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Implications of supermarket expansion on urban food security in Cape Town, South Africa

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The rapid rise in supermarkets in developing countries over the last several decades resulted in radical transformations of food retail systems. In Cape Town, supermarket expansion has coincided with rapid urbanization and food insecurity. In this context, retail modernization has become a powerful market-driven process impacting food access for the poor. The introduction of formal food retail formats is viewed simultaneously as a driver of food accessibility and as a detriment to informal food economies established in lower income neighborhoods. Through a mixed-methods approach, this article assesses the spatial distribution of supermarkets within Cape Town and whether this geography of food retail combats or perpetuates food insecurity, particularly in lower income neighborhoods. Spatial analysis using geographic information systems at a city-wide scale is combined with a qualitative case study utilizing semi-structured interviews and observational analysis in the Philippi township in order to illuminate the limitations of supermarket expansion as a market-oriented alleviation strategy for food insecurity. While supermarkets have been successful in penetrating some low-income communities, they are often incompatible with the consumption strategies of the poorest households, revealing the significance of the informal economy in Cape Town and the limitations of a food desert approach toward understanding urban food security.

Keywords: urban food security; supermarket; informal economy; food desert; Cape Town

1. Introduction

In South Africa, urbanization has been accompanied by a rapid increase in poverty and a rising population of urban poor. Over sixty percent of South Africa's population is now urbanized, and this figure is projected to reach 80% by 2050 (Todes, Kok, Wentzel, Zyl, & Cross, 2010). As a country which still retains elements of its apartheid past in the structural organization of poverty, this trend toward urbanization has exacerbated problems of food insecurity in the poorest neighborhoods, where infrastructure and economic indicators lag behind wealthier regions. In Cape Town, the second largest urban area in the country, with a population approaching four million and a growth rate almost 2% higher than the national average (Battersby, 2011b), urbanization patterns have concentrated the poor in sprawling townships far from the urban core.

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South African supermarket expansion has developed in conjunction with neoliberal economic policies promoted by post-apartheid governments. Supermarkets have often been conceptualized as food outlets with high quality, affordable goods, and a wide range of options (e.g. Block & Kouba, 2006; Zenk et al., 2005). In an environment where a structuralized geography of poverty spatially manifests as growing segregated urbanization with limited infrastructural capacity to support it, these supermarkets are conceptualized as market tools to increase food distributional capacity (Reardon & Hopkins, 2007). As such, supermarkets are hypothesized to replace traditional informal markets in lower income areas, leading to an increasingly formalized food system in South Africa (ibid., Reardon, Henson, & Berdegue, 2007). This raises questions concerning the impact of supermarket expansion on people's access to food in urban areas. On the one hand, it appears to be an economically sound market-based strategy backed by the formal sector and government infrastructural development. On the other hand, the informal economy is still a considerable player which many in low-income areas rely on (Battersby, 2011b).

This article utilizes a mixed-methods approach to develop a clearer understanding of the role of supermarkets in either perpetuating or alleviating food insecurity in Cape Town. We argue that although supermarkets have had some success expanding into lower income areas, their capacity to alleviate food insecurity is constrained by their formalized nature, which makes them inaccessible to the lowest income residents. In other words, the supermarket format as a retail outlet, while performing a particular role in low-income neighborhoods, is incapable of meeting all of the food needs of the poorest of the poor. This exposes the limitations of a formal Western market strategy within the hybridized nature of Cape Town's township economies, and the gradual integration between formal and informal economic models. Moreover, it highlights the relevance of a food desert conceptualization of retail access while alternatively emphasizing the need to supplement this with context specific research in food insecure communities.

2. Food deserts as a lens for conceptualizing urban food insecurity

The discourse on food security addresses a diverse set of factors which influence people's access to food. In 1996, the FAO defined food security as 'all people at all times hav[ing] physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life.' In effect, food security requires more than macro-level food availability, involving an understanding of productive capacity, entitlement failures, structural poverty, variable food access, and cultural constraints.

A prevalent framework for understanding urban food insecurity is the 'food desert' concept, which views food insecurity through the lens of food access. First developed in the United Kingdom to recognize disparities associated with people's ability to access healthy food in urban areas (Wrigley, 2002), this notion is derived from a spatialized epistemology centered around nodes of access in the distribution of food retail. Food deserts are areas where access to nutritious, affordable food is lacking, due to limitations stemming from the geographies of poverty, transportation, and food distribution. There have been many case studies done in both the United Kingdom (i.e. Whelan, Wrigley, Warm, & Cannings, 2002; Wrigley, 2002; Wrigley, Guy, & Lowe, 2002) and the United States (i.e. Block & Kouba, 2006; Larson & Moseley, 2012; Moore & Diez, 2006; Zenk et al., 2005) which have looked at food deserts at the neighborhood scale, with a focus on urban areas.

Studies done on food deserts have consistently emphasized the correlation between poverty, hunger, and food access. Often expressed through the lens of social exclusion, poverty is understood as a 'process of marginalization and deprivation' (Laderchi, Saith, & Stewart, 2003) that excludes people from the socially defined communities in which they live. This means that people who are impoverished not only lack the financial materials necessary for an adequate, comfortable lifestyle, but lack access to the basic social interactions and exchanges which ground them in a community. An approach to understanding poverty should therefore recognize the systemic linkages which reinforce spatially defined patterns of access. The traditional focus on individual households is, while effective for quantifying insecurity, limiting in its reductionism and inflexibility (ibid.).

A large number of definitions for food deserts exist. One definition utilized by the United States Department of Agriculture sees them as 'low-income census tract[s] where either a substantial number or share of residents has low access to a supermarket or large grocery store (ver Ploeg et al., 2009).' Another by Laurence (1997) defines them as 'those areas of inner cities where nutritious food is virtually unobtainable. Car-less residents, unable to reach out-of-town supermarkets, depend on the corner shop where prices are high, products are processed and fresh fruit and vegetables are poor or non-existent.' These definitions indicate the particularly prominent role of supermarkets in this literature as a proxy for access to healthy, affordable food (also see Leete, Bania, & Sparks-Ibanga, 2011). Supermarkets are typically seen as providing a wide range of choices at the most competitive prices, with lower prices than any local stores, fast food restaurants, or gas stations in the area (Block & Kouba, 2006). However, since supermarket distribution is often influenced by market-based factors, they disproportionately locate in higher income neighborhoods to capitalize on a more profitable consumer base. In this way, impoverished communities find supermarkets less accessible, resorting to shopping in stores with fewer healthy choices, lower quality goods, and higher prices, with negative implications for both health and household resiliency (ibid.).

The food desert literature highlights the complex, multifaceted nature of food systems. In urban environments, a multidimensional approach toward understanding food security which combines household scale analysis with a broader understanding of structural determinants must be adopted. In addition to household income and spending capacity, access to retail, and particularly access to supermarkets, is critical for understanding urban food environments.

3. Retail modernization in South Africa

Since the early 2000s, a large body of literature has developed around the recent growth of supermarkets in developing countries (Battersby, 2012; Tschirley, 2007). Much of the early literature on supermarket expansion argued that the introduction of large-scale multinational retail radically transformed local economies in the global South, resulting in food supply chain formalization, conglomeration of small farms, and the exclusion of small local retail through competition and economies of scale (Reardon & Berdegué, 2002; Reardon et al., 2007; Weatherspoon & Reardon, 2003). Small retailers and suppliers in more localized economies were often incapable of matching the low-prices and product diversity of large modern retailers, subsequently going out of business. This in turn resulted in uneven shifts in consumer behavior, benefitting those with the capacity to capitalize on formalization, while negatively impacted the poorest households who had previously relied on these local retailers for their consumption strategies (Reardon et al., 2007).

In South Africa, supermarketization was supported in part by trade liberalization and private development promoted in the African National Congress Growth, Employment, and Redistribution strategy. This strategy is based on a neoliberal premise that development should aspire to 'transformation towards a competitive outward-oriented economy,' (Department of Finance, 1996, p. 1) promotes liberalization through tax-incentives, increased trade and investment flows, and relaxation of foreign exchange controls (ibid., Mubangizi, 2008). This, combined with rising demand from urbanization, led to large-scale expansion of formal food retail in Cape Town, with rapid market saturation in high-income areas (Humphrey, 2007). South Africa-based corporate entities such as Pick n Pay (PnP) and Shoprite were able to rapidly expand, becoming dominant players in the food retail industry. This marked a unique trend in South Africa, where, unlike other African countries which experienced market development through the introduction of foreign supermarkets, the food retail environment was dominated by South African companies. These companies, however, adopted many of the strategies of their Western counterparts, utilizing supply chain formalization and Western-style layouts to establish a ubiquitous supermarket format.

Weatherspoon and Reardon (2003) assess retail modernization and its sweeping influence on food systems in sub-Saharan Africa. The rise of supermarkets in Southern and Eastern Africa marks a shift away from a niche market for the rich toward a factor in lower income household consumption patterns. Some argue that the greater presence of supermarkets in the food economy has negative implications for small farmers and retailers. For example, Weatherspoon and Reardon claim that stores like South Africa's Shoprite and Pick n Pay are requiring farmers to adhere to conditions which support larger scale producers and force small farmers out of competition, resulting in consolidation and industrialization in agricultural production methods. For instance, these supermarkets require larger volume transactions, quality regulations, product standardization, and certifications, all of which require greater costs for the farmer.

Other academics do not see retail modernization as a linear progression from an informal to a formal economy as accompanied by the consolidation and standardization. A more cautious view posits that the historical and cultural significance, as well as the complexity and resiliency of small-scale localized economies, limits this progression. As such, the supermarket revolution while significant is not an all-consuming trend (Abrahams, 2010; Crush & Frayne, 2011; Humphrey, 2007; Strydom, 2011; Tustin & Strydom, 2006). Humphrey (2007) shows that supermarkets have particular difficulty in controlling the fresh food sector. Since controlling decentralized supply systems is much more complicated for fresh food, it becomes difficult for supermarkets to offer lower prices than local stores. Rather than viewing the process as a simple linear progression, Humphrey argues that there are many factors, such as the state of the existing market and trade policies, which influence the format and extent of this transformation.

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In South African cities, studies found that rather than a complete transition to buying only from formal retailers, households often utilize a multitude of diverse food and income sources in order to promote resiliency (Crush & Frayne, 2011). Additionally, households reported particular instances when reduced access to food (either from price fluctuations, inconsistent revenue streams, or family illness) would alter consumption patterns, and that they often used informal markets as a coping mechanism (Battersby, 2011b).

The literature on supermarketization and retail modernization provides an alternative framing from that of the food desert literature concerning the role of supermarkets in urban food security. Rather than assuming that supermarket placement corresponds with

greater food security, this perspective critiques the influence of supermarkets by taking into account diverse informal economies and the consumption strategies of the poor. Supermarkets are critiqued for destabilizing existing food systems rather than conceptualized as providers of diverse food selection.

4. Methods

This research utilizes a mixed-methods approach to tackle conflicting perspectives in the literature about the role of supermarkets on urban food insecurity in Cape Town. Geographic information systems (GIS) analysis has been utilized to map the spatial distribution of supermarkets and compare it to the geography of poverty and access in the city. This is complemented by a qualitative case study of a neighborhood centered around a supermarket in a township area in Cape Town which was conducted to develop a more in-depth understanding of the role of supermarkets in household food procurement strategies.

Geospatial statistics were utilized to map the distribution of supermarkets and compare this to proxies for food insecurity and accessibility. The study area was determined as the Cape Town municipality, which consists of 24 sub-councils comprising 111 wards (City of Cape Town, 2012). Since census data are not available at the ward scale, sub-place data, which provides a smaller unit of analysis (with a total of 683 sub-places in the Cape Town municipality) was used. GIS was used to map and analyze supermarket location against sub-place scale household-level data.

Considering the market dominance by Shoprite, PnP, Woolworths, and Spar (Weatherspoon & Reardon, 2003) this research looks specifically at the spatial distribution of these four chains throughout the greater Cape Town metropolitan area. Supermarket locations were gathered from online store locators on the websites of Shoprite, PnP, Woolworths, and Spar, respectively.

Food insecurity is a complex, multifaceted problem with a wide array of determinants ranging from price fluctuations in global markets to vulnerability to disease. Unfortunately, an assessment of all variables which influence food insecurity is beyond the scope of this study. Recognizing this limitation, average annual household income was utilized as a proxy for food insecurity because there is a well-documented, direct relationship between the two variables (Battersby, 2012; Sen, 1982). This variable was assessed against supermarket distribution. In Cape Town's urban environments, food production is not necessarily a viable option and is rarely practiced to promote resiliency in food security (Battersby, 2011b; Crush & Frayne, 2011; Maxwell, 1999). Where the majority of foodstuffs are obtained through cash-based transactions, household income is a crucial component in food security conversations. Although not fully representative of food insecurity, household income is utilized for its ability to illuminate variation among sub-places.

Data on average annual household income was taken from 2001 city census data.[1] A quintile breaks method was utilized to divide up the data into five categories with an equal number of values, as the high positive skew in the data's distribution would cause both equal interval and optimal breaks classification methods to over-generalize the variations among low-income sub-places. Outliers found more than two standard deviations above the mean were removed.

In addition to mapping supermarket distribution, qualitative field research was performed around the shopping center located at the corner of New Eisleben and Landsdowne Roads (see Figure 3) in order to understand the relationship between

formal and informal food service formats. This location was chosen for two reasons. First, it is one of the few sites in Cape Town in which case study data on the extent of food security is present. A survey conducted by the African Food Security Urban Network found 17 percent of residents in Ward 34 to be moderately food insecure, and 71 percent to be severely food insecure (Battersby, 2011b). Second, it has a prominent presence of an informal economy. This is relevant because literature on supermarket diffusion has debated over the role of the informal economy in relation to the expansion of supermarkets (i.e. Abrahams, 2010; D'Haese & Van Huylenbroeck, 2005; Humphrey, 2007).

Semi-structured interviews were conducted with owners and employers of three different informal retail formats. Judgment (or purposeful) sampling was utilized, in which sample participants were chosen through available knowledge of variability and participant significance as derived from discussions with a translator prior to field work (Marshall, 1996). Maximum variation and snowball sampling shaped the total sample size, with data saturation determining the sample size at 20 (Hay, 2010).[2]

For the purposes of this research, the informal retail formats that were analyzed will be defined here. Fruit and vegetable (F&V) stands are retailers that present their produce on land which they lack ownership to, in an open-air format with limited infrastructure. They sell predominantly fruits and vegetables, and are typically operated by one to three workers. Meat stands also operate on public land, but with higher levels of infrastructure. They typically have the capacity to cook their meat and house a limited number of customers at their stands. The size and scale of distribution among meat stands varied considerably. Finally, Spaza shops are stores which sell commonly purchased products, including packaged staple foods, cigarettes, and 'air-time' (phone credits), which are run out of informal dwellings in an area regulated as residential. Spaza shops also vary widely in their size and business capacity.

5. Supermarket distribution in Cape Town

The distribution of supermarkets was compared with average annual household income to determine whether a relationship exists between the two variables. The number of supermarkets per 1000 km was calculated per income category. The income categories were: R1,454.62 to R43,197.89, R43,261.85 to R78,504.71, R78,521.88 to R122,188.25, R122,418.13 to R188,895.03, and R188,914.92 to R350,711.77, listed from 1 to 5 ascending in value.[3]

This study found that the distribution of supermarkets follows spatial patterns of uneven dispersion throughout the city. As indicated in Figure 1, the majority of supermarkets are located in the southern suburbs, northern suburbs, City Bowl, and Atlantic Seaboard. Those areas with fewer supermarkets are in the Cape Flats townships as well as the spectrum of low-density rural to peri-urban landscapes found north of the Northern Suburbs.

Findings from the analysis of supermarkets per kilometer found that supermarkets were most common in middle-class neighborhoods, with income group 4 having .338 supermarkets per kilometer (see Figure 1). This value declines in income group 5 to a rate of .164 supermarkets per kilometer. However, it is the lower three income groups, and particularly group 1, encompassing the lowest income range that faces the lowest ratios of supermarkets per kilometer. Income group 1 contained .021 supermarkets per kilometer, followed by a rate of .096 supermarkets per kilometer in category 2 and .112

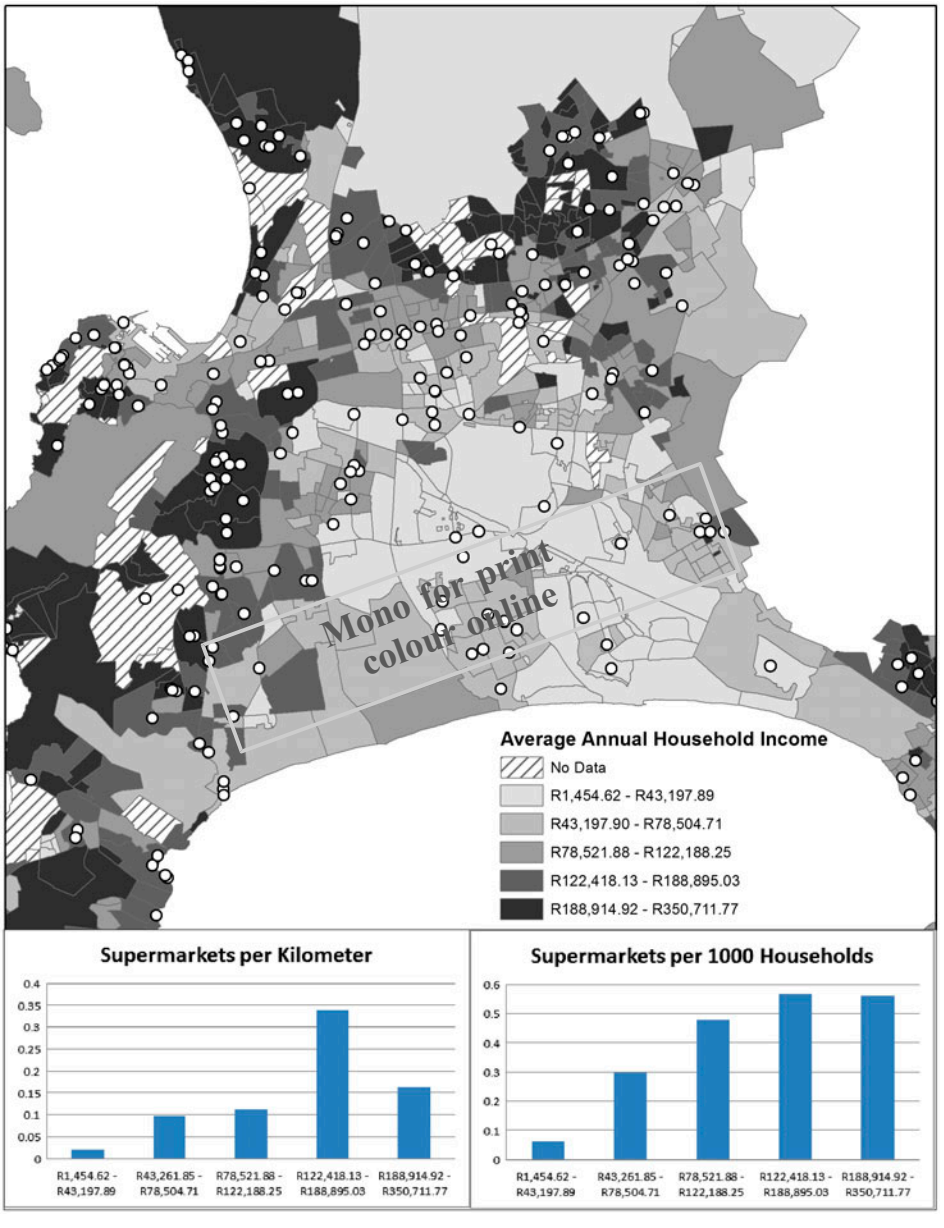

Figure 1. Supermarket distribution in Cape Town.
Notes: Map of supermarket locations (points) in relation to average annual household income (choropleth map), with corresponding graphs representing density measurements of supermarkets by area and number of households.
Cartography by first author (Stephen Peyton), data from 2001 census.

supermarkets per kilometer in group 3. When comparing income groups 4 and 1, you find that the supermarket density of group 4 is more than sixteen times the supermarket density of category 1.

Assessment of supermarkets per 1000 households also found discrepancies between income groups, but portrayed a different relationship between groups (see Figure 1). Group 4 was again found to contain the largest ratio of supermarkets to households, with a value of .567 supermarkets to every 1000 households. However, unlike the previous density measurement, group 5 was relatively similar, with .561 supermarkets per 1000 households. Additionally, group 3 appeared to have a relatively high ratio, with .477 supermarkets per 1000 households. On the other hand, the lowest income groups displayed a dearth of supermarkets, with .063 and .297 supermarkets to every 1000 households, respectively. The extremely low value of group 1 in particular should be noted, as group 4 has more than nine times the number of supermarkets per 1000 households.

The discrepancies between these two sets of data lie in the variability of household density[4] within sub-places and the market-based factors which influence supermarket placement. Differences in the relationship between groups 4 and 5 in the two data-sets indicate that after a certain threshold, the density of supermarkets begins to decline, likely due to the reduced profitability of supermarkets in high property value neighborhoods. However, since the density of residents in these neighborhoods also declines, the ratio of supermarkets to households stays relatively constant. The differences in income group 3 values likely correspond to a decrease in the density of household settlement between group 2 and 3. Although the density of supermarkets themselves is not changing by much between income groups 2 and 3, the density of households is, resulting in higher values for the latter analysis. However, a more constructive conceptualization of this comparison involves recognition of the high-density settlement in the townships corresponding to the first two categories.

These relationships highlight the unequal distribution of supermarkets in Cape Town by average annual household income. In line with the food desert literature above, the spatial organization of supermarkets indicates access limitations for the poorest households, with limited success in expansion to the poorest townships. However, attempts have been made by large-scale food retailers to capture lower income consumers. For example USave, a Shoprite-owned retail format with low-price bulk goods, was developed specifically to target the poor. On their website, Shoprite claims that 'The USave chain's focus is the lower income groups. Customers who are serious about saving and do not need the expensive frills and spills of regular shopping centers, are invited to put USave to the test (see website, www.shopriteholdings.co.za).'

The distribution of USaves differed drastically from the distribution of supermarkets as a whole. USaves tended to locate more frequently in the lower income Cape Flats area, rather than the higher income (predominantly white) suburbs and CBD. However, their distribution in low-income townships has been limited mainly to the edges of the Cape Flats region (see Figure 2). This has provided many in lower income neighborhoods with a cheaper alternative food source, but it has neglected those most in need; those in the central Cape Flats region, where poverty is most heavily concentrated.

Income group 2 held the highest values for both USaves per kilometer and USaves per 1000 households, at .0181 and .0558, respectively (see Figure 2). Conversely, groups 3, 4, and 5 had relatively low values in both equations, with .0046, .0057, and .0036 USaves per kilometer and .0195, .0096, and .0122 USaves per 1000 households, respectively. This indicates a particular targeting strategy in which those in the lower income range of income group 2 appeared to have benefitted greatly. Furthermore, the severe drop in supermarkets in the higher income groups indicates that this retail format

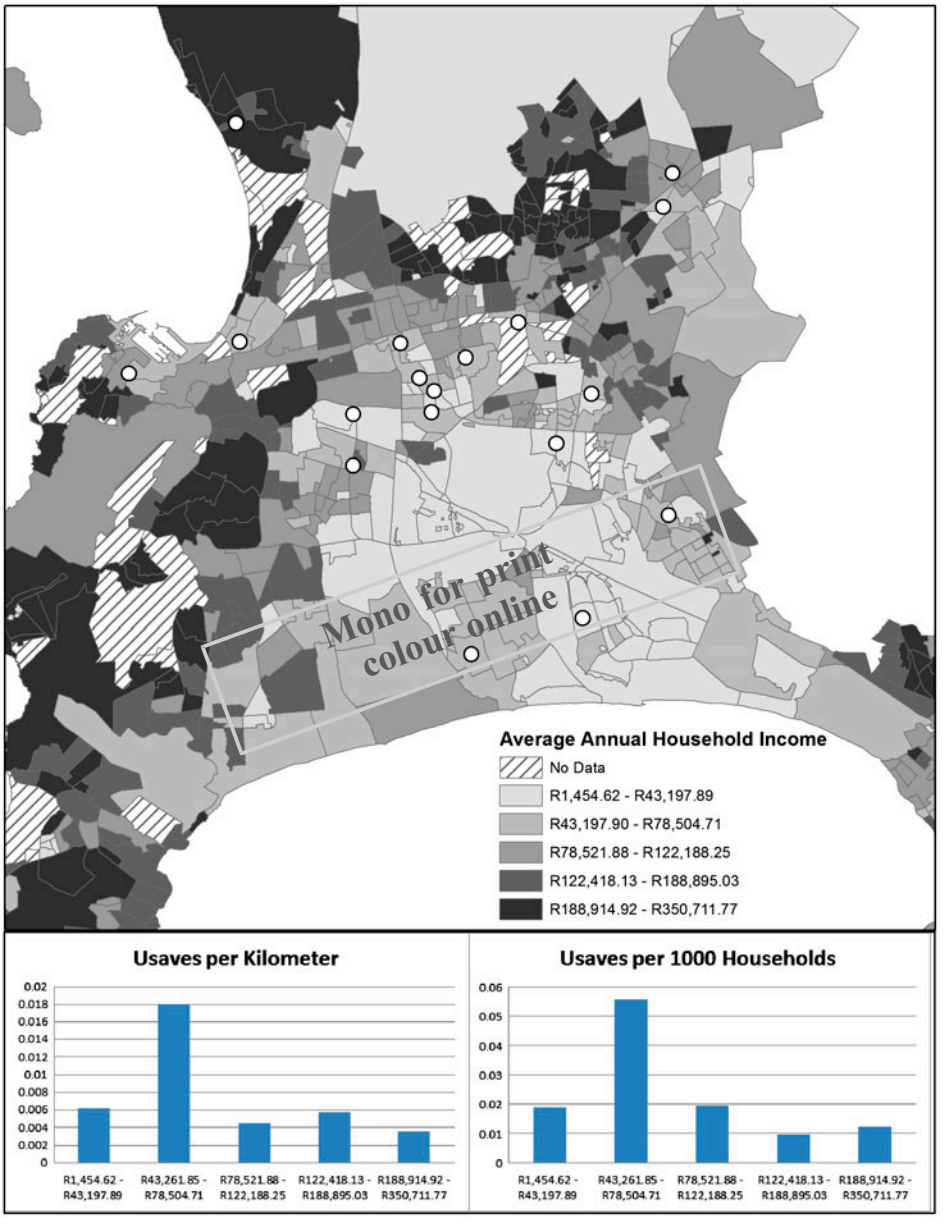

Figure 2. Usave distribution in Cape Town.
Notes: Map of Usave locations (points) in relation to average annual household income (choropleth map), with corresponding graphs representing density measurements of supermarkets by area and number of households.
Cartography by first author (Stephen Peyton), data from 2001 census.

is less compatible with the shopping preferences of higher income households and therefore only minimally profitable in higher income sub-places.

This targeted market strategy has failed to fully diffuse into sub-places facing the greatest impacts of structural poverty. Income group 1 only hosted .0062 USaves per

kilometer and .0189 USaves per 1000 households. Although these values are higher than those recorded for groups 3 to 5, they still represent values considerably lower than those found in group 2, with its values being almost three times as high in both cases. This trend, mirroring the evidence seen above, reveals the limitations of supermarkets in penetrating low-income neighborhoods, implying a structural disconnect between the needs of the poor and the strategies of the retailer. Even when private investment is directed toward lower income communities (such as with the USave example above), it appears the poorest of the poor fails to be recognized as an adequate consumer base.

These findings highlight the relationship between average annual household income and supermarket prevalence, revealing the constraints facing supermarket diffusion into low-income environments in Cape Town today. Even in the case of ventures specifically targeting lower income communities, supermarketization comes up short. Due to structural impediments to social inclusion for communities facing poverty, the formal food retail system appears to have been inadequate in addressing the food needs of the poor.

These findings build off of growing concerns voiced by AFSUN in their State of Food Insecurity report for Cape Town (Battersby, 2011b). Poverty has been recognized as an increasing problem in the quickly urbanizing metropolitan region and food insecurity is prevalent in many areas of the city (ibid.). These findings indicate that in this environment of structural inequality and an associated geography of poverty, the market-based expansion of supermarkets is limited in its capacity to tackle food insecurity. The Cape Flats region, recognized as highly food insecure in the 2008 AFSUN survey, has attracted minimal supermarket development, which tends to spatially organize around the periphery of the township conglomeration. Conversely, high income areas in the Northern and Southern Suburbs and the CBD have enjoyed drastically higher supermarket prevalence, with 10 to 40 times the frequency of supermarkets either per unit area or per household.

In the context of traditional food desert literature, the inequalities in supermarket access reveal the prevalence of food deserts in the geography of food retail in Cape Town. The lack of supermarkets indicates a reduced capacity to access healthy, diverse food choices in low-income townships. However, while supermarkets aren't as prevalent in lower income areas of Cape Town, in order to truly understand their impact on food insecurity, it is important to examine their current role in relation to alternative food sources in low-income areas where they do exist, and how these relationships illuminate both the benefits and limitations of supermarket expansion for food insecure households.

6. Interactions between formal and informal food markets

A case study was conducted looking at informal business strategies and household consumption patterns in a neighborhood situated near a supermarket in the Philippi area of the Cape Flats. Philippi is bordered by Nyanga and Gugulethu to the north and Lentegeur and Weltevreden Valley to the South. Found within the Mitchell's Plain main-place, Philippi has a relatively low average household income, within both the Cape Flats specifically and Cape Town as a whole (see Figure 3). This is reflected in the fact that while Mitchell's Plain residents had an average annual household income of approximately R41,560 at the time of the 2001 census, Philippi residents only held an average annual household income of roughly R14,774. This contrast is even greater when compared to the average annual household income of the Cape Town metropolitan area as a whole, which was approximately R80,957. Philippi also had a relatively high ratio of informal to formal dwellings, with 55.13% of dwellings being labeled as informal,[5] and

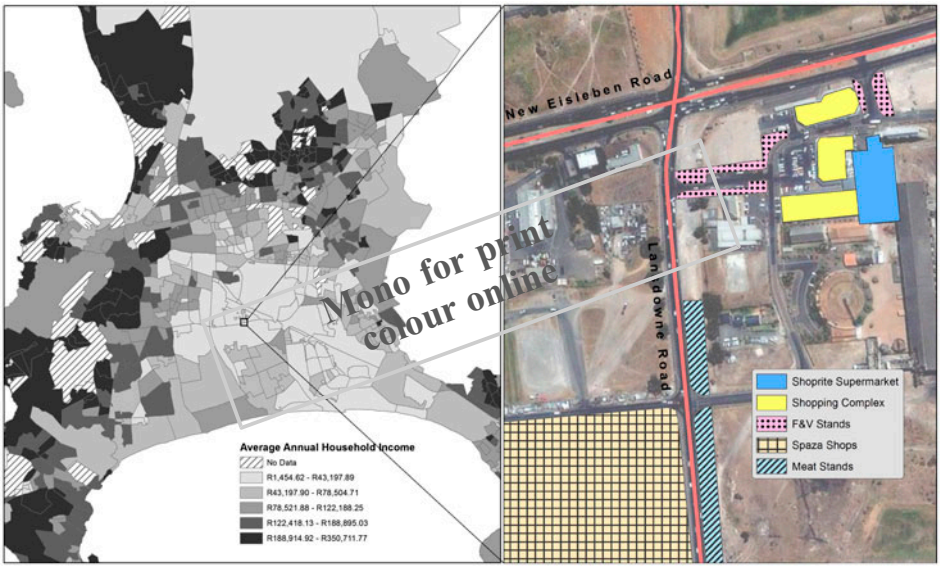

Figure 3. Reference map of case study research area.
Notes: Map of location where qualitative research took place. Case study detailing location of different store types, referenced as an inset map in relation to the larger Cape Town metropolitan area as denoted by a choropleth map of average annual household income.
Cartography by first author (Stephen Peyton), data from 2001 census.

39.29% being labeled as formal (other houses were labeled under different formats). On the other hand, Mitchell's Plain as a whole had a ratio of 21.64% informal dwellings to 72.87% formal dwellings. Dwelling composition as seen in the entire Cape Town municipality is composed of 73.86% formal and 18.4% informal dwellings, also indicating the massive discrepancies between sub-places and the particularly informal nature of the Philippi area.

As noted previously, this research was conducted around a Shoprite supermarket located at the intersection of New Eisleben and Lansdowne Roads. Housed within a shopping center, this supermarket performs the role of an anchor store, supported by several small clothing and fast food retailers housed within the complex. Surrounding the shopping center are several forms of informal food retail (see Figure 3). Immediately surrounding the shopping center, within the parking lot of the development are fruit and vegetable stands (F&V stands). Further out, along Lansdowne Road, a prominent transportation artery, are a row of meat stands. Further away still, Spaza shops are found interspersed among informal residential units. This research location was chosen for its relevance to food security data collected during the 2008 AFSUN survey and the interesting interplay between formal and informal food retail formats.

The informal economy operates where the market-based strategies of formal institutions and organizations are incapable of meeting consumer demand due to incompatibilities between formalized systems and households facing poverty. In Philippi, this research found that due to their informal nature, retailers were able to capitalize on consumers with inconsistent income streams and low disposable income. Informal retail business was found to be a coping mechanism to make up for the lack of formal employment opportunities.

In order to develop a strong consumer base, many informal retailers worked on a credit system. The majority of Spaza shops interviewed claimed to provide goods on credit to regular customers, with the assumption that they would be paid for at a later date. Concerning informal credit-based systems, one Spaza shop owner stated:

> You see, sometimes I do [give credit], if somebody come here and tell me, 'I have this problem, help me with this thing,' and the thing, I have to help him with because as long as I know him, I help. At the end of the day, he'll help me back. (Interview with respondent #9, 6/29/2012)

As seen in the quote above, this informal safety net system, which expands beyond monetary credit to include favors, is predicated on the existence of strong social ties. These exchanges require loyalty from the consumer as an informal socially binding contract which develops a mutually beneficial relationship. These informal relationships are vital, since competition solely through the pricing of products is often ineffective, considering the limitations of consumer spendable income. As such, factors such as product price, product quality, customer interactions, and relationships are weighted differently in informal business practices. Consumers would often decide to shop consistently at one particular store, and shopping at an alternative would be heavily frowned upon. One meat stand owner said this about his relationship to his customers:

> We [should be] clocking out at 7 but we are clocking out at 9, because there are a lot of customers, and they are complaining 'no, why you didn't make my meat, you can't close without me,' and you, you can't close, you know. (Interview with respondent #20, 6/29/2012)

Although each retail type had different spatial and economic organization, they all shared a common trait in their relationship to the supermarket. None of those interviewed expressed any concern of competition from the supermarket; competition was primarily between retailers of the same informal format. In fact, both F&V and meat stands actually capitalized on the existence of the shopping center through their spatial organization.

F&V stands were found most proximate to the shopping center, deliberately positioning themselves to capture the consumer base attracted by the supermarket. The supermarket is seen as a central location, with a high gravitational potential, bringing in customers who may support alternative businesses located close by. Most participants responded that their main consumer base was those who had bought from Shoprite but had forgotten to purchase a particular product. As one F&V stand worker stated,

> [Shoprite] customers, sometimes they forget to buy something from Shoprite, and then when they pass through the road that person's mind was to buy [fruit and veg] from Shoprite not from here but because he's far from Shoprite now … this stand is here because this is where everybody is going through and you can't put a stand where nobody is going. (Interview with respondent #3, 6/20/2012)

Meat stands were also found to capitalize on the centrality of the supermarket, utilizing the high level of traffic along Lansdowne Road, an artery which runs directly through the Cape Flats into Khayelitsha and connects the townships to the Southern

suburbs. This was a deliberate decision in order to generate a larger potential consumer base. One participant stated that the shop was opened in that particular location because

> it is near to the main road. This is a main road here. So it was all the people across Philippi can see the meat place. (Interview with respondent #18, 6/29/2012)

These retailers were found to have developed what they perceived to be a mutualistic relationship with the Shoprite. One worker of one of the two largest stands said in regards to competition with Shoprite:

> No, it can't hurt our business, because we are not selling the same thing. We are selling a different thing. So maybe a person can come here to buy meat but he thinks also, I must buy something at Shoprite. So a person can come to Shoprite and think oh I can go buy the meat as well. (Interview with respondent #20, 6/29/2012)

Rather than a purely parasitic relationship like that seen with the F&V stands, the meat stands have developed their own wide network of consumers. By specifically choosing to sell only pork in this particular location, it has developed the label as 'the pork place,' which promotes its status as a semi-formalized space for conducting a particular form of business. Furthermore, New Eisleben Road as a transportation corridor promotes accessibility; people are known to come from all over the Cape Flats region in order to buy the pork that is sold at this particular location.

Spaza shops were found among the housing units in the area surrounding the shopping center. Found in very high densities, their concerns gravitated mainly around competition with other Spaza shops, while competition with the supermarket did not seem to be an issue. In fact, a majority of participants supported Shoprite, as they recognized their own limitations in product diversity, and viewed their Spaza shops not as an alternative to the Shoprite, but providing a different function altogether. When asked about competition with Shoprite, one Spaza shop owner stated,

> No, that's no problem for me, sometimes I don't have something, I only have small stuff. These people need to go to Shoprite … [but] sometimes [Shoprite] don't sell half bread, or something like that. Buy sometimes the half bread or something like that here. (Interview with respondent # 15, 6/27/2012)

While supermarkets were often utilized for big bulk spending at the end of the month (for salaried workers at the higher end of the spectrum, as well as pension and social grant recipients), Spaza shops were seen to provide smaller basic staples on a daily or weekly basis and for those without a consistent income stream. This can be framed as niche construction, and reflect the continued necessity of alternative retail formats beyond the standard formal supermarket. Additionally, it reflects the diverse selection of consumption strategies utilized by consumers. Although some consumers shopped at least occasionally at Shoprite, it was found that many utilized Spaza shops for shorter time frequencies.

In order to employ price differentials as a potential determinant of consumption patterns, a price comparison analysis was conducted between the Spaza shops and Shoprite. Products found at Spaza shops had considerably limited diversity and variety in comparison to the Shoprite. Furthermore, variations in both prices and available product quantities occurred among Spazas, with store size seeming to be a particularly

important determining feature. While Shoprite had large bulk options at 5 and 10 kg for basic staples, such as flour, sugar, maize meal, rice, and beans, the majority of Spaza shops interviewed only held options ranging from 500 g to 2 kg, with the occasional 2.5 kg option. For instance, while 9 of 11 Spaza shops stocked 2.5 kg maize meal, only 2 of these stocked the 5 kg option. Conversely, the Spazas held low quantity options unavailable at the Shoprite. For instance, while Spaza shops regularly sold 375 mL bottles of cooking oil, tea containing 10 tea bags, single eggs, and 250 g packets of sugar, these products were unavailable in the supermarket (see Figure 4).

While prices did vary among Spaza shops and price differentials varied between products, it was found that for the majority of products sold at both Spaza shops and the Shoprite, Spaza shops provided them at cheaper prices. There were only few exceptions, such as a can of coke, 2.5 kg packets of maize meal, and 500 g packets of rice. Furthermore, there were certain lower quantity products, such as 375 mL containers of oil, boxes of 10 tea bags and single eggs, which were sold at Spaza shops but missing from Shoprite. These findings reflect the ability of Spaza shops to capitalize on the limitations of the formal market, and develop competitive prices in comparison to their larger, more formalized counterparts. Additionally, it reflects the integration of Spaza shops into formal supply chains, with wholesalers marketing products specifically to these informal sellers. This shows that it is falsely simplistic to claim that supermarkets are pushing Spazas out of business through their use of low prices and economies of scale.[6]

Overall, this research suggests that claiming that consumption patterns reflect a linear path toward greater use of formal outlets is a gross oversimplification. Although consumers do appear to patronize supermarkets more than informal shops, the urban poor in Cape Town utilize the informal sector to compensate for insufficient income to fully participate in the formal economy. Furthermore, Spaza shops are found to be pref-

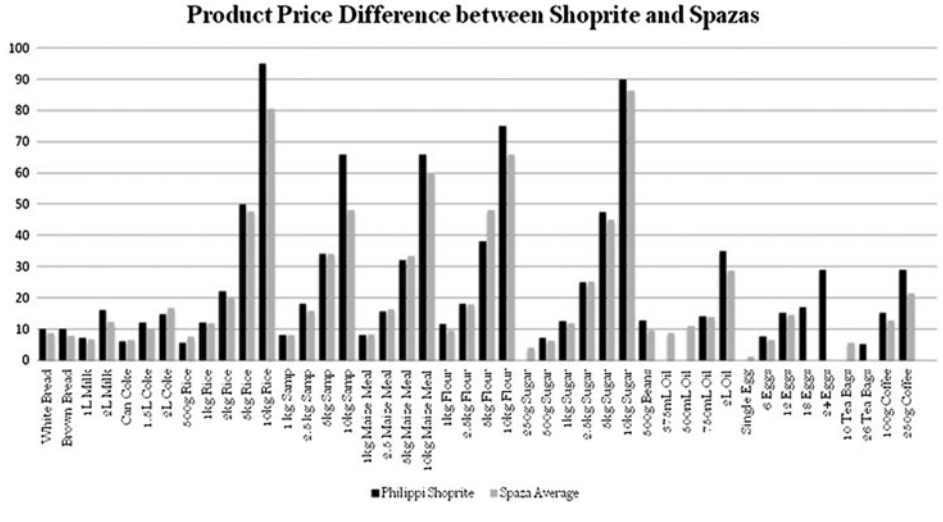

Figure 4. Price comparison between Shoprite and Spaza shops.
Notes: Graph depicting the difference in prices between the Shoprite supermarket and Spaza Shop products.
Data from primary research conducted by first author (Stephen Peyton).

erable for day to day purchases, due to their lower prices and smaller quantities, as well as spatial distribution near residential units. The existence of a diverse selection of options supports consumers who value access to the formal supermarket, but are unable to operate only in the formal sector. Therefore, consumers utilize a multiplicity of retail types, both formal and informal, and change consumption patterns to reflect patterns of employment and other means of generating an income.

In townships where supermarkets are present, informal retailers are beginning to construct solid niches alongside formal alternatives. For instance, Spaza shops, although having the same customers and selling the same products as supermarkets, have been able to construct a niche for themselves through supplying slightly cheaper, lower quantity goods. In other words, they capitalize on the limitations of a formal economy in addressing the needs of the poor. It appears as though Spaza shop owners did not see the supermarket as a threat; rather, they accepted this 'competitor' as a vital part of household food procurement strategies. Additionally, F&V stands employ convenience as their main tool in niche construction, while deliberately using the centrality of the supermarket as a way to capture customers. Finally, meat stands position somewhere between the informal and formal, with the social organization and infrastructure of informal business and the supply chains, large consumer base, and wide networks of the formal economy.

On the other hand, supermarkets are limited in their ability to address the needs of the urban poor. While those households with a consistent monthly income would regularly buy from supermarket in bulk, this option is not as readily possible for others working within an informal economy. Within the informal environment of Philippi, wealth disparities and irregular incomes prevent the poorest households from utilizing formal retail outlets. Therefore, the problem is not just limited supermarket expansion, but that the structure of formal retail itself is a restriction on household participation.

The integration of formal suppliers in the supply chains of informal retailers shows how formal practices are being integrated into localized food systems and informal store practices. The supermarket's presence is influencing a renegotiation of retail form, resulting in a hybridized landscape where retailers are reconfiguring their business practices. All Spaza shop owners and workers and F&V stand workers interviewed stated that their products were derived from wholesalers. Moreover, meat stand workers bought their products from a butcher, again capitalizing on the benefits of formalized supply chains. These shifting patterns are mirrored by a greater recognition by wholesalers of the market significance of the informal economy. Wholesalers sell products specially tailored toward informal stores, including smaller quantities of goods such as cooking oil, sugar, and maize meal for Spaza shops (see Figure 4).

This study shows that the traditional view of a linear trajectory toward a fully formalized retail sector is an oversimplification that ignores the capacity and agency of participants in localized food systems. Although it is impossible to rule out this possibility for the future, the flexible business approaches of informal store owners, the complex strategies employed by consumers, and the rapid rate of urbanization all speak to the continued necessity of the structures in place for small-scale, local, informal businesses.

6. Conclusion

Rapid urbanization and high levels of poverty make food insecurity an increasingly problematic phenomenon in Cape Town. Primarily restricted to cash-income for food

options with minimal safety nets for resilience, many poor households find that the current infrastructural capacity of the city and public support systems are insufficient to meet their needs.

The expansion of supermarkets in South Africa in the mid-1990s marked a shift toward economic formalization. Food desert literature of the global North views supermarkets as beneficial for food insecure neighborhoods as they provide a wide range of healthy foods priced within a more affordable range than alternatives. This market penetration, however, has been critiqued as a linear economic transformation from informal to formal at the detriment of traditional economies. Under such a scenario, low-income consumers and small shop-owners are excluded from the newly transformed formal economies. Since low-income households have variable consumption patterns contingent on erratic income streams, disease, and social obligations, the format of formal retailers fails to be fully compatible. With formalization exacerbating incompatibility, these communities face a severe loss of resiliency which promotes a higher prevalence of food insecurity.

This article reveals the unequal distribution of supermarkets in Cape Town, with high-income sub-places more likely to have a higher density of supermarkets. Low-income sub-places face drastically lower supermarket densities, indicating reduced accessibility to this food retail format. Supermarket expansion in its current state is constrained by market-based limitations, with a lack of sufficient economic incentive and compatibility in the food systems of the lowest income areas in the city.

The unequal distribution of supermarkets results in a high prevalence of informal food retail formats in low-income neighborhoods in Cape Town. A qualitative case study illuminated the interactions between formal and informal retailers in township environments, revealing the role of supermarkets in household consumption patterns. Research showed that the presence of supermarkets in informal township areas provides alternative methods to obtain food. They also work as anchors for growth and development, which is capitalized upon by informal stores. However, the continued necessity of these informal stores reveals the limitations of the supermarket format in catering to the resilience strategies of the poorest households.

The consumption strategies of the urban poor in Philippi highlight the current incompatibility of poor household consumption strategies with the formalized structure of the supermarket. Many poor households utilize supermarkets for particular spending practices at specific times with limitations for poorest households lacking a consistent income stream. Therefore, while supermarket expansion is significant for improving access to diverse food sources, an automatic assumption of their presence improving food security oversimplifies the relationship between poverty, household resilience strategies, and formal and informal food systems. Furthermore, the dichotomization of informal and formal economies in both literature and policy masks the complex environments in which food access is negotiated. In Philippi, neither a truly formal nor a truly informal economy exists; the economic environment has become a hybridized landscape in which food access is negotiated by the multiple retailers and consumers present. Therefore, a conceptualization of economic activities as distinctly formal or informal falsely represents the reality of these economies. A new way of conceptualizing this retail landscape, and the ways in which consumers negotiate their roles within it, must move away from a sole reliance on large formal retail as the only means of ensuring food security.

In its current state, supermarketization has had some success, although supermarket expansion has been limited in the poorest neighborhoods of the city. Fundamentally, the supermarket has been incapable of fully meeting the needs of the poorest of the poor, who often resort to consumption strategies utilizing a combination of informal and

formal food systems. Therefore, a new conceptualization of the interplay of formal and informal retail environments must be accompanied by a more context-specific notion of food deserts to accurately understand food security in Cape Town's townships.

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Notes

1. Data from the most recent 2011 census was not available at the time the research was conducted.
2. Interviews were divided as such: 11 interviews with Spaza shops, 6 with F&V stands, and 3 with meat stands.
3. 1Rand = .10 USD and .078 Euro.
4. Higher income neighborhoods tend to have lower density settlement and higher access to private transportation.
5. Informal dwellings typically take the form of small residential units assembled out of scrap metal by residents, often referred to as shacks.
6. It must be recognized that these are the views of those shop owners that have adapted to the supermarket's introduction and not representative of business that may have not survived the transition.

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