

Africa's Urban Food Deserts

Jane Battersby · Jonathan Crush

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Abstract Since the mid-1990s, the concept of the ‘urban food desert’ has been extensively applied to deprived neighbourhoods in European and North American cities. Food deserts are usually characterised as economically-disadvantaged areas where there is relatively poor access to healthy and affordable food because of the absence of modern retail outlets (such as supermarkets). This idea has not been applied in any systematic way to cities of the Global South and African cities in particular. Yet African cities contain many poor neighbourhoods whose residents are far more food insecure and malnourished than their counterparts in the North. This paper reviews some of the challenges and difficulties of conceiving of highly food insecure areas of African cities as conventional food deserts. At the same time, it argues that the concept, appropriately reformulated to fit African realities of rapid urbanisation and multiple food procurement systems, is a useful analytical tool for African urban researchers and policy-makers. Although supermarkets are becoming an important element of the food environment in African cities, a simple focus on modern retail does not adequately capture complexity of the African food desert. In the African context, the food deserts concept requires a much more sophisticated understanding of over-lapping market and non-market food sources, of the nature and dynamism of the informal food economy, of the inter-household differences that lead to different experiences of food insecurity and of the Africa-specific conditions that lead to compromised diets, undernutrition and social exclusion. The papers in this special issue explore these different aspects of African food deserts defined as poor, often informal, urban neighbourhoods characterised by high food insecurity and low dietary diversity, with multiple market and non-market food sources but variable household access to food.

J. Battersby

African Centre for Cities & Department of Environmental and Geographical Science, University of Cape Town, P/B Rondebosch, Cape Town, South Africa
e-mail: Jane.battersby.lennard@gmail.com

J. Crush (✉)

Balsillie School of International Affairs, Waterloo, ON, Canada
e-mail: crushj@queensu.ca

J. Crush

University of Cape Town, Rondebosch, Cape Town, South Africa

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Introduction

Over the last decade, the concept of the ‘food desert’ has gained significant traction within academic research and policy debates on urban food consumption. The term was coined by Beaumont et al. (1995), and has since been extensively used in empirical research on food retailing and nutrition in poor urban neighbourhoods. In a seminal contribution, Wrigley (2002, p. 2032) defined the food desert as a metaphor for ‘the complex nexus of interlinkages between increasing health inequalities, retail-development-induced differential access to food retail provision, compromised diets, undernutrition and social exclusion’. Although there are now various alternate definitions of food deserts (Shaw 2006)—and growing debate over the utility of the concept for understanding the actual determinants of urban diets (McEntee 2009; Alkon et al. 2013; Donald 2013; Shannon 2013)—they are commonly characterised as economically-disadvantaged areas of cities where there is relatively poor access to healthy and affordable food. Much of the early research was focused on deprived areas in cities in the UK (Cummins and McIntyre 2002; Whelan et al. 2002; Wrigley 2002; Wrigley et al. 2003; Guy et al. 2004; Pearson et al. 2005). More recently, the food desert concept has been widely applied to North American inner-city neighbourhoods (Apparicio et al. 2007; Short et al. 2007; Besharov et al. 2010; Thomas 2010; Walker et al. 2010; Gordon et al. 2011).

Studies of food deserts assign a pivotal role to ‘the proximity and density of retail food outlets in specific neighborhood...as markers of access to affordable, healthy food’ (Shannon 2013, p. 8). In the UK and North America, food deserts emerged as supermarkets retreated from low-income areas, closing downtown stores and opening mega-stores on the urban periphery. As a result, car-less residents depending on public transport were systematically disadvantaged (USDA 2009). This process of food desertification, and the absence of modern retail outlets in poorer areas of the city, means a lack of access to healthy and affordable food (Russell and Heidkamp 2011). Food deserts have been quantified by mapping cities according to income or ethnicity and overlaying spatial data on supermarket distribution. These methodological approaches have been refined over time and now include such strategies as measuring actual street network distance from stores instead of Euclidian distance, incorporating a wider range of store types, using travel time instead of distance to measure accessibility and taking account of various social barriers to food access (Short et al. 2007; Larsen and Gilliland 2008; Raja et al. 2008; Kowaleski-Jones et al. 2009; Leete et al. 2012; Páez et al. 2010).

An extensive literature search revealed only two published studies that engage directly with the concept in the Global South, one in Paraguay (Gartin 2012) and the other in South Africa (Battersby 2012). In the African context, there are a number of possible reasons why the idea has not acquired any purchase to date. First, food security and undernutrition are invariably viewed as rural issues in both the research and policy domains. Urban food insecurity has been marginalised and largely ignored on the global food security and development agenda (Crush and Frayne 2011a). Indeed, there

was more work on urban food security in Africa in the 1990s, when the continent was a lot less urbanised, than there is today. Second, the close association of food deserts with the presence or absence of supermarkets seems less appropriate in African cities. Although supermarkets are playing an increasingly important role in urban food systems in Africa, this is a comparatively recent development in most countries (Reardon et al. 2003, Crush and Frayne 2011b; Dakor 2012). Third, such research as does exist on food insecurity in African cities has tended to focus on the household scale. While this has provided useful analysis of the extent of food insecurity and characteristics of food insecure households, it tends to ignore structural drivers of food insecurity that operate beyond the household scale.

The fact that food deserts have not been explicitly identified or discussed in relation to African cities does not, of course, mean that they do not exist. African cities contain many poor neighbourhoods whose residents are far more food insecure and malnourished than their counterparts in the UK or North America. A baseline food security survey in 11 Southern African cities by the African Food Security Urban Network (AFSUN), for example, found that 57 % of households in poor neighbourhoods were severely food insecure and only 17 % were completely food secure (Crush et al. 2012). On average, food purchase made up 50 % of household expenditures. Dietary diversity was very low in all cities with heavy reliance on starch staples. The question therefore is whether the Euro-American understanding of the characteristics and causes of food deserts are applicable to Africa's rapidly-growing towns and cities. There are certainly reasons for caution. The history and geography of urban food retail in the UK and North America, for example, differs from that currently unfolding in Africa (Dakor 2012). While the spatial distribution of supermarkets may look superficially similar to patterns in the UK and North America, the trajectories and processes involved are very different. Instead of retreating from low-income areas, supermarkets in African cities are starting from a small upper-income base and progressively working their way into lower-income areas. In Southern Africa, the concern is not that the supermarkets are neglecting low-income consumers, but that they are undermining local business (Ligthelm 2008).

Another challenge in uncritically applying the Euro-American food desert approach in Africa is its use of distance from a supermarket as a proxy for access to healthy food at affordable prices. Some work on North American food deserts has included food from a wider range of store formats, and even local farmers' markets, but the primary focus is still supermarkets and other forms of formal food retail (Raja et al. 2008; Larsen and Gilliland 2008; Jiao et al. 2012). In African cities, retail typologies are fundamentally different. The AFSUN survey did find that 79 % of poor urban households sourced food at supermarkets compared with 70 % from informal retailers. This would seem to suggest that lack of access to supermarkets is not as significant a factor in Southern Africa's urban food deserts. However, when the frequency of patronage is factored into the analysis, it is clear that supermarkets are patronised relatively infrequently (once per month on average) for bulk purchase of staples. Informal retailers are patronised extremely frequently, usually several times a week.

The dynamism and complexity of the informal economy offers a particular set of challenges to a conventional food deserts approach which assumes spatial fixity on the part of the retail outlets being mapped. The informal food retail environment in African cities is marked by great fluidity. Many traders and vendors operate only at particular

times of day, or days of the week or days of the month. The fluidity of trade is an essential part of the urban food system and generates a food system responsive to the needs of low-income consumers. The static nature of food desert mapping also fails to capture the everyday mobility of residents whose lives are not circumscribed by the neighbourhoods in which they live. Indeed, in many African cities, low-income residential areas are located far from places of employment. These cities are characterised by high daily mobility even by the very poor and households do not necessarily shop in the neighbourhoods where they live.

The phenomenon of 'out-shopping' (shopping outside of the residential location) is common, and engrained in the everyday food practises of urban residents (Strydom 2011). In research conducted in Soweto, Johannesburg, in 2004, for example, only half of total household expenditures of the poorest households occurred within township areas (Ligthelm 2008, p. 38). The spatial configuration of formal and informal food retail has been shaped by these out-shopping practises. Formal retailers often locate stores near to transport hubs in areas which workers pass through on their way home. Likewise, informal traders cluster around transport hubs in poorer areas. It is essential to recognise these mobilities and how they shape access to food and the spatial configuration of the food system in understanding the nature of the African food desert.

Another challenge with applying the standard Euro-American food desert concept in Africa is that it fails to adequately account for differences between households operating within a single food environment. In the African context, households in the same areas of the city have different mobility patterns, different geographical access to food and different levels of food security. AFSUN's baseline survey found statistically significant relationships (of variable strength from city to city and neighbourhood to neighbourhood) between food insecurity and a whole range of household variables including size, gender, type, education, employment, income, poverty and migration status. Additionally, households with different income patterns source food differently within the same food environment. The development of a food deserts approach to the African city requires that the household, neighbourhood and city scales be considered together as the inter-play between these scales has a strong influence on urban food security.

Given these limitations and qualifications, is the idea of the food desert a useful concept to help broaden the current narrow framing of the food insecurity challenge in African cities? The fundamental point made by proponents of the concept is that food insecurity is not just an issue of household poverty, but one of structural and spatial inequality within the food system. This is an essential addition to understanding African urban food security. The food system in African cities is undergoing rapid, but largely unacknowledged, transformation that is changing food accessibility and consumption trends. City-scale mapping of food retail changes over time provides a means to monitor these major changes. However, an African food desert approach cannot afford to ignore the density and fluidity of retail in African cities and its implications for food access and dietary quality.

The papers in this special issue are largely based on individual city data from the AFSUN food security baseline survey, supplemented in a number of cases by other survey data and qualitative research. Each of these papers addresses one or more aspects of the food environment of the city concerned, illustrating both the common elements and the great variability between cities. What ties these papers together is a

common concern with levels of and determinants of food insecurity in poorer urban neighbourhoods, in Africa's food deserts. Here, we highlight some of the major findings from the different cities and reflect on their implications for the development of a distinctively African approach to food deserts.

The first two papers in this collection deal directly with a central concern of the standard food deserts literature, that is, the spatial behaviour of supermarkets and the implications for food security of residents of poor neighbourhoods. Battersby and Peyton map the spatial distribution of supermarkets, income and transportation corridors in Cape Town. They show that the distribution of supermarkets is highly unequal and the distance of low-income areas from high-income areas hinders access to supermarkets for the urban poor. Contrary to the standard food deserts argument, supermarkets are moving closer to and become more accessible to poor urban consumers. However, supermarkets in lower-income areas stock less healthy foods than those in more wealthy areas and, as a result, do not necessarily increase access to healthy foods. The assumption that supermarket access automatically guarantees a better diet is therefore highly questionable, especially in relation to the growing overnutrition (obesity) epidemic in the Global South (Reardon et al. 2010). Crush and Caesar's paper on the Msunduzi Municipality demonstrates that supermarkets completely dominate the urban food system of this South African city. Unlike many African cities, the informal food economy in Msunduzi is relatively small and absent from most poor residential neighbourhoods. This raises the general question of the competitive relationship between the formal and informal food economies and how this plays out in urban food deserts and affects the food accessibility of poor urban consumers.

Residents of Africa's urban food deserts do not only rely on supermarkets and the informal food economy for their food. AFSUN has shown that in Southern African cities, other (non-market) sources of food include urban agriculture and informal rural–urban food transfers. Two of the papers in this special issue address these alternate sources and assess their relative importance to the diets of the urban poor. Frayne et al. examine the data for all 11 AFSUN cities and show that the prevalence of urban agriculture varies considerably from city to city. They attribute these differences to distinctive local histories and geographies, suggesting that generalisations about the actual and potential mitigating role of urban agriculture in African food deserts are unwise. Their statistical analysis further demonstrates that urban agriculture is not an effective household food security strategy for poor urban households, with few significant relationships between urban agriculture and food security. Pendleton et al. show that the majority of the residents of Windhoek's food deserts are recent migrants from the rural North of the country. These migrants maintain close ties with their rural families, one benefit of which is the informal transfer of agricultural produce to the city. Many poor urban households rely on these transfers to help mitigate severe food insecurity. These two papers thus illustrate the importance of a conception of food deserts that take into account the acquisition of food from non-market sources.

One of the recurrent problems with standard food deserts research is the static, cross-sectional nature of much analysis (although see Guy et al. 2004; Larsen and Gilliland 2008). Longitudinal data is essential in order to understand the changing dynamics of food accessibility in food deserts. Two of the papers in this issue

demonstrate the importance of a dynamic conception of food security in the analysis of Africa's food deserts. In his paper, Tawodzera compares the prevalence of food insecurity in Harare's food deserts at the height of the country's political and economic crisis in 2008 with the situation in 2012, following several years of political stability and an improvement in the city's food supply. He shows that there has been a positive improvement in the levels of food access amongst the urban poor. However, in aggregate terms, food insecurity levels were still very high in 2012, primarily because most households could not afford the newly-accessible food. Simply because there is an improvement in national and local economies and food availability, then, it does not automatically mean that food deserts will be eliminated. The paper by Acquah et al. demonstrates this very clearly in the case of Gaborone, Botswana. Botswana has one of the most robust and well-managed economies in Africa, yet levels of inequality and food insecurity remain stubbornly high. Residents of that city's food deserts do not enjoy significantly better diets than those living in food deserts in other countries and cities.

In Africa's urban food deserts, not all households enjoy equal access to food. A number of the papers in this issue demonstrate the major determinants of inter-household variability. One of the major faultlines in African food deserts is gender. Women and men enjoy differential access to resources such as housing and jobs and therefore to income-generating opportunities. As Dodson and Riley show in their study of gendered food access in Blantyre, Malawi, female-centred households are twice as likely to be severely food insecure as nuclear households. This they attribute to the fact that gender shapes mobility and thus a household's ability to procure food from the most affordable sources. Gender also shapes household income, which impacts on a household's economic access to food. In their study of food insecurity and social protection in Manzini's food deserts, Tevera and Simelane show that various forms of community and intra-household food sharing are an important food source for a minority of poor households. The residents of many food deserts in cities in the North are able to benefit from state-funded social protection (such as social grants and foodstamps) or charitable redistribution of surplus food (such as food banks and soup kitchens). Social protection is much less developed in the African context. South Africa's post-apartheid child grant system has had a major impact on household income and food security. In more impoverished countries such as Swaziland, state-funded social protection is very limited and food-based social safety-net programmes that assist poor and vulnerable groups need to be strengthened.

The final theme addressed in this issue concerns the governance of Africa's urban food deserts. Few, if any, African cities have explicit food security policies that address the full range of issues involved. Some have enabling urban agriculture policies but that is about as far as policy-thinking goes. Even more problematic, as Brown points out in her study of Uganda, is that when governments do adopt a proactive urban planning strategy, food rarely features (unlike housing, water, transport and municipal services). Through sins of omission and commission, national and local governments have the potential to exacerbate the severity of food insecurity in urban food deserts. For example, most municipalities are ambiguous about the informal food economy. In a neo-liberal world, supermarkets are generally free to do business without any significant degree of regulation. The urban informal food economy, on the other hand, is regularly the target of control, regulation and draconian eradication policies (such as

Operation Murambitsvina in Zimbabwe in 2008 and Operation Clean Sweep in Johannesburg in 2013) (Vambe 2008; Crush 2013).

AFSUN adopts the widely-cited definition of food security proposed by the FAO (2006) as existing 'when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life'. While there is near-universal agreement on this definition, the fact that it focuses on food *access* rather than food production and supply is often overlooked. Just because more food is being produced or is available in a country is certainly no guarantee that it is more accessible to the bulk of the urban population. There is less unanimity in how best to capture and accurately measure levels of household food security and insecurity in general and in urban areas in particular (Renzaho and Mellor 2010; de Haen et al. 2011; Coates 2013; Headey and Ecker 2013). AFSUN has adopted the most common, cross-cultural household indicators used in the literature: the Household Food Insecurity Access Scale, the Household Food Insecurity Access Prevalence indicator, the Household Dietary Diversity Scale and the Months of Adequate Household Food Provisioning indicator (Swindale and Bilinsky 2006; Coates et al. 2007; Bilinsky and Swindale 2007). As a number of the papers demonstrate, each of these quantitative indicators generates a score for each household which measures a different aspect of food insecurity. These scores can then be cross-tabulated with other household variables to explain levels and variations in household food security within and between cities.

In his definition of food deserts cited at the beginning of this introduction, Wrigley (2002) refers to the 'the complex nexus of interlinkages' that create the poor diets and food insecurity that characterise these areas of the typical city. In practice, the literature gives pride of place to the lack of supermarket access as the key determinant of food deserts. Our argument is that supermarkets are an increasingly important element of the food environment in African cities, but a simple focus on modern retail does not adequately capture 'the complex nexus' of the African food desert. As this special issue demonstrates, the use of the food deserts concept in the African context also requires a much more sophisticated understanding of the multiple market and non-market food sources, of the spatial mobility and dynamism of the informal food economy, of the changing drivers of food insecurity over time, of the inter-household differences that lead to different experiences of food insecurity and of the Africa-specific conditions that lead to 'compromised diets, undernutrition and social exclusion'. In summary, we define African food deserts as poor, often informal, urban neighbourhoods characterised by high food insecurity and low dietary diversity, with multiple market and non-market food sources but variable household access to food. There is actually little chance of reversing the continued growth of these urban food deserts without the development and implementation of sound, evidence-based, city-wide food security strategies (Morgan 2009).

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