited all the sampled dwelling units in each of the nine provinces. During the first phase of the survey, sampled dwelling units were visited and informed about the coming survey as part of the publicity campaign. The actual interviews took place four weeks later. A total of approximately 30 000 households were interviewed during consecutive years using face-to-face interviews. Between 2002 and 2008, data collection took place over a period of two weeks in July of each year. Since GHS 2009, data collection is spread over three months during the period July to August of each year. As a result of the sample size and stratification design, data can only be aggregated down to provincial level. Data for the whole series as presented in this release were therefore comparable and the comparative analysis was made based on the premise that all samples were representative of the population of South Africa at the time when the survey was conducted.

More details related to the sampling and fieldwork methodology can be found in the GHS reports and metadata (2002-2011).

Stats SA revised the population model to produce mid-year population estimates during 2008 in the light of the findings of the Community Survey 2007 and new HIV/AIDS and mortality data. The new data have been used to adjust the benchmarking for all previous datasets. Weighting and benchmarking were also adjusted for the provincial boundaries that came into effect in December 2006. The data for the GHS 2002 to GHS 2011 as presented in this release are therefore comparable.

As a result of new statistical programs used for weighting, which discards records with unspecified values for the benchmarking variables, namely age, sex and population group, it became necessary to impute missing values for these variables. A combination of logical and hot-deck imputation methods was used to impute the demographic variables of the whole series from 2002–2011.

As with the 2009 report, household estimates that were developed using the UN headship ratio methodology were used to weight household files. The databases of Census 1996, Census 2001, Community Survey 2007 and the Labour Force Survey 2003, Labour Force Survey 2005, and Quarterly Labour Force Survey (quarter 3) of 2009 were used to analyse trends and develop models to predict the number of households for each year. The weighting system was based on tables for the expected distribution of household heads for specific age categories, per population group and province. Missing values and unknown values were excluded from totals used as denominators for

the calculation of percentages, unless otherwise specified. Frequency values have been rounded off to the nearest thousand. Population totals in all tables reflect the population and sub-populations as calculated with SAS and rounded off. This will not always correspond exactly with the sum of the preceding rows because all numbers are rounded off to the nearest thousand.

The same sample was used between 2008 and 2011, allowing this report to utilize a quasi-panel design in analysing households that were in the sample in 2010 as well as in 2011. In particular, changes in the self-reported food security status of these households between these years are identified and explored.

SAS 9.0 and SAS Enterprise Guide were used for the data analysis. In addition to the use of descriptive statistics, modelling using logistic regression analysis and chi square tests were also used for selected indicators. Unspecified values (item non-response) were excluded from the totals that were used to calculate percentages.

6. Findings

6.1 Household livelihood strategies

The food security of households is dynamic and influenced by a range of factors. To secure access to sufficient food and good nutrition, households have to cope with a variety of risks and shocks. Households can practise a diversity of livelihood strategies, including salaries and wages, remittances, social grants, and farming activities. Together these provide a variety of procurement strategies for food and cash. Livelihoods are secure when households have secure ownership of, and access to resources and income-earning activities. The concept of livelihoods broadens the understanding of food security beyond just food, and serves as a reminder to consider all capabilities, assets and activities required for a means of living. Livelihoods-based approaches have been used since the mid-1990s to analyse poverty and food security and have been particularly beneficial in refining socio-economic analysis.

The distribution of households in each province according to income quintiles based on the per capita income of households is presented in Table 1. Poor households are classified as those that fall into the lowest two income quintiles. Whereas 25,1% of the households in Western Cape and 26,7% of the households in Gauteng can be classified as poor, more than half of the households in Limpopo (59,5%) and Eastern Cape (52%) are poor. By contrast, only 9,7% of households in Limpopo, and 11,3% of households in Eastern Cape fall in the highest quintile, compared to 29,7% of households in Western Cape and 28,3% of households in Gauteng.

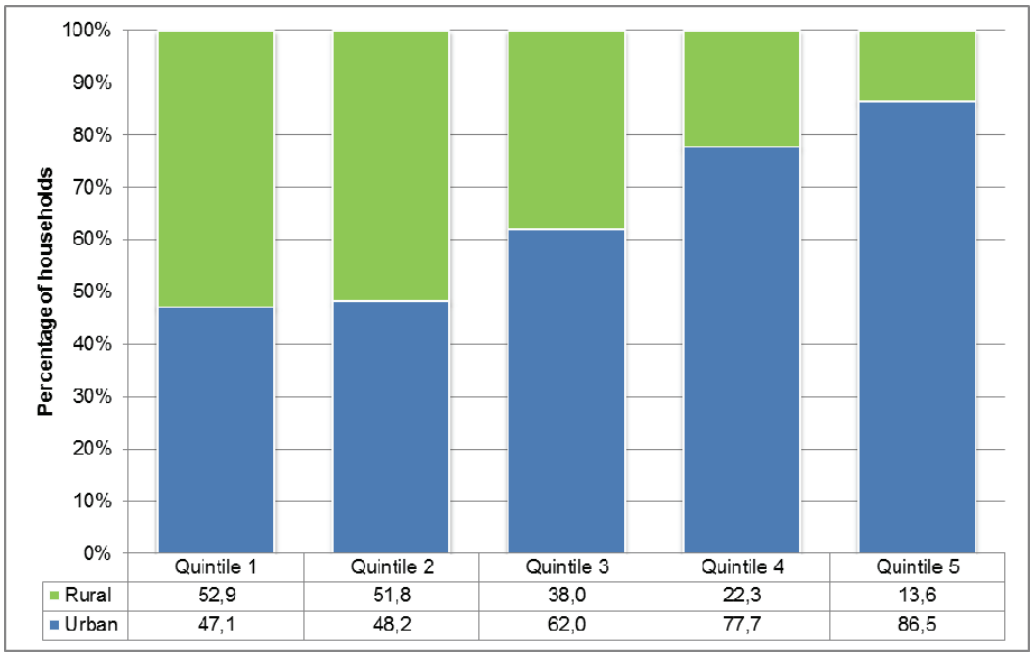
Table 1: Distribution of income quintiles by province, 2011

Income quintile	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpuma - langa	Limpopo
Quintile 1	11,8	24,3	22,3	20,5	22,9	21,9	13,8	18,9	31,9
Quintile 2	13,3	27,7	22,2	24,2	21,4	21,7	12,9	21,6	27,6
Quintile 3	21,4	22,3	23,2	19,8	19,5	19,2	18,4	22,2	18,8
Quintile 4	23,7	14,5	17,0	17,3	18,9	17,0	26,7	20,0	12,0
Quintile 5	29,7	11,3	15,4	18,2	17,4	20,2	28,3	17,3	9,7
Per cent	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**
Total	**1 425**	**1 749**	**305**	**875**	**2 559**	**962**	**3 386**	**993**	**1 389**

Figure 1 reveals that rural areas are more likely to contain poor households. While the majority of households in income quintile 1 (52,9%) and income quintile 2 (51,8%) live in rural areas, 77,7% of

households in income quintile 4 and 86,5% of households in income quintile 5 live in urban areas. This distribution is particularly evident in predominantly rural provinces such as Limpopo, Mpumalanga and Eastern Cape where households in the lowest two income quintiles are disproportionately represented compared to wealthier, more urbanised provinces such as Western Cape and Gauteng.

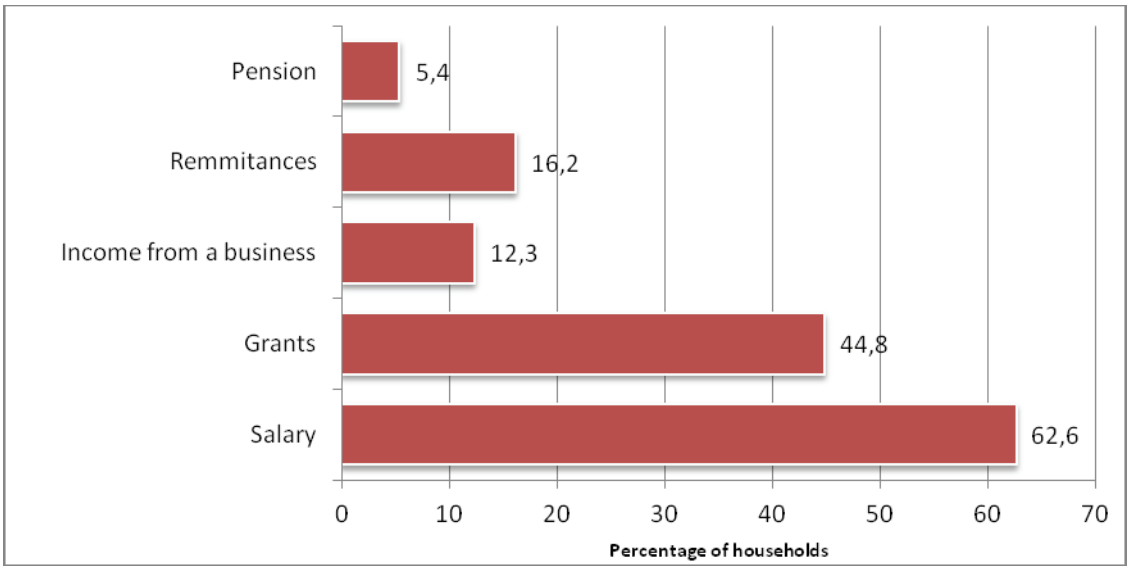
Figure 1: Distribution of urban and rural areas by income quintiles, 2011[1]



	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Rural	52,9	51,8	38,0	22,3	13,6
Urban	47,1	48,2	62,0	77,7	86,5

An analysis of the reported sources of income reported by households, Figure 2, reveals that almost two-thirds of households received a salary, followed by social grants (44,8%) and remittances (16,2%). Only 12,3% of households generate income from a business.

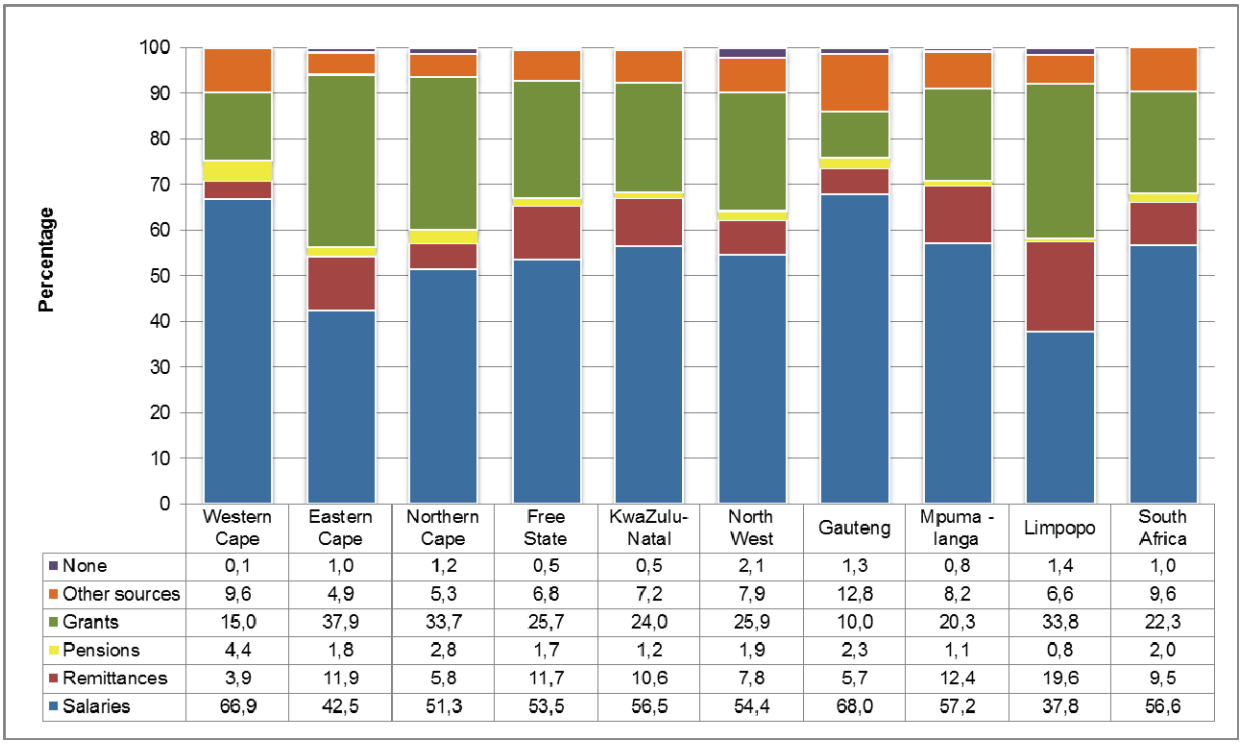
Figure 2: Percentage distribution of sources of household income for South Africa, 2011



[1] Urban and rural areas are based on the census 2001 settlement typology. Urban formal and urban informal areas were classified as urban, while tribal areas and rural formal areas were categorised as rural. Although some of these areas might have morphed into a different settlement type over the past 10 years, the use of rural and urban as dimensions of analysis remains valid and important.

Figure 3 shows the main sources of income reported by households per province. Nationally, 56,6% of households report salaries/wages as the main source of income, followed by grants (22,3%), other sources (9,6%) and remittances (9,5%). One per cent of households report having no income at all. Considerable variation is noted across provinces. More than two-thirds of households in Gauteng (68%) and Western Cape (66,9%) received salaries and wages as main source of income, compared to 37,8% in Limpopo and 42,5% in Eastern Cape. More than a third of households in Eastern Cape (37,9%), Limpopo (33,8%) and Northern Cape (33,7%) derived their main source of income from social grants, compared to a figure of 22,3% for South Africa as a whole, and 10% for Gauteng. Households in Gauteng (12,8%) and Western Cape (9,6%) are more likely to generate their main source of income from other sources.

Figure 3 : Household distribution of main sources of income by province, 2011



	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpuma-langa	Limpopo	South Africa
None	0,1	1,0	1,2	0,5	0,5	2,1	1,3	0,8	1,4	1,0
Other sources	9,6	4,9	5,3	6,8	7,2	7,9	12,8	8,2	6,6	9,6
Grants	15,0	37,9	33,7	25,7	24,0	25,9	10,0	20,3	33,8	22,3
Pensions	4,4	1,8	2,8	1,7	1,2	1,9	2,3	1,1	0,8	2,0
Remittances	3,9	11,9	5,8	11,7	10,6	7,8	5,7	12,4	19,6	9,5
Salaries	66,9	42,5	51,3	53,5	56,5	54,4	68,0	57,2	37,8	56,6

When the main sources of household income are disaggregated by income quintiles considerable variation is revealed across the distribution. This is presented in Table 2. Poorer households in the lower quintiles are characterised by a greater diversification of income sources, while the wealthiest households, income quintile 5, are more likely to report salaries and wages as the main source of income. Income from social grants and remittances declines with each increasing quintile, while income from business increases.

About 10% of households in quintile 5 reported income from business as the main source of income compared to half that (5%) in income quintile 1. It is notable that almost no households indicated income generated by the sale of farm products and services as the main source of income. This percentage remains remarkably stable across all income categories.

Table 2 shows that agriculture has ceased to be an important component of household food security as households have become net consumers of food with a greater reliance on purchased food. This is almost certainly linked to an earlier observation that the percentage of households that are involved in agriculture as a source of additional food have increased at the expense of households that produce food as a main source of income or and main source of food. Poor households have well diversified livelihood strategies which increasingly depend on non-farm sources of income, at the expense of

participating in agriculture. This diversification should be considered as a sign of increased household vulnerability due to the failure of previous strategies. The bottom two quintiles are extremely dependent on employment for their income. If one assumes that remittances are derived from salaries and wages of migrant household members, then 65,9% of all income in these households are derived from employment, including 7,8% from self-employment.

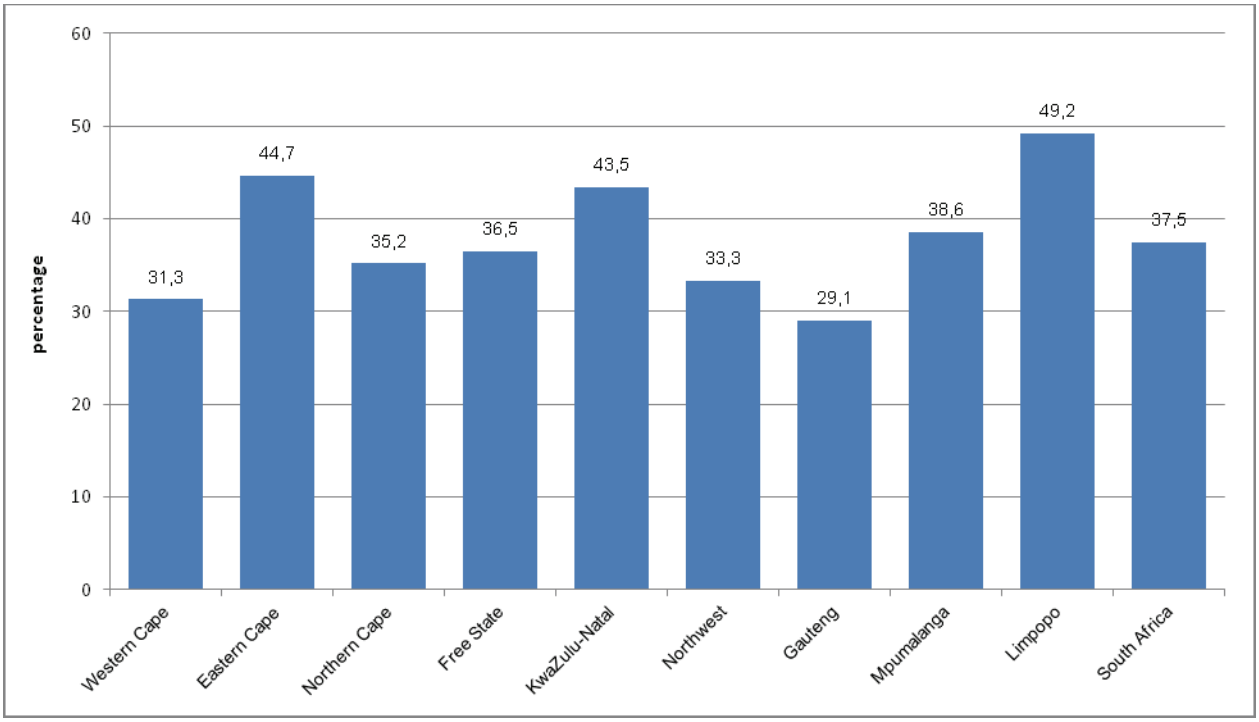
Table 2: Main sources of income per household by quintile, 2011

Main income	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Salaries	24,8	35,9	53,6	81,0	81,9
Income from business	5,0	5,1	6,0	7,4	9,7
Remittances	19,7	16,5	8,8	4,3	1,9
Pensions	0,3	1,0	1,2	2,7	5,3
Grants	43,7	40,8	30,1	4,1	0,2
Sales of farm products/services	0,0	0,0	0,0	0,0	0,2
Other income	1,5	0,6	0,3	0,6	0,7
No income	5,0	0,1	0,1	0,0	0,1
Percentage	**100,0**	**100,0**	**100,0**	**100,0**	**100,0**
Total (thousands)	**2 614**	**2 669**	**2 646**	**2 658**	**2 683**

Social grants have become an indispensable safety net for poor households. Grants were the main source of income for 43,7% of households in income quintile 1 and 40,8% of households in income quintile 2.

It is clear from the literature that the agricultural productivity in rural areas is very low and that households increasingly attempt to diversify their livelihood strategies through non-farm activities. The near absence of income from agricultural activities casts doubt on the value of agriculture as a way to address food insecurity.

Figure 4: Percentage of female headed households by province, 2011



Female-headed households are more likely to be poor and more likely to experience inadequate access to food than their male-headed equivalents. Whereas 37,5% of all households in the country are headed by women, female-headed households comprise a noticeably higher percentage of households in the historically labour sending provinces of Limpopo (49,2%), Eastern Cape (44,7%) and KwaZulu-Natal (43,5%). Rural households headed by women are often characterised by high dependency rates, unemployment and dependence on social grants. Some authors report that women are increasingly taking responsibility for subsistence farming as an additional livelihood strategy

6.2 Food security

6.2.1 Household vulnerability to hunger

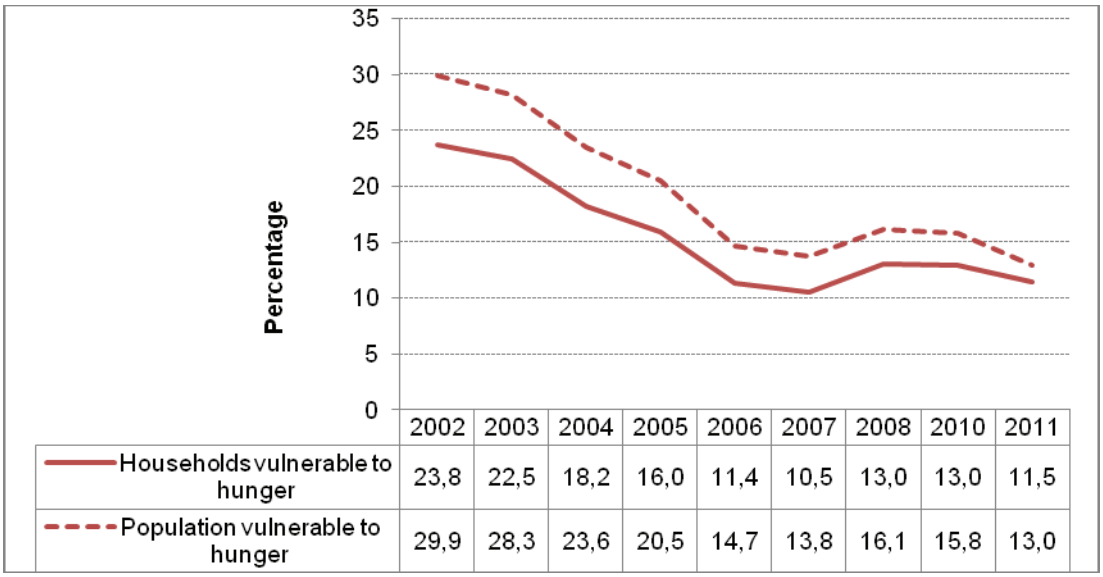
In order to understand food security it is useful to consider changes in the extent to which households have experienced hunger since 2002. In order to measure the prevalence of hunger, the GHS has asked the following questions since 2002:

> *"In the past 12 months, did any adult in this household go hungry because there wasn't enough food?"*

> *"In the past 12 months, did any child in this household go hungry because there wasn't enough food?"*

The respondent is limited to answer 'never', 'seldom', 'sometimes', 'often' and 'always' and the answers are collated by adding 'always', 'often' and 'sometimes' to create single measure of vulnerability. Although the term hunger is open to interpretation, the relatively smooth trend seems to indicate some shared understanding. Household and individual vulnerability to hunger is presented in Figure 5. It is clear from this figure that the percentage of households and individuals that have experienced hunger during the year before the survey has declined considerably between 2002 and 2011. During this time the percentage of households that experienced hunger declined from 23,8% in 2002 to 11,5% in 2011. The consistently downward trend was only interrupted in 2008 and 2010 following the financial crisis that hit the global economy and labour markets. The vulnerability of the population to hunger mirrors the household curve, though at a slightly higher level.

Figure 5: Estimated percentage of households and persons vulnerable to hunger in South Africa



	2002	2003	2004	2005	2006	2007	2008	2010	2011
Households vulnerable to hunger	23,8	22,5	18,2	16,0	11,4	10,5	13,0	13,0	11,5
Population vulnerable to hunger	29,9	28,3	23,6	20,5	14,7	13,8	16,1	15,8	13,0

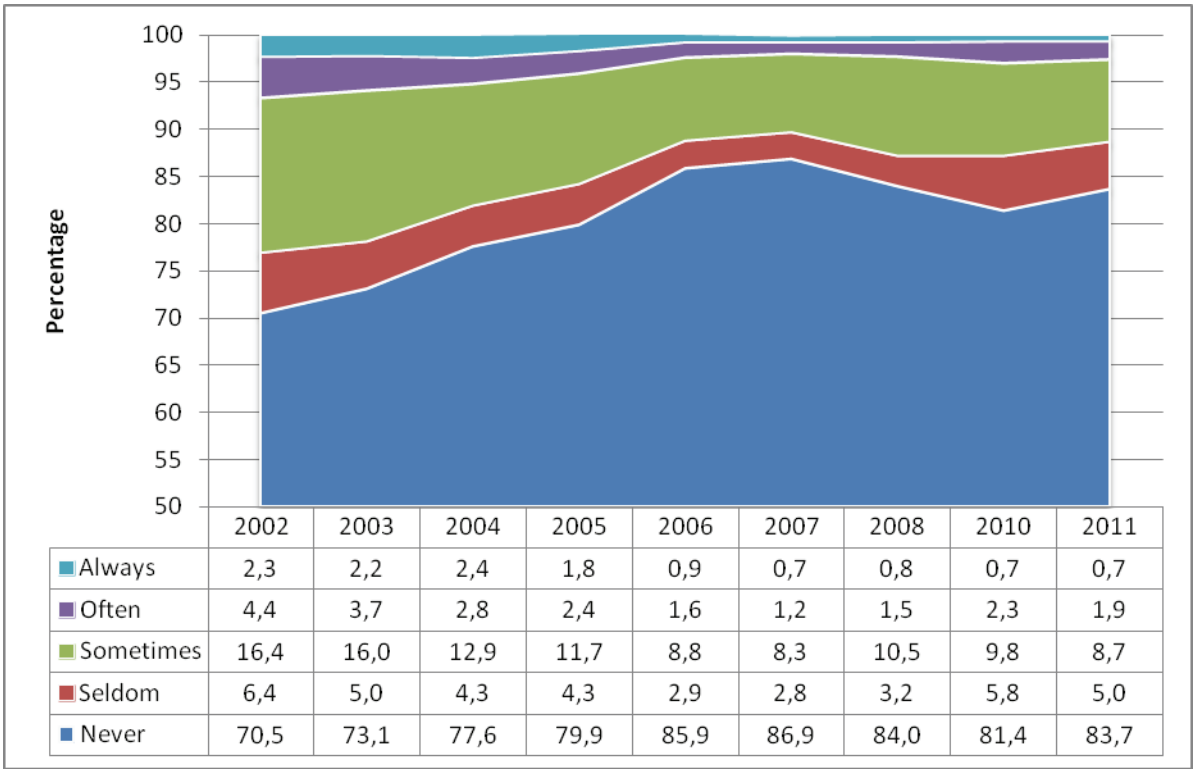
While household vulnerability to hunger has declined relatively consistently and smoothly until 2007, before rising again, the provincial patterns are much more uneven. Table 3 reveals that vulnerability to hunger in the Eastern Cape dropped rapidly from 41,8% in 2002 to 17,3% in 2006 before increasing slightly again in 2007, a year before the national figure started to increase. Vulnerability to hunger has been particularly jagged in Northwest, KwaZulu-Natal and Northern Cape. After declining consistently until 2007, the prevalence of hunger in Northwest leaped from 11% in 2007 to 19,4% in 2008 before retracting somewhat to 17,4% in 2010 and 14,7% in 2011. The reported prevalence of hunger in KwaZulu-Natal increased from 9,9% in 2007 to a high point of 17,2% in 2010 before falling back to a similar levels as before 2008. Reported experiences of hunger in Northern Cape has exhibited a wildly irregular pattern with a sharp decline between 2002 and 2003 followed by an inconsistent decline to 11,4% in 2008 before leaping to 22,9% in 2010. Whereas the prevalence of hunger amongst Northern Cape households was lower than all provinces but Gauteng and Western Cape in 2002, the figure of 22% in 2011 makes it the province with the highest percentage of households that experienced hunger. By contrast, experiences of hunger in Limpopo has declined from third highest in 2002 at 27,3% to the lowest of all provinces (4,4%) in 2011.

Table 3: Household experiences of hunger by province, 2002-2011

Province	2002	2003	2004	2005	2006	2007	2008	2010	2011
Western Cape	12,5	13,4	10,3	14,2	8,5	10,6	8,8	10,7	13,3
Eastern Cape	41,8	36,9	33,8	26,6	17,3	18,7	18,1	18,5	15,9
Northern Cape	22,6	13,3	15,3	16,0	14,7	14,9	11,4	22,9	22,0
Free State	25,8	23,1	17,5	17,3	13,8	8,9	11,0	12,2	13,6
kwaZulu-Natal	26,8	26,5	19,1	14,0	11,3	9,9	15,4	17,2	10,8
Northwest	25,2	25,8	23,2	19,5	12,7	11,0	19,4	17,4	14,7
Gauteng	13,1	14,9	11,1	10,2	9,4	7,9	10,0	9,1	9,8
Mpumalanga	27,6	26,5	21,1	19,8	9,8	11,4	15,4	10,6	11,0
Limpopo	27,3	20,9	17,9	16,1	9,7	6,8	9,9	7,3	4,4
South Africa	**23,8**	**22,5**	**18,2**	**16,0**	**11,4**	**10,5**	**13,0**	**13,0**	**11,5**

Figure 6 outlines the changes in specific response categories between 2002 and 2011. The figure is based on the question on adult experiences of hunger during the previous 12 months. The figure shows a decline for all the response categories, except ‘never’ between 2002 and 2007. Following the near continuous decline in experiences of hunger since 2002, an increase is noted in the response categories for ‘often’, ‘seldom’ and ‘sometimes’ in 2008. While this increase is followed by a consistent decline until 2011, the figure is yet to reach the lows noted in 2007. It is instructive to note that the percentage of households that have answered ‘always’ to this question have declined consistently since 2002. By contrast, the percentage of households that answered ‘never’ increased from 70,5% in 2002 to 86,9% in 2007 before falling back slightly to 83,7% in 2011, which is still much higher than the starting point. These figures seem to suggest that households have become much less likely to experience hunger.

Figure 6: Household experiences of hunger, 2002-2011



	2002	2003	2004	2005	2006	2007	2008	2010	2011
Always	2,3	2,2	2,4	1,8	0,9	0,7	0,8	0,7	0,7
Often	4,4	3,7	2,8	2,4	1,6	1,2	1,5	2,3	1,9
Sometimes	16,4	16,0	12,9	11,7	8,8	8,3	10,5	9,8	8,7
Seldom	6,4	5,0	4,3	4,3	2,9	2,8	3,2	5,8	5,0
Never	70,5	73,1	77,6	79,9	85,9	86,9	84,0	81,4	83,7

6.2.2 Household access to food

Aliber (2009: 386) notes that the incidence of malnutrition is significantly higher than the self-reported hunger, and he argues that the absolute level is perhaps of less importance than the changes over time, or comparisons of figures between sub-groups. While this question provides an important window to understanding some aspects of food security, the approach is unfortunately relatively one-dimensional and unable to capture issues related to the access and utilisation components of food security. For this reason, the questions on hunger were supplemented by a battery of four questions that are based on the Household Food Insecurity Access Scale (HFIAS) and which is aimed at establishing complex access to food by exploring the changes households have made in their diet or consumption of food as a result of limited resources to acquire food. Although the question was first introduced in 2009, the addition of an extra question in 2010 makes direct comparison with later figures unwise. The following questions were used to calculate food adequacy access index:

"*Did your household run out of money to buy food during the past year?"*

"Has it happened 5 or more days in the past 30 days?"

"Did you cut the size of meals during the past year because there was not enough food in the house?"

"Has it happened 5 or more days in the past 30 days?"

"Did you skip any meals during the past year because there was not enough food in the house?"

"Has it happened 5 or more days in the past 30 days?"

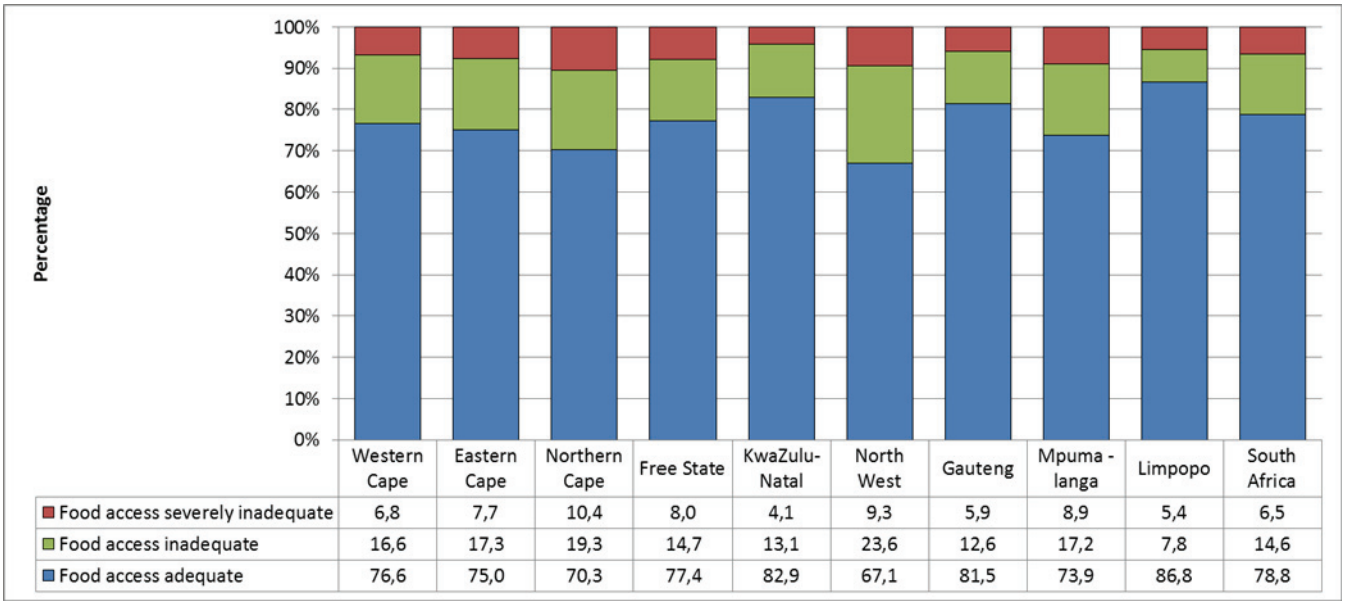
"Did you eat a smaller variety of foods during the past year than you would have like to, because there was not enough food in the house?"

"Has it happened 5 or more days in the past 30 days?"

Households were requested to answer 'yes' or 'no' to each question. Every affirmative answer increases the index score by one point. If households scored one or less out of a possible eight, they were classified as having adequate access to food. Households with a score between, and including, two and six are classified as having inadequate access to food. Scores of seven or eight are associated with severely inadequate access to food.

Households' access to food by province for 2011 is presented in Figure 7. According to this figures 78,8% of households experienced adequate access to food in 2011. Households in Limpopo experienced the best access (86,8%), followed by KwaZulu-Natal (82,9%) and Gauteng (81,5%). The provinces with the smallest percentage of households that experienced adequate access were Northwest (67,1%), Northern Cape (70,3%) and Mpumalanga (73,9%). Households in these provinces also most likely to experience severely inadequate acess to food.

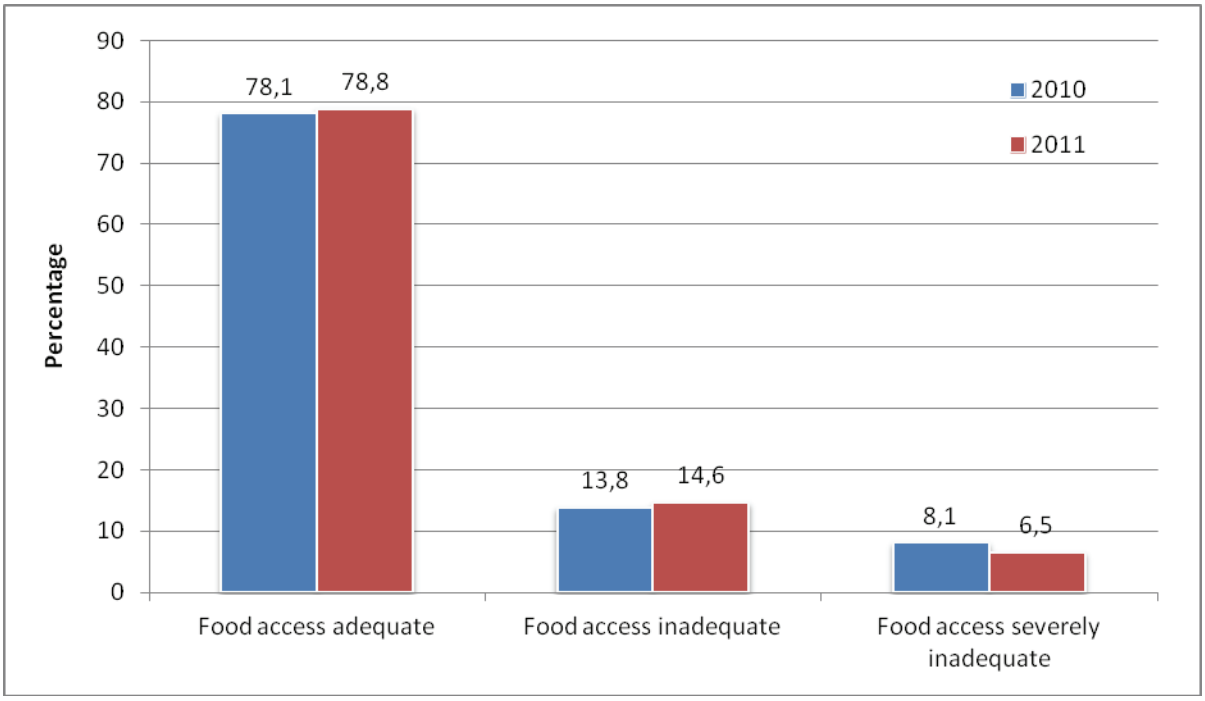
Figure 7: Food adequacy status of households by province, 2011



	Western Cape	Eastern Cape	Northern Cape	Free State	KwaZulu-Natal	North West	Gauteng	Mpuma-langa	Limpopo	South Africa
Food access severely inadequate	6,8	7,7	10,4	8,0	4,1	9,3	5,9	8,9	5,4	6,5
Food access inadequate	16,6	17,3	19,3	14,7	13,1	23,6	12,6	17,2	7,8	14,6
Food access adequate	76,6	75,0	70,3	77,4	82,9	67,1	81,5	73,9	86,8	78,8

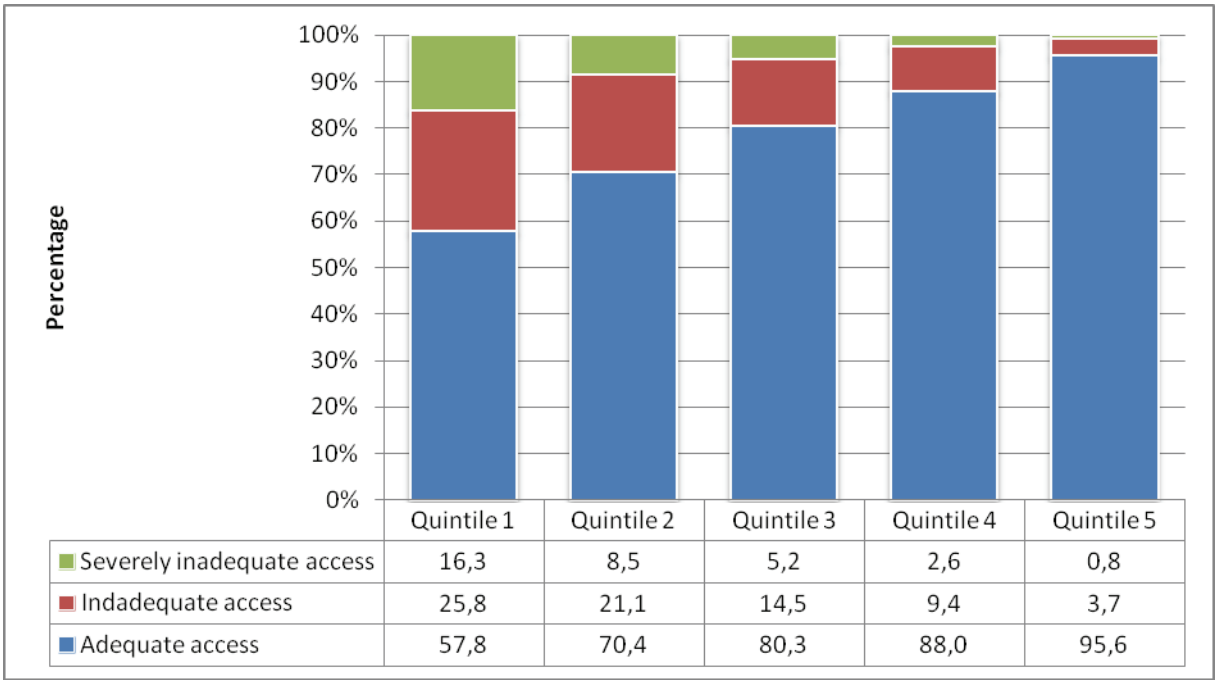
Figure 8 reveals that the percentage of households with inadeuqate or severely inadequate access to food has declined from 21,9% in 2010 to 21,1% in 2011. The figure shows that the percentage of households with severely inadequate access to food declined from 8,1% in 2010, while the percentage of households that experienced inadequate access increased slightly from 13,8% to 14,6%. Most notably, however, the percentage of households that experienced adequate food access increased from 78,1% in 2010 to 78,8% in 2011.

Figure 8: Comparison of food adequacy status of households for 2010 and 2011



Access to food generally improves with income. The relationship between food adequacy and household income is presented in Figure 9. Whereas only 57,8% of households in income quintile 1 experienced adequate access to food in 2011, this consistently improved during each quintile to 95,6% for households in income quintile 5.

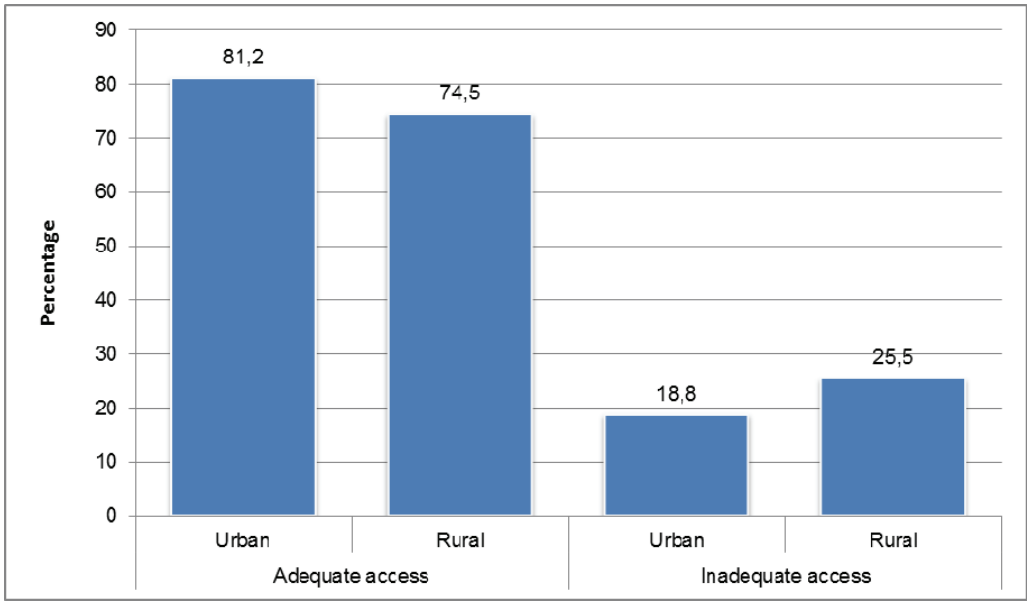
Figure 9: Food adequacy status of households by income quintile, 2011



	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Severely inadequate access	16,3	8,5	5,2	2,6	0,8
Indadequate access	25,8	21,1	14,5	9,4	3,7
Adequate access	57,8	70,4	80,3	88,0	95,6

Households in urban areas are more likely to experience adequate access to food than housheolds in rural areas. Figure 10 shows that 18,8% of households in urban areas experienced inadequate or severely inadequate access to food compared to 25,5% for households in rural areas.

Figure 10: Household access to food by geographic location, 2011



The characteristics of households that experience adequate and inadequate access to food are presented in Table 4. Households headed by black Africans are more likely than their share of the population to experience inadequate access, while households headed by white individuals are much more likely than their share of the population to enjoy adequate access to food. Similarly, female headed households are more likely to experience inadequate access to food.

It is interesting to note that households headed by elderly individuals are less likely than their share of the population to experience inadequate access to food, while the opposite is true for households headed by adult individuals aged 35-59. This is almost certainly linked to the availability of old age grants to qualifying individuals over the age of 60 years. This observation is supported by the finding that households with a larger percentage of elderly members are less likely to lack access to food than households with fewer or no elderly members.

The composition of households could have a determining impact on the households's access to food. Table 4 suggests that single person and nuclear households are more likely to experience adequate access to food, while extended households consisting of the nuclear family as well as other family members are much more vulnerable to food insecurity. This finding is most probably a function of the number of household members as well as the economic conditions that have brought them together. This assumption is supported in the table by the finding that households with less than four members are less likely than their share of the population to have experienced inadequate access to food. The opposite seems to be true for households with 5-9 and 10 and more members. The percentage of children in the household is perhaps even a better predictor of food adequacy than household size as children are typically net consumers of household resources. The table suggests that households of which less than 50% of the members are children are less likely to have indequate access to food than those with a larger percentage of children.

Since the majority of households have become net consumers rather than producers of food, it is important to investigate the relationship between a number of factors and food access. This is presented in Table 5. As could be expected, households that contain at least one employed individual can be expected to have adequate food access while the opposite is true of households without any employed members.

Table 4: Household access to food by demographic and household characteristics, 2011

Characteristics	Adequate access	Inadequate access	Total
Head population group			
Black African	75,3	88,8	78,2
Coloured	8,0	8,0	8,0
Indian/Asian	3,0	0,8	2,5
White	13,8	2,4	11,4
Head sex			
Male	63,9	57,3	62,5
Female	36,1	42,7	37,5
Head Age group			
<17	0,6	0,6	0,6
18-34	27,2	24,5	26,6
35-59	51,2	56,0	52,2
>60	21,1	18,9	20,6
Household composition			
Single person	23,2	18,4	22,2
Nuclear family	41,0	35,8	39,9
Extended family	33,5	43,9	35,7
Complex family	2,3	1,9	2,2
Household size			
0-4	75,4	66,1	73,4
5-9	22,9	28,9	24,2
>10	1,7	5,0	2,4
Percentage of children in the household			
Less than 50%	73,4	64,5	71,5
50% and more	26,7	35,4	28,5
Percentage of older persons in the household			
0-49%	88,9	94,0	90,0
50-99%	4,7	3,5	4,5
100%	6,3	2,5	5,5
Total	**11 645**	**3 111**	**14 756**

Households in the bottom two income quintiles can be expected to experience inadequate access to food. By contrast, households in quintiles 4 and 5 are likely to enjoy adequate access to food. As was seen in Table 2, income quintiles are closely associated with households' main sources of income. Households that receive salaries/wages, income from a business and pensions are more likely than households with other principle sources of income to enjoy adequate access to food. By contrast, households that receive remittances and social grants seem to be more likely to have inadequate access to food.

As could be expected only 1,7% of households with adequate access to food reported any experience of hunger during the previous 12 months, compared to 48% of households which do not enjoy satisfactory access to food.

Table 5: Household food security status by socio-economic characteristics, 2011

Characteristics	Adequate access	Inadequate access	Total
Employment status			
Don't' have an employed member	27,1	45,1	30,9
Have at least one employed member	72,9	54,9	69,1
Quintiles			
Poorest quintile	14,4	38,0	19,5
Quintile 2	17,4	27,6	19,6
Quintile 3	20,8	18,6	20,3
Quintile 4	22,6	11,5	20,2
Wealthiest quintile	24,8	4,4	20,4
Main source of income			
Salaries, wages, commission	61,1	39,7	56,6
Income from a business	7,5	5,6	7,1
Remittances	8,7	12,7	9,5
Pensions	2,3	0,8	2,0
Grants	18,7	36,1	22,3
Sales of farming products and services	0,1	0,1	0,1
Other income sources	1,3	2,1	1,4
No income	0,5	2,9	1,0
Hunger			
Experiencing hunger	1,7	48,0	11,3

Table 6 outlines the impact of household access to basic services to their perceived level of access to food. Although access to basic services would in principle not affect access to food, which is what is principally measured by this question, it will definitely have an impact on the utilization of food. It is important to note that access to some basic services can be associated with higher socio-economic status, and particularly income.

Households with access to piped or tap water on-site or off-site are less likely to have inadequate access to food while households that still utilise rivers, stagnant pools and other sources are more likely to suffer inadequate access to food. Having access to tap water in the dwelling seems to be a strong indicator of adequate access, while households with access to piped water in the yard or from a public or communal tap are more likely to lack adequate food access.

Households with access to mains electricity and those that use electricity for cooking can be expected to have adequate access to food. By contrast, households that use solid fuels or gas/paraffin tend to lack adequate access.

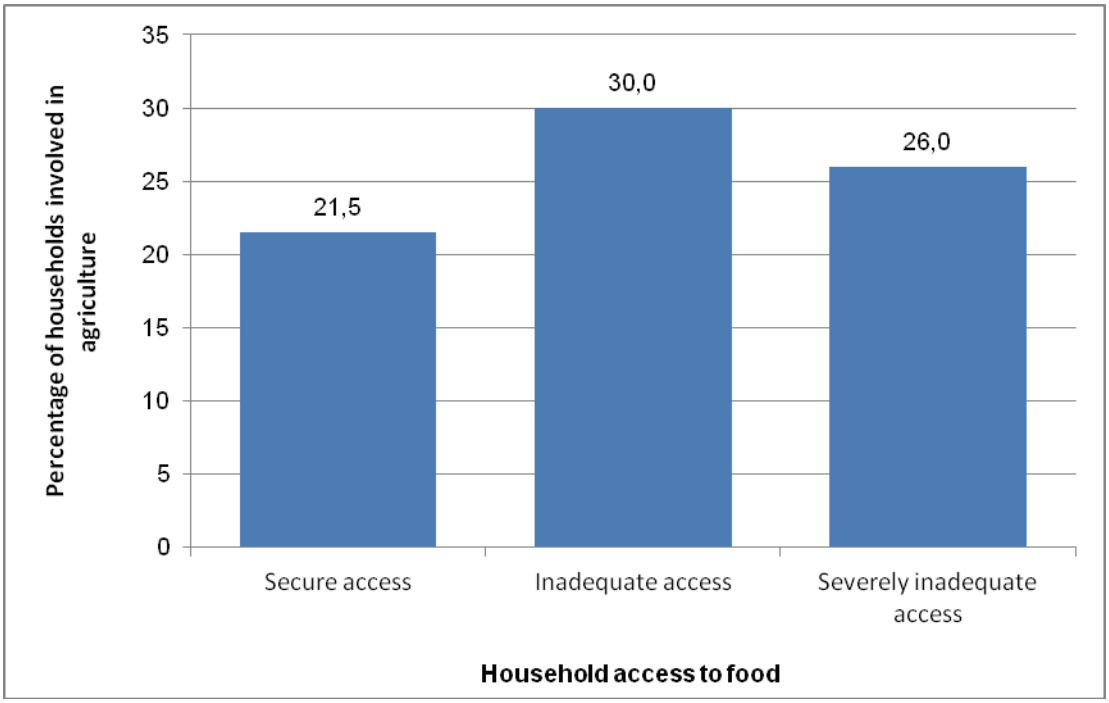
Households with access to a flush toilet, regardless of whether it is connected to a public sewerage or septic tank, will likely have adequate access, while households with access to other means of sanitation, including pit toilets with ventilation pipes, will most likely not be food secure. These findings are most likely linked to the distribution of serviced households in urban areas.

Table 6: Household food security status by access to basic services, 2011

	Adequate access	Inadequate access	Total
Drinking water			
Piped/tap water on-site or off-site	90,4	86,2	89,5
Groundwater: Borehole in and outside yard, and well	3,4	4,2	3,5
Other, including river, stagnant water, spring	6,2	9,7	7,0
Drinking water			
Piped (tap) water in the dwelling/house	47,5	27,5	43,3
Piped (tap) water in yard	27,4	32,8	28,6
Borehole in yard	1,8	1,1	1,6
Rain-water tank in yard	0,8	0,5	0,7
Neighbour's tap	2,1	5,1	2,7
Public/communal tap	13,4	20,7	14,9
Water-carrier/tanker	0,9	1,5	1,0
Borehole outside yard	1,2	2,2	1,4
Flowing water/stream/river	2,6	4,0	2,9
Stagnant water/dam/pool	0,4	0,4	0,4
Well	0,5	1,0	0,6
Spring	1,0	2,7	1,3
Other	0,6	0,6	0,6
Electricity			
Connection to mains electricity	84,8	75,1	82,8
Energy used for cooking			
Electricity from mains	76,2	61,5	73,1
Gas and paraffin	8,5	13,7	9,6
Wood and coal	12,2	22,1	14,2
Other	3,2	2,8	3,1
Sanitation			
Flush toilet connected to public sewerage	60,4	46,5	57,5
Flush toilet connected to a septic tank	4,3	1,8	3,8
Chemical toilet	0,6	1,4	0,8
Pit latrine/toilet with ventilation pipe	12,9	17,7	13,9
Pit latrine/toilet without ventilation pipe	17,1	22,6	18,2
Bucket toilet	0,4	1,1	0,5
None	4,3	8,6	5,2
Other	0,1	0,3	0,2
Total	**11 645**	**3 111**	**14 756**

Household food production is widely considered to be a potentially important approach to promote household food security. It is confusing then to notice from Figure 11 that households are more likely to be involved in some agricultural endeavour when they have inadequate or severely inadequate access to food. This observation could possibly be explained by the tendency of struggling households to attempt to diversify their livelihood strategies when existing strategies fail or are placed under pressure.

Figure 11: Household access to food by participation in agriculture, 2011



6.3 Poor households' access to food by geographical location

It was clear from Figure 11 that households in rural areas are more vulnerable to experience inadequate access to food than households in urban areas. Table 7 reveals that households headed by Black Africans are slightly more likely to experience adequate access to food in urban than in rural areas. Households in rural area are more likely to be headed by women than households in urban areas and Table 7 shows that female headed household are marginally less likely than their share of the population to experience inadequate access to food in rural areas, while being more likely to do so in urban areas. Households headed by individuals in the age group 35-59 are most likely to experience hunger in both rural and urban areas.

Table 7: Poor households' access to food by demographic and household characteristics, 2011

	Rural			Urban		
	Adequate access	Inadequate	Total	Adequate access	Inadequate	Total
Head population group						
Black African	96,7	98,9	97,4	71,3	86,4	76,0
Coloured	1,7	1,0	1,5	9,8	10,9	10,1
Indian/Asian	0,2	0,1	0,1	4,8	0,8	3,6
White	1,5	0,1	1,0	14,1	1,8	10,3
Head sex						
Male	45,8	47,8	46,5	61,0	56,1	59,5
Female	54,2	52,2	53,5	39,0	44,0	40,5
Head Age group						
18-34	23,7	21,7	23,0	25,9	26,1	26,0
35-59	48,2	55,9	50,8	54,3	58,6	55,6
>=60	28,1	22,5	26,2	19,9	15,2	18,5
Total	**2 007**	**1 027**	**3 034**	**2 461**	**1 099**	**3 560**

Table 8 explores households' access to food according to their household characteristics. Single person households are most vulnerable, being most likely to experience inadequate access to food in

both rural and urban areas. By comparison, extended households (containing the nuclear family as well as other family members) seem to be doing better in rural areas than in urban areas whilst extended families in urban areas are more likely to experience hunger. Households with fewer than five members are least likely to experience inadequate food access in both rural and urban areas. By contrast, households with more than ten members are more vulnerable in both areas. Interestingly, households with 5-9 members are more likely to experience hunger in urban areas, but not in rural areas.

By determining the percentage of children and elderly in a household it becomes possible to establish the influence that dependents have on food security in households. Table 8 shows that the share of children in rural households seem to matter little, while households in which more than half the members are children are more likely to experience hunger in urban areas. Older persons seem to contribute tremendously to improved access to food in rural and urban households. Households in rural and urban areas, where fewer than half the members are over the age of 60 years, are more likely to experience hunger while households with a larger percentage of elderly seem much more secure. This observation can probably be attributed to the beneficial effect of old age grants on the households in which recipients live.

Table 8: Poor households' access to food by household characteristics, 2011

	Rural Areas			Urban Areas		
	Adequate access	Inadequate access	Total	Adequate access	Inadequate access	Total
Household composition						
Single person	10,9	12,8	11,6	14,6	15,6	14,9
Nuclear family	29,6	29,0	29,4	44,3	39,3	42,8
Extended family	58,3	57,4	58,0	39,2	43,5	40,5
Complex family	1,2	0,8	1,1	1,9	1,6	1,8
Household size						
0-4	54,1	53,2	53,8	68,8	64,7	67,5
5-9	40,9	38,4	40,1	29,1	31,0	29,7
>10	4,9	8,3	6,1	2,1	4,3	2,8
Percentage of children in the household						
Less than 50%	49,1	49,4	49,2	69,9	64,6	68,3
50% and more	50,9	50,6	50,9	30,1	35,4	31,7
Percentage of older persons in the household						
0-49%	95,4	97,3	96,1	91,3	96,0	92,7
50-99%	3,8	2,1	3,2	4,1	2,9	3,8
100%	0,8	0,6	0,7	4,6	1,1	3,6
Total	**2 007**	**1 027**	**3 034**	**2 461**	**1 099**	**3 560**

Table 9 reveals that households that rely on unsafe sources of water such as rivers, stagnant water and springs are more likely to experience inadequate access to food, while access to electricity is associated with adequate access. By comparison, households that use gas, paraffin, wood and coal for cooking are more likely than their share of the population to experience hunger in both rural and urban areas. Not having access to improved hygiene facilities is only associated with inadequate access in urban areas.

Table 9: Poor households' access to food by access to basic services, 2011

	Rural Areas			Urban Areas		
	Adequate access	Inadequate access	Total	Adequate access	Inadequate access	Total
Drinking water						
Piped/tap water on-site or off-site	70,2	68,1	69,5	98,6	98,8	98,7
Groundwater: Borehole in and outside yard, and well	7,9	8,4	8,0	0,7	0,2	0,6
Other, including river, stagnant water, spring	21,9	23,6	22,5	0,7	1,0	0,8
Electricity						
Connection to mains electricity	75,9	71,7	74,4	88,8	76,8	85,1
Energy used for cooking						
Electricity from mains	46,3	39,3	43,9	85,1	73,8	81,6
Gas and paraffin	8,9	9,1	9,0	7,8	17,1	10,6
Wood and coal	43,5	50,3	45,8	3,2	6,3	4,2
Other	1,3	1,3	1,3	3,9	2,8	3,6
Sanitation						
Improved sanitation	42,4	41,4	42,1	90,5	83,3	88,3
Other	44,1	41,1	43,1	8,2	13,1	9,7
None	13,5	17,5	14,9	1,3	3,7	2,0
Total	**2 007**	**1 027**	**3 034**	**2 461**	**1 099**	**3 560**

Access to food is strongly associated with a households' income and sources of income. Households that rely on salaries or wages or income from a business are more likely to have adequate access to food than their respective shares of the population, while households without any income are much more likely to experience inadequate access. Households that rely on remittances are likely to be food secure in rural areas, but food insecure in urban areas. This is presented in Table 10.

Table 10: Poor households' access to food by economic characteristics, 2011

	Rural			Urban		
Characteristics	Adequate access	Inadequate access	Total	Adequate access	Inadequate access	Total
Main source of income						
Salaries, wages, commission	24,9	20,3	23,4	54,6	32,6	47,8
Income from a business	4,7	4,4	4,6	8,9	5,6	7,9
Remittances	21,4	17,8	20,2	10,1	14,3	11,4
Pensions	0,6	0,4	0,5	0,6	0,6	0,6
Grants	46,8	52,4	48,7	20,5	37,7	25,8
Sales of farming products and services	0,1	0,1	0,1	0,0	0,0	0,0
Other income sources	0,7	1,0	0,8	4,0	4,5	4,1
No income	0,8	3,7	1,8	1,5	4,7	2,5
Total	**1 901**	**954**	**2 855**	**2 312**	**1 037**	**3 349**

Table 11 explores the effect of agriculture on households' access to food. The table reveals that households that are involved in agriculture in both rural and urban areas are more likely than their shares of the population to experience inadequate access to food. Many households seem to use agriculture as a livelihood strategy of last resort and it might very well be that households start doing agriculture once their access to non-agricultural sources of income are already limited. Households that practise agriculture on particularly farm land or backyard gardens are considerably more likely than their share of the population to have adequate access to food in rural areas. In urban areas,

households that plant crops in their backyard garden tend to be slightly more likely to experience inadequate access. Households that engage in agriculture as a means to produce a main source of food are more likely than their respective shares of the population to have more limited access to food in rural and urban areas. Similarly, households that are involved in agriculture to leverage a main or extra source of income are equally more likely to experience inadequate access to food in rural areas. This is also true for households in urban areas that practise agriculture to produce an extra source of food.

Table 11: Poor households' access to food by participation in agriculture, 2011

	Rural			Urban		
Characteristics	**Adequate access**	**Inadequate access**	**Total**	**Adequate access**	**Inadequate access**	**Total**
Participation in agriculture						
Yes	58,4	57,1	58,0	8,9	12,1	9,9
No	41,6	42,9	42,1	91,1	87,9	90,1
Where does the household practise its crop planning activities						
Farm land (communal or private)	14,4	3,9	11,0	4,6	0,0	2,6
Backyard garden	91,8	86,5	90,1	88,3	94,8	91,1
School garden	0,1	0,0	0,1	0,8	1,1	0,9
Communal garden	1,8	1,4	1,7	4,5	0,6	2,9
On verges of roads and unused public/municipal land	0,1	0,1	0,1	2,9	0,7	2,0
Other	0,2	0,0	0,2	1,5	0,0	0,8
Reason for being involved in agriculture						
As main source of food	2,9	4,2	3,3	10,5	12,3	11,3
As main source of income	1,7	2,4	1,9	1,4	1,1	1,3
As extra source of income	4,4	5,7	4,8	4,4	3,5	4,0
As extra source of food	88,8	86,1	87,9	73,7	80,5	76,6
As leisure activity or hobby	2,2	1,7	2,0	10,0	2,6	6,8
Total	**2 007**	**1 027**	**3 034**	**2 007**	**1 027**	**3 034**

Table 12 outlines the characteristics of poor households (defined as those in income quintile 1) with and without access to social grants. It is clear from the figure that poor households without access to social grants are more likely to:

- be a single person household;
- be smaller than poor households in general or households with access to grants in particular;
- be male headed;
- be younger;
- be found in urban areas;
- have no income - 11,6% of poor households without access to social grants but adequate access to food have not income, compared to just under a quarter (23,6%) of the same households that don't have adequate access to food;
- rely on remittances than poor households in general and poor households with access to grants in particular;
- reside in informal settlements;

Poor households which do not access social grants are also less likely to be engaged in agriculture than poor households in general, and also less likely to participate in subsistence agriculture.

Poor households, those in quintile 1, who do not have access to social grants are most likely comprised of migrant men and women who move to urban areas to find work in an attempt to diversify the livelihood strategies of their predominantly rural households of origin. These individuals are likely

to live in informal areas and to be supported by their households of origin through remittances as they are not eligible for social grants. Because they are primarily concerned with finding employment, and because their places of residences are not likely to offer space to practise agriculture, they are much less likely than poor households in general to participate in any agricultural activities.

Table 12: Household characteristics of poor households with and without social grants, 2011

	Adequate access to food			Inadequate access to food		
Characteristics	Poor households with at least one social grant	Poor households without any social grant	All poor households with adequate access to food	Poor households with at least one social grant	Poor households without any social grant	All poor households without adequate access to food
Household size						
1	0,1	33,7	8,8	0,0	40,6	12,6
2-4	34,2	51,9	38,7	37,0	50,5	41,2
5-9	59,1	14,2	47,5	52,0	8,7	38,5
>10	6,7	0,3	5,0	11,0	0,3	7,7
Sex of household head						
Male	40,0	66,9	47,0	39,1	70,5	48,8
Female	60,0	33,1	53,0	60,9	29,5	51,2
Age of household head						
<18	0,4	2,5	0,9	0,4	1,6	0,7
18-34	20,1	41,1	25,8	20,8	38,9	26,4
35-59	59,4	52,0	57,5	63,3	56,3	61,1
60+	19,7	4,5	15,8	15,6	3,2	11,7
Geographical location						
Urban	41,6	57,9	45,8	45,1	57,0	48,8
Rural	58,4	42,1	54,2	54,9	43,0	51,2
Main source of income						
Salaries, wages, commission	27,5	32,3	28,8	18,1	21,4	19,1
Income from business	3,9	8,4	5,1	3,1	8,2	4,8
Remittances	11,3	43,7	19,8	7.9	44,1	19,6
Pensions	0,1	1,5	0,5	0,1	0,2	0,1
Grants	55,6	0,6	41,1	70,0	0,1	47,4
Sales of farm products	0,0	0,0	0,0	0,0	0,2	0,1
Other income sources	1,54	1,9	1,6	0,8	2,1	1,2
No income	0,0	11,6	3,1	0,0	23,6	7,6
Main Dwelling						
Formal dwelling	72,6	71,4	72,3	61,7	60,9	61,4
Traditional dwelling	20,2	9,2	17,4	25,1	14,2	21,6
Informal dwelling	7,1	19,1	10,2	13,1	24,5	16,7
Other dwelling	0,1	0,4	0,1	0,1	0,4	0,2
Agricultural participation						
None	60,7	79,1	65,5	61,3	80,0	67,1
Subsistence farming	37,5	19,9	33,0	36,2	17,8	30,5
Smallholder/commercial	1,8	1,0	1,6	2,6	2,2	2,5
Total	**1 173**	**409**	**1 582**	**795**	**359**	**1 154**

A logistic regression model is used to predict adequate access to food by province. Logistic regression is commonly used with discrete data to explore the relationships as part of multivariate analysis. The models provide the coefficients for each factor that contribute towards the regression model (y = mx +c). The intercept (c) shows how steep the line is, where it will cross the y axis and whether the regression leans forwards of backwards. The larger the coefficient the bigger is the relative contribution of that factor to the overall regression model. A negative coefficient means that the opposite of that factor has a relationship with the dependent variable (y). More details about the composition of variables can be found in the appendix.

Table 13 summarizes the models that were developed to predict adequate access to food using stepwise logistic regression. Table 13 shows that, nationally, Coloured and African headed households are respectively 48% and 40% more likely than households headed by white individuals to experience inadequate access to food. This observation is even more emphasized in Western Cape.

Nationally and in Eastern Cape, households headed by individuals in the age category 18-34 are slightly less likely than those headed by older persons (aged 60 years and older) to experience food inadequacy compared to households headed by older persons. By contrast, these households are 35% more likely to experience inadequate access than households headed by older persons in Limpopo. Households headed by individuals in the age category 35-59 are generally more likely to experience hunger.

Married, divorced or widowed household heads are more less likely than household heads who have never been married or in a relationship to suffer inadequate access to food, while households headed by single heads are 53% more likely to experience inadequate access. This pattern, however, differs by province.

Households in South Africa that reported salaries or remittances as main source of income are respectively 33% and 27% less likely than households with other sources of income to have inadequate access to food, while households that reported social grants as the main source of income or no income are respectively 25% and 60% more likely to have inadequate access compared to households with other sources of income. The importance of social grants for food security in Eastern Cape and Limpopo is illustrated by the observation that households in these provinces hat identified social grants as the main source of income were respective 28% and 4% less likely to experience inadequate access to food.

Households without any employed members are more likely to experience inadequate access in Western Cape and Northern Cape. The poorest fifth of households are most likely to experience hunger in all the provinces where the variable proved significant.

Table 13: Predictors of access to food for poor households by province, using logistic regression, 2011[2]

Description of variable	Province									
	WC	EC	NC	FS	KZN	NW	GP	MP	LP	RSA
Model indicators										
Likelihood ratio chi Square	33,6578	70,3377	4,7533	4,1497	34,0193	48,1725	51,3186	18,2235	25,0876	221,972
N	652	1497	601	1025	1616	997	1048	989	1635	10060
Intercept	-3,7157	-0,0998	-0,0412	-0,511	-0,4202	-0,19	-0,4215	0,1294	-1,4697	-0,8741
Maximum likelihood estimates between 2010 and 2011										
Population group										
Black African	3,8519	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0,4081
Coloured	3,2437	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0,4828
Asian/Indian	-8,4731	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-0,4415
White *(reference category)*										
Employed members in the households										
No employed members	0,3403	n/a	0,3899	n/a	n/a	n/a	n/a	n/a	n/a	n/a
At least one employed person *(reference category)*										
Number of persons with social grants in the household										
No social grant	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	0,1497
At least one social grant *(reference category)*										
Age of the household head										
18-34	n/a	-0,029	n/a	n/a	n/a	0,0448	n/a	n/a	0,3551	-0,019
35-59	n/a	0,2883	n/a	n/a	n/a	0,3765	n/a	n/a	0,2885	0,2094
60+ (*reference category)*										

[2] Dependent variable: Predicting inadequate access to food, where 0 = adequate access and 1 = inadequate access

Table 13: Predictors of access to food by province, using logistic regression, 2011 (concluded)

Description of variable	WC	EC	NC	FS	KZN	NW	GP	MP	LP	RSA
Household's main sources of income										
Salaries	n/a	-0,4674	n/a	n/a	-0,4884	-0,41	-0,6528	n/a	-0,3158	-0,3349
Remittances	n/a	-0,6647	n/a	n/a	-0,017	-0,2685	0,1436	n/a	-0,4489	-0,2749
Grants	n/a	-0,2837	n/a	n/a	0,0917	0,7298	0,3583	n/a	-0,0396	0,2475
No income	n/a	1,8358	n/a	n/a	0,9237	0,0597	0,3516	n/a	1,3045	0,5859
Other Income *(reference category)*										
Type of household										
Married	n/a	-0,3065	n/a	n/a	-0,3641	0,1411	n/a	-0,5672	n/a	-0,1506
Divorced	n/a	-0,6681	n/a	n/a	0,2683	-1,1758	n/a	0,8685	n/a	-0,2253
Single	n/a	0,7482	n/a	n/a	0,6817	1,4649	n/a	0,5995	n/a	0,5349
Widowed	n/a	0,1213	n/a	n/a	-0,3732	-0,2485	n/a	-0,5642	n/a	-0,1011
Never married (reference category)										
Household income										
Quintile 1 - poorest	0,2898	0,3017	n/a	0,2164	0,1442	0,2856	0,2135	0,2471	n/a	0,1937
Quintile 2 (reference category)										

n/a: Values that are not significant at 95% or 99% levels of significance

6.4 Dietary diversity

Information about a households' dietary diversity can serve as an effective indicator of nutrient intake amongst households and groups. The quality of diets have been shown to be directly related to dietary diversity, and inversely related to malnutrition. Eating a more diversified diet is positively associated with improved outcomes in the areas of birth weight and child anthropometric status, and reduced risk of suffering hypertension, cardiovascular disease and cancer. It is also highly correlated with factors such as protein and caloric adequacy and the quality of protein, particularly the consumption of animal protein (see Swindale and Belinsky, 2006: 3). Eating a diversified diet is, however, closely correlated to the socio-economic level of a household and to household income and poorer households tend to have a less diverse diet than households with a larger expendable income.

Dietary diversity is calculated by identifying the number of different food groups consumed by households during the 7 days before enumeration. Although the measure, if applied to the household cannot provide information about the inter-household distribution of food, dietary diversity is associated with better household nutrition and a better quality diet. Households were requested to indicate any food consumption during the seven days before they were enumerated from the following food groups:
:

- Cereals: Maize, rice, sorghum, millet, bread;
- Potatoes, sweet potatoes and cassava;
- Beans, peas, groundnuts, cashew nuts or other nuts;
- Vegetables, relish or leaves;
- Fruit;
- Beef, goat, poultry, pork, fish, eggs;
- Milk, yoghurt and other dairy products;
- Sugar and sugar products;
- Oils, fat and butter.

Technically, sugar and sugar products are not considered a food group. However; it is often an important source of energy for poor households and is mostly taken in the form of sugar with tea. Not listing it separately in a questionnaire of this nature leads to its omission and an underestimation of the consumption of especially energy rich foods. Furthermore foods rich in protein are usually grouped together into one food group regardless of whether it is of plant or animal origin. Within the context of linking food production to improved dietary diversity, separating the two sources of protein is important because access to land influences one's ability to increase intake of these two kinds of protein classes through agricultural interventions differently.

In terms of the analysis, positive answers were coded 1 and negative answers as 0. A household's dietary diversity was calculated by adding the answers across food groups. The dietary diversity score and analysis therefore is a representation of whether food from a specific food group was consumed at least once during the preceding 7 days rather than of the overall frequency with which food from each food group was consumed[3]. Figure 12 indicates that less than 50% of households consumed food from all nine selected food groups during the 7 days preceding the survey. When comparing dietary diversity with the household income quintiles the following results were obtained: the data

[3] The dietary diversity question was included for the first time in the GHS 2009 and even though using the categorisation of 'at least once in 7 days' shows consistency and reliability in relation to expected outcomes, the actual frequency of intake during the period of 7 days will better be measured by using the 24 hour recall format. Given that members of South African households do not have very homogenous dietary intakes, the question should perhaps be applied to one individual in the household (the respondent), rather than the household in general. These changes will be applied in the GHS 2013 questionnaire and will not only make its application in the field easier, but will also enable users to analyse the data using frequency measures as well.

shows that more than three-quarters of households consumed food from 7 or more different food groups during the previous week, while only 2,7% consumed food from four food groups or less. The findings in Figure 13 shows that a more diversified diet is positive related to household income. Households in income quintile 5 are much more likely to have consumed food from all nine food groups than households in income quintile 1. Inversely, 28,5% of households in income quintile 1 consumed food from between 1 and 6 food groups compared to only 5,2% of households in income quintile 5.

Figure 12: Household dietary diversity, 2010

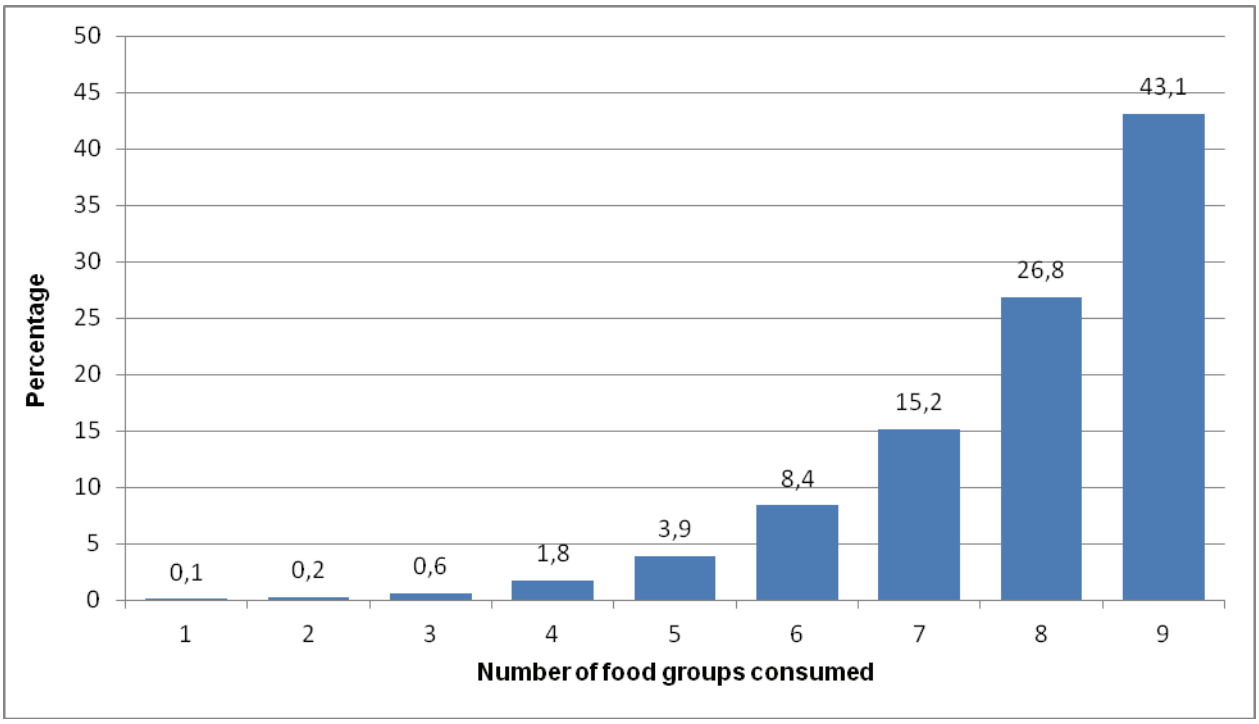
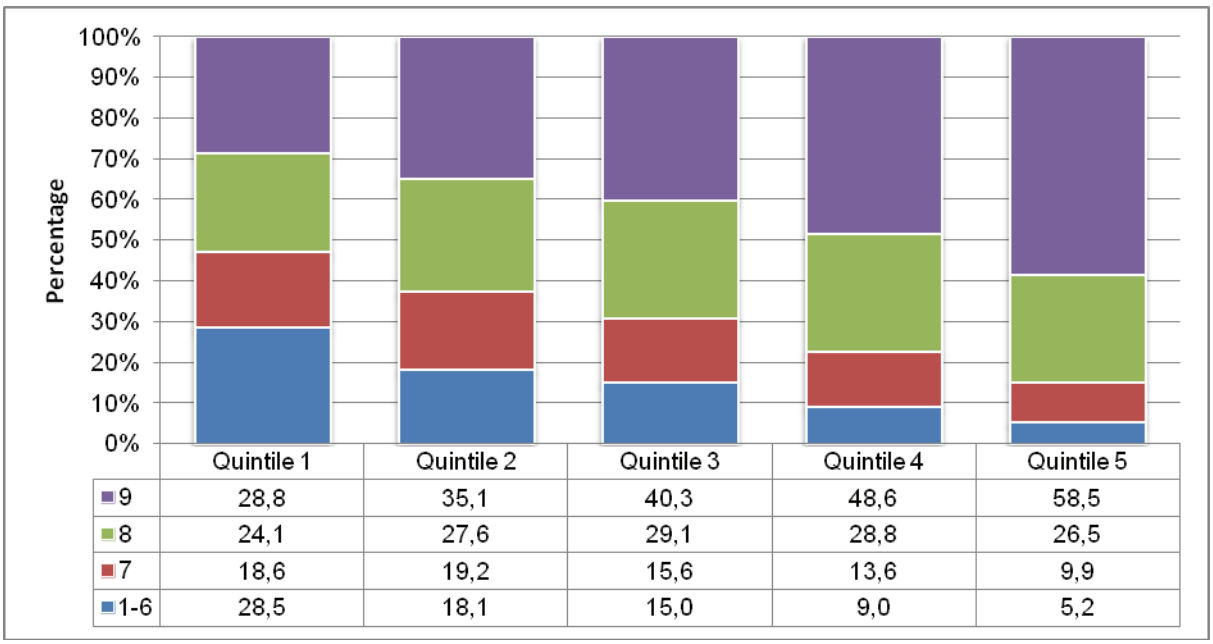


Table 14 summarises the consumption of selected food groups. There is considerable provincial variation in especially the consumption of proteins of plant origin, fruit and dairy products. The Western Cape had consistently the highest likelihood of consumption for all the selected food groups, whilst Limpopo has amongst the lowest for most groups. Plant proteins had low levels of consumption in North West, Free State, Northern Cape and Limpopo. Provinces where fruit were the least likely to be consumed during the 7 days preceding the survey were Limpopo, Eastern Cape, Northern Cape and North West. Dairy product consumption was exceptionally low in Limpopo as only 60% of the interviewed households reported consuming foods from that group at least once during the reference period.

Significant differences between urban and rural areas manifested itself in the consumption of fruit (82, 1% for urban and 66,5% for rural) and dairy products (86,6% for urban and 70,5% for rural). In the case of the former the time that the survey was executed (July to September) may have influenced these differences, as relatively few wild and cultivated fruits are available during this time. A similar pattern was observed for metro and non-metro areas as well as male and female headed households.

Figure 13: Dietary diversity measured by the number of food categories consumed by households according to quintile, 2010



	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
9	28,8	35,1	40,3	48,6	58,5
8	24,1	27,6	29,1	28,8	26,5
7	18,6	19,2	15,6	13,6	9,9
1-6	28,5	18,1	15,0	9,0	5,2

A comparison of consumption from the various food groups per income quintile shows a clear decline of consumption in all food groups from the wealthiest to the poorest quintiles once again reinforcing the relationship between household income and dietary diversity. White and Asian households consistently had the highest, and African households the lowest consumption patterns for the selected food groups. The findings also indicate that household composition does play a role in dietary diversity with nuclear and double generation households reporting the highest likelihood of consumption of a particular food group. Agricultural participation only seems to correspond with higher levels of consumption of proteins of plant origin and then even marginally so when compared to non-participating households. This further confirms that income, rather than production, plays the dominant role in dietary diversity in South Africa.

Table 14: Consumption of selected food groups, by households, 2010

Description	Mean number of food groups consumed	Plant protein	Animal protein	Vegetables	Fruit	Oils, fat, butter	Dairy products
Province							
Western Cape	8,3	73,7	93,5	93,6	85,3	96,9	90,5
Eastern Cape	8,0	77,1	87,7	93,2	69,3	96,9	83,8
Northern Cape	7,8	57,3	92,0	89,7	70,4	95,8	80,2
Free State	7,8	55,8	93,3	90,0	76,5	95,5	88,1
KwaZulu-Natal	8,1	83,0	90,5	90,5	75,9	96,3	78,9
Northwest	7,6	54,8	91,8	90,4	71,6	95,6	77,8
Gauteng	7,9	63,0	89,6	93,0	81,2	94,9	84,4
Mpumalanga	7,9	71,9	93,0	93,9	81,3	95,8	80,0
Limpopo	7,0	56,9	89,1	87,8	69,3	91,8	59,5
South Africa	**7,9**	**67,6**	**90,9**	**91,5**	**76,1**	**95,5**	**80,4**
Urban and rural							
Urban	8,1	67,7	92,2	92,9	82,1	96,3	86,6
Rural	7,5	67,6	89,3	89,3	66,5	94,3	70,5

Table 14: Consumption of selected food groups, by households, 2010 (concluded)

Description	Mean number of food types consumed	Plant protein	Animal protein	Vegetables	Fruit	Oils, fat, butter	Dairy products
Metro and non-metro areas							
Metro	8,1	72,4	91,8	94,2	84,5	96,4	88,3
Non-metro	7,7	65,7	90,6	90,4	72,7	95,2	77,2
Income quintiles							
Quintile 1 (poorest)	7,3	61,0	85,9	86,7	60,1	92,5	67,5
Quintile 2	7,7	66,0	90,4	90,5	69,6	95,9	76,5
Quintile 3	7,9	66,4	91,7	91,9	76,3	96,1	81,6
Quintile 4	8,1	70,0	93,6	93,9	86,2	97,0	87,3
Quintile 5 (wealthiest)	8,5	76,5	94,0	96,2	93,1	97,0	92,6
Food security status							
Adequate access t	8,1	71,5	92,8	93,9	82,5	96,8	85,0
Inadequate access	7,4	56,3	86,5	85,7	61,7	91,9	69,8
Severely inadequate	6,9	57,3	83,3	82,4	49,5	91,6	62,0
Sex of the household head							
Male	7,9	67,5	91,5	91,5	77,9	95.7	81.7
Female	7,8	67,8	90,2	91,5	73,9	95.3	78.8
Population group of household head							
Black African	7,7	65,6	90.2	90,6	73,2	95.1	77.6
Coloured	8,3	69,2	94.1	93,2	81,8	97.1	89.0
Indian/Asian	8,4	80,7	92.8	97,4	92,2	98.0	94.1
White	8,5	81,5	93.3	96,3	93,2	96.8	94.1
Type of household							
Single households	7,6	63,1	91,5	89,7	76,4	94,7	78,3
Nuclear households	8,0	70,5	91,4	93,3	79,0	96,7	83,8
Extended households	7,8	68,4	89,4	80,4	71,4	94,2	78,7
Complex households	8,1	71,5	89,6	92,9	73,1	96,1	78,4
Household composition							
Single generation	7,8	59,5	91,1	88,6	74,4	93,8	75,7
Double generation	8,0	70,4	91,9	93,5	80,3	96,7	84,6
Triple generation	7,8	68,8	89,9	91,0	72,8	95,2	78,5
Skip generation	8,1	68,4	92,1	91,5	82,5	96,3	86,2
Agricultural participation							
Yes	7,6	69,5	89,8	91,3	68,7	95,6	72,3
No	7,9	67,5	91,9	92,2	79,2	96,1	83,8
Agricultural participation in rural and urban areas							
Urban areas:	8,1	67,9	92,2	93,0	82,5	96,3	86.9
Not involved	7,8	63,1	91,4	91,0	73,9	96,1	81.0
Subsistence	8,2	74,0	96,0	92,0	86,0	96,0	88.0
Smallholder							
Rural areas:							
Not involved	7,5	65,0	88,8	87,5	66,7	93.0	71.7
Subsistence	7,5	71,1	88,8	91,7	66,2	95.8	68.4
Smallholder	7,8	63,5	90,4	86,2	68,6	94.6	77.8

6.5 Changes in food security between 2010 and 2011

For the duration of a specific master sample the GHS is administered to the same dwelling units and it therefore has an address panel design. Once provision has therefore been made for households that may have moved during a specific master sample period, it becomes possible to track changes in specific households over time. In order to construct a panel of individuals for the 2010 and 2011 data sets, the data sets were matched according to unique number, surname and name. Individuals with a positive match on unique number, but not surname or name were then matched according to the population group, age and sex of the household head. Households where no individuals could be matched between the two years were excluded from the panel comparison. Using these criteria it was possible to match 20 534 households, which represents 80% of the households interviewed in 2011. The transition matrix contained in Table 15 shows how the food security status changed within the linked dataset between 2010 and 2011. At a national level adequate access improved from 74,9% to 77,9% during the period of comparison. 61% of households retained their adequacy status over that time period, whilst 9,1% regressed from adequate to inadequate and 2,1% from adequate to severely inadequate. The general change patterns were similar within urban and rural areas. However, there were significant differences between rural and urban areas. Households living in rural areas were generally less likely to have adequate access than those in urban areas (74,3% for rural v. 80,1% for urban in 2011). Another observation of significance is that a greater proportion of households in rural areas (17%) moved from inadequate or severely inadequate to adequate access between 2010 and 2011, when compared to urban areas where only 14% transitioned

Table 15: Transition matrix of households by changes in access to food between 2010 and 2011

NATIONAL		2011			
		Adequate access	Inadequate	Severely inadequate	Total
2010	Adequate	62,7%	9,1%	3,1%	74,9%
	Inadequate	11,0%	4,4%	2,1%	17,4%
	Severely inadequate	4,2%	2,0%	1,5%	7,7%
	Total	77,9%	15,5%	6,7%	100,0%

N = 11 404 (in thousands)

URBAN		2011			
		Adequate access	Inadequate	Severely inadequate	Total
2010	Adequate	66,1%	8,7%	3,3%	78,0%
	Inadequate	10,4%	3,4%	1,8%	15,6%
	Severely inadequate	3,6%	1,5%	1,2%	6,4%
	Total	80,1%	13,6%	6,3%	100,0%

N = 7 072 (in thousands)

RURAL		2011			
		Adequate access	Inadequate	Severely inadequate	Total
2010	Adequate	57,2%	9,9%	2,7%	69,8%
	Inadequate	12,0%	5,8%	2,6%	20,5%
	Severely inadequate	5,1%	2,7%	2,0%	9,8%
	Total	74,3%	18,5%	7,2%	100,0%

N= 4 332 (in thousands)

Table 16: Transition matrix of key household characteristics by change in access to food from adequate in 2010 to adequate, inadequate or severely inadequate in 2011

	2011					
2010	**Adequate access**		**Inadequate access**		**Severely inadequate access**	
Adequate access	% change in total monthly household income	1,6%	% change in total monthly household income	-9,0%	% change in total monthly household income	-24,3%
	Average number of employed individuals per household in 2011	1,1	Average number of employed individuals per household in 2011	0,83	Average number of employed individuals per household in 2011	0,66
	% change in number of employed household members	-0,6%	% change in number of employed household members	-6,8%	% change in number of employed household members	-20,0%
	Average household size in 2011	3,45	Average household size in 2011	4,1	Average household size in 2011	3,7
	% change in household size	-1,2%	% change in household size	+3,9%	% change in household size	-0,5%
	Average number of children in household in 2011	1,2	Average number of children in household in 2011	1,6	Average number of children in household in 2011	1,4
	Ratio of children to adults aged 18-59 in 2011	0,59	Ratio of children to adults aged 18-59 in 2011	0,77	Ratio of children to adults aged 18-59 in 2011	0,67
	% Change in number of children	-3,5%	% Change in number of children	+2,5%	% Change in number of children	+1,6%
	Average number of social grant recipients per household in 2011	0,93	Average number of social grant recipients per household in 2011	1,51	Average number of social grant recipients per household in 2011	1,24
	% change in number of grant recipients	+2,5%	% change in number of grant recipients	+11,4%	% change in number of grant recipients	+2,6%
	Ratio of elderly to adults aged 18-59 in household in 2011	0,15	Ratio of elderly to adults aged 18-59 in household in 2011	0,17	Ratio of elderly to adults aged 18-59 in household in 2011	0,10
	% change in ratio of elderly to adult households members	3,2%	% change in ratio of elderly to adult households members	+4,0%	% change in ratio of elderly to adult households members	-6,9%

Table 17: Transition matrix of key household characteristics by change in access to food from inadequate in 2010 to adequate, inadequate or severely inadequate in 2011

	2011					
2010	**Adequate access**		**Inadequate access**		**Severely inadequate access**	
Inadequate access	% change in total monthly household income	+20,3%	% change in total monthly household income	+1,5%	% change in total monthly household income	-11,8%
	Average number of employed individuals per household in 2011	0,92	Average number of employed individuals per household in 2011	0,74	Average number of employed individuals per household in 2011	0,52
	% change in number of employed household members	+6,9%	% change in number of employed household members	0,0%	% change in number of employed household members	-23,3%
	Average household size in 2011	4,1	Average household size in 2011	4,66	Average household size in 2011	4,1
	% change in household size	-6,2%	% change in household size	-1,6%	% change in household size	-2,4%
	Average number of children in household in 2011	1,6	Average number of children in household in 2011	2,1	Average number of children in household in 2011	1,8
	Ratio of children to adults aged 18-59 in 2011	0,73	Ratio of children to adults aged 18-59 in 2011	0,95	Ratio of children to adults aged 18-59 in 2011	0,82
	% Change in number of children	-12,0%	% Change in number of children	-1,9%	% Change in number of children	-0,9%
	Average number of social grant recipients per household in 2011	1,5	Average number of social grant recipients per household in 2011	1,92	Average number of social grant recipients per household in 2011	1,66
	% change in number of grant recipients	-3,5%	% change in number of grant recipients	5,5%	% change in number of grant recipients	+6,6%
	Ratio of elderly to adults aged 18-59 in household in 2011	0,15	Ratio of elderly to adults aged 18-59 in household in 2011	0,13	Ratio of elderly to adults aged 18-59 in household in 2011	0,10
	% change in ratio of elderly to adult households members	+7,1	% change in ratio of elderly to adult households members	17,7%	% change in ratio of elderly to adult households members	-0,9%

Table 18: Transition matrix of key household characteristics by change in access to food from severely inadequate in 2010 to adequate, inadequate or severely inadequate in 2011

	2011					
2010	**Adequate access**		**Inadequate access**		**Severely inadequate access**	
Severely inadequate	% change in total monthly household income	+42,6%	% change in total monthly household income	+20,0%	% change in total monthly household income	9,1%
	Average number of employed individuals per household in 2011	0,87	Average number of employed individuals per household in 2011	0,66	Average number of employed individuals per household in 2011	0,51
	% change in number of employed household members	+35,3%	% change in number of employed household members	+26,4%	% change in number of employed household members	-7,5%
	Average household size in 2011	4,1	Average household size in 2011	4,6	Average household size in 2011	4,0
	% change in household size	-5,7%	% change in household size	-3,6%	% change in household size	-3,2%
	Average number of children in household in 2011	1,6	Average number of children in household in 2011	2,1	Average number of children in household in 2011	1,6
	Ratio of children to adults aged 18-59 in 2011	0,10	Ratio of children to adults aged 18-59 in 2011	1,0	Ratio of children to adults aged 18-59 in 2011	0,77
	% Change in number of children	-11,0%	% Change in number of children	-7,1%	% Change in number of children	-6,5%
	Average number of social grant recipients per household in 2011	1,5	Average number of social grant recipients per household in 2011	2,0	Average number of social grant recipients per household in 2011	1,36
	% change in number of grant recipients	-1,9%	% change in number of grant recipients	+10,6%	% change in number of grant recipients	-6,6%
	Ratio of elderly to adults aged 18-59 in household in 2011	0,10	Ratio of elderly to adults aged 18-59 in household in 2011	0,11	Ratio of elderly to adults aged 18-59 in household in 2011	0,07
	% change in ratio of elderly to adult households members	-0,8%	% change in ratio of elderly to adult households members	+35,3%	% change in ratio of elderly to adult households members	-23,0%

Tables 16 to 18, summarise the main characteristics of the households that transitioned from adequate in 2010 to inadequate or severely inadequate in 2011 (Table 16); households who transitioned from inadequate in 2010 to adequate or severely inadequate (Table 17) and households who transitioned from severely inadequate to adequate or inadequate access (Table 18). In all three cases the same variables are summarised for households who did not transition and whose access remained stable in order to highlight the factors at play in the transition. The main findings of these tables are:

Changes from adequate in 2010 to inadequate or severely inadequate in 2011 are closely associated with:

- A reduction in household income.
- A reduction in the percentage of employed household members.
- An increase in household size for transition to adequate and a slight decrease for those who transitioned to severely inadequate.
- Increase in the percentage of children in the household.
- Increase in the percentage of grant recipients.
- In the case of those who transitioned from adequate to adequate an increase and for those who transitioned to severely inadequate a dramatic decrease in the ratio of elderly to adult household members.

Changes from inadequate access in 2010 to severely inadequate access in 2011 were accompanied by:

- A reduction of household income.
- A reduction in the percentage of employed household members.
- A reduction in household size.
- An increase in the number of grant recipients.

Changes from severely inadequate to adequate in 2011 were characterised by:

- Significant increases in household income.
- Increase in the percentage of employed household members.
- Reduction in household size.
- Reduction in number of children.

The change patterns observed clearly show linkages between changes in food access adequacy and changes in household income and the percentage of employed household members. However, the relationships between the number of household members, the ratio of children to adults and the elderly to adults are less clear cut. Likewise are the patterns that emerge in relation to grant receipt not always as expected. This may be the result of the fact that changes in household size and composition can both be causes and effects of reduced household income and access to food and the way it manifests itself is subject to variability between households. Tables 19 to 21 take this analysis a little further by constructing logistic regression models that identify the best combination of variables to predict change from improved to no change in food security (Table 19); from negative to no change in food access (Table 20) and from positive to negative (Table 21). The analysis in all three tables was done for rural and urban areas as well as the country as a whole.

Table 19 shows that an increase in household income, increases in the percentage of employed household members and grant recipients and stopping with agricultural activities in 2011 are important predictors for positive change versus no change in rural areas. Starting with agricultural activities in 2011 is negatively associated with positive versus no change in status. A reduction in agricultural activities from 2010 to 2011 is a negative predictor of improvement in food access, whilst

an increase in agricultural activities is positively associated with improved food access status. The reverse was observed in urban areas. In urban areas an increase in household income and grant receipt are positive predictors of improved food security status when compared to no change. No change in social grant receipt is negatively associated with improved food security status in rural and urban areas as well as the country as a whole. Having a male household head is a negative predictor of change in rural areas and the country as a whole.

Table 19: Predictors of improved versus no change in food security status between 2010 and 2011, using logistic regression, 2011

Description of variable	Rural areas	Urban areas	South Africa
Model indicators			
Likelihood ratio chi Square	523	74	268
N	206	3142	8413
Intercept	-1,2718	-1,1496	-1,1724
Maximum likelihood estimates			
Sex of the household head			
Male	-0,1490	n/a	-0,1112
Reference: Female			
Change in income	n/a	n/a	n/a
Increase	0,2474	0,2474	0,2474
No change	-0,1966	n/a	n/a
Reference: Decrease			
Change in the percentage of employed household members			
Increase	0,1716	n/a	0,0931
No change	n/a	n/a	n/a
Reference: Decrease	n/a	n/a	n/a
Change in number of social grant recipients			
Increase	0,2297	0,1868	0,2181
No change	-0,3689	-0,3628	-0,3837
Reference: Decrease			
Change in number of household members with illness or injuries			
Increase	n/a	n/a	n/a
No change	-0,1185	n/a	-0,0838
Reference: Decrease			
Change in the main source of income			
Change to salary	n/a	n/a	n/a
Change to grant	n/a	n/a	n/a
Change to remittances	n/a	n/a	-0,0047
Reference: No change in main source of income			
Change in households' involvement in agriculture			
Started doing agriculture in 2011	-0,3871	n/a	n/a
Involved in agriculture in 2010 and 2011	n/a	n/a	n/a
Stopped doing agriculture in 2011	0,2799	n/a	n/a
Reference: Never participated in agriculture			

n/a: Values that are not significant at 95% or 99% levels of significance

Table 20: Predictors of negative versus no change food security status between 2010 and 2011, using logistic regression, 2011

Description of variable	Rural areas	Urban areas	South Africa
Model indicators			
Likelihood ratio chi Square	177	73	235
N	5127	2959	8086
Intercept	-0,9758	-1,1111	-1,0144
Maximum likelihood estimates			
Head_sex			
Male	n/a	n/a	-0,1112
Reference: Female	n/a	n/a	n/a
Change in income			
Increase	n/a	-0,2456	-0,1483
No change	-0,1586	n/a	-0,0891
Reference: Decrease			
Change in child dependency ratio			
Increase	n/a	n/a	n/a
No change	n/a	-0,2216	n/a
Reference: Decrease			
Change in number of social grant recipients			
Increase	0,208	n/a	0,14
No change	-0,379	n/a	-0,3212
Reference: Decrease			
Change in number of household members with illness or injuries			
Increase	0,1964	n/a	0,1729
No change	-0,164	n/a	-0,1452
Reference: Decrease			
Change in the main source of income			
Change to salary	-0,4508	-0,5534	-0,4876
Change to grant	n/a	n/a	n/a
Change to remittances	1,0389	0,8909	0,9906
Reference: No change in main source of income			
Change in households' involvement in agriculture			
Started doing agriculture in 2011	n/a	0,3145	n/a
Involved in agriculture in 2010 and 2011	n/a	n/a	n/a
Stopped doing agriculture in 2011	n/a	n/a	n/a
Reference: Never participated in agriculture	n/a	n/a	n/a

n/a: Values that are not significant at 95% or 99% levels of significance

Table 20 shows that nationally good positive predictors of negative change when compared to no change include a change to remittances as a main source of income, increase in number of social grant recipients as well as an increase in the number of household members with illness or injuries. Negative predictors of change include a male household head, increase or no change in household

income, change to salaries as the main source of income, no change in the number of social grant recipients, no change in number of household members with illnesses or injuries.

Table 21: Predictors of positive versus negative changes in food security status between 2010 and 2011, using logistic regression, 2011

Description of variable	Rural areas	Urban areas	South Africa
Model indicators			
Likelihood ratio chi Square	117	75	177
N	1709	534	2961
Intercept	-0,3914	-0,0435	-0,1592
Maximum likelihood estimates			
Change in income			
Increase	0,3033	0,4012	0,3777
No change	n/a	n/a	n/a
Reference: Decrease			
Change in household size			
Increase	n/a	n/a	-0,1275
No change	n/a	n/a	n/a
Reference: Decrease			
Change in the percentage of employed household members			
increase	0,2277	n/a	n/a
No change	n/a	n/a	n/a
Reference: Decrease			
Change in number of household members with illness or injuries			
Increase	-0,2266	n/a	-0,206
No change	n/a	n/a	n/a
Reference: Decrease			
Change in the main source of income			
Change to salary	0,5742	0,8735	0,7331
Change to grant	n/a	n/a	n/a
Change to remittances	-0,8743	-1,3111	-1,0822
Reference: No change in main source of income			
Change in households' involvement in agriculture			
Started doing agriculture in 2011	n/a	n/a	n/a
Involved in agriculture in 2010 and 2011	n/a	n/a	n/a
Stopped doing agriculture since 2010	0,4196	n/a	0,2603
Reference: Never participated in agriculture			

n/a: Values that are not significant at 95% or 99% levels of significance

The regression analysis confirms that increase in household income and a change to salary as the main source of income are the primary drivers of positive change from a position of negative food access status (Table 21). This is true for rural, urban as well as at national level. At all three levels of geography, a change towards remittances as main income source is a negative predictor. In rural areas and nationally stopping with agriculture in 2010 were also positive predictors of improvement in

food security status. An increase in the number of household members with illness or injuries was a negative predictor of change in rural and at national level.

6.6 Agriculture

Less than a quarter of households in South Africa are involved in agriculture, including doing agriculture as a hobby. Figure 14 reveals a large variation in the extent to which households practise agriculture across provinces. Households in the predominantly urban provinces such as Gauteng (5,9%) and Western Cape (7,3%) are least likely to participate in agriculture while households in the more rural provinces of Limpopo (52,7%), Eastern Cape (37%) and Mpumalanga (33,9%) are most likely to engage in agriculture.

Figure 14: Household involvement in agricultural activities, including participating for leisure purposes, by province, 2011

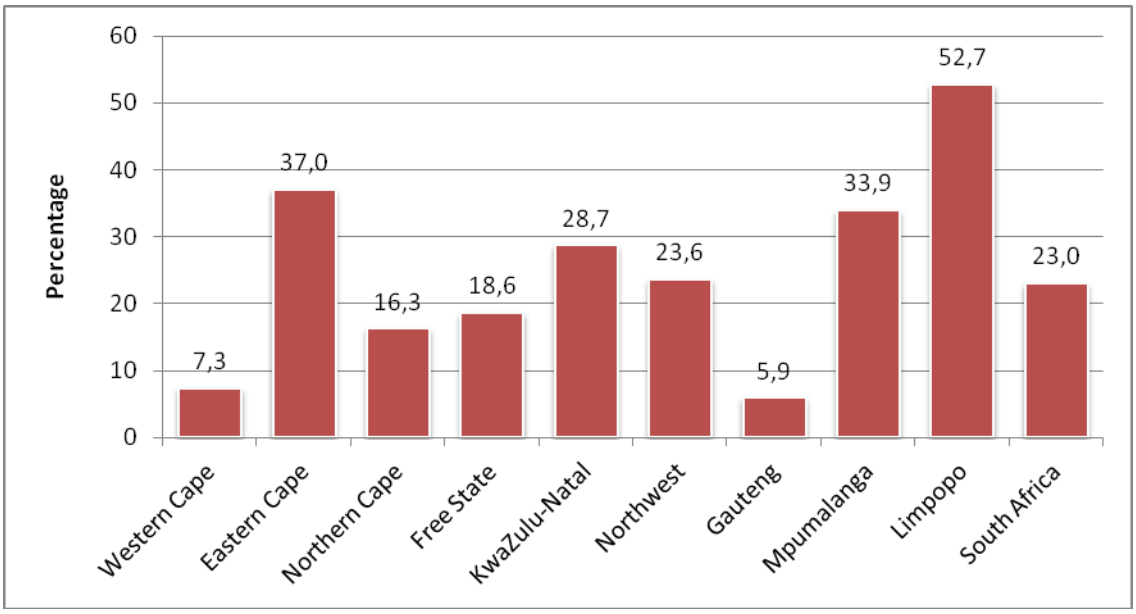


Table 22 shows household's main reasons for being involved in agriculture by their food security status. The table reveals that households that participate in agriculture to produce food as main source of nutrition is much more likely to have severely inadequate access to food than households that offered other reasons. Households that were involved in agriculture to produce an extra source of food were second most likely to experience severely inadequate access to food, while households that used agriculture as a hobby enjoyed the best access.

Table 22: Households' reasons for being involved in agriculture by the households' access to food, 2011

Households' reasons for being involved in agriculture	Adequate access to food	Inadequate access to food	Severely inadequate access to food	Total
As main source of food for the household	66,2	15,7	18,2	100,0
As a main source of income/earning a living	73,5	20,2	6,3	100,0
As an extra source of income	71,3	24,1	4,6	100,0
As an extra source of food	73,0	19,3	7,7	100,0
As a leisure activity of a hobby	84,3	13,1	2,6	100,0

Household's main reasons for being involved in agriculture by province are presented in Table 23. Nationally, more than 84% of households are engaged in agriculture to produce an extra source of food, while only 4,2% of households use agriculture to produce the majority of food. Another 7,6% of households participate in agriculture to earn income. While 4,2% of households in South Africa practised agriculture as a hobby, participation is particularly notable in Western Cape (31,3%) and Gauteng (19%). Approximately nine-tenths of households in Limpopo (94,6%), Eastern Cape (90,6%) and Mpumalanga (89,0%) use agriculture to generate an extra source of food.

Table 23: Households' main reasons for being involved in agriculture by province, 2011

Province	As main source of food for the household	As main source of income / earning a living	As an extra source of income	As an extra source of food for the household	As a leisure activity or hobby, e.g. gardening	Per cent	Total (thousands)
Western Cape	3,6	7,9	5,2	52,0	31,3	**100,0**	**71**
Eastern Cape	1,4	1,5	4,6	90,6	1,9	**100,0**	**656**
Northern Cape	2,7	11,5	28,9	51,0	5,9	**100,0**	**38**
Free State	18,2	3,4	7,9	67,4	3,1	**100,0**	**153**
KwaZulu-Natal	1,4	2,9	7,1	83,6	4,9	**100,0**	**713**
Northwest	11,1	7,9	9,1	67,6	4,4	**100,0**	**229**
Gauteng	18,1	1,8	4,8	56,4	19,0	**100,0**	**127**
Mpumalanga	4,7	0,8	2,5	89,0	3,1	**100,0**	**345**
Limpopo	1,9	0,8	1,8	94,6	0,9	**100,0**	**736**
South Africa	**4,2**	**2,5**	**5,1**	**84,1**	**4,2**	**100,0**	**3 068**

For the purpose of analysis, two main agricultural activities, subsistence and smallholder farming, are derived from these reasons based on whether the produce is sold or used by the household. The terms are classified as follows:

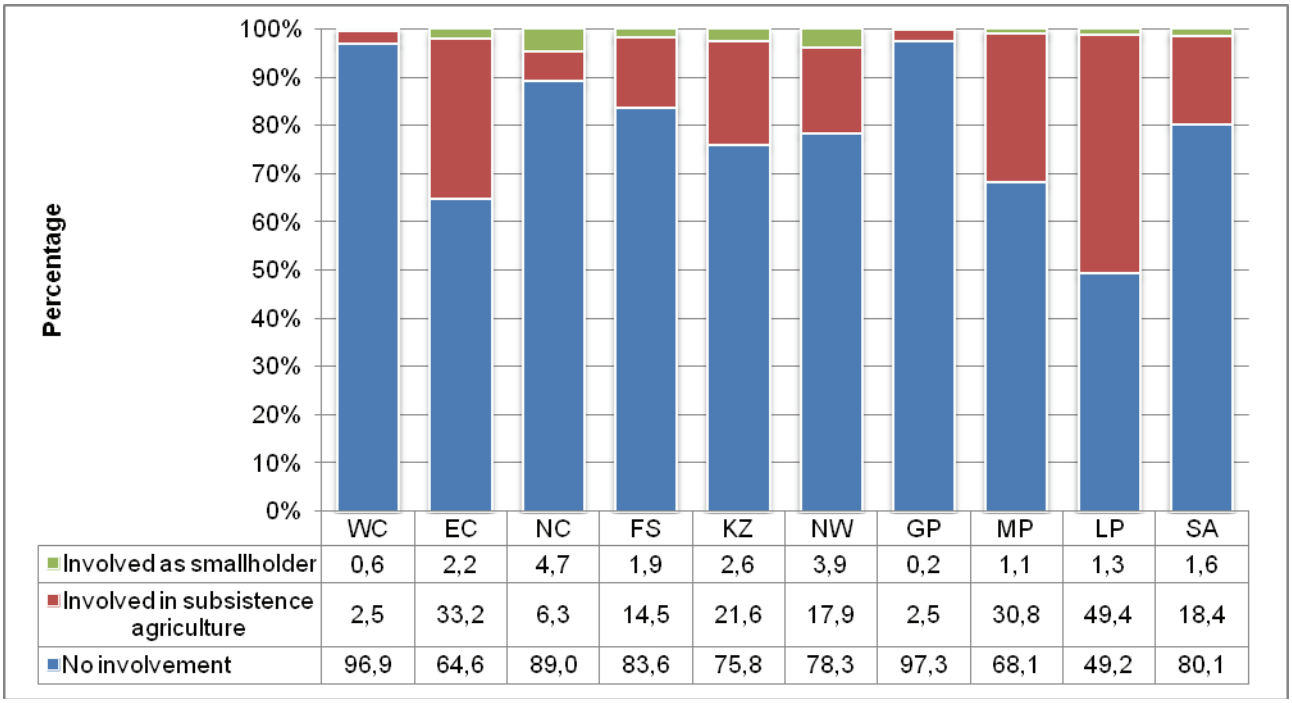
- **Subsistence farming**: when households engage in agriculture to produce a main or additional source of food it is classified as subsistence farming.
- **Smallholder farming**: when households produce food to generate income, either as a main or additional source. The latter category includes a wide range of activities, ranging from smallholders and emerging farmers to large scale commercial farmers.

For the purposes of this analysis, households that engage in agriculture as a hobby were classified as not participating in productive agriculture.

Figure 15 shows that less than 231 000 or 2% of households in South Africa practise smallholder agriculture. The highest percentage is noted in Northern Cape (4,7%), followed by Northwest (3,9%) and KwaZulu-Natal (2,6%). The smallest percentage of smallholders are observed in Gauteng (0,2%) and Western Cape (0,6%).

By comparison, 2,7 million or 18,4% of households practise subsistence agriculture. Households in Limpopo (49,4%), Eastern Cape (33,2%) and Mpumalanga (30,8%) are most likely to engage in subsistence farming. Only 2,5% of households in Western Cape and Gauteng are involved in agriculture for subsistence reasons. The small extent of agricultural participation in Gauteng and Western Cape is emphasized by the large percentage of households in these provinces that either do not participate in agriculture or that do it as a hobby.

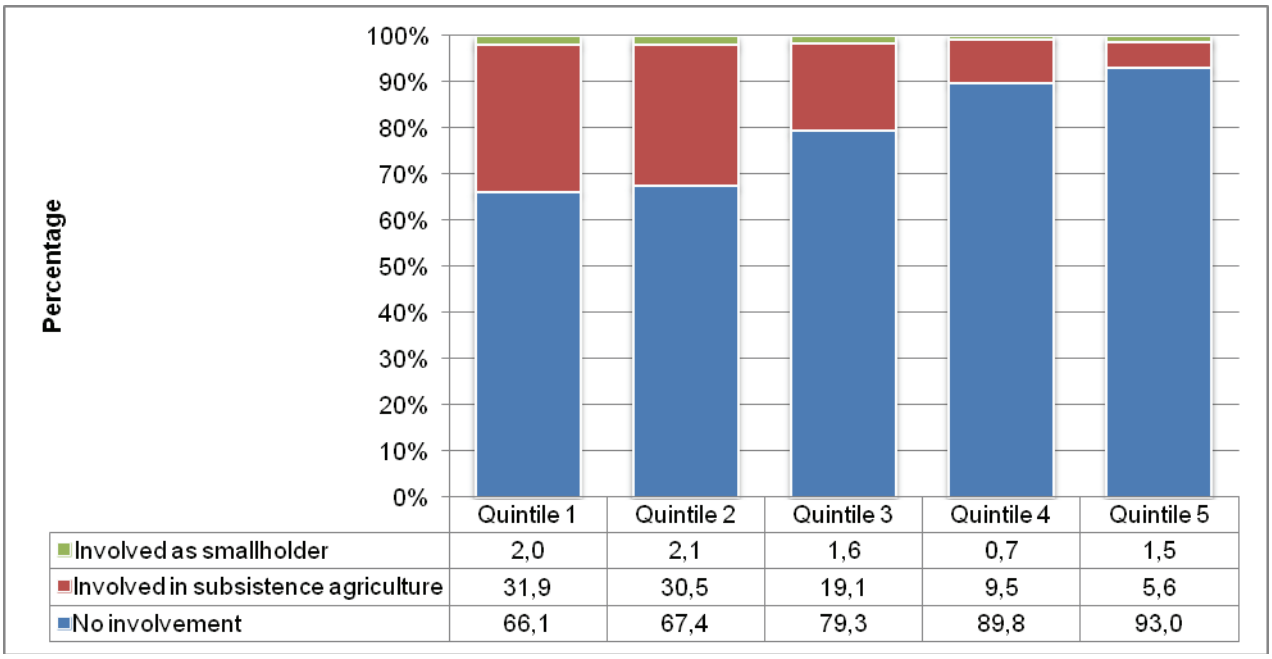
Figure 15: Households' involvement in productive agricultural activities, excluding for leisure purposes, by province, 2011



	WC	EC	NC	FS	KZ	NW	GP	MP	LP	SA
Involved as smallholder	0,6	2,2	4,7	1,9	2,6	3,9	0,2	1,1	1,3	1,6
Involved in subsistence agriculture	2,5	33,2	6,3	14,5	21,6	17,9	2,5	30,8	49,4	18,4
No involvement	96,9	64,6	89,0	83,6	75,8	78,3	97,3	68,1	49,2	80,1

Household participation in subsistence agriculture is negatively correlated with income and households in income quintile 1 are much more likely to participate in agriculture than households in income quintile 5. Conversely, the percentage of households that are not participating in agriculture shows a consistent increase with each successive income quintile. As with subsistence farming, smallholding also seems to decline with income, at least until income quintile 4. The slight increase in the percentage of smallholders in income quintile 5 might be due to the presence of commercial farmers. This is presented in Figure 16.

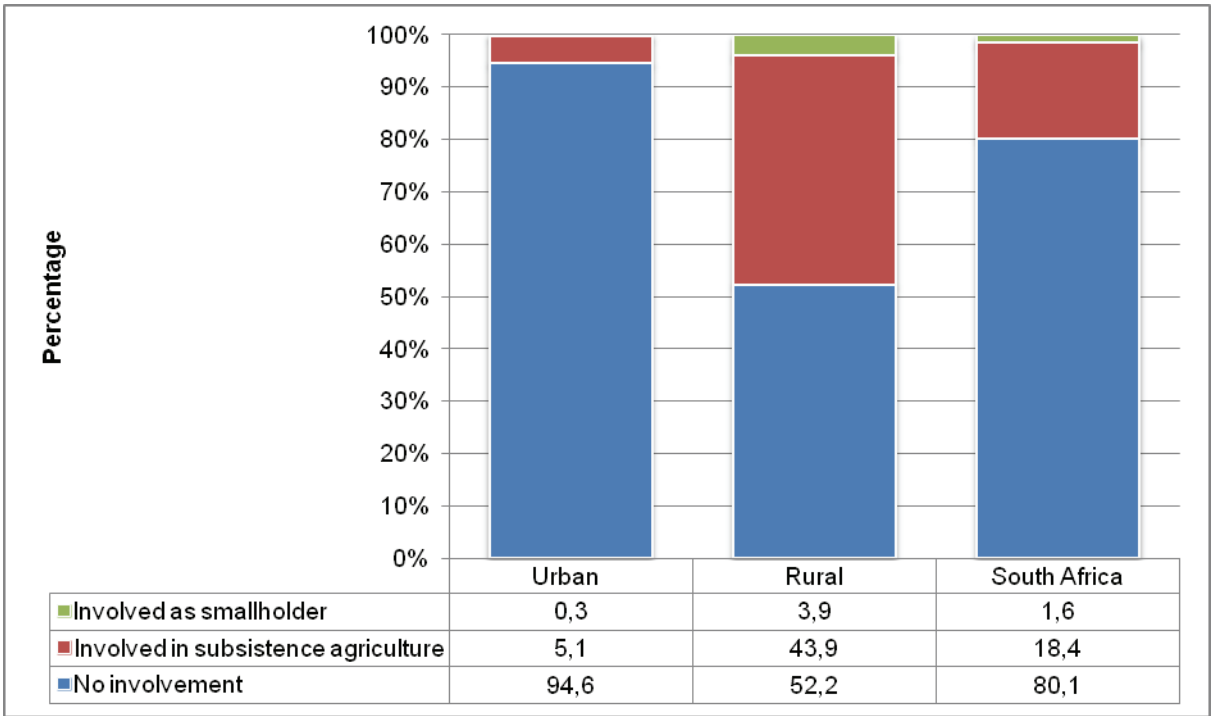
Figure 16: Households' involvement in agricultural activities by income quintile, 2011



	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5
Involved as smallholder	2,0	2,1	1,6	0,7	1,5
Involved in subsistence agriculture	31,9	30,5	19,1	9,5	5,6
No involvement	66,1	67,4	79,3	89,8	93,0

Urban areas are characterised by very little agricultural activity. This is presented in Figure 17. Only 0,3% and 5,1% of households respectively engage in smallholder and subsistence agriculture, while almost 95% of households are not involved at all. By contrast, almost half (47,8%) of households in rural areas are involved in either smallholder (3,9%) or subsistence (43,9%) farming.

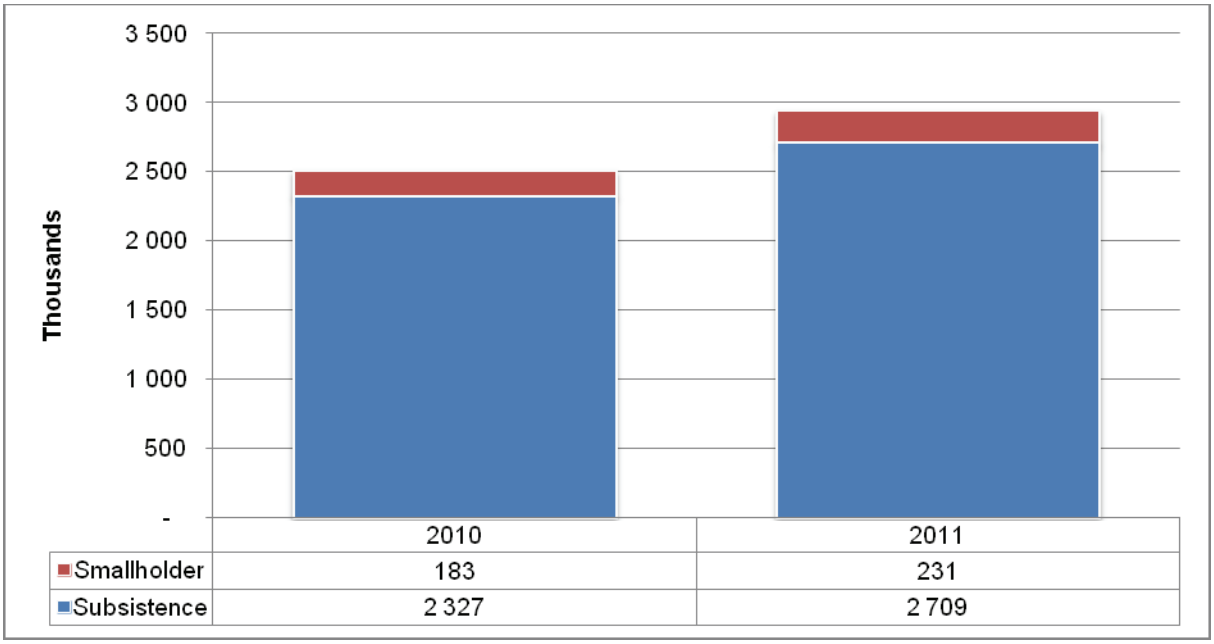
Figure 17: Household involvement in agriculture by rural and urban location, 2011



	Urban	Rural	South Africa
Involved as smallholder	0,3	3,9	1,6
Involved in subsistence agriculture	5,1	43,9	18,4
No involvement	94,6	52,2	80,1

Figure 18 shows that the number of subsistence and smallholder/commercial farms have increased by 17,2% since 2010 when they were first measured by the General Household Survey. Between 2010 and 2011 the number of smallholder households increased by 26,3% to 231 000 while the number of households that practise subsistence farming increased by 16,4% to 2,7 million.

Figure 18: Number of subsistence and smallholder/commercial households, 2010-2011



	2010	2011
Smallholder	183	231
Subsistence	2 327	2 709

Table 24 explores the characteristics of households that are involved or not involved in agricultural activities by rural and urban areas. Involvement in agriculture is limited to participation in subsistence or smallholder farming, and households that do agriculture as a hobby are not considered to be involved in agriculture. It is clear from the table that households headed by a black African are very likely to be involved in agriculture in both rural and urban areas. By contrast, households headed by coloured, Indian/Asian and white individuals are less likely to be involved in agriculture in both urban and rural areas.

Female headed households are more likely than male headed households to be involved in agriculture in rural areas. Smaller households seem less likely to be involved in agriculture than their bigger counterparts. The table shows that households with up to 4 members are less likely to participate in agricultural activities in both urban and rural areas while larger households are more likely to be involved in both urban and rural areas. Households that reported salaries or wages as the main source of income are less likely to be involved in agriculture in either urban or rural areas. Conversely, households that receive social grants as main source of income are very likely to participate in agricultural activities in both rural and urban areas. The reception of remittances also seems to have a positive impact on agricultural participation.

Table 24 reveals that wealthier households are less likely to be involved in agriculture than their poorer peers in both rural and urban areas.

Table 24: Household involvement in subsistence or smallholder agriculture, 2011

Characteristics	Urban			Rural		
	Not involved	Involved	Total	Not involved	Involved	Total
Head's population group						
Black African	68,8	80.3	69.4	93.3	96.9	95.0
Coloured	11.3	5.1	10.9	3.8	0.6	2.2
Indian/Asian	3.9	1.5	3.7	0.2	0.0	0.1
White	16.1	13.1	15.9	2.7	2.5	2.6
Sex of household head						
Male	66.8	63.1	66.6	59.6	49.3	54.7
Female	33.2	36.9	33.4	40.4	50,7	45,4
Household size						
0-4	78,6	63,6	77,7	75,0	54,4	65,1
5-9	20,1	33,2	20,8	22,0	39,9	30,6
10+	1,4	3,3	1,5	3,0	5,7	4,3
Main source of income						
Salaries, wages, commission	66,6	52,3	55,8	51,5	24,9	38,7
Income from a business	7,8	7,5	7,8	5,6	6,1	5,8
Remittances	6,7	7,4	6,8	13,6	16,3	14,9
Pensions	2,6	2,4	2,5	0,9	0,9	0,9
Grants	13,5	28,2	14,3	26,3	50,4	37,9
Sales of farming products and services	0,0	0,1	0,0	0,0	0,4	0,2
Other income sources	1,9	1,5	1,9	0,5	0,5	0,5
No income	0,9	0,6	0,9	1,6	0,5	1,1
Income quintiles						
Quintile 1	14,2	22,2	14,7	25,1	34,6	29,7
Quintile 2	14,8	20,9	15,1	25,0	33,6	29,1
Quintile 3	19,1	21,7	19,3	23,0	19,3	21,2
Quintile 4	24,4	18,3	24,0	16,6	7,9	12,4
Quintile 5	27,5	17,0	26,9	10,4	4,6	7,8
Total	**9 184**	**528**	**9 713**	**2 631**	**2 412**	**5 043**

Table 25 constructs a logistic regression model that identifies the best combination of variables to predict participation in agriculture for households in rural and urban areas as well as the country as a whole.

The table shows that a small household size, household income and the main source of income are important predictors for participation in agriculture nationally. Households with fewer than five members are negative predictors of agricultural involvement in urban and rural areas, as well as nationally. Falling into income quintile 1 or 2 is a positive predictor of agricultural involvement nationally, as well as in rural areas. Nationally, as well as in rural areas, households that receive salaries, wages or commission as main source of income as well as households with no income are less likely to engage in agriculture than households that reported other sources of income. By contrast, households that receive remittances are more likely to engage in agriculture nationally, as well as in rural and urban areas. Households that receive social grants are positive predictors of agricultural activity in rural areas, as well as for South Africa as a whole.

Table 25: Predictors of participation in agriculture in 2011, using logistic regression, 2011

Description of variable	Province		South Africa
	Urban	Rural	
Model indicators			
Likelihood ratio chi Square	82	590	1 654
N	9 354	4 814	14 168
Intercept	-2,1633		-1,0127
Maximum likelihood estimates			
House hold size			
0-4	-0,3833	-0,6143	-0,5371
5-9	n/a	n/a	n/a
>9 (Reference category)			
Main source of income			
Salaries, wages, commission	n/a	-0,5062	-0,4490
Social grants	n/a	0,2772	0,4575
Remittances	0,4839	0,5621	0,7019
No income	n/a	-0,6433	-0,7193
Other income (Reference category)			
Income quintile			
Poorest households	n/a	n/a	0,3364
Quintile 2	n/a	0,2581	0,4296
Quintile 3	n/a	n/a	n/a
Quintile 4	n/a	-0,2071	-0,3466
Wealthiest households (reference category)			
Access to food			
Adequate access Inadequate access (reference category)	-0,1402	n/a	n/a

n/a: Values that are not significant at 95% or 99% levels of significance

Table 26 explores differences in the livelihood strategies of subsistence and smallholder households. The table shows that compared to households that are engaged in smallholder farming, households that practise subsistence farming rely more on social grants (47,2% compared to 36,4%) and salaries and wages (30,2% versus 25,8%). In comparison, a larger percentage of smallholder households identified income from business (22,3% versus 5%) and sales of farm products and services (3,4% compared to 0,1%) as main sources of income.

Table 26: Household sources of income by type of agriculture and geographic type, 2011

	Subsistence	Smallholders
Salaries and wages	30,2	25,8
Income from business	5,0	22,3
Remittances	15,1	9,6
Pensions	1,1	1,6
Grants	47,2	36,4
Sales of farm products	0,1	3,4
Other income	0,7	0,5
Per cent	**100,0**	**100,0**
Total (thousands)	**2 709**	**231**

Table 27 shows that 82,2% of smallholder households farm with livestock compared to only 28,8% with crops and 24,5% with fruits and vegetables. Although a smaller percentage of subsistence households engaged in livestock production (57,9%), a much larger percentage plants crops (49,4%) and or fruits and vegetables (46,1%). For households that practise subsistence farming, crop production is highest in Limpopo (62,4%) and Eastern Cape (59,1%) while the highest percentage of subsistence households involved in the production of fruits and vegetables are found in Gauteng (92,0%) and Western Cape (87,4%). In Northern Cape, 91,4% of households are involved with livestock, while commercial crop production is highest in Mpumalanga (43,2%) and Eastern Cape (35,8%). Households in Limpopo are most likely to plant fruits and vegetables.

Table 27: Percentage of households engaged in different form of agricultural production by province, 2011

	Subsistence households				Smallholder households			
	Livestock	Crops	Fruits and vegetables	Number of households	Livestock	Crops	Fruits and vegetables	Number of households
Western Cape	24,7	1,8	87,4	**39**	76,5	19,1	32,9	**9**
Eastern Cape	81,8	59,1	43,5	**604**	87,0	35,8	23,8	**40**
Northern Cape	69,5	2,6	43,6	**21**	91,4	6,6	13,9	**15**
Free State	34,4	11,7	79,4	**131**	83,6	30,3	28,7	**17**
KwaZulu-Natal	62,8	56,4	25,8	**606**	82,3	37,1	23,0	**72**
North West	63,8	3,9	49,0	**180**	91,5	11,3	11,4	**39**
Gauteng	13,4	7,9	92,0	**94**	45,2	26,7	31,9	**8**
Mpumalanga	54,4	51,3	70,0	**323**	73,6	43,2	43,2	**11**
Limpopo	45,3	62,4	39,7	**710**	68,3	32,2	44,8	**19**
South Africa	**57,9**	**49,4**	**46,1**	**2 709**	**82,2**	**28,8**	**24,5**	**231**

Tables 28 to 32 summarises the main characteristics of subsistence and small holder producers for rural and urban areas. The dynamics of subsistence and smallholder production in urban areas are significantly different from rural areas in that the urban producers from both groups tend to rely more on income from salaries in urban areas (52% v. 25% in rural areas); are less dependent on grants (28% v. 50% in rural areas) and more likely to have at least one employed household member (54% v. 32%). Rural producing households are more likely to be headed by someone 60 years and older, with household head gender parity. Urban producers are significantly more likely to be headed by

males (63%). Sixty percent of urban producers fall into the wealthiest two household income quintiles compared to 36% of rural producers. Urban producers are less likely to feel land degradation is a problem (33% v. 47% of rural producers), use public or communal taps (11% v. 30% in rural areas) and be widowed (16% v. 26%).

Within rural areas the dynamics are quite different when the two farmer groups are compared. Compared to rural subsistence producers, rural smallholder producers are more likely to:

- Be male (65% compared to 48% for subsistence)
- Be white (22% compared to 1% for subsistence)
- Get an income from business (23% v. 5%) and sales of farm products/services (4% v. 0,1%)
- Be in the two wealthiest household income quintiles (49% v. 35% for subsistence)
- Have at least one household member employed (48% v. 31% for subsistence)
- Practise crop planting on farm land (53% v. 9% for subsistence)

Rural smallholder producers are less likely than rural subsistence producers to:

- Have social grants as their main source of income (38,9% as opposed to 51,4% for subsistence)
- Practise crop planting in backyard (47% v. 91% for subsistence)
- Use water from unsafe water sources as well as communal water sources (33% v. 41%)
- Live in a traditional dwelling (24% v. 35%)

The dynamics of smallholder and subsistence production in urban areas are significantly different in the following ways. Urban smallholder producers are more likely than urban subsistence producers to:

- be dependent on income from a business as a main source of income (21% v. 7%)
- have at least one person employed (66% v. 53%)
- use farm land for crop production (36% v. 1%)

Compared to urban subsistence producers urban smallholder producers are less likely to:

- Be dependent on salaries (42% v. 53%) and grants (21% v. 29%) as a main source of income.
- Use backyard garden for crop production (46% v. 93%)

Table 28: Access to food of households engaged in subsistence or smallholder agricultural production by urban or rural area, 2011

Characteristics	Rural			Urban		
	Subsistence	Smallholder	Total	Subsistence	Smallholder	Total
Access to food						
Adequate access	73,3	71,3	73,1	70,2	76,3	70,6
Inadequate access	19,5	23,7	19,8	17,3	17,6	17,3
Severely inadequate access	7,3	5,0	7,1	12,5	6,1	12,1
Total (thousands)	**2 214**	**198**	**2 412**	**496**	**33**	**528**

Table 29: Demographic characteristics of households engaged in subsistence or smallholder agricultural production by urban or rural area, 2011

Characteristics	Rural			Urban		
	Subsistence	Smallholder	Total	Subsistence	Smallholder	Total
Sex of the household head						
Male	48,0	64,5	49,3	63,2	62,2	63,1
Female	52,1	35,5	50,7	36,8	37,8	36,9
Age of the household head						
18-34	14,5	9,0	14,1	10,8	11,8	10,8
35-59	50,4	51,5	50,5	60,8	60,3	60,8
60+	35,1	39,5	35,4	28,5	27,9	28,4
Population group of the household head						
Black African	98,8	76,8	96,9	80,0	84,2	80,3
Coloured	0,5	1,3	0,6	5,3	1,5	5,1
Indian / Asian	0,0	0,0	0,0	1,7	0,0	1,5
White	0,7	21,9	2,5	13,0	14,3	13,1
Marital status of head						
Legally married	39,9	50,4	40,7	45,4	48,0	45,5
Living together as husband and wife	8,7	8,9	8,7	11,5	5,8	11,1
Divorced	1,8	2,6	1,9	3,0	1,3	2,9
Separated but still legally married	1,6	0,6	1,6	2,0	3,6	2,1
Widowed	26,2	22,2	25,8	16,2	17,5	16,3
Single but have been living together with someone as husband/wife before	2,3	1,0	2,2	1,9	0,0	1,8
Single but have never been married/never lived together as husband/wife before	19,5	14,2	19,1	20,2	23,8	20,4
Total (thousands)	**2 214**	**198**	**2 412**	**496**	**33**	**528**

Table 30: Socio-economic characteristics of households engaged in subsistence or smallholder agricultural production by urban or rural area, 2011

Characteristics	Rural			Urban		
	Subsistence	Smallholder	Total	Subsistence	Smallholder	Total
Main source of income						
Salaries	25,1	23,3	24,9	53,0	41,9	52,3
Income from business	4,6	22,5	6,1	6,7	21,0	7,5
Remittances	16,9	10,0	16,3	7,4	7,4	7,4
Pensions	0,9	0,8	0,9	2,1	6,7	2,4
Grants	51,4	38,9	50,4	28,7	21,1	28,2
Sales of farm products	0,1	3,9	0,4	0,1	0,0	0,1
Other income	0,5	0,3	0,5	1,5	1,9	1,5
No income	0,6	0,5	0,5	0,6	0,0	0,6
Total (thousands)	**2 214**	**198**	**2 412**	**496**	**33**	**528**

Table 30: Socio-economic characteristics of households engaged in subsistence or smallholder agricultural production by urban or rural area, 2011 (Concluded)

Characteristics	Rural			Urban		
	Subsistence	Smallholder	Total	Subsistence	Smallholder	Total
Quintiles						
Poorest	23,6	17,4	23,1	15,7	14,8	15,6
Quintile 2	20,2	16,1	19,9	10,7	6,9	10,4
Quintile 3	21,5	17,4	21,2	14,0	18,5	14,3
Quintile 4	21,8	19,9	21,6	22,0	21,1	22,0
Wealthiest	13,0	29,3	14,2	37,7	38,8	37,7
Having at least one employed households member						
At least one employed member	31,0	48,2	32,4	52,9	65,9	53,7
No employed household members	69,1	51,8	67,6	47,1	34,1	46,3
Total (thousands)	**2 214**	**198**	**2 412**	**496**	**33**	**528**

Table 31: Access to housing and water of households engaged in subsistence or smallholder agricultural production by urban or rural area, 2011

Characteristics	Rural			Urban		
	Subsistence	Smallholder	Total	Subsistence	Smallholder	Total
Type of drinking water						
Piped (tap) water in the dwelling/house	5,0	20,2	6,3	50,0	55,7	50,4
Piped (tap) water in yard	26,6	21,8	26,2	32,7	38,0	33,0
Borehole in yard	3,1	9,8	3,6	1,1	2,1	1,1
Rain-water tank in yard	2,5	2,0	2,5	0,6	1,8	0,7
Neighbour's tap	5,0	1,2	4,7	2,0	0,0	1,9
Public/communal tap	30,7	24,6	30,2	11,4	0,0	10,7
Water-carrier/tanker	2,0	1,2	1,9	0,7	0,0	0,7
Borehole outside yard	3,6	5,6	3,7	0,2	1,1	0,3
Flowing water/stream/river	11,0	8,3	10,8	0,8	1,3	0,8
Stagnant water/dam/pool	1,1	2,5	1,2	0,3	0,0	0,3
Well	2,2	1,4	2,2	0,1	0,0	0,1
Spring	5,8	1,3	5,4	0,0	0,0	0,0
Other	1,4	0,2	1,3	0,2	0,0	0,1
Type of dwelling						
Formal dwelling	62,7	74,7	63,7	85,5	95,8	86,1
Traditional dwelling	34,8	23,7	33,9	7,7	2,8	7,4
Informal	2,3	1,7	2,2	6,9	1,5	6,6
Other	0,1	0,0	0,1	0,0	0,0	0,0
Total (thousands)	**2 214**	**198**	**2 412**	**496**	**33**	**528**

Table 32: Place where households plant crops and environmental concerns of households engaged in subsistence or smallholder agricultural production by urban or rural area, 2011

Characteristics	Rural			Urban		
	Subsistence	Smallholder	Total	Subsistence	Smallholder	Total
Crop planting						
Farm land	9,1	52,6	11,3	0,5	35,9	1,6
Backyard garden	91,3	46,5	89,1	93,0	45,6	91,5
School garden	0,2	0,4	0,2	0,3	0,0	0,3
Communal garden	1,4	6,3	1,7	1,0	8,0	1,2
Verges of roads	0,2	0,0	0,2	0,8	3,5	0,9
Other	0,1	0,4	0,2	0,0	2,4	0,1
Environmental concerns						
Littering	32,3	28,8	32,1	35,4	32,9	35,2
Water pollution	20,3	19,4	20,2	13,5	19,3	13,8
Land degradation	47,3	48,5	47,4	32,9	39,2	33,3
Reception of a government land grant						
Household received for residence	1,7	4,2	1,9	1,6	5,5	1,8

7. Summary and conclusions

The right to food is a basic human right that is entrenched in the constitution of the Republic of South Africa (No 8 of 1996). The constitution obliges the State to take all necessary steps to enable residents to meet their own basic food needs. As signatory to the Millennium Development Goals the country has committed itself to achieve the goals and targets set out in the document, including halving the proportion of people who suffer from hunger by 2015. The eradication of hunger and poverty is a particularly important development objective as good nutrition is vital to ensure the improvements in health and human capital that are needed to achieve most of the other development goals. Households have different capacities to make a living depending on their access to human, social, natural, physical and financial capital and they attempt to achieve their livelihood goals based on their available assets and capabilities. Most households attempt to diversify their livelihood options by engaging in a variety of activities that might range from employment to agricultural activity.

Despite its importance, very few instruments are available to identify the different types of food security and to identify households that are vulnerable to hunger. Food security is commonly held to comprise four interconnected dimensions, namely availability of food; access to food; utilization of food; and stability of availability and access to food, but this report will primarily focuses on issues related to households' access to food.

Availability of, and Access to food

Although South Africa has largely maintained its ability to meet national food requirements and to provide food in sufficient quantities and of appropriate quality to consumers, large scale inequality and poverty mean that many households do not enjoy food security or adequate access to food. Many households live in a state of chronic poverty and find it difficult to deal with shocks such as unemployment and natural disasters. These households are consequently very vulnerable to hunger and food insecurity. Poor households are also less likely to consume a diet that is sufficiently diverse to allow adequate nutrition.

A process of deagrarianisation and urbanisation have created a wage based economy in which livelihood strategies have become less diversified and in which households have become more dependent on salaries and wages at the expense of agricultural participation. The report shows that 62,6% of South African households receive salaries or wages, it is disconcerting to note that 44,8% of households are poor enough to qualify for and to receive social grants. The report shows that 56,6% of South African households receive salaries and wages as the main source of income while 22,3% list social grants as the main source of income. While more than two thirds of households in Western Cape (66,9%) and Gauteng (68,0%) list salaries and wages as the main source of income, social grants is the main source of income for 37,9% of households in Eastern Cape and 33,8% of households in Limpopo.

The report finds that households, as net consumers of food, that do not contain a single employed member are very likely to experience poor access to food, while households that receive salaries or wages as the main source of income are much less likely to experience inadequate access to food than households that rely on social grants and remittances. A positive relationship is identified between income and access to food in which access to food improves with improvement in income, measured in the report in terms of income quintiles. The study shows that social grants comprise more than 40% of the income of households in quintile 1 and 2 while more than 80% of the households in quintile 4 and 5 households listed salaries and wages as the main source of income.

The relationship to poverty is emphasized by the finding that households with diminished access to basic services (including the use of unimproved sources of water and hygiene, as well as using paraffin, wood and coal for cooking) are more likely to experience inadequate access. This unfortunately locks households with inadequate access to food in a vicious cycle. The use of unsafe water increases the risk of diarrhoea and infectious diseases, lowering resistance and reducing nutritional status, which in turn impacts food security status negatively. Even households with sufficient access to food may become caught the food insecurity cycle as a result of the risks of diarrhoea and malnutrition associated with the use of unsafe water.

An analysis of households based on their access to food shows that households headed by black Africans, households with female heads, large households, and those with many dependent children are most likely to experience inadequate access. By contrast, smaller households (single person and nuclear) are more likely to enjoy adequate access than larger households. This is probably a function of the number of people in the household as well as the socio-economic factors that brought them together.

Changing household access to food

The report shows that complex access to food has improved since 2010, and that households with inadequate or severely inadequate access to food declined from 21,9% in 2010 to 21,2% in 2011. Inadequate access to food is particularly severe in Northwest (32,9%) and Northern Cape (29,7%). Despite being a relatively poor province, households in Limpopo had better access to food than in any other province.

An analysis of households that were in the sample in both 2010 and 2011 reveals how the food security status changed within the linked dataset between these years. At a national level adequate access improved from 74,9% to 77,9% during the period of comparison. Whilst 62,7% of households retained their adequacy status over that time period, 12,2% regressed from adequate to inadequate or severely inadequate. The general change patterns were similar within urban and rural areas. However, there were significant differences between rural and urban areas. Households living in rural areas were generally less likely to have adequate access than those in urban areas (74,3% for rural v. 80,1% for urban in 2011). Another observation of significance is that a greater proportion of

households in rural areas (17%) moved from inadequate or severely inadequate to adequate access between 2010 and 2011, when compared to urban areas where only 14% transitioned. As seen earlier, the transition to improved food access is closely associated with an increase in household income, an increase in the number of employed household members, and a decrease in the household size or number of dependent children.

Vulnerability to hunger

Households' vulnerability to hunger has declined tremendously over the past decade, decreasing from 23,8% to 11,5% in 2011. This is, however, still higher than the 10,5% recorded in 2007, before the advent of the financial crisis. Despite the improvement since 2008, the report finds that the percentage of households that said that they experience hunger 'often' has increased.

Access to food and social grants

The report confirms that poor households which receive social grants are less likely to experience inadequate access to food than poor households without any grants. The latter set of households can be characterised as smaller households in urban areas, often living in informal dwellings, that are headed by younger males and which are very dependent on remittances for survival. These households seem to consist of labour migrants who went to urban areas to diversify the livelihood strategies of their often rural households of origin by generating wage income.

Dietary diversity

Less than 50% of households consumed food from all nine selected food categories in the report. The report finds that a properly diversified diet is positively related to household income and that households in quintile 5 are much more likely to have consumed food from all nine food groups than households in quintile 1. Inversely, 28,2% of households in quintile 1 consumed food from six or less food groups compared to only 4% in quintile 5. Significant differences are manifested in the consumption of fruit (82,1% for urban and 66,5% for rural) and dairy products (86,6% for urban and 70,5% for rural). An analysis of consumption of the various food groups reveals a clear increase in the consumption with increasing wealth. Nuclear and double generation households are also more likely to consume a more diverse diet than larger households.

Participation in agriculture

The report finds that households in urban areas that are experiencing inadequate access to food are more likely to participate in agriculture than those with adequate access. Inadequate access to food is particularly high for households that say that their agricultural activities serve as the main source of food for the household.

Less than a quarter of households in South Africa are involved in agriculture, including doing agriculture as a hobby. This figure contains a large variation in the extent to which households practise agriculture across provinces. Households in the predominantly urban provinces such as Gauteng (5,9%) and Western Cape (7,3%) are least likely to participate in agriculture while households in the more rural provinces of Limpopo (52,7%), Eastern Cape (37%) and Mpumalanga (33,9%) are most likely to engage in agriculture. Nationally, more than 84% of households that are engaged in agriculture do so to produce extra food for the household, while only 4,2% of households use agriculture to produce the majority of their food.

A smaller household size, adequate access to food and earning salaries/wages as main source of income are negative predictors of agricultural activity, while being a poor household (falling into

quintile 1) is a strong predictor of agricultural participation. Equally, the receipt of social grants and remittances are strong positive predictors of agricultural participation. This ties in very neatly with the argument that households with more tenuous livelihood strategies are more likely to diversify their strategies as much as possible.

Less than 2% of households in South Africa practise agriculture as smallholders. The highest percentage is noted in Northern Cape (4,7%), followed by Northwest (3,9%) and KwaZulu-Natal (2,6%). The smallest percentage of smallholders are observed in Gauteng (0,2%) and Western Cape (0,6%).

Subsistence farming is much more prevalent with 18,4% of households practicing this form of agriculture. Households in Limpopo (49,4%), Eastern Cape (33,2%) and Mpumalanga (30,8%) are most likely to engage in subsistence farming. Only 2,5% of households in Western Cape and Gauteng are involved in agriculture for subsistence reasons.

The report finds that households that practise subsistence farming rely more on social grants (47,2% compared to 36,4%) and salaries and wages (30,2% versus 25,8%) than smallholder households. In comparison, a larger percentage of smallholder households identified income from business (22,3% versus 5%) and sales of farm products and services (3,4% compared to 0,1%) as main sources of income.

8. Policy recommendations

For some time now there has been a considerable information gap that would enable policy makers and strategists to engage in evidence based decision making in the area of food security and small scale agriculture. Revisions in the GHS 2009 questionnaire were aimed at filling this gap. The internal consistency of the data and the emergence of expected patterns and relationships indicate that the current food security module in the GHS is on the right track. However, if it is to adequately respond to the information gap in the area of food security and its relationship to agriculture, a number of improvements will be needed for GHS 2013:

1. The dietary diversity question has to be included annually but based on 24 hour recall of a specific individual in the household.
2. There is a need to find a better way to measure and distinguish between the two categories of producers (smallholder and subsistence) used by the Department of Agriculture and Forestry.
3. Currently the questionnaire measures access to land only for those who are already active in agriculture. There is a need to reposition those questions to ascertain what the relationship is between access and use, irrespective of current use patterns.
4. Survey officer training in relation to the scope of agricultural activities that have to be reported on will have to be improved to reduce interprovincial variation and ensure better measurement accuracy.
5. There is a need to develop a complex food security index based on all the variables that feed into access, availability and utilisation that could form the basis of progress in relation to the Government's food security targets.

In addition to the potential contribution of the GHS to measuring food security, the need remains for a regular and institutionalised survey that is not household based, but which uses the smallholder and subsistence producers in South Africa as the sampling universe. Such a survey should explore the operational environment and constraints faced by these producer groups as well as monitor progress in terms of state and private sector support towards enhancing the growth and development of this sector as envisaged by the National Development Plan 2030. Statistics South Africa and the Department of Agriculture need to continue with their engagements on this matter to ensure that such a survey is executed.

The findings confirmed that the adequacy of access to food and per implication food security, is primarily driven by the wage labour economy. Household income and employment are the main drivers of better food access, dietary diversity and per implication food security. Early indications are that the safety net provided by social grants does protect households against severe problems related to access to food. However, grant receipt in itself may also reduce the incentive that poor households may have had, prior to the expansion of social grants to make use of the available land to augment household food production. The findings of this report suggest that a relatively small proportion of South African households engage in any form of agricultural production. Where there is access to land, it is vital that the opportunities provided by such access are exploited as much as possible in order to ensure advancement on the zero hunger and reduction of poverty agendas. It is vital that more households make use of available land as a livelihood and income generation asset. This has the potential of reducing the current high dependence of households in especially rural areas on social grants. However, indications are that the sector needs to be significantly revitalised as those currently engaged in production have significantly poorer food access than the population as a whole. Structural constraints such as the costs of agricultural inputs and problems with access to land and markets etc. will have to be dealt with before such a strategy will translate into reducing hunger, poverty and inequality.

The data suggest that only a small proportion of producers currently come from the two poorest household income quintiles. This could reflect possible problems with access to land as well as resources and inputs needed for production if the poor is to be targeted. Currently a small proportion of producers sell their produce or can be classified as smallholders, if the sector is going to contribute towards the NDP 2030 goal of job creation and poverty alleviation there will be a continuous need to work towards up-scaling producers from subsistence to smallholder and finally commercial production.

Some urban agriculture does take place at present. The support and expansion of this sector does have the potential to make a contribution towards improving food security and diversifying urban livelihood strategies. A greater involvement in and focus on IDP and local municipal development planning and programs on the part of the DAFF may help to give greater impetus to this agenda.

9. Limitations of the data

The study is based on secondary data that have been collected as part of the GHS between 2002 and 2011, and did not include questions specific to vulnerable groups beyond the general socio-economic indicators measured by the questionnaire. The data also have some limitations; being sourced from a general survey, none of the content areas is measured in great detail. Measures of employment estimated from the GHS are, for example, rough estimates, rather than the detailed and precise measures that can be provided by the Quarterly Labour Force Survey. Certain aspects, for example household income, were estimated for only the second time in 2010, although there were certain provisions and conditions attached to it. Other concepts, such as disability, were measured differently since 2009 in order to align the question better with international standards. This, therefore, precluded an analysis of changes over time, resulting in a focus on 2009 in this report. Throughout the report, these limitations are highlighted and the process of data interrogation has inevitably identified areas where the GHS questionnaire can be improved for future use.

The sample design of the GHS is based on a sample of dwellings and the sampling frame excludes institutions such as student hostels, old-age homes and hospitals, but includes workers' hostels and retirement villages. This is an important factor to bear in mind when considering the chapter on the elderly, as a number of them live in old-age homes. Members of vulnerable groups living on the street, i.e. the homeless, were also not included in the samples.

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11. Variable categorisation

The table, below, summarises the way in which variables were analysed for purposes of the logistic regression models.

Table 33: Categorisation of variables used in logistic regression models

Description	Variable	Variable values
Population group	01	Black African
	02	Coloureds
	03	Indian/ Asian
	04	White
Employed members in the households	00	No employed members
	01	At least one employed person
Number of persons with social grants in the household	00	No social grant
	01	At least one social grant
Age of the household head	01	Age between 18 and 34
	02	Age between 35 and 59
	03	Age 60 years and older
Household's main sources of income	01	Salaries
	03	Remittances
	05	Grants
	08	No income
	02, 04, 06, 07	Other source of income
Food security status	00	Food access adequate
	01	Food access inadequate
	02	Food access severely inadequate
Sex of the household head	01	Male
	02	Female
Marital status of the household head	01, 02	Married
	03	Divorced
	04, 06	Single
	05	Widowed
	07	Never married
House hold income by quintile	01	Poorest quintile
	02	Poor quintile
	03	Neither poor or rich quintile
	04	Rich quintile
	05	Richest quintile

Description	Variable	Variable values
Change in income	01	Increase in household income
	02	No change in household income
	03	Decrease in household income
Change in the percentage of employed household members	01	Percentage of the employed increased
	02	No change in the percentage change if household income
	03	Decrease in percentage change household income
Change in number of household members with illness or injuries	01	An increase in the number of members with illness or injuries
	02	No change in the number of members with illness or injuries
	03	A decrease in the number of members with illness or injuries
Change in the main source of income	01	Change to salary
	02	Change to grant
	03	Change to remittances
	04	No change in main source of income
Change in households' involvement in agriculture	01	Started doing agriculture in 2011
	02	Involved in agriculture in 2010 and 2011
	03	Stopped doing agriculture in 2011
	04	Never participated in agriculture
Change in child dependency ratio	01	An increase in child dependency ratio
	02	No change in child dependency ratio
	03	A decrease in child dependency ratio
Change in number of social grant recipients	01	An increase in the number of social grants recipients
	02	No change in the number of social grants recipients
	03	A decrease in the number of social grants recipients
Change in household size	01	An increase in household size
	02	No change in household size
	03	A decrease in household size