

Changing Perspectives on Food Deserts

Challenging the Current Policy Framework and Proposing a Way Forward to Address America’s Obesity Epidemic

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ABSTRACT

We review the body of research on food deserts: how they form, what policies have been proposed to combat them, and how effective those policies have been. All major policy responses to food deserts have maintained an approach focused on the supply side as the root of the problem, most often subsidizing the establishment of new grocery stores. We seek to highlight the main emerging trend in the literature, which increasingly questions both the theory and success of the supply-side approach, and explores how considering the demand side and implementing locally specific policies can more holistically address nutritional inequalities.

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I. Introduction

The United States faces its most significant obesity crisis to date. According to the Center for Disease Control and Prevention (CDC), almost 40% of American adults and 20% of adolescents are obese – figures 60% higher than in the 1990s.¹ One of the main reasons provided by health experts for this is the accessibility and consumption of highly processed food. Further, the prevalence of such levels of access and consumption is often attributed to the fact that many jurisdictions lack stores that offer anything aside from packaged and processed food. Over time, and with growing concern from practitioners, these regions have come to be known as “food deserts.”

Formally, CDC defines food deserts as areas, particularly of lower-incomes, with limited access to affordable nutritious foods, vegetables, whole grains, low-fat milk, and other foods that make up the full range of a healthy diet.² Similarly, the U.S. Department of Agriculture (USDA) defines food deserts as parts of the country void of fresh fruit, vegetables, and other healthful whole foods, which are usually found in impoverished areas.³ Lastly, the 2008 Farm Bill defines a food desert as “an area in the United States with limited access to affordable and nutritious food, particularly such an area composed of predominantly lower-income neighborhoods and communities.”

Food deserts need to be clearly conceptualized and addressed to solve America’s nutritional public health crisis. A little more than 2% of US households do not have access to a personal mode of transport for food shopping and do not have a supermarket within a mile of their residence. Additionally, more than 20 million people live more than a mile away from a supermarket and in low-income areas. Considering racial disparities, 8% of African Americans live in a census tract with a supermarket compared to 31% of whites.⁴ More so, lack of access to healthy food is not only linked to higher rates of diet-related disease and death, but also impacts educational outcomes and crime.⁵

Although there is no single definition of food deserts, most existing definitions only consider a region’s lack of supply of food and its citizens’ distance to it. Recently, however, local governments have come to understand the stringency of this definition and have undertaken different ones that allow for a better understanding of what “food deserts” exactly are. In a recent initiative, for example, the city of Baltimore partnered with the Johns Hopkins Center for a Livable Future to define and map food deserts. Their definition is more robust than that used at the federal level, and considers four, rather than two, factors: (1) distance to supermarkets (more than one-quarter mile), (2) poverty (median household income at or below 185% of the federal poverty level), (3) vehicle availability (over forty percent of households without vehicles), and (4) the quality and availability of healthy food in all food stores.⁶

In this paper we review the existing literature on food deserts, how these arise, and different policies that have been proposed to ameliorate them. We aim to highlight the recent trend in the literature, which increasingly challenges the previously prevalent supply-side perspective of food desert

¹ National Center for Health Statistics (2017)

² CDC (2017)

³ USDA (2015)

⁴ Treuhaft and Karpyn (2010)

⁵ See Joyti *et al.* (2005) and Freeman (2015)

⁶ Buczynski, Freishtat, and Buzogany (2015)

formation and alleviation. Further, we build the case for a holistic understanding of low access areas and present policies informed by this discussion. More specifically, Section II focuses on why food deserts exist and the supply-side dynamics to which their rise are traditionally attributed. Section III presents recent evidence demonstrating the need for thinking about food deserts from the consumer's (demand-side) perspective, while Section IV argues for synthesizing both perspectives into innovative policies. Finally, Section V summarizes and concludes our discussion.

II. Supply-Side Dynamics and the Formation of Food Deserts

Most researchers and practitioners have maintained a top-down approach to food deserts, arguing they have come into existence because of the supply-side dynamics within the food industry. For them, the decade-old industry trend of increasing consolidation has changed the structure of supply chains and has shifted market power dynamics, leading to detrimental localized levels of fresh food availability.

2.1. Increasing Agglomeration in the Food Industry

Many argue that the economics of globalization and technological innovations have led to the formation of food deserts. The food industry has transitioned from a more localized 'mom and pop' store approach to a consolidated one geared towards large supermarkets.⁷ Moreover, technological innovations have promoted the establishment of large self-distribution centers⁸ which, in turn, have changed the market such that only innovative, transnational, and large corporations survive.⁹ Nutritionally, this might be significant because, since stores are no longer local, food is sourced from outside the point of sale, compromising the level of freshness in food availability.

Coupled with the dynamics of agglomeration, whereby firm operating costs decrease if they are located near other stores,¹⁰ all of these have resulted in an increased amount of market power in the hands of large companies. In fact, in 2011, the largest 20 retail food companies made 64% of all sales,¹¹ with the rate of monopolization only increasing since then. The direct implication of this is that, as in any market where supply maintains market power, decisions of food store location are made with heavy considerations on fixed costs.¹² For instance, to cut costs, many firms might move or establish stores in a specific suburb where real estate prices might be lower and yet customers who own personal means of transport can still reach them.

2.2. Supply-Side Policy Responses to Food Desert Formation and Persistence

The policy response of both national and state governments to mitigate food deserts has been focused around ameliorating the above mentioned 'supply-side' factors, usually by subsidies to incentivize corporations to set up grocery stores in food deserts. In this section, we discuss federal policies, focusing on the Healthy Foods Financing Initiative (HFFI) and other similar state financing initiatives.

⁷ Jackson (2006)

⁸ Institute of Medicine and National Research Council (2015)

⁹ Wrigley, Coe, and Currah (2005)

¹⁰ Krugman (1991)

¹¹ USDA (2011)

¹² Bitler and Haider (2011)

Spotlight on the Healthy Foods Financing Initiative (HFFI)

In 2010, the White House announced the Healthy Food Financing Initiative. Jointly administered by the departments of Health and Human Services (HHS), Agriculture (USDA), and Treasury, the initiative involved competitive grants, loans, and tax breaks to community development corporations (CDCs)¹³ engaged in financing retail grocery stores in food deserts. In total, it awarded around \$195 million in 35 states, with an estimate of \$1 billion in leveraged private investment and tax credits.¹⁴ Under the 2014 Farm bill the initiative was formally placed under the USDA, with each associated department providing different mechanisms to support the development of local food systems to accommodate for different local needs and strategies.

HHS also administers the Community Economic Development (CED) program. Although not exclusively dedicated to food access, its grants are awarded to community development corporations to help finance grocery stores, farmers markets, or other food retail establishments. Between 2011 and 2016, the total amount of funding awarded under the CED-HFFI program was about \$51.8 million.¹⁵

Through the Healthy Food Financing Initiative Financing Assistance awards (HFFI-FA), the Treasury Department incentivizes the development of local food systems by offering loans, grants, and equity investments to community development financial institutions (CDFI), which then lend to businesses or CDCs. Although similar to CDCs, CDFIs have as their main purpose financing community development projects rather than managing or planning them and may or may not be for profit. Up to date, \$142 million have been awarded through the competitive program, with \$22 million awarded in 2017.¹⁶ Keeping in mind that these awards are contingent on at least a one-to-one match by awardees,¹⁷ and fund sources are diverse; with 36% coming from banks, 9% from corporations, 19% from governments, 10% from philanthropic organizations, and 5% from individuals.

Additionally, the Treasury department administers the New Markets Tax Credit (NMTC) Program. The tax credit is equal to 39% of an investor's qualified equity investment into CDCs or CDFIs. In keeping with the supply-side focus, proponents argue it comprises a key and flexible policy to generate needed commercial services in a community,¹⁸ especially when oriented towards large retailers.¹⁹

Since the start of the Healthy Foods Financing Initiative the Department of Agriculture has focused on “creating business opportunities for America’s farmers, and promoting economic development in rural areas.”²⁰ Consequently, it has focused on supporting healthy food retail outlets such as farmers’

¹³ Usually oriented towards a specific community, CDCs are private, non-profit organizations founded with the purpose of planning, developing, or managing community development programs or activities. Given some of the costs that this type organizational structure carries, such as higher transaction costs or forgone returns by shareholders from traditional investments, to operate CDCs attempt to capitalize on the social value that some community members place on a neighborhood asset staying open; see Serlen (2011).

¹⁴ The Food Trust (2017)

¹⁵ HHS (2017)

¹⁶ CDFI Fund (2017)

¹⁷ Department of Treasury (2017)

¹⁸ Usinger (2011)

¹⁹ EY (2013)

²⁰ Department of the Treasury (2010)

markets, mobile markets, community kitchens, food hubs, and grocery stores through a number of smaller programs like the Business and Industry Guaranteed Loan Program. As mentioned above, in 2014 the Healthy Foods Financing Initiative was formally established within the USDA, with \$125 million in future funds. Because obtaining these required appropriations, however, no money was allocated to it until 2017, when Congress appropriated \$1 million for the program to be delivered through the Rural Development Agency.

Key to the 2017 appropriation was the naming of The Reinvestment Fund as the National Fund Manager. Announced at the beginning of 2017, the National Fund Manager ensures access to private capital to supplement federal appropriations, establish new partners, provide financial and technical assistance and other duties.²¹ Ultimately it is to act as an intermediary between HFFI funds and local CDFIs and be able to reach sources of funds other CDFIs may not be able to.²²

In terms of new legislation, the Healthy Food Financing Initiative Reauthorization Act of 2018, designed to amend and reauthorize HFFI, was introduced in mid-February and has been in Subcommittee on Nutrition since March.²³ A more likely route to HFFI reauthorization is through the 2018 Farm Bill, which has passed the House and the Senate and at the time of this paper's publication is in conference.

State and Local Financing Policy Responses

State-based financing policies have been sprawling in recent years mirroring the Pennsylvania Fresh Food Financing Initiative (PFFFI). Initiated in 2004, PFFFI was the groundbreaker in food-related financing to fight food deserts, with \$30 million in funding allocated to 88 projects.²⁴ Among other innovations, PFFFI was the first program to complementarily use loan funds, grants, and tax credits. Many states, including New York and Illinois, followed suit, and the Healthy Food Financing Initiative was largely modeled after Pennsylvania's program.²⁵

Today, ten states have analogous directly state-funded financing programs, with the number rapidly growing. The last two years, for example, have seen the implementation of financing programs in states including Ohio, South Carolina, and Alabama. Many more states have introduced legislation or pilot programs or significant civic campaigns to increase financing opportunities beyond the national HFFI, including Nebraska, Virginia, North Carolina, and Michigan.

At the same time, some states have seen the creation statewide financing programs independent of their state's government. For example, the Michigan Good Food Fund (operated by a CDFI) leveraged \$3 million from HFFI to raise \$30 million by partnering with several philanthropic foundations. Similarly, the New Jersey Economic Development Authority collaborated with the Reinvestment Fund and, by partnering with other philanthropic organizations, raised \$10 million in investment to meet the financing needs of healthy food projects.

²¹ USDA (2016)

²² The Food Trust (2017)

²³ More developed is the bipartisan Healthy Food Access for all Americans Act, being discussed in the House and Senate. The bill, maintaining the supply-side perspective, incentivizes the construction of new grocery stores and food banks in food deserts by introducing a one-time 15% tax credit on property plan and construction costs. Furthermore, companies that make retrofits to an existing store's healthy food sections can receive a one-time 10% tax credit.

²⁴ Lang *et al.* (2013)

²⁵ Cummins, Flint, and Mathews (2014)

Individual cities have also implemented financing initiatives, the first being New Orleans after hurricane Katrina. Seeded with a disaster relief block grants, the city partnered with a philanthropic CDFI to increase healthy food access. Today, more than a dozen cities have a food policy office. For example, the Detroit Economic Growth Corporation, partnering with the Kresge foundation, the city, and other private institutions, launched the Green Grocers Project, providing funding and technical assistance and funding to new grocery stores.²⁶

2.3. Evaluating Financing Initiatives

From this overview of current and past policies it is clear that, although financing initiatives combatting food deserts are widespread, there has been no systematic evaluation of them. Such an evaluation would be difficult, given that local conditions and the kinds of stores differ widely.

Regardless, the main proponents of these financing policies argue that they have been widely successful; citing as evidence the large number of jobs created, the amount of private financing leveraged, or the number of people that have gained food access. These figures are certainly impressive, but proponents rarely directly evaluate whether communities' eating habits or health outcomes have improved.

In evaluating the New Jersey program mentioned above, for example, The Food Trust cited survey results showing that 70% of respondents agreed that the store encouraged them to buy healthier foods – or that, of the 37% that tried new fruits and vegetables because of a new store, 70% reported buying more fruits and vegetables – as evidence that the program had delivered positive benefits to the communities in question.²⁷ The short and medium-term benefit they emphasize of the programs should be commended, but when the policies are evaluated on a case-by-case basis in terms of health outcomes, as discussed below in depth, they do not fare as well.

In our view, this underperformance can be attributed to the exclusive focus on food supply. The Food Trust, citing a McKinsey Global Institute study, writes that “systemic, sustained portfolio of initiatives, delivered at scale, is needed. [...] Additional interventions are needed that rely less on conscious choices by individuals and more on changes to the environment.”²⁸

III. Moving Towards a Demand-Side Perspective

Although food access policy today remains focused on the supply side, researchers have begun to examine and acknowledge the demand-side dynamics at play in the formation and perpetuation of food deserts. In this section, we trace the recent trend in the academic literature which, again, has started to realize that supply-side views (and their corresponding efforts) are not comprehensive; rendering them widely ineffective. By doing so, we present the demand-side factors that are being argued as critical in determining food access.

The immediate academic problem with the top-down supply-side view which has been long-understood is that it can prove ineffective at identifying smaller populations within a community that may lack appropriate food access. For example, one can think of a community with normal

²⁶ PolicyLink, The Food Trust, Reinvestment Fund (2017)

²⁷ The Food Trust (2017)

²⁸ Dobbs *et al.* (2014)

levels of income and a non-negligible number of full-service grocery stores in which most people have non-problematic food access. However, it could be the case that, because of a combination of age and/or poor social capital, a fraction of the population might not share this level of access.²⁹ If one were to maintain a purely geographic approach, one would not identify it as a food desert, and those sub-population's eating habits would not be addressed.

But beyond the problems of the academic practitioner, it is becoming clearer and clearer that the top-down approach has proved ineffective at improving eating habits where it has been implemented. To start, there is little evidence that HFFI projects result in any significant improvement in eating habits.³⁰ Improved access to supermarkets does not seem to improve obesity,³¹ especially when the opening of a new supermarket barely leads to an improvement in healthy food availability³² and supermarkets constitute the main source of unhealthy foods for food desert residents.³³

Most recently, one paper found “only small effects of supply-side factors on consumer purchases.” 91% of nutritional inequalities between high- and low-income households were found to be driven by differences in demand, and only 9% by differences in supply. In other words, closing the supply gap by offering low-income households the same availability and prices experienced by high-income households would only reduce nutritional inequality by 9%.³⁴ What specifically are these demand-side factors, then?

Researchers highlight factors like taste preferences, free time, age, perceived safety, or the amount of social cohesion.³⁵ At the same time, McDermot (2016) argues poor eating habits may be responsible for the existence of food deserts and not simply the distance to the nearest fresh food store. For example, a recent paper surveying a low-access area found that 70% of residents thought it was easy to purchase healthy foods, all the while only 37% actually eat recommended levels of nutritious food.³⁶

In fact, studies that have focused on distance have shown that people do not shop at the store closest to them, not even the nearest full-service grocery store, and that people's shopping behavior is not limited to a single establishment.³⁷ Another demand-side factor for the existence of food deserts can be a lack of physical ability to purchase food, hence widening the conception of access from a spatial one. More specifically, ability might include the incapacity to carry bags full of groceries. Keeping these in mind, the key point is that food access needs to be understood in a much broader way than distance to a supermarket, as the supply-side view maintains.

²⁹ Shaw (2006)

³⁰ Gortmaker (2011)

³¹ Shier *et al.* (2012)

³² Ghosh-Dastidar *et al.* (2017)

³³ Vaughan *et al.* (2016)

³⁴ Allcott, Diamond, and Dubé (2018)

³⁵ See Adams, Ulrich, and Coleman (2010), Williams, Ball, and Crawford (2010), and O'Connor, Farag, and Baines (2016) for research on the listed demand-side factors.

³⁶ Calise *et al.* (2018)

³⁷ See Dubowitz *et al.* (2015) and LeDoux and Vojnovic (2013)

Lack of knowledge of the importance of healthy food can also be a key factor giving rise to food deserts.³⁸ Food access may improve, but this will not directly bring improvements in diet.³⁹ Kato and McKinney (2015) have further qualified these knowledge dynamics into human capital, cultural capital, and social capital. The first of these three includes informational access: the awareness of the importance of a healthy diet and exercise and the awareness of healthy food options in one's community. The second of these concerns people's attitudes to reject certain foods based on preferences, which might be based on habit or on ethnicity. Lastly, social capital is the lack of information that is caused by a lack of social connections that would otherwise optimize information flows about things like food-related community events or the importance of a healthy diet.

All in all, any policy that seriously improve the nutritional levels of a low-access community should try to identify the specific causes at play and seek to tackle it directly. As shown above, such an approach will necessarily require an understanding by practitioners that the root of the problem may not necessarily be in the supply-side dynamics of the retail market. For example, if citizens are not eating well because of an inability to dedicate time to cooking meals because many of them are working multiple jobs or have limited cooking skills a policy designed to promote the arrival of new supermarkets will be misguided and ineffective.⁴⁰

IV. Towards an Integrated Approach to Addressing Food Deserts

As outlined in the above sections, food deserts arise because of many distinct factors, so policies seeking to eradicate them must be multi-pronged and locally-specific. In this section, we outline some innovative policies and initiatives that try to combat food deserts more holistically than the straightforward supply-side financing tactics popular in the past. Although the recency of these efforts means that they remain mostly unevaluated, a policy focus on the demand side both responds to evidence that demand differences drive almost all of the nutrition gap, and encourages a wider view of what constitutes access and lack of access.

4.1. Rethinking Financing Initiatives

To solve the issue of access to fresh food, policies have focused on increasing the number of stores available. However, we have seen how this one-pronged approach assumes the maxims that Guthman (2011) has pointed out: “if you build it they will come” and “if you build it they will eat better.” At the same time, demand-side considerations have to be multifaceted, being attentive to factors from economic constraints to social relations; where policies will continue to be ineffective otherwise. For example, Sage and McCracken (2017) argue that farmers' markets, although commonly perceived as localizing the food system, can often perpetuate inequalities because of their high prices and limited temporal availability.

Policy makers should learn from small scale community-led interventions that can be replicated at a larger scale while remaining community focused. For instance, the Quad Cities Food Hub (QCFH) is using HFFI financing to initiate the Healthy Food & Farms Project, which will consist of several initiatives to increase healthy food access and distribution in eight counties in Illinois and Iowa.

³⁸ Rodier, Durif and Ertz (2017)

³⁹ See Cummins, Flint, and Mathews (2014) and Boone-Heinonen *et al.* (2011)

⁴⁰ Ambrose (2012)

QCFH will extend its year-round retail store with expanded hours, initiate virtual food box ordering to improve access, create a second Healthy Food Mobile Market to expand access to food in food deserts, and build two licensed shared-use kitchens as spaces for local food entrepreneurs. This project will also support local farmers by creating a better food distribution infrastructure and providing assistance to increase their yield capacity.

In another example, The Cooperative Fund of New England (CFNE) is a forty-year old CDFI that is using HFFI financing to increase healthy food access in New England and eastern New York State through the Healthy Food/Cooperative Communities Initiative, which combines financing, development services, technical assistance, and data collection and measurement to increase low-income consumers' utilization and membership in food cooperatives. To supplement its HFFI financing, CFNE launched its Food Cooperatives and Healthy Food Access program (FCHFA) to help food co-ops better serve low-income communities. CFNE partnered with Neighboring Food Co-op Association (NFCA), a regional food co-op association, to document food co-op programs in this area, promote their efforts, and support them in innovating and expanding healthy food access for local food insecure households. Since 2011, CFNE has financed \$3.6 million in loans to nine HFFI-eligible food co-op projects, for their development and expansion around low-access communities throughout New England, including the Good Tern Food Co-op in Rockland, ME.

4.2. Food Councils and Community-Focused Food Programming

Food councils can also be helpful in advocating for community-focused programming. According to Broad (2017), programs that are not designed keeping in mind community needs lack an incisive focus on racial and economic inequality and on customization. Broad (2016) discusses the importance of comprehensive local projects that can perform due diligence of local needs to respond better to them. Local or regional food policy councils, then, can help facilitate initiatives with a local or state government. (Seymour 2017). For example – and keeping in mind some studies have found car ownership to be the best predictor of healthy food access (Jiao 2012) – in response to a lack of transportation in Austin, the Austin Food Policy Council worked with Austin Capital Metro Transit to implement a grocery bus line to transport individuals living in food desert neighborhoods to two supermarkets.⁴¹

Food councils can take on many forms, varying in their extent of official interaction and recognition by the local government. Whereas some can take a more independent-advisory role, others can become part of government departments. Food councils can also serve as networks that aid in building community capacity in working on food and food policy issues. For instance, Michigan State University supports a local food council network which provides a space for councils to network with one another.

4.3. Urban Farming

How nimbly cities can adapt any given piece of land to market and societal changes.⁴² In some states, 'urban farming' is gaining popularity as a way to localize fresh food availability. Even agricultural space as small as a ten by ten-meter plot can yield the majority of a household's total annual vegetable needs.⁴³ For example, Chicago has increased healthy food access by amending zoning codes to support urban agriculture. Chicago's amended zoning regulations allow community

⁴¹ Harper *et al.* (2009)

⁴² World Bank (2008)

⁴³ Grewal and Grewal (2012)

gardens, urban farms, and onsite produce sales, encouraging local food production. The Chicago Department of Housing and Economic Development requires green roofs for all projects that receive public funding that are built as a Lakefront Protection Ordinance Development or are built in a Planned Development.

As another example, Cleveland encouraged urban farming by creating an urban garden district. Other cities, such as Seattle, have gone a step further to mandate urban agriculture by requiring at least one community garden for every 2500 households. The Seattle Department of Neighborhoods and the nonprofit P-Patch Trust, secures vacant land for urban agriculture and allows community members to apply for one-year land leases that can be used for individual or community farming.

It is important to point out that, although appealing – especially given that they localize food systems and are cost effective – urban farms have had trouble achieving long term sustainability, usually because of an eventual drop in community engagement. In this line, policymakers considering them should make it a priority to deploy resources so as to deliver sustainable change.⁴⁴

4.4. The Supplemental Nutrition Assistance Program

In order to provide financial assistance for purchasing food and tackling economic constraints, USDA provides the Supplemental Nutrition Assistance Program (SNAP) to low-income families and individuals. While this program does not aim to solve the problem of food deserts specifically, it instead aims to combat food insecurity more broadly and therefore indirectly touches on the problem of food deserts.

SNAP operated pilot programs that aim to tackle the problems related to limited physical access to food. For instance, a home delivery pilot seeks to improve the grocery access of homebound elderly and disabled participants. More specifically, USDA locates food distribution nonprofits which accept SNAP funds from homebound individuals and purchase and deliver the food to the individuals' homes.⁴⁵ This pilot is promising because it reduces the burdensome transaction costs of purchasing healthy foods. Most importantly, it removes the difficulty of finding transportation to the store, navigating the store while holding groceries, finding transportation home while carrying groceries, and worrying about theft or food perishing during travel.

Additionally, the online purchasing pilot shows promise in the sense that it would eliminate these transaction costs. Available to anyone in the states participating in the pilot program, (Maryland, New Jersey, New York, Pennsylvania, Washington, Oregon, Iowa), USDA hopes that online access will improve food availability and that home delivery will help those with mobility limitations; with online retailers hoping to capture a share of the \$66 billion in SNAP dollars spent nationwide. The pilot's success depends on whether online shopping is more affordable and convenient than local "brick and mortar" grocers. The key question, however, is whether online access leads to more or less healthy purchases.

While the SNAP program is too nascent to be evaluated, the policy set up seems promising. Kato and McKinney (2015) devised and tested this policy by delivering boxes of fresh foods to the homes of community members. In their study they alternated weeks of delivering \$25 worth of produce to participants' homes and delivering a \$30 voucher for a local food market. This experiment included

⁴⁴ Koc and Dahlberg (1999)

⁴⁵ USDA (2017)

pre- and post-experiment interviews to assess the barriers to taking full advantage of the local food market. Although spatial considerations were not the most significant, both the food boxes and vouchers caused long-term dietary changes during the term of the experiment and in the same way increased the community members' healthy food purchasing habits.

4.5. SNAP-Leveraging and Other Programs

Local initiatives focused on healthy eating also seem to have worked well in addressing the food desert problems. The Baltimore City Health Department initiated a handful of programs to increase access to healthy foods. One is the Virtual Supermarket Project, where customers can order groceries online from a Shop Rite grocery store and pick them up at a designated delivery site, such as a local library. The program provides SNAP beneficiaries with ten bonus dollars to incentivize the purchase of healthy foods on the customer's first order and on every fourth subsequent order.⁴⁶

With a grant from the USDA, Massachusetts started the Healthy Incentives program, which matches consumer electronic benefit transfer (EBT) spending one-to-one at farmers markets, farm stands, and mobile markets. After one year, those receiving the incentive reported consuming one-fourth of a cup more per day of fruits and vegetables and significantly increased spending on healthy food.⁴⁷ A similar but philanthropic project in DC has been implemented. Although both of these remain untested in their effects on health outcomes, studies examining the effect of lower prices (or subsidies) for fruit and vegetables have found a generally positive effect on consumption, with some evidence of lower weight after the introduction of subsidies.⁴⁸

Community assembly forums, such as churches can also serve as indispensable advocacy tools to promote healthy food habits. Although the extremely effective role of churches was pointed out in the early literature on food deserts⁴⁹ they have been widely disregarded since then. In Gary, Indiana, a local church has been playing an extensive role in spreading the word about local government initiatives to promote healthy food such as the recent establishment of a culinary and arts incubator - Arthouse. It has also undertaken a community garden project where kale, tomatoes, green beans and a variety of herbs are grown so that fresh food can be made locally available and residents can be encouraged to undertake more of such initiatives.⁵⁰

4.5. Economic Development

Lastly, we consider the argument that food deserts are fundamentally a problem of economic development. From a free market perspective, for example, Porters (2002) argues that subsidies are ineffective, and that food deserts should look to their assets rather than liabilities, leverage their “competitive advantage,”⁵¹ and promote innovative ways for retailers to thrive in their communities. For him firms will succeed if they are flexible and sensitive to community concerns, which he argues they can do by partnering with community-based organizations, security, workforce development, or offering community needed services like basic financial ones.

⁴⁶ Barrington (2011)

⁴⁷ Healthy Incentives Program (2017)

⁴⁸ See Thow *et al.* (2010) and Powell *et al.* (2013)

⁴⁹ Glanz and Yaroch (2004)

⁵⁰ Giles (2016)

⁵¹ Hart (1995)

At the same time, Wolf-Powers (2017) provides a more left-of-center critique of exclusively food-oriented policy. She argues that a focus on food policy independent of other social welfare has led to a set of policies that are corporate focused, whether these may be subsidies or tax privileges, and instead argues for a focus on delivering comprehensive welfare policies.

Economic development, however, can also be achieved through innovative methods such as food incubators. In Birmingham, Alabama, an incubator in the downtown area is providing training and education to food entrepreneurs so that they can open their own local businesses in the future.⁵² Such organically developed businesses would inherently meet the needs of their communities and would also contribute to their local economic development. As another example, a culinary incubator in Gary, Indiana combines arts with culinary entrepreneurship to contribute to the city's economic and social revival. Researchers are starting to acknowledge the potential of the arts to promote economic development;⁵³ where the incubator provides access to a commercial kitchen to food entrepreneurs as well as training so that local food businesses can thrive in the city and contribute to the city's economic development.

V. Discussion

The problem of low food access areas is closely linked to America's nutritional public health crisis. The previous research on food deserts heavily focused on the supply-side aspects, and so policy makers responded by implementing programs (such as the Healthy Foods Financing Initiative) that only incentivized the development of new stores. While the supply factors are indeed key factors in the formation of food deserts and while the development of functioning food systems is crucial for their eradication, researchers and policy analysts must also consider demand-side factors – i.e. understanding food consumption and purchasing habits. This is especially true because of evidence presented in Section 3, where we trace the recent trend in the academic literature showing that improving the supply of supermarkets does not ameliorate the nutritional deficiencies.

The rise of food deserts, thus, is due to a complex mix of factors that precludes the identification of a general cause. Principal causes are most often locally specific, and the reason for the rise and perpetuation of a given food deserts might change over time. For instance, a region may start off being void of a supermarket/grocery store because of supply-side reasons because retailers and store managers may find it unprofitable to operate in a given location. Due to limited physical and economic access to stores in nearby towns, a substantial set of residents may then resort to 'convenience' food which over a period of time may start influencing their food habits.⁵⁴ Because of these, even after policy measures to build new stores in food deserts are implemented, people may not change their food habits unless policies are accompanied by measures to improve knowledge of healthy food habits through cooking demonstrations, community lunches or food workshops.

For this reason, we find a rhetorical step away from the term "food deserts" appropriate. The implied imagery is that of a barren area devoid of food, which we know is not the case as

⁵² Helmer (2016)

⁵³ Hecht (2014)

⁵⁴ One could argue this has been the case in the city of Chicago: a recent paper shows how, although the economic recession decreased the number of supermarkets available, the recovery did not reinstate the previous levels of healthy food retailers; see Kolak *et al.* (2018).

convenience stores, fast food restaurants, and often supermarkets, remain widely available.⁵⁵ Phrases such as “low-access areas” (with an accompanying shift in conceptions of “access”) could more accurately describe the problem.

The immediate need is to move beyond top-down solutions of increasing physical access to food, and towards more comprehensive financing of initiatives or the sponsoring of local and customized programs such as The Cooperative Fund of New England (CFNE) discussed in Section 4.1. Additionally, policy makers can also encourage and support local initiatives such as urban farming and food incubation. The best policy will be determined by the specific factors at play in a given jurisdiction, but such measures can contribute to a community-level shift in food habits. Emerging food entrepreneurs can also contribute in this sense, eventually also supporting the economic development of the region.

In sum, research on food access needs to seek to understand the specific factors at play in a community, hence enabling policy makers to determine which demand-conscious policy is best to implement. For this, and keeping in mind the difficulty of testing the efficacy of any of these policies, more resources need to be devoted to due-diligence, monitoring, and evaluation programs that aim at understanding food habit patterns and that are also able to keep track of progress on goals and targets through appropriate indicators.

⁵⁵ Some have ventured to call areas with readily available unhealthy food “food swamps”; see Broad (2016).

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