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The changing landscape of food deserts

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Abstract

In this article, we discuss the most recent trends in food-retail access in low- and moderate-income communities in the United States of America. We begin with a review of the current literature on the number of people impacted by food deserts and then review several critical retail trends, including supercentres (such as Walmart),[1] dollar stores, farmers markets and online food retail. We discuss the growing investment in incentive programmes, as well as new understandings of the impact of food deserts on health. In the United States of America, the number of communities without adequate access to healthy affordable food has declined, though more than 5.6 percent of the population still lives in low-access census tracts. At the same time, racial and economic disparities in food access remain a considerable concern, with around 30 percent more non-white residents facing limited access to food retail than white residents. We also provide recommendations for areas of future research.

INTRODUCTION

The Scottish Nutrition Task Force first coined the term “food desert” in 1995 (Beaumont et al., 1995). Today, the term generally refers to a geographic area that lacks sufficient access to grocery stores, especially in low-income communities (Shaw, 2006). While much of the food-desert concept remains grounded in a conceptualization of geographic proximity, whereby concern remains for those that live far from affordable access to healthy nutritious foods, recent policy efforts, changes in the retail industry and new research findings have

[1]According to the Merriam-Webster dictionary, a supercentre is a very large discount department store that also sells a complete line of grocery merchandise.

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prompted new considerations about how food deserts can or should be defined. These include a broader understanding for how food deserts impact the economic well-being of communities (Richardson et al., 2017), how store quality influences access (Hilmers et al., 2012), how supercentres and dollar stores influence shopping patterns, and how new technologies (including online ordering and home delivery) may help to alleviate gaps.

In 2009, the United States Department of Agriculture (USDA) began mapping food access to identify communities where there was low availability of affordable nutritious foods and found that food deserts exist in every American state, in all types of communities. It estimated that roughly 23 million people lived in 6 529 food-desert communities (USDA, 2012). The USDA's research elicited increased recognition of the vital role of people's environment in supporting health and reducing disparities (Neff et al., 2009).

In the United States of America, national funds were allocated to address food-desert areas for the first time in 2011, following a series of city and state financing efforts, which began with the Pennsylvania Fresh Food Financing Initiative in 2004 (Karpyn et al., 2010). To date, such public efforts have provided more than USD 220 million, which has leveraged more than USD 1 billion in private investment through public-private partnerships, to fund nearly 1 000 retailers serving areas of limited food access in 35 states (PolicyLink, The Food Trust and The Reinvestment Fund, 2015).

HAS THE NUMBER OF RESIDENTS LIVING IN FOOD DESERTS CHANGED?

In its most recent 2017 report, the USDA's Economic Research Service determined that the number of census tracts that met the classification of "low access" had declined measurably since 2010, indicating a general improvement in the proximity of supermarkets to residents across the country (Rhone et al., 2017). Specifically, the US saw a 15 percent decline in the number of individuals living in a limited-supermarket-access area. From 2010 to 2016, the share of the population living in limited-supermarket-access areas declined gradually, from 6.8 percent of the population to 5.6 percent (Rhone et al., 2017).

However, because the number of low-income communities across the country had increased by more than 5 percent since 2010, the net number of low-income and low-access communities increased 0.36 percent (Rhone et al., 2017). The overall increase in low-income areas in the United States of America – the cause of the net increase in low-income food deserts – raises concerns about the growing number of struggling households with limited access to affordable nutritious foods, and the ways in which disparities may expand in part as a result.

State by state, the greatest improvement in increasing food access, as denoted by the percentage decrease in limited-supermarket-access-area populations, was witnessed in North Dakota (41 percent), Idaho (41 percent), Iowa (40 percent), Rhode Island (38 percent), Wisconsin (36 percent), Alabama (35 percent), Kansas (35 percent), New York (34 percent), Arkansas (32 percent) and Indiana (32 percent). In contrast, several states have experienced a substantial worsening of the problem, including Maine (with an increase of 27 percent) and Nevada (with a rise of 26 percent) (The Reinvestment Fund, 2018).

In addition to examining food access at state level, research has also considered food access at the census-tract level. Census tracts are relatively small geographical subdivisions of an area, defined for the purpose of collecting national census data. Depending on definitional parameters, estimates indicate that somewhere between 35.2 million and 83.5 million individuals (5.6 percent to 17.7 percent of the US population, respectively) reside in census tracts with limited access to a store (Rhone, et al., 2017). Further, racial and economic disparities in food access persist across the country, with approximately 30 percent more non-white residents facing limited access to food retail than their white counterparts (Rhone, et al., 2017). Rhode Island, for example, was home to more than 274 000 non-white residents as of 2018 (26 percent of the state's population), yet 60 percent of those living in food deserts were non-white (The Reinvestment Fund, 2018).

NOTABLE TRENDS IN GROCERY RETAIL AND FOOD-DESERT COMMUNITIES

In 2011, as a team member of Michelle Obama's National Healthy Food Financing Initiative, Walmart announced that it would open between 275 and 300 stores to serve USDA-designated food-desert areas (Walmart Inc., 2011). In the United States of America, USD 1 in every USD 3 grocery dollars is spent at Walmart (Hauter, 2014), the country's largest food retailer. According to its 2019 annual report (Walmart Inc., 2019), Walmart increased its revenue by 6.6 percent, from USD 482 billion in 2015 to USD 514 billion in 2019. It did so in part through store expansion, increasing its retail units by 5.6 percent between 2015 and 2019, including adding 4.8 percent more supercentres (to total 3 570 such stores), 27 percent more neighbourhood markets (now 813 stores) and 18 percent more discount stores (now 386 stores). While the net result has been expansion, stores have closed as well. From 2015 to 2019, Walmart closed a total of 223 stores in the United States of America, creating at least 3 new food deserts and another 31 neighbourhoods in 15 states that no longer sell fresh produce and meat (CBS News, 2016).

Walmart entering a region can result in social concerns, including weakened union bargaining power, reduced wages and benefits, and decreased employment levels (Neumark et al., 2008; Davis et al., 2009). Large supercentres also evoke considerable worry about the viability of local retail. For example, a report by Manhattan Borough President Scott Stringer showed that (a new) Walmart on 125th street in Harlem, New York would result in 25 percent of the nearby supermarkets and bodegas going out of business within a year (CBS New York, 2011). Such concerns magnify the potential impact of superstore closings on communities.

At the same time, the nations' largest grocer has been a significant partner in several evidence-based health promotion and nutrition interventions. For example, in 2011, Walmart helped to lead a national effort to work with manufacturers to reformulate products to reduce sodium, added sugar and trans fats in frequently purchased and consumed foods without adding considerable cost for consumers (Stolberg, 2011).

The dollar-store market, although a very different model from the supercentre, has also grown considerably in food-desert communities, prompting concerns. As of 2018, dollar-

store chains (including Dollar Tree, Dollar General and Family Dollar, which was acquired by Dollar Tree in 2015) grew from roughly 18 000 locations in 2009 to more than 27 000, with plans to continue expanding to more than 50 000 (Donahue, 2018). Like Walmart, dollar stores often serve food deserts, are rapidly expanding in rural and low-income communities, and have raised concerns in relation to their proclivity to decrease the profits of local grocers in the surrounding area, causing such stores to close (Donahue, 2018).

Community advocates have noted worrying ripple effects on communities, as dollar-store chains employ fewer people on average than local grocery stores, rely more heavily on publicly subsidized health care for their employees and offer a limited selection of healthy foods (Donahue, 2018). Dollar stores typically do not carry fresh produce and their selection of food is mostly processed (Donahue, 2018). Furthermore, dollar-store chains often appeal to low-income customers by offering low sticker prices, though their per-unit prices are actually higher than the competition (Hoium, 2012). Taken together, this suggests that dollar-store chains are contributing to growing economic and health disparities in rural and low-income communities across the United States of America.

Just when the physical landscape of the food desert is evolving in terms of the types of retailer sited in low-income and underserved areas, online food delivery is emerging and starting to realize its potential. While it remains unclear to what extent these types of solutions will effectively meet the needs of low-income residents, the recent merger between Amazon and Whole Foods has fuelled hope that online delivery will soon be able to reach customers whom to date have not had adequate access to healthy, affordable foods (Karsten and West, 2017).

At the federal level, in April 2019, the USDA’s Food and Nutrition Service, which administers the Supplemental Nutrition Assistance Program (SNAP), launched an online, two-year pilot programme in New York to test the use of SNAP benefits in online grocery shopping and delivery systems (USDA, 2019). Specifically, Amazon and ShopRite (a full-service retailer) will be providing the service to the New York City area, while Walmart will provide online services in upstate New York locations (USDA, 2019).

The novel approach responds to ongoing questions about how receptive low-income families are to online ordering, how feasible online ordering is for them (including access to technology and internet access for online orders) and the extent to which families will be able to pay for the delivery fee associated with the service using non-SNAP forms of payment. While promising, the extent to which food purchasing patterns will be altered in the New York pilot remains to be seen. It is unknown whether the programme will increase the sale of healthier foods among food-desert residents who are receiving food-assistance benefits and decrease sales of unhealthy items.

Farmers markets, defined as a location where two or more farmer-producers sell their own agricultural products (such as fruits, vegetables, meat, fish, poultry, dairy products and grains) directly to the general public at a fixed location (USDA Agricultural Marketing Service, 2019), have also seen considerable growth in low-income areas and are proving a

promising strategy for addressing food deserts. The number of US farms selling directly to consumers increased from 116 733 in 2002 to 144 530 in 2012 (Low et al., 2015).

Farmers markets, in parallel with the number of farms selling directly to consumers, have witnessed substantial growth over the past 10 years, with more than 8 767 such markets in operation nationally as of 2018, up 200 percent from 2006 (Low et al., 2015). Local farmers markets, in addition to providing locally grown food in low-income areas, have a positive job multiplier effect, with each full-time-equivalent job created at a farmers market supporting approximately half of another full-time-equivalent job in other sectors of the region's economy (Low et al., 2015).

Evidence from the past 10 years shows a steady increase in SNAP-benefit use at farmers markets. In 2015, more than USD 19.4 million SNAP redemptions were honoured by farmers markets, compared with only USD 2.7 million in 2008 (USDA Food and Nutrition Service, 2015). Despite increased farmers-market usage, however, lower-than-recommended fruit-and-vegetable consumption patterns persist among low-income residents (Moore et al., 2015), while rates of diet-related chronic disease remain high (National Center for Health Statistics, 2016). And while early data on the health and economic benefits of increased SNAP shopping at farmers markets suggest positive impacts on fruit and vegetable intake and body mass index, especially where additional financial incentives are available (Dimitri et al., 2015), these studies remain limited in geography and research design (for example, no comparison group) (Savoie-Roskos et al., 2016). Consequently, it is unclear whether the improved diet is a result of increased access alone, or whether it is mediated by the individual characteristics of the farmers-market shopper, who may be inherently more likely to purchase and consume healthier products.

HOW DO FOOD DESERTS IMPACT COMMUNITIES?

Food deserts and their consequences are far more complex than once thought (Richardson et al., 2017). Research has evolved to support a growing understanding of the causes of food deserts and their economic impacts in terms of lost wages, reductions in the local tax base and lost potential for food retail to serve as an anchor institution for other retail development. The economic impacts of a new grocery store or retention of an existing, but struggling grocery store, reflect our growing understanding of the multi-faceted importance of employment and community on health and well-being (Horster et al., 2016; Hardcastle et al., 2015; Buro et al., 2015).

Research has further re-defined adequate store access beyond store counts to include measures of store quality, community acceptability, healthy and unhealthy food-marketing practices, product quality and affordability (Adam and Jensen, 2016). In addition, new approaches to incentivizing healthy food have taken centre stage as a mechanism for helping low-income consumers (Broers et al., 2017). New research has also emerged, which estimates that 9 percent of nutritional inequalities are attributable to food deserts (Allcott et al., 2017). However, more recent conversations about the need to solve the food-desert problem emphasize the importance of both ensuring the fundamental human right to food and the economic value of community retail, and de-emphasize the role of food deserts as

an obesity-prevention or obesity-reduction strategy, where connections are likely more distal (Haspel, 2018).

Food insecurity is also closely tied to wellness, and to the availability of healthy food, disproportionately affecting those in low-income communities (FAO, IFAD, UNICEF, WFP and WHO, 2018). Food insecurity, or a lack of secure access to sufficient amounts of safe and nutritious food for an active healthy life, and normal growth and development, is a result of limited food availability due to inadequate physical access to food (in other words, food deserts), limited economic access to food (namely, poverty, or high food costs), inadequate utilization (for example, lack of kitchen or household facilities for food preparation, or challenges in meeting the costs of living in a way that adequately addresses food needs), or a lack of stability in one's environment or income, further disrupting physical, economic or utilization capacity.

Inadequate access to affordable, nutritious food, particularly when combined with stress, anxiety or depression, disordered eating patterns and/or inadequate pre-natal and child nutrition, results in an inadequate diet and contributes to excess and/or insufficient nutritional quality. Consumption of calories, protein, vitamins or minerals and intake of sugar, salt and/or fat are often impacted, in terms of either excess consumption or inadequate consumption, or both. In turn, child stunting and wasting, micronutrient deficiencies and overweight and obesity result (FAO, IFAD, UNICEF, WFP and WHO, 2018).

NEW UNDERSTANDINGS OF THE ECONOMIC POTENTIAL OF FOOD DESERTS

In spite of food deserts' negative attributes, there is increasing evidence that such areas offer significant economic potential. To date, food deserts have witnessed substantial grocery "leakage" due to unmet demand for food retail. For example, analysis in Newark, New Jersey showed that residents of low-income areas underserved by food retailers were travelling more than twice as far to full-service food-retail locations as residents of similar areas that were solidly middle income (PolicyMap, 2018). Newark's low-income residents still need to purchase food – corresponding to retail demand of USD 24 million – but as these low-income families are underserved by food retail, their available food supply is only valued at about USD 6 million, meaning that almost USD 18 million of total retail food demand is leaking outside these low-income areas (PolicyMap, 2018).

In addition to this untapped retail demand, food deserts offer potential to decrease unemployment rates among the formerly incarcerated. In the US, close to 700 000 persons are released from prison each year, many of whom are low income and in need of jobs (SHRM, 2019). Supermarkets are one of a limited number of employers that will hire and train formerly incarcerated individuals (Von Bergen, 2017). The US Congress and others have recognized the critical nature of such opportunities for families and recently passed the First Step Act (December 2018), which includes increased rehabilitation programming, among other things, to support former prisoners (115th US Congress, 2018).

PROVIDING FUNDING AND INCENTIVES FOR LOW-INCOME RESIDENTS TO PURCHASE HEALTHIER FOOD

Dating back to 1939, Congress began providing financial benefits to citizens needing assistance to purchase food to meet their nutritional needs in the form of a food-stamp programme (USDA, 2018a). While the original programme ended in 1943, Congress restarted the provision of food assistance in 1961 and this has remained uninterrupted (USDA, 2018a). Since 1973, food assistance has been authorized and funded by Congress as part of the Farm Bill (Farm Policy Facts, n.d.). This legislation is typically revised and reauthorized every five to six years and is administered by USDA (Snap to Health! 2018).

Relatively recent and noteworthy developments related to the provision of food assistance include the establishment of electronic benefits transfer (EBT) (USDA, 2018a). Also, to reduce the stigma of receiving benefits and in recognition of those benefits as a significant source of nutrition, the programme was renamed the Supplemental Nutrition Assistance Program (SNAP) in 2008 (USDA, 2018a). SNAP is the largest programme in the United States of America's hunger safety-net (USDA, n.d.), providing nutrition assistance benefits to approximately 42.1 million Americans as of September 2017 (Cronquist and Lauffer, 2019). Furthermore, the aforementioned online purchase programme for SNAP beneficiaries was launched in April 2019 (USDA, 2019).

To help address disparities in food access and nutrition among low-income residents, a series of efforts have been made to provide financial discounts, or "bonus" dollars, for the purchase of healthy foods, often in conjunction with SNAP. Efforts to understand incentive programmes largely began in 2008 when that year's Farm Bill provisions for the SNAP programme committed USD 20 million to projects intended to incentivize recipients to increase their purchase of fruits and vegetables and other healthful foods at the point of sale (Rosenbaum, 2008).

In 2011, a USD 4.4 million healthy-incentive pilot was the first attempt in this area of research to systematically study the impact of fruit and vegetable incentives on SNAP participants' purchase and consumption patterns (Bartlett et al., 2014). Results showed that by instituting a 30 percent incentive within a retail setting for purchases of targeted fruits and vegetables, among a randomly selected sample of 7 500 SNAP participants, mean total fruit and vegetable intake increased by 0.32 cups per day compared with the control group (Bartlett et al., 2014). Researchers reported an increase from 2.294 to 2.616 cups per day of all fruits and vegetables, including potatoes, legumes and 100 percent juice (Bartlett et al., 2014). More recently, the USDA Food Insecurity Nutrition Incentive grant programme was established by the 2014 Farm Bill (USDA, 2018b) and renewed in the 2018 Farm Bill, with more than USD 100 million to be dispensed over five years to support projects that utilize incentives (financial and non-financial) to increase the amount of fruit and vegetables purchased and consumed by SNAP participants.

CONCLUSIONS

Since the term's emergence in 1995, the nutrition field's understanding of how to address food deserts has evolved into a far more nuanced and complex web of considerations and, perhaps, we now have more questions than answers. Research to date shows that a new supermarket in a low-income neighbourhood is unlikely to have an effect on obesity reduction (Adam and Jensen, 2016; Dubowitz et al., 2015a; Pechey and Monsivais, 2015); however that new supermarket will probably have an impact on community health and well-being, including economic benefits (Adam and Jensen, 2016; Dubowitz et al., 2013; Dubowitz et al., 2015b; Aggarwal et al., 2014; Cannuscio et al., 2013). At the same time, online food retail is nascent and it remains unclear to what extent this new phenomenon will help food-desert residents to purchase healthy food, or perhaps perpetuate inequities by causing new store closings, reducing the number of bricks-and-mortar stores across the nation.

Choice is an important variable in the food-desert discussion and residential shopping is determined by an increasingly evolving retail landscape, driven by price, convenience, and cultural and practical considerations, which together add a significant nuance to the "if we build it, they will come" interpretation of the food-desert definition (Dubowitz et al., 2015b).

Our next generation of efforts to make healthy foods "accessible" to residents of food deserts requires an understanding of meaning and context, as well as of place and space. Both quantitative and qualitative research are needed to understand how food retail availability and store operations – including retail jobs, community and family perceptions of the relative value of healthy and less healthy foods, food cultures and traditions, food marketing efforts and food prices – collectively impact health.

References

115th US Congress. 2018. FIRST STEP Act. H.R. 5682. Introduced by Rep. Collins D. Received in the Senate 23 May 2018. (also available at https://www.congress.gov/bill/115th-congress/house-bill/5682/text?q=%7B%22search%22%3A%5B%22p%22%5D%7D).

Adam A & Jensen JD 2016. What is the effectiveness of obesity related interventions at retail grocery stores and supermarkets? – a systematic review. BMC Public Health, 16: 1247. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5192566/pdf/12889_2016_Article_3985.pdf). [PubMed: 28031046]

Aggarwal A, Monsivais P, Cook AJ & Drewnowski A 2014. Positive attitude toward healthy eating predicts higher diet quality at all cost levels of supermarkets. Journal of the Academy of Nutrition and Dietetics, 114(2): 266–272. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3947012/). [PubMed: 23916974]

Allcott HD, Diamond R, Handbury JP, Rahkovsky I & Schnell M 2017, revised 2018. Food Deserts and the Causes of Nutritional Inequality. NBER Working Paper Series 24094. Cambridge, MA, National Bureau of Economic Research.

Bartlett S, Klerman J, Olsho L, Logan C, Brocklin M, Beauregard M, Enver A, Wilde P, Owens C & Melhem M 2014. Evaluation of the Healthy Incentives Pilot (HIP): Final Report. Alexandria, VA, United States Department of Agriculture, Food and Nutrition Service. (also available at https://fns-prod.azureedge.net/sites/default/files/ops/HIP-Final.pdf).

Beaumont J, Lang T, Leather S & Mucklow C 1995. Report from the policy sub-group to the Nutrition Task Force Low Income Project Team of the Department of Health. Radlett, UK, Institute of Grocery Distribution.

Broers VJV, De Breucker C, Van den Broucke S & Luminet O 2017. A systematic review and meta-analysis of the effectiveness of nudging to increase fruit and vegetable choice. European Journal of Public Health, 27(5): 912–920. (also available at https://academic.oup.com/eurpub/article/27/5/912/3888821). [PubMed: 28655176]

Buro B, Gold A, Contreras D, Keim AL, Mobley AR, Oscarson R, Peters P, Procter S & Smathers C 2015. An Ecological Approach to Exploring Rural Food Access and Active Living for Families With Preschoolers. Journal of Nutrition Education and Behavior, 47(6): 548–554. [PubMed: 26566097]

Cannuscio CC, Tappe K, Hillier A, Buttenheim A, Karpyn A & Glanz K 2013. Urban food environments and residents' shopping behaviors. American Journal of Preventive Medicine, 45(5): 606–614. [PubMed: 24139774]

CBS News. 2016. Walmart shutdowns create new food deserts [online]. CBS News, updated 27 January 2016. Fairfield, AL. https://www.cbsnews.com/news/walmart-shutdowns-create-new-food-deserts/

CBS New York. 2011. Stringer: Walmart In NYC Would Be 'Potentially Devastating' To Local Economy [online]. CBS New York, 15 December 2011. https://newyork.cbslocal.com/2011/12/15/stringer-walmart-in-nyc-would-be-potentially-devastating-to-local-economy/

Cronquist K & Lauffer S 2019. Characteristics of Supplemental Nutrition Assistance Program Households: Fiscal Year 2017. Supplemental Nutrition Assistance Program Report No. SNAP-18-CHAR. Alexandria, VA, US Department of Agriculture Food and Nutrition Service. (also available at https://fns-prod.azureedge.net/sites/default/files/resource-files/Characteristics2017.pdf).

Davis J, Merriman D, Samayoa L, Flanagan B, Baiman R & Persky J 2009. The Impact of an Urban Wal-Mart Store on Area Businesses: An Evaluation of One Chicago Neighborhood's Experience. Chicago, IL, Center for Urban Research and Learning, Loyola University. (also available at https://www.motherjones.com/files/walmartreport2009122.pages_.pdf).

Dimitri C, Oberholtzer L, Zive M & Sandolo C 2015. Enhancing food security of low-income consumers: An investigation of financial incentives for use at farmers markets. Food Policy, 52: 64–70.

Donahue M 2018. Dollar Store Impacts: Fact Sheet. In: The Impact of Dollar Stores and How Communities Can Fight Back. Minneapolis, MN, Institute for Local Self-Reliance. (also available at https://ilsr.org/wp-content/uploads/2018/12/Dollar_Store_Fact_Sheet.pdf).

Dubowitz T, Ghosh-Dastidar MB, Steiner E, Escarce JJ & Collins RL 2013. Are our actions aligned with our evidence? The skinny on changing the landscape of obesity. Obesity (Silver Spring), 21(3): 419–420. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3630460/). [PubMed: 23592652]

Dubowitz T, Zenk SN, Ghosh-Dastidar B, Cohen DA, Beckman R, Hunter G, Steiner ED & Collins RL 2015a. Healthy food access for urban food desert residents: examination of the food

environment, food purchasing practices, diet and BMI. Public Health Nutrition, 18(12): 2220–2230. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4457716/) [PubMed: 25475559]

Dubowitz T, Ghosh-Dastidar M, Cohen DA, Beckman R, Steiner ED, Hunter GP, Flórez KR, Huang C, Vaughan CA, Sloan JC, Zenk SN, Cummins S & Collins RL 2015b. Diet and Perceptions Change With Supermarket Introduction in a Food Desert, but Not Because of Supermarket Use. Health Affairs (Millwood), 34(11): 1858–1868. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4977027/).

FAO, IFAD, UNICEF, WFP & WHO. 2018. The State of Food Security and Nutrition in the World 2018. Building climate resilience for food security and nutrition. Rome, FAO. (also available at http://www.fao.org/3/I9553EN/i9553en.pdf).

Farm Policy Facts. n.d. Farm Bill: A Short History and Summary [online]. Washington, DC. [Cited 7 March 2019]. (also available at https://www.farmpolicyfacts.org/farm-policy-history/).

Hardcastle SJ, Thogersen-Ntoumani C & Chatzisarantis NL 2015. Food Choice and Nutrition: A Social Psychological Perspective. Nutrients, 7(10): 8712–8715. [PubMed: 26665419]

Haspel T 2018. Food deserts don't cause obesity. But that doesn't mean they don't matter. The Washington Post, 23 August 2018. (also available at https://www.washingtonpost.com/lifestyle/food/food-deserts-dont-cause-obesity-but-that-doesnt-mean-they-dont-matter/2018/08/22/df31afc0-a61b-11e8-a656-943eefab5daf_story.html?noredirect=on&utm_term=.2b645ab1ac55).

Hauter W 2014. Walmart Squeezes Organics. The Progressive, 78(6): 18–21. (also available at https://progressive.org/magazine/walmart-squeezes-organics/).

Hilmers A, Hilmers D & Dave J 2012. Neighborhood Disparities in Access to Healthy Foods and Their Effects on Environmental Justice. American Journal of Public Health, 102(9): 1644–1654. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3482049/). [PubMed: 22813465]

Hoium T 2012. Discount Distortion: How Dollar Stores Actually Charge You More. Motley Fool Newsletter Services [online], 25 June 2012. https://www.aol.com/2012/06/25/discount-distortion-how-dollar-stores-actually-charge-you-more/

Hoerster KD, Wilson S, Nelson KM, Reiber GE & Masheb RM 2016. Diet quality is associated with mental health, social support, and neighborhood factors among Veterans. Eating Behaviors, 23: 168–173. [PubMed: 27816854]

Karpyn A, Manon M, Treuhaft S, Giang T, Harries C & McCoubrey K 2010. Policy Solutions to the 'Grocery Gap'. Health Affairs, 29(3): 473–480. (also available at https://www.healthaffairs.org/doi/full/10.1377/hlthaff.2009.0740?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub%3Dpubmed). [PubMed: 20194989]

Karsten J & West D 2017. How the Amazon-Whole Foods merger shrinks food deserts [online, 29 August 2017]. Washington, DC, The Brookings Institution. [Cited 16 May 2019]. https://www.brookings.edu/blog/techtank/2017/08/29/how-the-amazon-whole-foods-merger-shrinks-food-deserts/.

Low SA, Adalja A, Beaulieu E, Key N, Martinez S, Melton A, Perez A, Ralston K, Stewart H, Suttles S, Vogel S & Jablonski BBR 2015. Trends in U.S. Local and Regional Food Systems: A Report to Congress. Washington, DC, United States Department of Agriculture Economic Research Service. (also available at https://naldc.nal.usda.gov/download/60312/PDF).

Moore LV & Thompson FE 2015. Adults meeting fruit and vegetable intake recommendations - United States, 2013. In Morbidity and Mortality Weekly Report, 64(26): 709–713. Atlanta, GA, Centres for Disease Control and Prevention. (also available at https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6426a1.htm). [PubMed: 26158351]

National Center for Health Statistics (US). 2016. Health, United States 2015: With Special Feature on Racial and Ethnic Health Disparities. Hyattsville, MD. (also available at https://www.ncbi.nlm.nih.gov/books/NBK367640/).

Neff RA, Palmer AM, McKenzie SE & Lawrence RS 2009. Food Systems and Public Health Disparities. Journal of Hunger & Environmental Nutrition, 4(3–4): 282–314. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3489131/). [PubMed: 23173027]

Neumark D, Zhang J & Ciccarella S 2008. The effects of Wal-Mart on local labor markets. Journal of Urban Economics, 63(2): 405 – 430. (also available at https://www.nber.org/papers/w11782.pdf).

Pechey R & Monsivais P 2015. Supermarket Choice, Shopping Behavior, Socioeconomic Status, and Food Purchases. American Journal of Preventative Medicine, 49(6): 868–877. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4651322/).

PolicyLink, The Food Trust & The Reinvestment Fund. 2015. The Healthy Food Financing Initiative (HFFI): An Innovative Public-Private Partnership Sparking Economic Development and Improving Health. 2015. Washington, DC and Philadelphia, PA (also available at https://www.frbsf.org/community-development/files/healthy_food_financing_initiative.pdf).

PolicyMap. 2018. How Opportunity Zones Can Expand Access to Fresh Food in America's Food Deserts [online]. Philadelphia, PA, and Los Angeles, CA. [Cited 25 April 2019}. https://www.policymap.com/2018/09/how-opportunity-zones-can-expand-access-to-fresh-food-in-americas-food-deserts/

Rhone A, Ver Ploeg M, Dicken C, Williams R & Breneman V 2017. Low-Income and Low-Supermarket-Access Census Tracts, 2010–2015. Economic Information Bulletin No. 165. Washington, DC, United States Department of Agriculture Economic Research Service. (also available at https://www.ers.usda.gov/webdocs/publications/82101/eib-165.pdf?v=42752).

Richardson AS, Ghosh-Dastidar M, Beckman R, Flórez KR, DeSantis A, Collins RL & Dubowitz T 2017. Can the introduction of a full-service supermarket in a food desert improve residents' economic status and health? Annals of Epidemiology, 27(12): 771–776. (also available at https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5989716/). [PubMed: 29198367]

Rosenbaum D 2008 (revised). Food Stamp Provisions of the Final 2008 Farm Bill. Washington, DC, Center on Budget and Policy Priorities. (also available at https://www.cbpp.org/sites/default/files/atoms/files/5-23-08fa.pdf)

Savoie-Roskos M, Durward C, Jeweks M & LeBlanc H 2016. Reducing food insecurity and improving fruit and vegetable intake among farmers' market incentive program participants. Journal of Nutrition Education and Behavior, 48(1):70–76. [PubMed: 26598911]

Shaw HJ 2006. Food deserts: towards the development of a classification. Geografiska Annaler: Series B, Human Geography, 88(2): 231–247.

SNAP to Health! 2018. U.S. Farm Bill: Frequently Asked Questions [online]. Washington, DC. [Cited 7 March 2019]. https://www.snaptohealth.org/farm-bill-usda/u-s-farm-bill-faq/

Society for Human Resource Management (SHRM). 2019. Getting Talent Back to Work Toolkit: The Resources you need to Advance the Hiring of Workers with a Criminal Background. Alexandria, VA. (also available at https://www.gettingtalentbacktowork.org/wp-content/uploads/2019/01/GettingTalentBackToWork_Toolkit.pdf).

Stolberg SG 2011. Wal-Mart Shifts Strategy to Promote Healthy Foods. New York Times, 20 January 2011. (also available at https://www.nytimes.com/2011/01/20/business/20walmart.html).

The Reinvestment Fund. 2018. Assessing Place-Based Access to Healthy Food: The Limited Supermarket Access (LSA) Analysis [online]. Philadelphia, PA. [Cited 28 May 2019] https://www.reinvestment.com/wp-content/uploads/2018/08/LSA_2018_Report_web.pdf.

United States Department of Agriculture (USDA). n.d. Supplemental Nutrition Program (SNAP) [online]. Washington, DC. [Cited 7 March 2019]. https://www.fns.usda.gov/snap/supplemental-nutrition-assistance-program-snap

USDA. 2018a. A Short History of SNAP [online]. Washington, DC. [Cited 7 March 2019]. https://www.fns.usda.gov/snap/short-history-snap#1939

USDA. 2018b. Gus Schumacher Nutrition Incentive Program (formerly FINI) [online]. Washington, DC, National Institute of Food and Agriculture. [Cited 7 March 2019]. https://nifa.usda.gov/program/food-insecurity-nutrition-incentive-fini-grant-program.

USDA. 2019. FNS Launches the Online Purchasing Pilot. Press release, 18 April 2019. Washington, DC. (also available at https://www.fns.usda.gov/snap/online-purchasing-pilot).

USDA Agricultural Marketing Service. 2019. Local Food Directories: National Farmers Market Directory [online]. Washington, DC. [Cited 29 May 2019]. https://www.ams.usda.gov/local-food-directories/farmersmarkets

USDA Food and Nutrition Service. 2015. SNAP benefit redemptions through farmers and farmers markets show sharp increase. Press release, 25 June 2015. Alexandria, VA. (also available at https://www.fns.usda.gov/pressrelease/2015/fns-0007-15).

Von Bergen JM 2017. What Philly area CEOs think about hiring ex inmates. The Inquirer Daily News, 27 October 2017. (also available at https://www.philly.com/philly/business/reentry-ex-offenders-jobs-philly-records-ceo-graterford-genomind-browns-20171027.html).

Walmart Inc. 2011. Walmart to Open up to 300 Stores Serving USDA Food Deserts by 2016; More than 40,000 Associates Will Work in These Stores. Press release, 20 July 2011. Washington, DC. (also available at https://corporate.walmart.com/_news_/news-archive/2011/07/20/walmart-to-open-up-to-300-stores-serving-usda-food-deserts-by-2016-more-than-40000-associates-will-work-in-these-stores).

Walmart Inc. 2019. Defining the Future of Retail: 2019 Annual Report. (also available at https://stock.walmart.com/investors/financial-information/annual-reports-and-proxies/default.aspx).