Vulnerable populations in food deserts: a case study

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Abstract

Purpose – This paper aims to examine the realities of food deserts and the vulnerable populations in urban areas in the USA; review underlying causes of these realities; and propose a set of solutions to address challenges facing vulnerable populations living in urban food deserts.

Design/methodology/approach – The paper presents a case study with a focus on a specific vulnerable population living in a food desert in the inner city of Richmond, Virginia.

Findings – While vulnerable populations and food deserts have much in common, in general, they both reflect, for specific groups of people, a failure to achieve or even having a chance to achieve the American dream. In particular, they reflect the economic, social, culture and education disenfranchisement of many citizens in society.

Originality/value – This exploratory paper and case study offers a beginning reference point to both understand and deal with urban food deserts and the vulnerable populations that reside there-in. Food deserts are a serious problem that is historically based and contemporarily reinforced by economic, social and cultural/community realities in society. By first understanding these realities, the paper calls for research and action.

Keywords Community realities, Contemporary issues, Food desert alleviation, Food desert realities, Urban food deserts

Paper type Case study

Introduction

Food desert realities

Food desert – as noted previously – the term was first documented in a 1995 report by the Nutrition Task Force Low Income Project Team of the UK Department of Health. It is defined as "areas of relative exclusion where people experience physical and economic barriers to healthy foods" (Cummins, 1999, 2002). In the USA, food deserts are identified as parts of the country with only limited access to fresh fruit, vegetables and other healthful whole foods. Food desert are typically located in poverty ridden parts of cities but can exist in rural areas as well. This is largely because of a lack of grocery stores, farmers' markets and healthy food providers (Wood and Thomas, 2016).

Food deserts and the vulnerable populations living (existing) there-in, represent a dishonor to and failure of both social institutions and economic systems. Food deserts are often devoid of well-stocked, up-to-date grocery outlets, especially those that carry fresh fruits, vegetables, dairy products and protein. Urban food deserts are often replete with local (but not locally owned) fast-food retail options that provide processed foods, sugar-laden treats and saturated fat choices (fried food warmed all day by heat lamps and pizza), that are known contributors to obesity, cardio-vascular and respiratory disease and diabetes

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(Reising and Hobbiss, 2000; Rose and Richards, 2004). It has been said that "in food deserts one can purchase fried chicken, pizza and old bananas, while also picking up an alcoholic beverage and pack of cigarettes, but that's about it" (Lee, 2016). Urban food deserts are populated by vulnerable populations, predominately African American who are at high risk of experiencing violence, crime, personnel degradation, economic poverty and long-term despair over the full course of their lives (Shivayogi, 2013).

Existing literature indicates that access-related concerns (e.g. sustainable transportation to and from healthy food outlets), and lack of education (with respect to food options, preparation of food varieties and general principles of nutrition), are significantly correlated with premature death among vulnerable populations living in food deserts (Rose and Richards, 2004; Walker *et al.*, 2010; Wood and Thomas, 2016). For example, census tract data indicates that life expectancies are shorter by almost 20 years among those living in the Fairfield Court public housing community in the "East-End" of Richmond, VA (an urban food desert and the focus of this paper's case study), when compared to the city's more affluent neighborhoods just five or less miles away in the "West-End." The average life-span in Richmond's East End food desert is 60 years. The average in its affluent West End neighborhood is 80 years (Wood and Thomas, 2016).

Underlying causes of food deserts (antecedents)

A recently published model provides a starting point to our thinking and understanding of the causes of food deserts and their alleviation. Wood *et al.* (2017) suggest that specific antecedents including historic, economics, social and cultural/community realities if moderated by sustainable transportation and food education can alleviate, to some degree, food deserts (Figure 1 – Food Deserts: Drivers and Solutions). This model is overviewed below, with a brief explanation of the theorized antecedents of food deserts and the vulnerable populations that inhabit them. The moderators in this model (sustainable transportation and food education) represent the focus of the case study presented later.

In the USA, the long and torturous journey of those who make up the vast majority of vulnerable inhabitants of food deserts – African Americans – can perhaps best be captured by first understanding the *historic* realities of slavery and Jim Crow laws. Between 1525 and 1866, according to the Trans-Atlantic Slave Trade Database (www.slavevoyages.org/), 12.5 million Africans were shipped to the New World. Of those, 10.7 million survived the dreaded Middle Passage, disembarking in North America, the Caribbean and South America. Of those 10.7 million Africans, only 388,000 were shipped directly to North America. The overwhelming percentage of these African slaves were shipped to the Caribbean and South America. Brazil received 4.86 million Africans alone. Some scholars estimate that another 60,000 to 70,000 Africans arrived in the USA, after touching down in the Caribbean first, which would bring the total to approximately 450,000 Africans who arrived in the USA over the course of the slave trade. From these slaves came most of the 42 million members of the African-American community living in the USA currently (Gates, 2014). Denied their freedom, wages for their labor and many other common dignities, African slaves were seen as less than human and as inhabitant of the earth that needed specific oversight by those who were granted superior faculties by god, namely Caucasians of European decent (Campbell, 2012).

By the end of the eighteenth century, the American Revolution freed the colonies from British rule and led to the creation of the USA. It did not, however, free the slaves. That took another seven decades involving the war-between-the-states and the Emancipation Proclamation, issued by President Lincoln in 1863. In 1865, the Civil War ended, and the Thirteenth Amendment to the USA Constitution abolished slavery throughout the USA

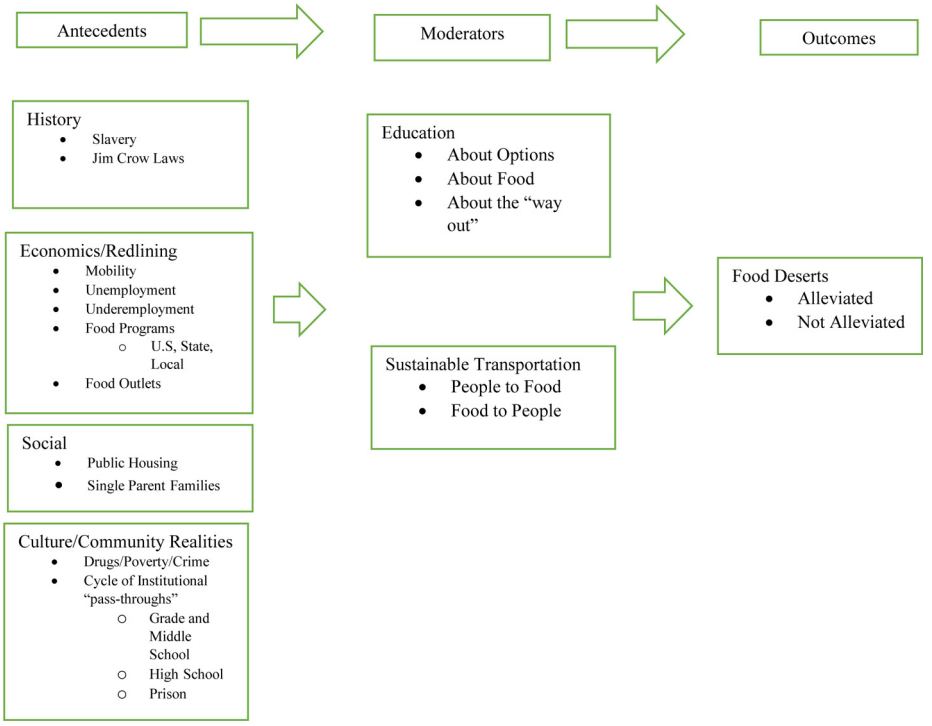

Figure 1.
A model of food desert drivers and solutions (based on work by wood and Thomas – 2016)

(www.infoplease.com/timelines/slavery.html). Again, however, this did not end the plight of these new "African Americans". Institutionalized segregation, discrimination and class structure continued the subjugation of black Americans and ultimately led to the current urban food deserts and the vulnerable populations residing there-in.

This brings us to the second historical antecedent in our model – namely, Jim Crow laws (Figure 1). When state legislatures passed laws of racial segregation directed against blacks at the end of the nineteenth century, these became known as Jim Crow laws (Woodward and McFeely, 2001). In essence, Jim Crow laws represented the "de jure" continuation of white dominance over blacks though violence, intimidations and state approved discrimination as often carried out by the Klu Klux Clan and other "hate groups" (Southern Policy Law Center – www.splcenter.org/fighting-hate/extremist-files/groups). Jim Crow laws legally enforced racial segregation in most if not all public facilities. These laws institutionalized numerous economic, educational and social disadvantages to blacks. And these realities, while not "de jure" law in the north, eventually became "*de facto*" law in northern states over time, as well. Thus, the whole of the nation basically bought into a philosophy of "separate but equal", resulting in conditions that were consistently inferior for blacks in America, when compared to whites (Woodward and McFeely, 2001).

After the Second World War, African Americans increasingly challenged segregation. The civil rights movement and landmark Supreme Court rulings such as those that mandated school segregation (Brown versus the Board of Education of Topeka – 1954), the historic Civil Rights Act of 1964 (outlawing discrimination in public accommodations), and Voting Rights Act of 1965 (ending legally sanctioned state barriers to voting for all federal,

state and local elections), effectively ended Jim Crow. But the reality of segregation, discrimination and underfunding of basic services in predominately African American communities in the USA continued and continues today. Indeed, the vulnerability of this population is largely a reflection of lingering historical effects (Hosea, 2013; Campbell, 2012).

The economic realities faced by the urban poor in the USA can perhaps be best understood by understanding the term "redlining" and the effects it has reaped. This is the second antecedent to food desserts in the model (Figure 1). Redlining is the practice of denying services, either directly or through selectively raising prices, to residents of certain areas based on the racial or ethnic makeup of those areas (https://en.wikipedia.org/wiki/Redlining). It refers to the practice of marking a red line on a map to delineate the area where banks would not invest and later became the term used to describe discrimination against any people based race or sex irrespective of geography although the inner city "ghettos" were a frequent target of this process (Dedman, 1988; Sagawa and Segal, 1999).

Redlining led to a lack of generational wealth creation and resulted in whole communities without proper public transportation (mobility), with high un- and under-employment and dependence on food stamp and other public programs for survival (Maxwell and Immergluck, 1997; Eisenhauer, 2001). The economic realities of redlining go hand-in-hand with the social and cultural/community realties (the third and fourth antecedent in our model – Figure 1). Redlining has been shown to severely retard the housing market, lower property values in redlined communities and encourage landlord abandonment, resulting in a population density skewed toward those that are most vulnerable. Abandoned structures in such area often serve as shelters for drug dealing and other illegal activity, which in turn leads to spiraling social problems and continued reluctance of people to invest in these areas (Wilson, 1996). What housing does exist is overwhelmingly "public" in nature, which garners little pride in upkeep and maintenance by residents. In general, public housing communities became ripe with crime, unemployment, limited mobility, poor overall healthcare, degradation of infrastructure, limited and poorly funded education and dependence on government programs, all of which in combination lead to a "cycle of institutions" (described below) and a challenge to family structure. The majority of families in public housing communities are led by a single parent (predominantly females). Taken together, this toxic swill creates an urban environments that fully represents what a food desert is – a community of vulnerable people (Walter, 2003).

The vulnerable populations in food deserts in America remain tattered and stressed. Overcrowding (in public housing "projects"), limited mobility, broken family structures, abundance of drug use and poverty-based crime, high under and unemployment, lack of wealth creating enterprises and a preponderance of marginal food outlets all combine to form a cycle of institutional "pass-throughs" (where an individual's life path may be represented by a series of underfunded and thus relatively bleak experiences in grade school, middle school and high school. Followed by gang membership (for respect and safely), leading to criminal activity, which in term is followed by lengthy incarceration, followed by a return to the only home available, the food desert. And in the end, a now 27 year old "pass-through" finds himself with no skills, no credit and no hope, where his vulnerability may continue for a life-time in his familiar public housing community (Curtis Lee, 2016).

Solutions – getting to food desert alleviation (moderators)

So what solutions might there to this reality? As depicted in the model (Figure 1) the antecedents to food deserts are theorized to be moderated by education and sustainable

transportation which in turn can lead to the alleviation of food deserts (outcomes). Both moderators represent the focus of the case study that follows.

Sustainable, reliable and safe transportation options are a crucial link that connects people to employment, a social life, health care, education opportunities and food sources (Lau, 2013). Sustainable transportation can bring food to people and people to food. With access to sustainable transportation, living standards improve as distances no longer becomes the critical limiting factor in what one can or cannot do. Unfortunately, for many-low income, households, the lack of transportation limits their access to the "way out" of their food desert and to a better life (Akinbami and Fadare, 1997; Gudmundsson, *et al.*, 2012; Lau, 2013; Bhattacharyay, 2012).

Perhaps even more impactful than sustainable transportation, as a moderator in the model, is education. Indeed, education, specifically about food options, healthy eating, the importance of nourishment and the joy of food variety, preparation and consumption has the potential to be a significant "game changer" to the existence of food deserts (Wood *et al.*, 2017).

This model is incomplete in capturing the full story of food deserts, their causes and cures, it does provide a starting point for further research and action. As will be demonstrated in the case study below, sustainable transportation and food education can effect food desert in our society and provide vulnerable populations who reside in such deserts, a vision of and chance for a better life.

Case study – the east-end food desert in Richmond, Virginia

Between 2013 and 2017, Ford Motor Company awarded teams of Virginia Commonwealth University (VCU) students (led by the authors of this paper) a sizable grant to explore the sustainable transportation and food education needs of the most vulnerable population residing in Richmond, VA.

To identify that population and the community in which they lived, the VCU team, using USA Census Bureau (2012) data, undertook a comparative analysis of select demographics (i.e., average income, percent unemployed, transportation realities and modes) in the three most impoverished areas in Richmond (the North-Side, the East-End and the South-Side). Table I summarizes the results of this analysis and shows the East-End as the most challenged area of the three examined. Following this, a series of personal interviews and focus groups were conducted with community leaders and residents to hear "their stories" about life in the East-End. Numerous visits to this community were also made to inspect food outlet, public housing facilities, schools, after school programs and general living conditions. All of this, further verified that the East-End of Richmond, VA was indeed a food-desert with a vulnerable population. For example, the Richmond City Council member who represents the East-End, indicated in a personal interview that this community had thirty-two thousand residents, but only one grocery story, which was a three mile walk on

Yearly averages by areas	North-side	East-end	South-side
Average income	$35,220.00	$21,204.33	$31,897.90
Average % unemployed	17.40	21.47	15.04
Average % households with/no vehicle access	25.15	40.87	18.29
Average % employed/who bike to work	0	2	0.75
Average % employed/using public transportation to get to work	15.50	22.71	6.69
Average % employed/who carpool to work	15.63	11.18	15.17

Table I.
Descriptive statistics of low income/low access areas – Richmond, Virginia

average for most residents. The East End was therefore chosen as the focus of our exploration of the possible value of sustainable transportation and food education in alleviating food desert realities.

Throughout the four years of involvement, the VCU team continued their interactions with East End organizations and their leaders (in churches, community centers, non-profit entities) and residents to indentify historic, economic, social and cultural barriers to the communities' general well-being. Results from these interactions verified the role that the antecedents in the model (Figure 1) in creating this food desert and this vulnerable populations.

Likewise, during this period feedback from pastors, community service personnel, public officials and residents of the East-End confirmed that the lack of adequate sustainable transportation in their community was a major factor that isolated this community and made it vulnerable to economic degradation and social expansion. More specifically, limited public transportation in general, a limited number of bus stops, lack of any public transportation penetration into heart of the East-End housing communities, unavailability of sustainable and reliable transportation to more affluent neighborhoods (where proper grocery stores, pharmacies, retail outlets, healthcare facilities, daycare options and possible employment exist) and having to walk on average thirty to forty-five minutes to arrive at any bus stop, effectively boxed residents into this food desert and deprived most residents from the economic and social opportunities that might be realized given mobility options.

When probed, focus group participants explained that part of the benefit of having access to grocery stores, pharmacies, and other retail outlets (including movie theaters and other entertainment options) was having the "social interactions and pleasure of shopping as an experience" that many in other communities take for granted. Some participants indicated that many grade school, middle school and high school students in the East End had never seen the most noted areas of Richmond (e.g. Monument Avenue, Cary Town, VA Commonwealth University, Hollywood Cemetery, the James River and so on), and thus "their vision" of what the whole of Richmond really was like, and what it might portend for their lives, was missed.

In response to this reality, the VCU team piloted a "Shoppers Trolley" transportation option, in partnership with a private company in Richmond that offers old-fashion trolley rides to a shopping district that featured grocery stores, pharmacies, restaurants, day-day and other retail and entertainment venues. This "pilot" transportation option, had the backing of the shopping district itself and ran on Sundays for four hours during a trial period. This transportation option was offered free of charge for the riders from the East-End, in the hope that interest and demand would increase and then, in the future, a fee schedule would be adapted to cover the cost of the transportation, including the trolley service itself, maintenance, insurance, etc. and thus make this service "sustainable".

The results of this pilot transportation undertaking included a real understanding of how sustainable transportation could and does make a difference in food desert populations quality of life. Because of this (and other such efforts by other concerned organizations), the City of Richmond is developing a rapid-transport bus systems that could permanently meet some of the transportation needs of East-End residents. Likewise, significant insights into the East-End family culture with respect to understanding East End resident's perceptions as to what days are best for shopping? what child care dimensions were most appreciated? what retail outlets are most frequented? what groceries were preferred when shopping at a proper outlet? what items in such stores were perceived as strange or unknown? and what type of "food education" and dimensions there-in, might be most impactful for residents? These insights led the VCU team to turn its focus to the issue of education.

Perhaps even more impactful than sustainable transportation to food outlets, in vulnerable populations, is "food education" (Wood *et al.*, 2017). Education, specifically about food options, about healthy eating, about the importance of nourishment, about the variety of foods and recipes that exist in our world, and the joy of food preparation and consumption is theorized to be a most important moderator in the model presented earlier focusing on the alleviation food desert realities (again, Figure 1).

Based on this theory (and the insights garnered from the trolley experience), the VCU team developed and implemented an educational program aimed at the most vulnerable residents in the East-End community, namely its youth. This program, in brief, verified to the VCU team that food educational programs focusing on positive experiences surrounding food nutrition, preparation, variety and serving could change attitudes, perceptions and behaviors of vulnerable populations such that hope for a brighter future is envisioned. In essence, the aim of this food education program was to test the maxim – "give people a fish – feed them for a day, teach people to fish – feed them for a lifetime."

Again, the VCU team's food education program was grounded in the theory that without an understanding of healthy food options, residents in Richmond's East End, particularly the youth of the community, are left with little knowledge of food nutrition, food preparation and food diversity. Thus, our team focused on educating a group of high-school "participants" residing in the Richmond's East-End about healthy foods that had variety and diversity of tastes, textures and smells.

The immediate goals of this project were –to teach participants about the importance of using proper cooking techniques, safety and having healthy dietary habits and to provide participants with a sense of personal achievement and independence gained from their acquired healthy food education. In short, this "cooking class model" aimed to create a stimulating learning environment by providing the cooking resources and lesson plans necessary for all participants to learn how to cook independently, on a weekly basis, while offering variety to their meals. Learning about the benefits of a healthy diet and instilling the skills necessary to prepare and cook a balanced meal was the targeted objective. The VCU team envisioned an education model for cooking classes that could be scaled to a significant number of underprivileged youth in urban, food desert school systems throughout the USA.

Every Friday during the period of the food education classes, the VCU team arrived at a pre-selected high school in the East-End of Richmond, VA, to undertake cooking classes. The curriculum, types of food to be prepared (Asian, African, European, Latin and fusion) and flow of each class were developed by the VCU team (led by one of the VCU students who was a trained, credentialed chef). In all, ten weeks of classes were undertaken. Cooking utensils and appliances were all provided on site, and the actual cooking classes were held in a kitchen inside the school where there was plenty of space for each participant to fully engage in the planned cooking activities.

At each class both quantitative and qualitative data from participants were gathered on the effectiveness of the day's lesson and curriculum. Each class began with an explanation of the ingredients that were used during that day's class. Once the ingredients were properly explained and the process for cooking reviewed, the VCU team would pause and gather information for each participant as to their perceptions of the previous class and how it had effected their thoughts on healthy eating, personal cooking skills (growth in abilities) and embrace of variety in food options.

Once this data was collected, participants moved on to what was to be cooked (guided by the VCU team's chef) and following the recipes laid out for the day. VCU team members observed, and recorded the progress of each participant, at each step of the meal preparation

process. Each participant worked at his or her own "meal station" which, again, contained a set of ingredients and directions to use in preparing the assigned meal. Once the meal of the day was complete, each participant "plated" (situated food on plates in a way so that it was aesthetically pleasing) and had a taste comparison of each other's prepared dishes. After this tasting, each participant prepared identical ingredients to take home and cook the same meal for their family over the coming week.

Cameras were used to capture the participants in action, getting candid shots of them cutting, grilling, basting and so on. Over the 10-week course, insights were gained into how this cooking curriculum, cooking activities and overall educational experience influenced not only participant's specific healthy eating habits, but also their perceptions and attitudes toward healthy life choices in general.

Results indicated that during the course, participants cooked for themselves, at home, on average two to three times per week (up from zero, on average, before the classes). The VCU team also received consistent feedback that at least 90per cent of participants were able to successfully cook their meal at home each week (typically receiving positive reinforcement from their families). In general, most participants became more comfortable with the challenge of cooking different meal (some participants called them "exotic") as the course progressed. This progressive development of positive attitudes suggests that teaching participants proper cooking techniques, educating them about food alternatives, instilling in them the confidence that they could prepare and serve a nutritious "exciting" meal and making the whole process a fun experience, is a worthy investment. Food education can affect food desert realities.

Conclusion and recommendations

This exploratory paper and case study offers a beginning reference point to both understand and deal with urban food deserts and the vulnerable populations that reside there-in. Food deserts are a serious problem that is historically based and contemporarily reinforced by economic, social and cultural/community realities in society. By first understanding these realities, we can begin to deal with them.

Perhaps the most insightful take-aways for this work are:

- the realization that reliable and sustainable transportation can moderate the realities of food-deserts and aid vulnerable populations living in them find a way out; and
- the realization that motivating residents of food deserts to change their own lives through food education can also moderate the realities of food-deserts.

Future research should further develop the model depicted in Figure 1 and expand upon additional constructs and variables that influence the growth and demise of food deserts. Empirical research should be undertaken to rigorously test the relationships depicted in the model and then tie those findings from such testing to strategies focusing on food desert alleviation. This paper provides evidence that strategies focusing on sustainable transportation and food education could be an effective beginning to such alleviation. Researchers, governmental agencies, NGOs and private enterprise is call upon to continue the fight again this untenable reality.

One of the cornerstones of any decent society is the willingness to rectify historical injustices. We cannot change history, but we can improve the present and the future. Food deserts and the vulnerable populations that live in them are societal problems and thus should be everyone's concern. As in the call to action expressed by Dr Martin Luther King, Jr – "We must learn to live together as brothers or perish together as fools".

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