

Purchasing behaviour as a determinant of food insecurity in Klipplaat

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Opsomming

Hierdie studie poog om kooppbealers van voedselonsekerheid onder huishoudings in Klipplaat, in die Oos Kaap, te ondersoek. Eerstens poog die studie om die verhouding tussen huishoudelike inkomstevlakke en voedselonsekerheid in Klipplaat te beaam. Tweedens beoog die studie om vas te stel of daar 'n verhouding bestaan tussen voedselonsekerheid en vervoertipe na winkels vir voedselaankope. Laastens beoog die studie om te bepaal of daar 'n verhouding bestaan tussen voedselonsekerheid en eienaarskap of gebruik van 'n yskas.

Die studie maak gebruik van 'n aangepaste weergawe van die Huishoudelike Voedselonsekerheid-takseringskaal. 'n Gerieflikheidssteekproef (n=459) huishoudings is in Julie 2006 by die studie betrek. Die steekproef is gekenmerk deur hoë werkloosheidvlakke (86%) en lae inkomstevlakke (76% met 'n maandelikse inkomste van minder as R500).

Beskrywende en afleidende statistiek (ANOVA) is aangewend vir data-afleiding. Sowel praktiese beduidendheid as statistiekbeduidendheid is bepaal vir elk van die hipotetiese vergelykings.

Die studie het bevind dat voedselonsekerheid algemeen voorkom in Klipplaat. Inkomstevlakke het 'n beduidende invloed op voedselonsekerheidtoestande in Klipplaat. Daar is verder bevind dat voedselonsekerheid beduidend beïnvloed word deur die beskikbaarheid, al dan nie, van doeltreffende vervoer in Klipplaat. Daarby het die gebruik van voedselverkoeling 'n kleiner maar beduidende verband met voedselonsekerheid getoon.

Daar is tot die gevolgtrekking gekom dat huishoudings 'n minimum inkomstevlak, kostedoeltreffende vervoer, en verkoeling benodig om voedselonsekerheid te verlig.

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INTRODUCTION

This research seeks to explore how poverty causes food insecurity through constraining purchasing behaviour amongst rural shoppers in the Klipplaat area of the Eastern Cape. Purchasing behaviour in this instance refers to where one shops and the quantity one shops for: occasionally purchasing large quantities of food in bulk from large retail outlets, versus frequently purchasing small quantities of food from local shops. Low-income consumers are unlikely to be able to buy many items when they are on special in shops because of a limited income and generally cannot afford to purchase in bulk (Du Plessis & Rousseau, 2003:442). This is the departure point of this study- does being unable to purchase larger quantities of products, transport and store these products affect household food insecurity?

The Food and Agriculture Organisation (FAO) of the United Nations defines food security as "ensuring that all people at all times have both physical and economic access to the basic food that they need". Food insecurity is defined as the state in which "people do not have adequate physical, social or economic access to food" (FAO, 2003).

Food insecurity is aggravated by a lack of availability of resources for a household (Van Hook & Balistreri, 2006). Money, transport, arable land and intellectual capital all contribute to a household's ability to produce or procure food. In particular, a lack of money is a major cause of food insecurity. Often there is sufficient food available in a country, but it is unobtainable because of resource-related behavioural constraints, which affect physical and economic access to food (Smith *et al*, 2000).

Nutrition affects productivity (Sampson *et al*, 2002), job status (Devine *et al*, 2003), and educational efficacy (Behrman, 1996). Poor diets have a high cost for the economy both in terms of medical expenses and lost productivity (Guthrie & Smallwood, 2003). It is essential that policy-makers investigate how to mitigate the impact of poverty on food insecurity.

Access to food

Food insecurity can be looked at in terms of inadequate availability, access, and utilisation of levels of food (Swindale & Bilinsky, 2006). This study focuses mainly on access to food, and in particular on economic access to food.

Accessibility of food encompasses both economic and physical accessibility. Economic accessibility refers to

the capacity of the household to purchase food for an adequate diet without compromising the satisfaction of other basic needs (Butcher *et al*, 2002). Sometimes medical bills, electricity costs, and school fees mean that households cannot afford enough food to be food secure. In instances of high unemployment, such as in Klipplaat (Blaauw, 2005), economic accessibility may be severely compromised.

The government of the Republic of South Africa provides some financial access to food in the form of social assistance (Department of Social Development, 2006). This social assistance, colloquially known as a 'grant' is provided for the elderly, war veterans, the disabled (and those having to care for disabled children), foster children, and children younger than 14. This age limit will soon be increased to 15 years (South African Government Services, 2007). This 'grant' may improve economic access to food in some instances.

Physical accessibility implies that food must be accessible to everyone, including vulnerable groups such as women, children, the elderly, sick, physically disabled, mentally ill, and victims of natural disasters and armed conflicts (Butcher *et al*, 2002).

People need to be able to access cost-effective food, or to produce their own food in order to combat food insecurity. Food is generally cheaper at supermarkets, with a 10% discrepancy in prices between supermarkets and small retail outlets. Supermarkets are able to take advantage of the cost savings associated with economies of scale, which means they can offer products at lower prices than independent retailers (D'Haese & Huylenbroeck, 2005; Kaufman, 1999). If households cannot afford the cost of transport to supermarkets, they may struggle to be food secure, because they have to buy food from the more expensive independent retailers. If consumers cannot visit cheap retail outlets and cannot store or refrigerate food purchased in larger quantities, they could become food insecure. This is because they may have to buy small quantities of items locally in shops that do not enjoy the same economies of scale as supermarkets.

Food insecurity in South Africa and the Eastern Cape

According to the General Household Survey conducted by Statistics South Africa (2004), 5,5% of adults in South Africa went hungry in 2004, whilst 5,1% of children were in a similar situation. Statistics South Africa concluded that there was a strong association between low expenditure in households and child hunger. Low levels of household expenditure were found to be associated with higher levels of child hunger (Statistics South Africa, 2004).

A 2002-2005 study by the Human Sciences Research Council (HSRC) found that 91,3% of white South Africans believe that their households are receiving an adequate amount of food in order to survive. Of the Indian respondents, 85,9% claimed to receive enough food, with 65,2% of coloureds receiving enough food

and 48,5% of black respondents reported receiving enough food (Davids, 2006).

When data from Davids' (2006) study was assessed on a residential level, it was found that respondents in urban formal areas were most likely to have access to enough food, followed by inhabitants of formal rural residences. Those living in informal settlements and in tribal areas reported the lowest levels of food access. The majority of black and coloured respondents reported not having enough money to purchase food. Of the black respondents, 65,6% reported not having sufficient money to buy food. In coloured households 60,7% reported not having enough money for food. Overall, Davids' (2006) research indicated that blacks and coloureds, and in particular those in rural areas, were less likely to have adequate access to food.

The three major challenges to Food Security in South Africa are unemployment, HIV/Aids, and poverty (Modi *et al*, 2006). All three of these challenges are inter-related and affect those living in rural areas more than those living in urban areas.

According to the Human Sciences Research Council (HSRC) (2004), South Africa is unlikely to be a high-risk region for food insecurity, as it is a net exporter of agricultural products. The HSRC goes on to state that the per-capita income is relatively high for a developing country. However, the HSRC concedes that 35% of the South African population is vulnerable to food insecurity. It has been suggested that household income is a major determinant of food security in South Africa, even in rural areas (HSRC, 2004).

Klipplaat lies between Jansenville and Steytleville in the Eastern Cape, South Africa, and is affected by systemic poverty. The town is geographically isolated, there is little subsistence farming, and it is estimated that 85% of the community is unemployed (Blaauw, 2005). Klipplaat has no major wholesaler, no supermarkets, and no bakery (Lindhiem & Potgieter, 2005:38). In order to purchase foodstuffs from anywhere other than spaza shops or small general dealers, residents must travel to Jansenville, some 30km away, on a dirt road with no public transport on offer. It is too far to walk to cheap food outlets, taking over three hours in each direction (Blaauw, 2005). This may severely affect the physical and economic accessibility of food.

Often, when households are food insecure, they are encouraged to eat more vegetables, but these are unaffordable to low-income households (Modi *et al*, 2006). Exploratory research in Klipplaat found that although households in Klipplaat liked vegetables, and wanted to eat them, they could not afford those (Lindhiem & Potgieter, 2005:39). This also occurs on the national level (Modi *et al*, 2006).

Poverty

When households in South Africa have low incomes, they tend to maximize the utility of their incomes by planning their purchases carefully (D'Haese & Huylen-

broeck, 2005). However, when incomes are exceedingly low, no matter how hard a household plans, they may still be food insecure.

Low-income households in Klipplaat live from month to month (Lindhiem & Potgieter, 2005:47). All money is spent on survival. They do not have enough spare money to save to enable bulk buying. Households cannot build up surplus food supplies for times when they are needed.

Transport

Markets can comprise segments in which participants face different prices for goods, services, or factors of production. One of the biggest reasons for these cost differences is the cost of transportation. People who live farther away from the supply will pay more than those who live close to it (Roemer & Jones, 1991:7). Food surpluses in areas with abundant food may not spill over into areas with less food, because of the cost of transport. For some communities, this may mean that they cannot afford to buy enough food to be deemed food secure.

Consumer markets are the geographical places in which consumers do their regular shopping (Frenzen & Parker, 2000). Klipplaat's consumer markets are geographically dispersed, with Klipplaat residents doing their shopping in Klipplaat, in Jansenville (30km away) and as far away as Uitenhage (150km away) or Port Elizabeth (180km away) (Lindhiem & Potgieter, 2005:2). This means that money for food must also be spent on transport to reach food-retail outlets.

Bulk purchasing at discount stores is limited, owing to the fact that low-income consumers, such as those living in Klipplaat, often do not possess the transportation to drive to discount stores. Minibus taxis to the nearest major city centre (Uitenhage) are relatively costly for low income households (Lindhiem & Potgieter, 2005:45). Furthermore, minibus taxis charge for additional luggage, adding to the cost of bulk food purchases (Blaauw, 2005). Transport-related constraints on purchasing behaviour may lead to food insecurity as people cannot reach discount stores and are instead forced to shop in the more expensive rural shops.

Rural shoppers have much less variety of shops available to them. Furthermore, rural shoppers tend to have to travel further to buy food, yet still do not have access to the variety of products available in urban areas (Frenzen & Parker, 2000).

Processed food prices are substantially higher in rural shops than in national outlets. Most rural consumers travel to the nearest supermarket to purchase processed foods in bulk (D'Haese & Huylbroeck, 2005). This is an additional demand on their finances, making it harder to make ends meet and remain food secure.

Preservation

The ability to store and preserve food may mean that one can buy goods in bulk, thus capitalizing on the bulk deals and economies of scale offered by discount bulk retailers, and thus reducing food insecurity.

Food retailing has changed because of technologies such as refrigeration. Refrigeration has prolonged the storage, transport, and shelf life of perishables (Ruel *et al*, 1998). This enables consumers with the financial resources to buy large quantities of perishable food at low prices and store them until they are needed.

Not all residents of Klipplaat have access to refrigeration or even electricity (Blaauw, 2005). This means that many of the households are living in conditions similar to those experienced in Western Countries before 1884, when iceboxes were commonplace in all but the poorest of households (Krasner-Khait, 2006). Not being able to keep food fresh and safe could impact on household food security levels.

Households in Klipplaat that do not have electricity or refrigerators report having to consume perishables immediately after purchasing those products (Lindhiem & Potgieter, 2005:43). Accordingly, Klipplaat residents without refrigerators buy small quantities of perishables from spaza shops. These products are more expensive than their bulk counterparts are, accordingly households may have to buy less food than if they could store food. This purchasing behaviour may result in food insecurity.

METHOD

Objectives of the study

The primary objective of the study was to focus on purchasing behaviour as a determinant of food insecurity amongst rural shoppers in the Klipplaat area. The relationship between poverty and food insecurity is virtually a given in Klipplaat, but it was necessary to confirm this. In essence, the results of research into food insecurity in the area could be seen as *inevitable*. Exploratory research by Lindhiem and Potgieter (2005:52) presented a scenario where low incomes, a lack of transport, and a lack of refrigeration appeared to adversely affect the food security in Klipplaat, despite the fact that there was ample room for subsistence farming. These suspected relationships needed to be statistically tested.

Secondary objectives were:

- a. To ascertain food insecurity levels in Klipplaat
- b. To confirm the suspected relationship between food insecurity and poverty in Klipplaat
- c. To investigate the impact of purchasing behaviour on food insecurity, in particular purchasing small quantities of food locally, because of lack of transport and refrigeration.

The additional variables, namely transport and preservation, were chosen because of the impact they have on access to food. Transport was chosen because of the geographical isolation of the town, cost of trans-

port, and the other issues mentioned in the literature above. Preservation, and in particular refrigeration, was chosen because not being able to preserve food impacts on how much one pays for food, as mentioned in the literature. It can be argued that these extra costs mean that households may not be able to afford sufficient food to be food secure.

Based on the literature, one can speculate that those who have no access to transport will be forced to shop in the smaller rural stores at greater expense. The inability to store food would also necessitate buying small quantities of perishables at greater expense. These two variables may change purchasing behaviour in a way that influences food insecurity.

Research Instrument

This study made use of the Household Food Insecurity Access Scale (HFIAS). The Food and Nutrition Technical Assistance (FANTA) programme of the Food and Agriculture Organization (FAO) developed the HFIAS (Coates *et al*, 2006).

The measure was developed because, formerly, information on household food insecurity was difficult and costly to collect, and technically difficult owing to the use of econometric approaches (Swindale & Bilinsky, 2006). The HFIAS is based on the premise that food insecurity actually causes quite universal reactions and experiences. These can be measured, coded, and used to assess household food insecurity in an easy and straightforward manner. The measure can be used for assessing contemporary food insecurity situations as well as for longitudinal studies.

The HFIAS was designed to assess the access component of household food insecurity. The measure is aimed at capturing the universal experience of access to food across cultures as well as countries. The wording developed is seen to be universally appropriate, with minor editing for local contexts (Swindale & Bilinsky, 2006).

The HFIAS covers the following experiences associated with food insecurity:

- a. Anxiety and uncertainty about household food access.
- b. Insufficient quality (including variety, preferences, aspects of social acceptability).
- c. Insufficient food intake and its physical consequences.

(Swindale & Bilinsky, 2006)

For the purposes of this study, minor editing was carried out following the pilot study, to simply re-phrase the measure in a way that was easy for South Africans to understand. This adapted version of the HFIAS specifically asks respondents about their experiences of food insecurity in the last thirty days.

The process of creating the original measure by FANTA involved the production of a background paper as well as multi-year field-validation studies in Bangladesh and Burkina Faso. These validation studies

showed that an experiential household food insecurity (access) scale can be successfully used in developing countries. The critical assumption, however, which remains questionable, is whether food insecurity (access) is experienced in the same way across different cultures. Can a standard set of questions capture this experience and be used to create a valid and sensitive measure (Swindale & Bilinsky, 2006)?

The development of the measure also involved extensive collaboration with various non-governmental organisations studying food insecurity, as well as adaptation of the United States Food Security Survey Measure. This process resulted in a draft guide, which was further reviewed through consultative workshops, and finally published in 2006 as the Household Food Insecurity Access Scale (HFIAS) (Swindale & Bilinsky, 2006).

The HFIAS comprises nine items that encompass access to enough food to be considered food secure. The questions are based on frequency of experience, and are based on a recall period of approximately 30 days (Swindale & Bilinsky, 2006). This measure simply asks how frequently households experienced any of the conditions associated with inadequate access to food, and food insecurity.

Items in the instrument

Respondents were asked to explain how frequently they or their families experienced certain food-insecurity-related conditions within the last thirty days. Responses varied from never, rarely (once or twice) to sometimes (three to twenty times) and often (more than twenty times) in one month.

All items in the HFIAS measured how food-insecure households actually were. The HFIAS on its own did not determine why households were as food insecure as they were. In order to look at physical and economic accessibility of food. It was necessary to add an additional section to the measure in which forced choice questions were asked. These included:

1. The type of *transport* utilised, with the choice being between walking, bicycles, taxis and cars
2. *Income levels*, ranging from less than R500 per month to over R2000 per month.
3. *Preservation of food*, including ownership or use of refrigerators.

Hypotheses

The following hypotheses addressed the impact of food insecurity and purchasing behaviour on these conditions.

H₁ There is a relationship between income level and food insecurity.

H₂ There is a relationship between transport and food insecurity.

H₃ There is a relationship between preservation of food and food insecurity.

Sampling technique and description of the sample

A single non-probability convenience sample was drawn for this study, owing to time and resource constraints. The sample of 512 adult representatives of households in Klipplaat was drawn by multi-lingual fieldworkers in the first week of July 2006. Of the questionnaires administered, 459 questionnaires were complete and usable.

Table 1 summarises the demographic data collected on the sample. Noteworthy findings are the very high unemployment rate (86%) and the low income levels indicating that 76% of the sample lives on less than R500 per month.

Data collection and analysis

Home interviews were conducted by fieldworkers fluent in all three languages (English, Afrikaans, and Xhosa) spoken in the area. A structured questionnaire, the (HFIAS, with additional items) was used.

The HFIAS usually reports four categories of food insecurity namely food secure, mildly food insecure, moderately food insecure and severely food insecure (HFIASc). This was calculated. When the classic instrument was applied the categories were too crude. Finer gradations were needed to pick up the nuances of Klipplaat's food insecurity reality. Therefore, a continuous scale score (HFIASn) was also calculated. This score was used to calculate analysis of variance (ANOVA).

Where variance was found using ANOVA, it was followed by Scheffé's post-hoc test to check for statistical significance. Scheffé's post-hoc test was used because of the differences in sample sizes. Where Scheffé's post-hoc test found statistical significance, Cohen's d statistics were used to calculate the practical significance of the findings. Where results were not statistically significant, practical significance was not calculated.

Reliability was assessed by means of Cronbach's coefficient alpha resulting in an alpha of 0,78 that is well over 0,6, which is the level that denotes satisfactory reliability (Malhotra, 2004:268).

Content validity was measured through expert analysis of the content. This was in addition to the two-year multi-field validation of the measure conducted by the Food and Nutrition Technical Assistance (FANTA) Project in Burkina Faso (Frongillo & Nanama, 2004). Interviews with key informants in the community further validated the findings of the research.

RESULTS

Of the respondents surveyed, 90% often worried about not having enough food for themselves and their families. Less than one percent of the respondents reported never worrying about food.

The vast majority (81,52%) of households surveyed reported that they often ate food they preferred not to

TABLE 1: DEMOGRAPHIC PROFILE OF THE SAMPLE (n=459)

Age	n	Percentage
18-30	14	3,06%
31-45	206	44,98%
46-60	196	42,80%
61+	43	9,44%
Education		
Primary Education	256	55,77%
Secondary Education	166	36,17%
Matric or Higher	37	8,06%
Language		
English	4	0,88%
Afrikaans	260	56,89%
IsiXhosa	191	41,79%
Other	2	0,44%
Missing	3	0,66%
Gender		
Male	220	48%
Female	239	52%
Employment		
Unemployed	387	84,31%
Employed	72	15,69%
Income Level		
<R500,00	351	76,47%
R501,00-R1000,00	15	3,27%
R1001,00-R2000	65	14,16%
>R2001+	28	6,10%
Household Size		
1 or 2	47	10,24%
3 or 4	228	49,67%
5 to 7	163	35,51%
8 to 10	18	3,92%
10+	3	0,65%

eat. This was because the households could not afford to buy preferred foods. Seventy eight percent of respondents ate a monotonous diet because that was all they could afford.

Almost all households had to eat food they did not find palatable either sometimes or often during the month, 50% often ate food they preferred not to, and 46% sometimes ate food they would prefer not to.

Most households (71,52%), only sometimes ate smaller meals than they felt they needed, because there was not enough food to go around. The majority of respondents also reported that they or their families sometimes ate fewer meals in a day than they felt they needed, owing to a lack of food (71,96%).

The majority of respondents further reported sometimes running out of food before there was money to buy more (59,57%). For the first time, a noteworthy number of respondents reported rarely or never running out of money for food before the end of the month (26,74% combined).

When asked how often respondents or their families

went to bed hungry, most (73,48%) reported never going to bed hungry. When asked whether respondents or their families went a whole day and night without eating, only seven percent of respondents reported that this had ever happened to them.

Overall Food Insecurity in Klipplaat

When the measure was scored according to HFIAS guidelines, it was found that 69% of the sample were severely food insecure, with a further 31% deemed to be moderately food insecure. None of the households sampled were found to be food secure or mildly food insecure.

Income level and food insecurity

Hypothesis 1 proposed a relationship between income level and food-insecurity conditions. Results shown in Table 1 indicate that most (76%) of the households earn less than R500 per month.

Table 2 illustrates that food insecurity levels change with income level. The less earned, the more frequently the household will experience conditions associated with food insecurity.

The one-way ANOVA confirmed that food-insecurity conditions differed significantly among the four income-level groups [F(3, 455)=20,687, p < 0,0005], with those earning lower incomes experiencing greater levels of food insecurity than those earning higher incomes.

Hypothesis 1 may thus be accepted. This implies that

households in Klipplaat must earn a minimum amount of money in order to minimise food-insecurity conditions, they are reliant on money for food, and they are not growing their own food.

Transport and food insecurity

Hypothesis 2 stated that there is a relationship between transport and food-insecurity conditions. The majority (86%) of the respondent households reported walking to and from the shops in order to buy food. Taxis were used by just under ten percent of respondents and very few households had access to private transport (5%). This means that few residents reported shopping at discount stores, and that the majority shopped in Klipplaat at small rural stores where prices are higher.

Results indicated in Table 3 show that those who walked to the shops reported the highest levels of food insecurity (1,98). Respondents who could make use of taxis fared marginally better (1,79). Those who had access to private transport reported the lowest frequency of food-insecurity conditions amongst the sample (1,40).

Being able to use a motor vehicle to go shopping contributes to reducing food-insecurity conditions, possibly through affording consumers the ability to drive to discount outlets and to purchase large quantities of food at any given time.

The one-way ANOVA revealed that food-insecurity conditions differed significantly as a function of transport [F (2, 456) = 5,15, p <0,005]. Those who had pri-

TABLE 2: INCOME LEVEL AND FOOD INSECURITY (n=459)

Income pm	n	Mean	SD	Significance Statistics			
				Scheffé p			
				CoCohen's d			
				1	2	3	4
1. <R500	351	2,02	0,23		,238	<,0005	<,0005
2. R500-1000	15	1,87	0,29	-		<,0005	<,0005
3. R1001-2000	65	1,80	0,36	0,86	0,22		<,0005
4. R2000+	28	1,27	0,40	3,08	1,67	1,44	

TABLE 3: TRANSPORT AND FOOD INSECURITY (n=459)

Income pm	n	Mean	SD	Significance Statistics		
				Scheffé p		
				CoCohen's d		
				1	2	3
1. Walking	393	1,98	0,27		<,0005	<,0005
2. Taxi	44	1,79	0,31	0,71		<,0005
3. Car	22	1,40	0,61	1,98	0,90	

vate transport experienced the least food-insecure conditions while those using taxis fared better than those who had to walk to the shops.

A moderate difference existed between those who walk and those who take taxis when they buy food. There are large differences between those who have cars and those who have to walk or use public transport.

Those who have enough money to afford a car may have enough to buy adequate food for their families. Those who have access to cars remain food secure, because they can buy in bulk, can shop around for sales, and can travel to cheaper food stores.

A practically significant relationship exists between food-insecurity conditions and transport. Those who can afford to travel by taxi and by car are likely to experience the conditions associated with food insecurity more infrequently than those who walk. One can conclude that there is a practically and statistically significant relationship between food-insecurity conditions and the type of transport households have access to.

Based on the result, hypothesis 2 can be accepted. Transport does play a role in reducing the frequency of the experience of food-insecurity conditions.

Access to refrigeration and food insecurity

Hypothesis 3 postulated a possible relationship between food-insecurity conditions and preservation of food.

Just under a third of households surveyed had no access to refrigeration (32,46%). For the most part, households did have access to refrigeration.

Table 4 indicates that food-insecurity conditions change with refrigerator ownership/access. Those who cannot refrigerate food experience food insecurity more frequently than those who have access to a refrigerator.

The one-way ANOVA revealed that food-insecurity conditions differed significantly as a function of refrigeration ownership [$F(1, 457) = 7,03, p < 0,008$]. Those without refrigerators experienced food-insecurity conditions more frequently than those with them.

Based on the abovementioned results, hypothesis 3 was accepted. Owning a refrigerator may reduce the frequency of food-insecurity conditions.

When households in Klipplaat earn low incomes, they are likely to be food insecure. This is because they do not produce their own food and cannot afford to buy food (Blaauw, 2005). Even if they do have financial

incomes, if they cannot travel to cheaper food outlets they are susceptible to food insecurity. Finally, even if households do manage to purchase food, not being able to refrigerate food reduces the ability of households in Klipplaat to remain food secure. This suggests that combating food insecurity requires a multi-pronged approach, particularly in improving physical and economic access to food in rural areas.

CONCLUSION AND LIMITATIONS

The main purpose of the study was to ascertain whether purchasing-related variables were determinants of food insecurity in Klipplaat. The study sought to ascertain the extent of food insecurity in households in Klipplaat and to then assess whether this was affected by income levels, transport used, and the availability of refrigeration.

The sampled residents in Klipplaat experience food insecurity between three and ten times a month. It was found that there is a significant relationship between income level and food-insecurity conditions in Klipplaat. Low income levels were associated with food-insecurity conditions in Klipplaat.

In Klipplaat, 86% of households walk to and from local spaza shops and general dealers to do their food shopping. Only ten percent of households could utilise taxis to go to shops further away. Less than five percent of households could use cars to go to shops in large towns further away. A significant relationship was found to exist between the type of transport used by a household and food-insecurity conditions. Those who had to walk to and from the local shops in order to purchase food experienced household food-insecurity conditions more frequently than those who took taxis or had access to motor cars.

Of the households surveyed in Klipplaat 68% of households owned refrigerators. Inversely, this means that 32% do not have access to refrigeration for food. A significant relationship was found to exist between refrigeration and food-insecurity conditions, where not having refrigeration exacerbated food insecurity.

This study is directed at particularly the community of Klipplaat. The major limitation of the study therefore is the lack of generalisability of results to other communities in South Africa. Consequently, there is scope for a broader study making use of the HFIAS and items relating to purchasing behaviour, and addressing a number of different regions and communities. The measure should have looked at income per capita in relation to the national poverty line as opposed to gauging household income on a coarse scale.

Obviously, income, refrigeration, and transportation

TABLE 4: REFRIGERATOR OWNERSHIP AND FOOD INSECURITY (n=459)

Fridge	n	Mean	SD	F stat p	Cohen's d
Yes	310	1,88	0,335056	0,008	-0,57
No	149	2,06	0,257299		

are not the only factors influencing food-insecurity levels. This study simply aimed to highlight possible contributors to food insecurity.

The findings of this study highlight the challenges facing poor communities in South Africa, and point to a need to holistically tackle food insecurity in Klipplaat. Future research should use the HFIAS to measure the efficacy of various social development initiatives in South Africa, and to identify communities with high food insecurity in need of intervention.

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