

Mirage of Understanding:  
Challenging the Dominant Perspective  
in Food Desert Discourse

by

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## Abstract

In recent years there has been increasing concern over the lack of fresh, affordable, healthy food in certain neighborhoods, especially poor ones. The worry is that the residents of these “food deserts,” as they are often called, have little choice but to eat whatever fast food and junk food happens to be nearby, which could potentially lead to chronic health problems such as obesity and diabetes. An entire discourse has emerged around this issue as journalists, academics, government officials, and activists write articles, compile reports, make maps, produce videos, pass laws, and launch initiatives. In this dissertation I argue that the discourse surrounding food deserts contains a dominant perspective, and that this perspective is promoting a view of food deserts that is simplistic and misleading. To facilitate my argument, I present a rubric of three “foundational ideas” that underlie the perspective. The first idea concerns the nature of food deserts; the second, the knowability of food deserts; and the third, the nature of a healthy diet. After closely examining each idea, I conclude that all three are flawed, and that this should call the viability of the dominant perspective into question.

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## Chapter 1

# Introduction

*“God has chosen to give the easy problems to the physicists.”*

*—Charles Lave and James March*

The world is getting fatter, and people are unhappy about it. According to the World Health Organization, obesity rates have tripled since 1975, with 39 percent of adults worldwide classified as overweight and 13 percent classified as obese in 2016.<sup>1</sup> From every corner of public life—from the declarations of government agencies to the social media accounts of celebrities—we hear that an epidemic of obesity is threatening to overwhelm our healthcare systems and cripple our economies. Headlines in the New York Times proclaim, “American Adults Just Keep Getting Fatter,”<sup>2</sup> and “Big Nation. Big People. It's Clearly a Big Deal.”<sup>3</sup> The Atlantic warns, “The obese are more likely to be depressed, to miss school or work, to feel suicidal, to earn less, and to find it difficult to marry.”<sup>4</sup> Health guru Dr. Oz writes, “[T]he damage [obesity] can cause cannot be overstated and should not be overlooked. . . .”<sup>5</sup> A prominent surgeon calls obesity “Public Enemy #1.”<sup>6</sup>

Experts say that our waistlines are expanding because we’re eating too much fat,<sup>7</sup> too much sugar,<sup>8</sup> too much processed food,<sup>9</sup> or simply too much, period.<sup>10</sup> We’re eating too few fruits and vegetables<sup>11</sup> and too little fiber.<sup>12</sup> We’re not drinking enough water.<sup>13</sup> We’re not exercising enough.<sup>14</sup> We’re not sleeping enough.<sup>15</sup> We’re spending too much time in front of screens.<sup>16</sup> We’re throwing off our circadian rhythms by getting too much blue light at night and too little blue light during the day.<sup>17</sup> We’re damaging our gut flora with excessive antibiotics.<sup>18</sup> We’ve been infected with Ad-36, an adenovirus that has been shown to cause obesity in lab animals and has a strong correlation with obesity in humans.<sup>19</sup> We’re being manipulated by the advertisements of multinational food corporations.<sup>20</sup> The list goes on. Collectively, these



hypotheses have spawned thousands of studies,\* and the research shows no signs of slowing down.

One hypothesis that has gained traction in recent years is the idea that obesity can be caused by living in a “food desert,” an impoverished neighborhood where healthy food is hard to come by, whether because it is far away, expensive, low-quality, or otherwise difficult to access. In such an environment, people are more likely to reach for unhealthy food—such as fast food or junk food—which can cause them to gain weight. It’s a simple, plausible story, and it has the added appeal of reducing some of the stigma that comes with being poor and overweight. It also suggests a straightforward solution: Find ways to make healthy food accessible, and the rest will work itself out. This has helped food deserts become a cause célèbre among journalists, academics, government officials, and activists, who have gone on to create an entire discourse on the subject by writing articles, compiling reports, making maps, producing videos, passing laws, and launching initiatives.

In this dissertation I will argue that food desert discourse contains a dominant perspective, and that this perspective is promoting a view of food deserts that is simplistic and misleading.

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Food deserts are a politically and morally charged issue, but the goal of this dissertation is neither political nor moral—at least not in any straightforward sense. The goal is epistemic: I want to correct certain misunderstandings. Naïve as it may sound, my motivation is the pursuit of truth, and as such, I’m more concerned with what people *think and say* about food deserts than with what people *do* about food deserts. This doesn’t mean that I don’t have opinions

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\* This is almost certainly an understatement. According to science journalist Gary Taubes, “Since [the 1970s], well over half a million articles have been published in the peer-reviewed medical literature on the subjects of obesity and/or diabetes. . . .” See: Taubes, *Case Against*.

about the politics or morality of food deserts, of course—and I will reveal some of those opinions in subsequent chapters—but it means that my primary focus is elsewhere. If I manage to convince readers that the dominant discourse about food deserts is unconvincing, then I will have succeeded, regardless of what readers subsequently decide to do with that information.

## Chapter 2

### The Rise of Food Desert Discourse

*“Right now it’s only a notion, but I think I can get money  
to make it into a concept, and later turn it into an idea.”*

*–Woody Allen*

#### 2.1. Food deserts enter the public conversation

The exact origin of the term “food desert” is uncertain, but it most likely originated as a slang term in the early 1990s in a public housing project in Scotland, where it was used to describe urban neighborhoods that had no sources of affordable, healthy food.<sup>21</sup> The United Kingdom’s Nutrition Task Force soon realized that the term aligned with their concern over the dietary habits and diet-related health outcomes of the urban poor, and therefore decided to use the term in a 1995 report.<sup>22</sup> This debut in an official government document initiated a process whereby the term slowly transformed from street slang to technical jargon. Within a few years, the term started cropping up in academic journals, and by the mid-2000s a wave of food desert research appeared on the horizon. This wave reached the shores of the intelligentsia in the late 2000s, and the more compelling research findings were quickly seized on by journalists, government officials, and activists. Between 2004 and 2012, the term went from sporadic appearances in obscure articles to prominent headlines in the *New York Times*,<sup>23</sup> *Wall Street Journal*,<sup>24</sup> *Washington Post*,<sup>25</sup> *Chicago Tribune*,<sup>26</sup> *Los Angeles Times*,<sup>27</sup> *USA Today*,<sup>28</sup> the *Atlantic*,<sup>29</sup> *Time*,<sup>30</sup> *New Republic*,<sup>31</sup> *National Review*,<sup>32</sup> *The Week*,<sup>33</sup> *Reason*,<sup>34</sup> *Mother Jones*,<sup>35</sup> *Commentary*,<sup>36</sup> *Slate*,<sup>37</sup> *Harvard Political Review*,<sup>38</sup> and more. In 2008 Congress passed the Food, Conservation, and Energy Act, which contained a section directing federal agencies to study food deserts.<sup>39</sup> A day-long conference on food deserts followed, sponsored by the Economic Research Service of the Department of Agriculture and featuring speakers from high-

profile institutions such as Johns Hopkins University and the American Heart Association.<sup>40</sup> In 2010 the Obama administration created the Healthy Food Financing Initiative, a program that leveraged financial assistance and expertise from the Department of Agriculture, the Department of Health and Human Services, and the Department of Treasury to facilitate greater access to healthy food.<sup>41</sup> That same year, the drug store chain Walgreens announced that it had started selling fresh produce and other healthy food at ten stores in Chicago food deserts.<sup>42</sup> First Lady Michelle Obama even made food deserts a cornerstone of her much publicized “Let’s Move!” campaign to end childhood obesity, proclaiming, “We can give people all of the information in the world about healthy eating . . . [but] if their only options for groceries are in the corner gas station or the local mini mart, then all of that is just talk. . . .”<sup>43</sup>

Another sign of the term’s influence is the number of spinoffs, imitators, and competitors it has inspired or inadvertently promoted. Among them: food oases,<sup>44</sup> food swamps,<sup>45</sup> food mirages,<sup>46</sup> food hinterlands,<sup>47</sup> food brownfields,<sup>48</sup> food savannahs,<sup>49</sup> food grasslands,<sup>50</sup> food apartheid,<sup>51</sup> food enclosures,<sup>52</sup> food prisons,<sup>53</sup> food deserts “for bugs and birds,”<sup>54</sup> micro food deserts,<sup>55</sup> urban deserts,<sup>56</sup> grocery deserts,<sup>57</sup> grocery store deserts,<sup>58</sup> supermarket deserts,<sup>59</sup> green deserts,<sup>60</sup> nutrition deserts,<sup>61</sup> culinary deserts,<sup>62</sup> flavor deserts,<sup>63</sup> grocery gaps,<sup>64</sup> gastronomic oases,<sup>65</sup> grazing environments,<sup>66</sup> and foodscapes.<sup>67</sup> Less metaphorical, more formal-sounding terms include: food environments,<sup>68</sup> local food environments,<sup>69</sup> community food environments,<sup>70</sup> residential food environments,<sup>71</sup> neighborhood food environments,<sup>72</sup> neighborhood-based food environments,<sup>73</sup> neighborhood-level retail food environments,<sup>74</sup> activity-based retail food environments,<sup>75</sup> food retail environments,<sup>76</sup> total food environments,<sup>77</sup> objective food environments,<sup>78</sup> perceived food environments,<sup>79</sup> consumer food environments,<sup>80</sup> objective nutrition environments,<sup>81</sup> perceived nutrition environments,<sup>82</sup> observed nutrition environments,<sup>83</sup> community nutrition environments,<sup>84</sup> consumer nutrition environments,<sup>85</sup> healthy nutrition environments,<sup>86</sup> dietary environments,<sup>87</sup> grocery environments,<sup>88</sup> eating environments,<sup>89</sup> fruit and vegetable environments,<sup>90</sup> obesogenic environments,<sup>91</sup>

obesoprotective environments,<sup>92</sup> food disadvantaged communities,<sup>93</sup> healthy food access gaps,<sup>94</sup> healthy food priority areas,<sup>95</sup> and health food priority areas.<sup>96</sup> This influence has even extended beyond the realms of health and nutrition, spawning terms such as shopping deserts,<sup>97</sup> book deserts,<sup>98</sup> pharmacy deserts,<sup>99</sup> child care deserts,<sup>100</sup> transit deserts,<sup>101</sup> education deserts,<sup>102</sup> higher education deserts,<sup>103</sup> online education deserts,<sup>104</sup> physical education deserts,<sup>105</sup> physical and online education deserts,<sup>106</sup> news deserts,<sup>107</sup> wage deserts,<sup>108</sup> play deserts,<sup>109</sup> etiquette deserts,<sup>110</sup> diversity droughts,<sup>111</sup> and jobs oases.<sup>112</sup> It has also transcended the boundaries of the English-speaking world; researchers are now talking about food deserts in Sweden,<sup>113</sup> China,<sup>114</sup> Slovakia,<sup>115</sup> Cuba,<sup>116</sup> Japan,<sup>117</sup> France,<sup>118</sup> Paraguay,<sup>119</sup> Hong Kong,<sup>120</sup> the Netherlands,<sup>121</sup> Iran,<sup>122</sup> Brazil,<sup>123</sup> Thailand,<sup>124</sup> Tunisia,<sup>125</sup> Korea,<sup>126</sup> Southern African cities,<sup>127</sup> “rainforest cities,”<sup>128</sup> and more.

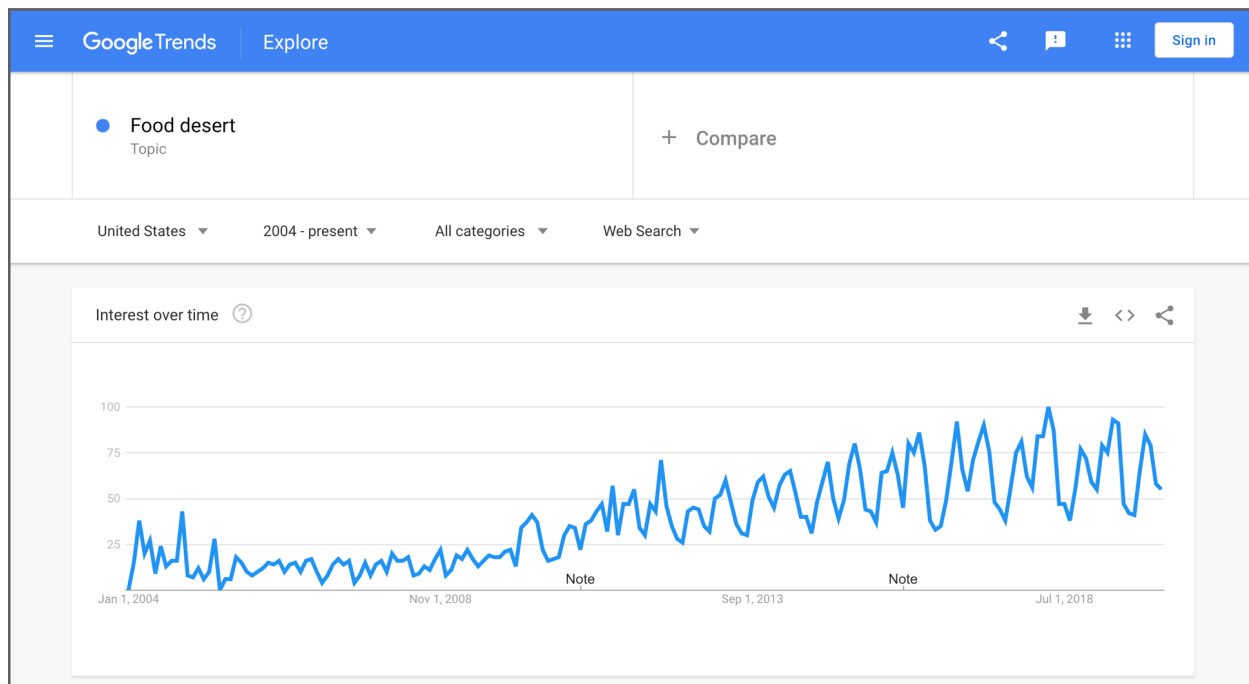
There are signs that the topic is losing its cachet within certain academic circles—“2009 was the height of food deserts,” a researcher recently declared<sup>129</sup>—but this hasn’t slowed its momentum with the broader public. Perhaps the strongest evidence for this momentum is the steady increase in Google searches about the topic in the last decade (see *Figure 1*, next page).<sup>\*</sup> Another indicator is the topic’s arrival in less rarified media outlets, such as HuffPost (formerly The Huffington Post),<sup>130</sup> BuzzFeed,<sup>131</sup> and the YouTube channel of The Kelly Clarkson Show.<sup>132</sup>

## 2.2. The meaning, size, and scope of “food desert discourse”

In the chapters ahead I will be taking a close look at the discourse surrounding food deserts. I want to take a minute, then, to clarify what I mean by “discourse” and to give a sense of the size and scope of food desert discourse. There is a recent practice within social science of

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<sup>\*</sup> In Google Trends, there is a difference between “search terms” and “topics.” A search term is the exact word or phrase that people search for (e.g., “food desert”), while a topic is a collection of search terms that—according to Google’s algorithms—tend to cluster around a particular subject, such as pluralizations of terms (e.g., “food deserts,”), misspellings of terms (e.g., “foood desert”), and closely related terms (e.g., “urban food desert”). Unfortunately, Google does not reveal the search terms that comprise a topic.



*Figure 1. Google Trends graph of the topic “Food desert.” This shows how often Google users searched for the term “food desert”—and for words and phrases directly related to the term “food desert”—from January 2004 through January 2020. (2004 is the earliest year for which data are available.)*

using “discourse” to mean “a shared way of looking at the world . . . [whose adherents use] a particular kind of language when talking about events, which in turn rests on some common definitions, judgments, assumptions, and contentions.”<sup>133</sup> This practice was popularized by Michel Foucault and is intimately connected with certain schools of thought in social science, such as postmodernism and poststructuralism.<sup>134</sup> I hesitate to identify with these schools of thought, however, so I will be using “discourse” in the more pedestrian sense of anything that is written or said about a topic.

Given my simple definition of “discourse,” it would seem that the category of “food desert discourse” would be simple as well, denoting anything written or said about food deserts. But there is a methodological problem here, which is that the boundaries of the category are blurred by the long list of food desert synonyms, near-synonyms, and antonyms that I presented above. For example, should articles that use the term “grocery gap” instead of “food desert”

count as part of food desert discourse? It would seem so, given that the two terms have nearly identical meanings. What about articles that focus on the broader “food environment”? These articles tend to address many of the same concerns as food desert articles, but not all of the same concerns, and not all of the time. Thus, whether an article should be considered part of food desert discourse depends on the article. A certain amount of personal judgment is therefore unavoidable when delineating the boundaries of food desert discourse.

This problem makes it nearly impossible to quantify food desert discourse with precision. There is no straightforward answer to how many food desert documents—articles, chapters, books, reports, pamphlets, websites, videos, podcasts, and so on—exist, but two facts can give us a rough idea. The first fact is idiosyncratic, but telling nonetheless: In the years I have spent researching food deserts and related topics, I have amassed a collection of over 900 documents. Whether or not that number seems high, it is always climbing, because I still routinely discover material about food deserts that I’ve never encountered before. The second fact is less idiosyncratic: As of January 2020, the research database Google Scholar lists 1,162 entries with either “food desert” or “food deserts” in the title, and the news and legal document database Nexis Uni lists 1,833 entries—news articles, magazine articles, press releases, industry trades, blog posts, and more—with either “food desert” or “food deserts” in the title. There is very little overlap between the content of these two databases, so this brings the number of research and news entries to nearly 3,000. This doesn’t include certain types of documents (e.g., non-blog websites) and documents that use related terms (e.g., grocery gap), however, so if those documents were added into the collection, the number would swell substantially.

### **2.3. My source material**

It was never my intention to conduct a systematic, comprehensive review of food desert documents, but rather to look for salient themes in the discourse and to get a sense of how different people and disciplines approach the subject. As such, I didn’t collect food desert

documents according to any predetermined strategy. I just started reading and exploring—letting my interests guide me—and then eventually I began to broaden and deepen my collection. I hunted down seminal pieces, gathered articles on neighboring topics, and kept my eyes open for material that was unusual or that pushed the envelope. So while my collection isn't representative of food desert discourse in a strict sense, it contains a quantity and diversity of material that provides an expansive view of the intellectual landscape.

The largest component of my collection—by a wide margin—is peer-reviewed academic articles. The next largest component is newspaper and magazine articles, followed by theses and dissertations, reports from governments and nonprofit organizations, blog posts, and websites. The peer-reviewed articles were sourced from hundreds of journals, but five journals happen to predominate: *The American Journal of Preventative Medicine* (43 articles), *Health & Place* (39 articles), *Public Health Nutrition* (26 articles), *Preventative Medicine* (22), and *Applied Geography* (19). As this list suggests, the majority of the journals are affiliated with health disciplines—medicine, public health, nutrition, and epidemiology—or geography,\* but some journals are affiliated with sociology, economics, urban planning, transportation studies, agriculture, and food studies.

#### **2.4. Research contribution**

For a discussion of how this dissertation contributes to the research on food deserts, please refer to Appendix A.

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\* The geographer Jerry Shannon has noted that “work on food deserts in the USA has mainly been done by epidemiologists, [while] geographers have played a more significant role in the UK and Canada.” See: Shannon, “Food Deserts.”



## Chapter 3

### The Dominant Perspective in Food Desert Discourse

*“How is explanation to be at all possible when we first turn everything into a picture—our picture!” –Friedrich Nietzsche*

#### 3.1. Detecting a perspective

As with any hot topic, the conversation about food deserts features a variety of voices, opinions, and interests. However, it doesn't take much exposure to this conversation to realize that a certain perspective is dominant. This perspective is on display in the vast majority of documents, laws, and initiatives relating to food deserts, and therefore is presumably shared by most academics, journalists, government officials, and activists who write about the topic. It is treated as the default position—how any reasonable, compassionate person would view the topic—and thus assumed to be true unless proven otherwise. This makes it the *de facto* starting point for any discussion of food deserts, even among skeptics.

Before I describe the dominant perspective, I need to add two caveats. First, I will be using the word “perspective” in an expansive way to denote not only a point of view, but an interconnected set of claims, moral attitudes, and philosophical assumptions—similar to the word “worldview,” but applied to a fairly narrow “world.” Second, perspectives are complex, intangible things that are often only revealed in indirect ways, such as when a person uses a certain word with a certain tone in a certain context. As such, describing perspectives necessarily involves a degree of interpretation.

#### 3.2. The dominant perspective's narrative

The dominant perspective is centered on a particular *narrative* of food deserts, which can be summarized as follows:

Millions of people in the Western world live in impoverished neighborhoods where it is difficult or even impossible to buy healthy food. These “food deserts” often have an abundance of food outlets, but the outlets tend to be fast-food restaurants, convenience stores, or corner stores where healthy food is expensive, low-quality, or nonexistent. Fresh produce is particularly hard to find in food deserts; as the activist Marian Wright Edelman puts it, “In many urban neighborhoods, it’s easier to buy a pint of liquor, a fried chicken wing, or a gun than a fresh tomato.”<sup>135</sup> The only way to get healthy, affordable, decent-quality food is to make the trip to the supermarket across town. Given that most food desert residents don’t have cars, this trip must be made on foot or with public transportation—which requires a lot of time—and involves lugging heavy bags of groceries—which requires a lot of energy. All of these factors combine to make unhealthy food the most appealing option, or maybe even the only viable option, especially for working parents who are constantly strapped for time and energy. As a result, food desert residents reach for fast food and junk food, gain weight, and experience higher rates of type 2 diabetes and other diet-related diseases. (See *Figure 2*, next page.) The only way to fix the problem is to pinpoint these neighborhoods and apply targeted interventions that will increase access to healthy food. These interventions include incentivizing supermarkets to move into food deserts, restricting the number of retail outlets that might compete with supermarkets, helping corner stores carry fresh and affordable produce, bringing in mobile produce carts, and facilitating transportation to existing supermarkets.

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Different authors convey this narrative in different ways, but they tend to use the same essential components. It’s analogous to a diverse group of musicians covering the same song; minor stylistic details change, but the most important elements of the song stay the same. The main characters of the narrative are always in the same predicament, which is that their diets

are unhealthy for reasons that are at least partly due to where they live, and it is always implied that “we”—the audience of concerned onlookers—should do something about this predicament. Beyond that, the characters assume a variety of geographic, demographic, socioeconomic, and psychological attributes. They may live in an urban, suburban, or rural area; be male or female; be any age; be any race or ethnicity; and occupy any position on the socioeconomic ladder, although they are almost always poor or lower middle-class.



Figure 2. Food desert cartoon. See: Rogers, “Food Desert.”

One type of person in one type of setting is far more prevalent than any other, though, to the point that it has become a stereotype—albeit based on real people with real struggles. This person is a single mother of color who lives in a poor neighborhood in a large city. She is portrayed as being busy and stressed because she works two jobs and must care for multiple

children by herself. She doesn't have a car, much time to cook, or any reliable social support. Her neighborhood doesn't have any full-service grocery stores—just convenience stores, fast-food restaurants, and corner stores. The corner stores technically carry produce, but the selection consists mostly of a few overripe bananas, a couple of bruised apples, and maybe an orange, all at double the price of what one would find in a wealthier, whiter part of town. The woman therefore usually feeds herself and her children with burgers from McDonald's, pizza from the gas station, or whatever meal she can throw together from the corner store's patchy selection of dry, packaged, and canned goods. She rarely eats fresh fruits, vegetables, whole grains, low-fat milk, lean meats, and other foods that the experts tell us to eat. She is fat and prediabetic, and her children are nearly so. She knows that she should eat better and that she should feed her children better, and she wants to, but there are only so many hours in the day, and she has more pressing concerns, such as making sure the electric company doesn't shut the power off again. And so on.

Here are some examples from the food desert discourse of this particular version of the narrative:

Tiffiney Davis, a single mom, lives . . . in subsidized housing, in a gentrifying neighborhood. . . . She works in Manhattan, earning \$13 an hour . . . and she receives food stamps. . . . [I]n the markets where she usually shops, [fruits and vegetables are] not fresh. "I buy bananas and bring them home and 10 minutes later they're no good. . . . So I mostly buy canned foods."<sup>136</sup>

Karen Mann, a 46-year-old mother of four . . . estimates that she spends close to \$200 each month just getting to the supermarket to buy food for herself and her four children. "You have to go out of the neighborhood to get anything," Ms. Mann said as she unloaded nearly two dozen food-filled plastic bags from a cab's trunk.<sup>137</sup>

Jane, a pregnant mother without a car, sometimes could not face the walk to the bus stop, get a bus, do the shopping, lug it home on the bus and then walk 15 minutes to the house.<sup>138</sup>

Flora, a poor black mother who was currently separated from her husband . . . was living with her daughter and two grandchildren in a cockroach- and flea-infested hotel room with two double beds. They prepared all of their food in a small microwave, rinsing their utensils in the bathroom sink.<sup>139</sup>

Giselle, a single black mother of two, worked two part-time jobs to make ends meet. There was little room in the food budget to experiment with new or expensive foods. When it came to decide what to make for supper, Giselle played it safe. She explained, “I don’t want to cook something [they won’t like] because I’ll like waste the food.”<sup>140</sup>

### **3.3. Minor characters in the narrative**

The narrative features minor characters as well. These characters are sometimes mentioned directly, but more often they exist merely in the background. Nevertheless, they are responsible for key facets of the narrative. These characters include corner store owners, executives of chain supermarkets, executives of chain dollar stores, government officials, activists, and the narrative’s authors themselves:

- Corner store owners are responsible for most of the overpriced, low-quality produce found in food deserts—if their stores carry any produce at all—and thus are viewed as part of the problem. This has inspired researchers to assess the viability of changing the owners’ “attitudes” through social cognitive theory, social ecological theory, and cash incentives.<sup>141</sup> The idea is that if activists and government officials can convince

corner store owners to carry fresh produce, this will effectively make some food deserts disappear. At the same time, the owners are often viewed as doing the best they can in difficult circumstances. As one team of researchers puts it, “They operate on razor-thin profit margins across-the-board and often survive mainly by employing family members at reduced wages and locating in sites where rent or land is extremely cheap.”<sup>142</sup> Some researchers have also noted the numerous logistical and financial barriers that stand in the way of small stores carrying fresh produce.<sup>143</sup>

- Chain supermarket executives are usually portrayed as callous elites who refuse to sell affordable, healthy food in underserved areas because of prejudice, an excessive concern for profitability, or both. The term “redlining” has even been used to describe their actions, thus suggesting racist motives.<sup>144</sup> Other commentators are more subtle in their criticisms: “[I]n addition to the economic issues, there may also be a *psychological component* to why supermarket executives are reluctant to site stores in food deserts . . . [italics added].”<sup>145</sup> Some researchers bemoan the executives’ unwillingness to keep unprofitable stores open; when a supermarket closed in New Haven, Connecticut—an event that effectively created a food desert—two researchers wrote, “[T]he corporate offices in Minnesota had concern only for the company’s overall profitability; the foundation of trust . . . built and maintained with the New Haven community over twelve years was not part of that discussion.”<sup>146</sup> Even when it seems clear that a new supermarket in a poor neighborhood could be profitable, writes journalist Kevin Drum, supermarket executives become “cagey” when this is pointed out: “[This] suggests there’s more to it than mere profitability.”<sup>147</sup>

- Chain dollar store executives are often viewed in a worse light than supermarket executives, because their stores—such as Dollar Tree, Dollar General, and Family Dollar—are geared toward low-income consumers but only carry small amounts of packaged food. Commentators claim that the executives are perpetuating or even creating food deserts by not selling healthy food at their stores, by dissuading grocery stores from locating nearby, and by putting existing grocery stores out of business. “[L]argely as a result of their rapid growth in the rural middle- and low-income communities . . .” the website Business Insider writes, “they’re edging out full-service grocery due to perceived competition and lack of retail space.”<sup>148</sup> When NPR asked Barry Popkin, a professor of nutrition at the University of North Carolina at Chapel Hill, what he would say to dollar store executives, he said, “Shame on you. You’re killing America just so you can get richer.”<sup>149</sup> In the U.S., dollar stores now outnumber Starbucks and McDonald’s combined, and this is worrying an increasing number of city governments.<sup>150</sup> The city council of Birmingham, Alabama, for example, recently voted 8-0 to limit the number of discount stores within city limits.<sup>151</sup> “This amendment will help us recruit grocery stores in food desert areas,” announced the city’s director of the Department of Innovation and Economic Opportunity, “and I fully expect we will see more expanded options of non-traditional grocery stores.”<sup>152</sup>
- Government officials are generally treated as distant figures who could swiftly end the food desert problem once and for all, but who will not do so unless educated citizens make sophisticated appeals to them. This is evident in the routine practice of concluding food desert articles with a supplication to policymakers to pull various governmental levers and make things right. It is also underscored by researchers’ eagerness to indicate that their work has “policy implications”—implications that are

sometimes enumerated and sometimes left to the imagination—and that their models could be useful to governments. A particularly stark example of the latter is the announcement by a team of researchers that their prediction model “may be useful in providing surveillance for areas that may be at risk of becoming food deserts.”<sup>153</sup>

- Activists are presented as fighting the good fight against the myriad forces that leave innocent people with nary a vegetable in sight. As one pamphlet on food deserts declares, “There are those who argue that the problems we have highlighted are insuperable or inevitable. We reject such pessimism.”<sup>154</sup> These individuals are prepared to get out there and actually do something about the problem. “Like a rolling oasis moving through this desert,” writes a local Twin Cities journalist, “[a group of activists] have retrofitted two city busses that operate almost like old-fashioned bookmobiles for fresh, healthy food. . . .”<sup>155</sup> Alongside food desert residents and certain government officials, activists occupy the moral high ground in the food desert discourse.
- Authors—a category that includes academic researchers, bloggers, and everyone in between—tend to be the least visible characters, because they don’t usually discuss themselves directly, and yet their presence is always felt to some degree. Most food desert researchers are trying to combine rigorous impartiality with civic virtue, as evidenced by their juxtaposition of tables, graphs, and maps with solemn pronouncements about the dangers of obesity and the need for policy interventions. Their self-image seems to be one of hard-nosed scientists and scholars who nevertheless have compassion. They provide the data and analysis that is used by government officials, activists, and journalists, and are therefore essential to the



credibility of the dominant perspective. Journalists, pundits, and bloggers, on the other hand, mostly deal in detailed imagery and quotable dialogue. Their work helps bring the abstract concept of food deserts to life, providing the narrative richness found in the dominant perspective.

### **3.4. The foundational ideas of the dominant perspective**

My brief analysis of the dominant perspective's narrative was intended to provide a glimpse into the claims, moral attitudes, and philosophical assumptions of the dominant perspective. I would like to now examine those elements in a more straightforward way. To facilitate this process, I have created a rubric of three "foundational ideas" that underlie the dominant perspective. As the word "foundational" suggests, each idea provides crucial support for the perspective, to the point that the perspective would more or less collapse without them.

The ideas are:

Foundational Idea 1: Millions of people live in impoverished neighborhoods that contain no fresh, affordable, healthy food, and this leaves them with little choice but to eat unhealthy food.

Foundational Idea 2: Food deserts are objective, discoverable, and measurable.

Foundational Idea 3: There is a scientific consensus regarding the nature of a healthy diet. A healthy diet features an abundance of fresh fruits and vegetables; modest portions of whole grains, lean meats, and low-fat dairy; and a minimal amount of salt, sugar, and fat—especially saturated fat and trans fat.

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I will examine these ideas in the next three chapters—one idea per chapter.

## Chapter 4

### Foundational Idea 1: On the Nature of Food Deserts

*“The more complex a situation, the larger is the number of plausible perspectives upon it—because the harder it is to prove any one of them wrong in simple terms.”*

*—John S. Dryzek*

#### 4.1. Foundational Idea 1 stated

*Millions of people live in impoverished neighborhoods that contain no fresh, affordable, healthy food, and this leaves them with little choice but to eat unhealthy food.*

#### 4.2. Ten examples of Foundational Idea 1 in food desert discourse

*Example 1:* “23.5 million Americans live in areas without supermarkets or other places where they can access fresh, nutritious foods. . . . The U.S. Department of Agriculture has mapped thousands of locations across the country where residents continue to live in low-income, low-access areas. Those who live in these areas are often subject to poor diets as a result, and are at a greater risk of becoming obese or developing chronic diseases.”<sup>156</sup>

*Example 2:* “It is estimated that 23.5 million people live in food deserts. . . . Instead of access to healthy and nutritious food, people living in these areas rely on convenience stores and fast-food restaurants for sustenance.”<sup>157</sup>

*Example 3:* “An estimated 23.5 million people live in FD [food deserts] across the United States, and the White House Task Force on Childhood Obesity recognized FD as a major contributor to a poor dietary pattern and obesity.”<sup>158</sup>

*Example 4:* “These grocery-store deprived zones have come to be known as ‘food deserts’ and the federal government estimates that they are home to millions of Americans. . . . In rural areas, where the closest store selling fresh produce may be 10 miles away, or in the inner city, where it may be a 30-minute trip by bus, people often make do with what’s available at the corner store, the convenience shop or the neighborhood bodega. That rarely means healthy eating.”<sup>159</sup>

*Example 5:* “For millions of Americans—especially people living in low-income communities of color—finding a fresh apple is not so easy. Full-service grocery stores, farmers’ markets, and other vendors that sell fresh fruits, vegetables, and other healthy foods cannot be found in their neighborhoods. What can be found, often in great abundance, are convenience stores and fast food restaurants that mainly sell cheap, high-fat, high-sugar, processed foods and offer few healthy options.”<sup>160</sup>

*Example 6:* “Millions of Americans live in the middle of a desert, a food desert that is. But instead of desolate lands with little rainfall, food deserts are areas barren of nutritious food. . . . [T]oo often the same communities suffer simultaneously from poor access to healthy foods and an abundance of junk foods, making healthy choices difficult for many people.”<sup>161</sup>

*Example 7:* “Long known as food deserts, large geographic areas with poor access to mainstream grocery stores make buying healthy food a challenge. Fresh food is available

only at the cost of a long and often expensive trip. . . . Instead of grocery stores, farmers' markets, or other sources of fresh food, residents are 'bombarded by fast food and convenience stores selling high-fat, high-sugar, processed food'. . . . The problem is widespread. About 9 percent of the continental U.S. population live in areas with poor supermarket access."<sup>162</sup>

*Example 8:* "When healthy foods like fruits and vegetables are not locally available, many people shop at 'convenience' stores where food is typically more expensive and less healthy (processed, higher in fats and sugars)."<sup>163</sup>

*Example 9:* "Lack of access to supermarkets in such neighborhoods may constrain residents to buy food from small neighborhood or convenience stores with poor selection of healthy foods, wide selection of unhealthy foods, and higher food prices."<sup>164</sup>

*Example 10:* "Eating well is hard enough for the poor as it is, but it becomes all but impossible if they don't have convenient access to good food in the first place."<sup>165</sup>

### **4.3. Evidence and arguments in favor of Foundational Idea 1**

It is indisputable that healthy food is distributed unevenly across space, and that not everyone has the same level of access to it. Hundreds of studies demonstrate that there are obstacles—physical, economic, social—that stand between certain populations and healthy food. "Food deserts" are areas where one or more of these obstacles exist, and depending on how one defines the term, it is possible that millions of people live in them. Besides being inconvenient, living in a food desert has the potential to foster unhealthy eating habits, because fast food and junk food are often the closest, easiest options around. This in turn can lead to chronic health problems such as obesity and diabetes.

#### 4.4. Evidence and arguments against Foundational Idea 1

The problem with Foundational Idea 1 is not that it is completely untrue, but that it paints a picture of food deserts that is simplistic to the point of being misleading. As I will show, nearly every aspect of the idea has been called into question—or even contradicted—by peer-reviewed research. To facilitate the discussion, I have divided the idea into four of its component phrases, which I will examine in turn: [ *Millions of people* ] [ *live in impoverished neighborhoods* ] [ *that contain no fresh, affordable, healthy food* ] [ *and this leaves them with little choice but to eat unhealthy food* ].

##### 4.4.1. “Millions of people . . .”

Estimates vary as to how many Americans live in food deserts, but the most frequently cited estimate is 23.5 million, a number which came from a 2009 report by the United States Department of Agriculture (USDA): “Area-based measures of access show that 23.5 million people live in low-income areas (areas where more than 40 percent of the population has income at or below 200 percent of Federal poverty thresholds) that are more than 1 mile from a supermarket or large grocery store.”<sup>166</sup> The popularity of this estimate presumably stems from the fact that it comes from a reputable authority, has been repeated by influential figures, and—perhaps most importantly—is rather shocking. But the next two sentences in the report give a revised estimate: “However, not all of these 23.5 million people have low income. If estimates are restricted to consider only low-income people in low-income areas, then 11.5 million people, or 4.1 percent of the total U.S. population, live in low-income areas more than 1 mile from a supermarket.”<sup>167</sup> This estimate is not cited nearly as often as the first estimate.\*

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\* There are 7.5 times as many Google results, and 4 times as many Google Scholar results, for the combination of “23.5 million” and “food desert” than for the combination of “11.5 million” and “food desert.”

It is easy to make the case that the second estimate is superior to the first one. After all, most higher-income people who live in low-income areas more than 1 mile from a grocery store probably have no problem getting groceries, so it makes sense to restrict the estimate to just the low-income people. This leads to other questions, however. If we are separating out the low-income people in low-income areas, why include the area aspect at all, given that there are low-income people who live in medium-income or even high-income areas that are more than 1 mile from a supermarket? Why doesn't the estimate distinguish between people with or without access to a car, given that traveling more than a mile is rarely a problem for people with access to a car? Why is 1 mile from a supermarket the cutoff, given that some people would have trouble traveling shorter distances? Why not use state poverty thresholds, given that the federal threshold might be too high for people in poor states like Mississippi and too low for people in rich states like Connecticut? What exactly counts as a grocery store? (Is Dollar Tree a grocery store? What about a *carnicería* that carries a small selection of fruits and vegetables? What about farmers' markets?) And so on.

The USDA report is 150 pages of dense research, so it addresses many of these questions as well as others, and recently the USDA revamped its entire methodology, rendering some of these questions moot while simultaneously inspiring new ones. Regardless of how the questions are answered, they leave ample opportunities for legitimate disagreement, and researchers have capitalized on those opportunities. As I discuss in depth in the next chapter, this has led to wildly different estimates of how many food deserts exist and how many people live in them. When a group of researchers tried to count how many food deserts were located in New Orleans, their results varied *fivefold* depending on which definition of food deserts they used.<sup>168</sup> Similarly, with the USDA's new methodology in place, the agency now estimates that 2.1 million, 17.3 million, 19 million, or even 54.4 million people live in food deserts, depending on which criteria are used.<sup>169</sup> And if we took the dozens of definitions that have been devised for specific cities or regions and extended them to the national scale, we would get dozens of different

estimates. As one study put it, “We found that the identification of vulnerable populations living in food deserts is highly dependent on the definition and measurement of low-income status and of economic and physical access to supermarkets.”<sup>170</sup>

This doesn’t mean that all estimates are equally defensible, of course. It does mean, though, that the matter is much more complicated and murky than the dominant perspective suggests. In order to be intellectually honest, any statement about the number of people living in food deserts must be upfront about the tentative and speculative nature of the topic.

#### 4.4.2. “. . . live in impoverished neighborhoods . . .”

The vast majority of food desert definitions include an income component, because it’s safe to assume that very few well-off people have a problem getting to the grocery store. The USDA’s latest definition uses the following criterion: “A [census] tract with either a poverty rate of 20 percent or more, or a median family income less than 80 percent of the State-wide median family income; or a tract in a metropolitan area with a median family income less than 80 percent of the surrounding metropolitan area median family income.”<sup>171</sup> Other definitions use different areal units and different thresholds, but the goal is the same, namely to pick out genuinely poor neighborhoods, not merely neighborhoods that happen to have some poor people in it. This fits with the image of food deserts that is common in the discourse. In an article in Atlanta Magazine called “Stranded in Atlanta’s Food Deserts,”<sup>172</sup> a journalist describes a neighborhood that was surrounded by food deserts, was dangerously close to becoming a food desert, and—two years after the article was published—became a food desert:<sup>173</sup> “Super Giant Food [now closed] is the only grocery store for miles; many customers travel an hour or more by bus. . . . The store adjoined a onetime Kmart that housed a flea market, surrounded by six acres of asphalt in the epicenter of Bankhead, a west Atlanta neighborhood best known for blighted housing projects, sketchy auto parts shops, and a dance [sic] called the Bankhead Bounce.”<sup>174</sup>



There are two problems with this approach. First, if the goal is to seek out poor people who might have trouble obtaining healthy food, focusing on areas that meet certain arbitrary thresholds of poverty can lead to glossing over poor people who live in non-poor areas. According to a detailed study of census block groups, roughly *40 percent* of poor people live in block groups that are not “high poverty.”<sup>175</sup> This has prompted Laura Leete, Associate Professor of Planning, Public Policy and Management at the University of Oregon, to argue that lack of access to healthy food is a “spatially dispersed problem”: “[In much of the U.S.] urban poverty is less of a concentrated urban phenomenon and the low income households living with low food access are really spread all over an urban area.”<sup>176</sup>

Second, most poverty thresholds used in food desert definitions allow for mixed-income and even largely middle-class neighborhoods to be categorized as food deserts. For example, the USDA’s threshold of a census tract poverty rate of 20 percent or more means that there are census tracts categorized as food deserts in which two-thirds, three-quarters, or even 80 percent of the residents are above the poverty line. Granted, these tracts are unlikely to be 20 percent poor and 80 percent rich, but there is a decent chance that the non-poor segment includes a range of incomes that are well above the poverty line. In fact, economic research has shown that there is more economic diversity within neighborhoods than most people realize. A pair of economists from Tufts and MIT found “significant income mixing in the majority of US urban micro neighborhoods,” which are areas “much smaller” than census tracts.<sup>177</sup> Given that micro neighborhoods are smaller than census tracts—and larger areas are almost always more diverse than smaller areas—it is safe to assume that income mixing in census tracts would be even higher than in micro neighborhoods. Moreover, a study commissioned by the Federal Reserve Board of Governors found that “lower income tracts have relatively higher within-neighborhood income dispersion,”<sup>178</sup> meaning that lower-income tracts are more likely to have a wide array of incomes than higher-income census tracts. (See Appendix B for a case study about a mixed-income food desert.) Many neighborhoods labeled food deserts, therefore, are economically

diverse places. This conflicts with the dominant perspective’s image of food deserts as spaces of pervasive poverty.

#### 4.4.3. “. . . that contain no fresh, affordable, healthy food . . .”

The dominant perspective tends to treat full-service grocery stores and supermarkets as the only sources of healthy food that are worth taking seriously.\* However, food outlets that are traditionally viewed as dens of nutritional vice—fast-food restaurants, corner stores, convenience stores, and so on—have been working hard to provide healthier options, if only to improve their image.† It is now common for fast-food restaurants to sell healthier options such as salads, wraps, fruit parfaits, and chili.<sup>179</sup> Many large convenience stores now carry almonds, yogurt, turkey jerky, dried fruit, and protein drinks.<sup>180</sup> Even Domino’s Pizza started selling salads nationwide in 2016.<sup>181</sup> So while there are surely food deserts that contain absolutely no healthy options, there are also food deserts that contain more healthy options than the dominant perspective acknowledges. The authors of the aforementioned USDA report agree: “[F]ocusing only on supermarkets and larger grocery stores is likely to underestimate the availability of healthy foods since some of these foods are also available at small grocery stores, convenience stores, pharmacies, dollar stores, farmers’ markets, and restaurants.”<sup>182</sup> Moreover, nearly all food outlets readily provide nutrition information—such as calorie counts and grams of saturated fat, trans fat, and added sugar—and are willing to make modifications to the food they prepare, including removing ingredients for people with special diets and people with health concerns. With a little forethought, therefore, it is possible to transform unhealthy food into healthy food—or at least make unhealthy food *less unhealthy*.

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\* Some articles discuss farmers’ markets, urban gardens, and “mobile produce carts,” but these articles constitute a small minority in the food desert discourse.

† According to the food writer Michael Pollan, fast-food marketing companies call this type of image-improvement strategy “denying the denier.” See: Pollan, *Omnivore’s Dilemma*.

There is an entire documentary about this topic, in fact. Made as a retort to the popular anti-fast-food documentary “Supersize Me,” the documentary “Fat Head” follows a middle-aged man as he eats all his meals at fast-food restaurants for a period of 28 days. Instead of choosing typical fast-food fare, though, the man primarily selects items lower in carbohydrate, such as Chicken McNuggets, or reduces the carbohydrate content of standard items by removing some (or all) of the high-carbohydrate components, such as buns or bread.<sup>183</sup> After 28 days of eating muffin-less Egg McMuffins, cheeseburgers with half the bun, chicken drumsticks from Kentucky Fried Chicken, and other lower-carbohydrate fast food—along with an occasional order of hash browns or fries—the man discovers that his weight had dropped 12 pounds, his total cholesterol was lower, his LDL cholesterol (the so-called “bad cholesterol”) was lower, and his HDL cholesterol (the so-called “good cholesterol”) was higher.<sup>184</sup> This is anecdotal evidence, of course, but it is still striking, and it suggests that fast-food restaurants are not as dangerous as the dominant perspective makes them out to be.

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According to the dominant perspective, healthy food is sometimes close by but still inaccessible due to high prices. This is plausible, because it is true that certain items, such as fresh bananas and apples, are often much more expensive in corner stores than in grocery stores. But many healthy food items are already so inexpensive that even doubling the price wouldn’t make them out of reach for low-income households.\* In recent years, bananas have been sold in some Chicago stores—a city known for its abundance of food deserts<sup>185</sup>— for 29 cents per pound.<sup>186</sup> Suppose, then, that these stores switched to selling bananas at the national average price of 57 cents per pound (as of December 2019),<sup>187</sup> which is nearly double the normal

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\* This is barring a massive disruption of commodity prices and living costs, of course.

price. With sales tax, that comes to 58 cents per pound. (Sales tax in Chicago is only 1% for qualifying foods such as groceries [as of February 2020].<sup>188</sup>) The minimum wage in Chicago is \$13 per hour (as of December 2019);<sup>189</sup> assuming a total income tax burden of approximately 20 percent,<sup>190</sup> this amounts to \$10.40 per hour take-home pay. A minimum-wage worker in Chicago could therefore buy a banana with 50 seconds of work. That's 71 bananas per hour. If we switch the example to fresh broccoli—which is over three times the price of bananas on a per-pound basis<sup>191</sup>—the worker could buy a serving of broccoli with 2 minutes and 14 seconds of work. That's 27 servings (5.4 pounds) of broccoli per hour.

More to the point, perhaps, Americans spend a smaller portion of their income on food—about 10 percent—than ever before.<sup>192</sup> In 1901, the average worker in the manufacturing sector could use the wages from an hour of work to buy 1 dozen eggs, 0.9 pounds of butter, or 8.8 pounds of flour; in 2003, a worker in the same position could buy over 12.3 dozen eggs, 5.4 pounds of butter, or 49 pounds of flour.<sup>193</sup> As the agricultural economist Annette Clauson puts it, “We are purchasing more food for less money, and we are purchasing our food for less of our income.”<sup>194</sup> Americans also spend a smaller portion of their income on food than anyone else in the world,<sup>195</sup> and given that food prices have been declining for centuries, it is safe to say that Americans today spend less of their income on food than any other population in human history. Arguably, then, complaints about the price of food in America deserve to be taken about as seriously as complaints that food isn't free. Granted, many food desert residents probably spend a higher proportion of their income on food than the average American does, but that proportion is still going to be low by both global and historical standards. It should also be noted that a significant number of food desert residents receive SNAP (Supplemental Nutrition Assistance Program, formerly known as “food stamps”) benefits, so the proportion of their income spent on food would be dramatically lower.

Some commentators will admit that *food overall* is cheap but still argue that *healthy food* is expensive—or at least that healthy food is more expensive than unhealthy food. There

are two problems with this argument. The first is that the cost of food can be evaluated in multiple ways, thus complicating any attempt to compare the cost of healthy and unhealthy food. In a USDA study aptly titled “Are Healthy Foods Really More Expensive? It Depends on How You Measure the Price,” a pair of economists write, “For all metrics except the price of food energy [i.e., calories], the authors find that healthy foods cost less than less healthy foods.”<sup>196</sup> In other words, healthy food was cheaper per gram and per portion, but more expensive per calorie. We can make this more concrete by comparing a bag of chips to an equivalent weight of bananas and broccoli. At Walmart, a 15.25-ounce “Family Size” bag of Lay’s Potato Chips costs \$3.98 before tax (as of January 2020).<sup>197</sup> Using the pre-tax prices for bananas and broccoli prices mentioned above, this means that a 15.25-ounce bag of bananas would cost 54 cents and a 15.25-ounce bag of broccoli would cost \$1.82. On a per-ounce basis, then, potato chips cost 7.4 times more than bananas and 2.2 times more than broccoli. The bag of chips, however, has roughly 2,400 calories,<sup>198</sup> while the bag of bananas would have about 385 calories<sup>199</sup> and the bag of broccoli would have about 147 calories.<sup>200</sup> On a per-calorie basis, then, bananas are 6.2 times more expensive than chips, and broccoli is 16.3 times more expensive than chips. If we look at servings—an inconsistent unit of measurement that is only marginally useful\*—chips cost about 27 cents per serving, bananas cost about 17 cents per serving, and broccoli costs about 62 cents per serving. These calculations partly support the findings of the USDA study, because one of the two healthy options (i.e., the bananas) is cheaper per serving than the unhealthy food, but they partly contradict the findings as well, because the other healthy option (i.e., the broccoli) is more expensive per serving.

Healthy food can therefore be cheaper or more expensive than unhealthy food, depending on whether the goal is to maximize calories or to maximize “nutrient density”—the amount of nutrients per calorie or per gram. But even this decision is not as straightforward as

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\* Serving sizes fluctuate with time and are contingent upon the eating habits of consumers and the decisions of manufacturers and regulators. See: U.S. Food and Drug Administration, “Serving Sizes.”

it seems, because some foods that are now universally praised as healthy are both high in calories and inexpensive. Olive oil, for example, is as close to pure fat as any natural food gets, and fat has the maximum number of calories that can fit into a gram of digestible food—over twice as many calories per gram as protein and carbohydrate.\* The only way to fit more calories into olive oil would be to process it heavily to remove the infinitesimal amounts of water and micronutrients it contains, and even then this would only increase its calories by a tiny percentage. Olive oil is therefore the definition of a high-calorie food. It is also cheap: A 101-fluid-ounce bottle of extra virgin olive oil—a bottle so big that it has an extra plastic handle attached to it—costs \$18.24 at Walmart (as of January 2020), provides 200 servings, and contains a whopping 24,000 calories.<sup>201</sup> If we compare this to the aforementioned 15.25-ounce bag of chips, the bottle of olive oil has 10 times as many calories but is only 4.6 times the price, making the chips 2.2 times more expensive per calorie. The chips are also 1.4 times more expensive per gram and 2.9 times more expensive per serving. Olive oil therefore has the rare distinction of being healthier than chips, more calorically dense than chips—containing 1.5 times as many calories per gram—and cheaper than chips according to all three measures of price.

Avocados are another example of a food that is healthy and yet high-calorie and inexpensive. They have 1.9 times as many calories per ounce as bananas and 4.9 times as many calories per ounce as broccoli due to the fact that 83 percent of their calories come from fat.<sup>202</sup> A bag of 4 to 6 medium Hass avocados at Walmart costs \$2.78 (as of February 2020),<sup>203</sup> so each avocado costs 56 cents if we assume that a bag has 5 avocados in it. Going back to our bag of chips, this means that chips are  $\frac{3}{4}$  the price of avocados per calorie but 2.5 times more expensive per ounce and 1.4 times more expensive per serving.

The other problem with the argument that healthy food is expensive is that the cost of eating the recommended amounts of fruits and vegetables—the cornerstone of a healthy diet,

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\* Fat has roughly 9 calories per gram, while protein and carbohydrate both have roughly 4 calories per gram. See: U.S. Dept. of Agriculture, National Agricultural Library, “How Many Calories.”

according to the conventional wisdom—is low by any reasonable standard. In 2011 the USDA commissioned a study to find out how much it would cost the average American to eat the recommended amount of fruits and vegetables. According to the authors, “[I]n 2008, an adult on a 2,000-calorie diet could satisfy recommendations for vegetable and fruit consumption in the 2010 Dietary Guidelines for Americans (amounts and variety) at an average price of \$2 to \$2.50 per day. . . .”<sup>204</sup> While those numbers are based on 2008 dollars, the price is not much higher today. If we use updated USDA data<sup>205</sup> and yearly changes in the Consumer Price Index,<sup>206</sup> this range translates to \$2.31 to \$2.86 per day in 2019 dollars. Notice also that the authors said “amounts and variety,” so this doesn’t mean \$2.31 to \$2.86 of a single cheap fruit or vegetable, such as bananas or carrots, but rather multiple kinds of fruits and vegetables in sufficient quantities. For the aforementioned hypothetical minimum-wage worker in Chicago, \$2.31 to \$2.86 is 13 minutes and 20 seconds to 16 minutes and 30 seconds of work. It is also worth noting that a study conducted in Philadelphia found that lower-income shoppers spent an average of \$20.78 per week on junk food from supermarkets,<sup>207</sup> which, at \$2.97 per day, is more than what is needed to satisfy the USDA’s fruit and vegetable recommendations.

Rounding out one’s diet by following the rest of the federal dietary guidelines only costs a few more dollars per day. If one uses the USDA’s “Thrifty Food Plans” as a guide, it is possible to meet all the dietary guidelines for \$5.31 to \$6.14 per day (as of January 2019), depending on one’s age and gender.<sup>208</sup> If one felt like splurging, one could follow the “liberal plan”—the Cadillac of sensible, government-devised meal plans—at the cost of \$10.01 to \$12.17 per day, depending on one’s age and gender.<sup>209</sup> Suppose, then, that our hypothetical minimum wage worker in Chicago is a 35-year-old woman who works full-time and wants to follow the government’s “low-cost plan,” which allows for more indulgence than the spartan “thrifty plan” but is still cheaper than the “liberal plan.” This would cost her 11.6 percent of her take-home pay. She would almost certainly qualify for SNAP, however, so this percentage would actually be much lower. If she were feeding two children, one 4 years old and one 7 years old, this would

bump up the percentage to 29.8 percent, but in that case she would qualify for both SNAP and The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)—which provides free food for low-income mothers of young children—so this percentage would likely be only marginally higher than if she didn't have children.

A counterargument to all this is that even if food, including healthy food, is cheaper and requires a lower percentage of income than ever before, that doesn't mean that everyone can afford it. This is true. However, it would still be true even if food was much cheaper than it is today, because until food is completely free, there always will be some people who can't afford it. This leads to a related counterargument, which is that while food has gotten cheaper, the cost of other important goods and services—such as medical care, child care, and higher education—has risen much faster than inflation, thus leaving less income to dedicate to food. This is also true, and some have argued quite persuasively that prices have risen particularly fast for the things that actually help people climb out of poverty.<sup>210</sup> But food is cheap and keeps getting cheaper, so if we care about the real causes and consequences of poverty, we should probably focus our finite attention on the soaring costs of those goods and services that are essential for upward mobility.

#### 4.4.4. “. . . and this leaves them with little choice but to eat unhealthy food.”

The dominant perspective portrays food desert residents as “passive and immobile,” to use the phrase of geographer Jerry Shannon<sup>211</sup>—consigned to eating whatever their neighborhood environment happens to serve them. In addition to being condescending, this is deceiving. Food desert residents are much more active and mobile than the dominant perspective gives them credit for.

Studies suggest that most food desert residents have a car or access to one. An analysis of 33,604 census block groups across the U.S. found that, in block groups without a nearby supermarket, over 95 percent of residents have access to a car, and that “vehicle availability is



highest in the areas where vehicles are most needed.”<sup>212</sup> Similarly, a study based on time use survey data found that 93.3 percent of low-income people with “the lowest levels of access” use a car to get groceries.<sup>213</sup> The National Household Food Acquisition and Purchase Survey found that 86 percent of “food-insecure” households—a category that includes the most vulnerable food desert residents—either drive to the grocery store or get a ride with someone.<sup>214</sup> An in-depth study of two Pittsburgh food deserts found that the typical trip to the grocery store was conducted by car.<sup>215</sup> A case study of low-income households in Austin, Texas found that cars are “an important mode for nonwork travel, even among those [low-income] households that do not own one.”<sup>216</sup>

Adding to the evidence of food desert residents’ mobility are studies that suggest that many food desert residents choose to travel longer than necessary to purchase groceries. SNAP participants—a group that overlaps significantly with food desert residents—travel an average of 3.36 miles to buy groceries, even though they have the option to travel 1.96 miles.<sup>217</sup> “Even those who walk, use a bike, or take public transit for their food shopping choose a primary store that is farther away than the nearest supermarket or supercenter,” write the study authors.<sup>218</sup> Carless people live an average of 0.5 miles from a supermarket or supercenter, but they choose to travel an average of 0.92 miles.<sup>219</sup> An earlier study found that SNAP participants traveled an average of 2.8 miles to a supermarket, even though the closest supermarket was an average of 0.8 miles away.<sup>220</sup> The aforementioned study of two Pittsburgh food deserts found that residents traveled an average of 3.7 miles to a supermarket, even though the closest supermarket was an average of 1.6 miles away.<sup>221</sup> A survey of 198 low-income recipients of WIC in two urban neighborhoods found that “participants rarely shop at the closest supermarket,” choosing instead to travel an extra 0.95 miles on average for WIC shopping and an extra 0.65 miles on average for non-WIC shopping.<sup>222</sup> An analysis of the buying habits of SNAP recipients in Minneapolis–Saint Paul found that traveling to the suburbs for groceries was commonplace, due to the perception that

suburban stores have lower prices and better quality food.<sup>223</sup> Another study reported “much non-local travel to shops even for low income people and people with stores nearby.”<sup>224</sup>

When it comes to traveling to the grocery store on foot, I suspect that many or even most food desert residents find the task to be an inconvenience rather than a major burden. But the dominant perspective treats food desert residents as incapable or unwilling to walk even modest distances. Some of the distance “thresholds” or “cut-offs” used in food desert studies—the distance to a grocery store that is deemed too far for walking—are preposterously low for able-bodied people. For example, some studies use 500 meters (0.31 miles),<sup>225</sup> and at least one goes as low as a quarter-mile.<sup>226</sup> To put this in perspective, a study of walking physiology found that a typical woman in her 40s can walk a quarter-mile at a comfortable pace in approximately 4 minutes and 49 seconds.<sup>227</sup> A young man in a hurry might take as little 2 minutes and 39 seconds, while a healthy elderly woman walking at a leisurely pace might take 5 minutes and 16 seconds.<sup>228</sup> Yet some food desert researchers think that it is unreasonable to ask an able-bodied adult to walk 6 minutes in order to access a year-round cornucopia of food. Even if we use the higher threshold of 0.31 miles—a distance that “essentially makes [grocery stores] accessible only to consumers with automobiles,” according to one study<sup>229</sup>—this is still much shorter than the distance walked by many children on the way to school. A study of federal transportation data found that 12.7 percent of K–8 students nationwide walked to school most days, and of those students, 15.3 percent lived 0.5 miles to 1 mile from school, 4 percent lived 1 mile to 2 miles from school, and 1.6 percent lived more than 2 miles from school.<sup>230</sup> Granted, an adult walking to the grocery store or bus stop has to carry groceries on the trip back—and it can be hard to make oneself walk to the store or bus stop after a long day of work—but it seems reasonable to assume that if an elementary student with a backpack can walk a third of a mile, an adult with a few bags of groceries probably can too.

Researchers also likely underestimate how much food desert residents walk in a given day and overestimate how much walking is necessary to keep a stocked pantry. The average

American man takes roughly 5,340 steps per day, while the average American woman takes roughly 4,912 steps per day.<sup>231</sup> Given that walking one mile typically requires about 2,000 steps,<sup>232</sup> this means the average American walks about 2.5 miles per day. Consider the following scenario. Suppose a hypothetical food desert resident recently became carless. She starts taking the bus to work and to a few other destinations, and this increases her average daily walking by 1.25 miles. The grocery store is not on the bus route, so she must walk there. Without a car, she can't carry as many groceries per trip, so she needs to visit the store three times per week, instead of the national average of once or twice per week.<sup>233</sup> The store is 0.8 miles from her house. According to my calculations, her new habit of grocery shopping on foot increases her weekly walking by approximately 18 percent. I don't want to discount the fact that such an increase might be a serious burden to some people, and not all neighborhoods are safe enough to walk in, but I think we should be careful not to infantilize people who are perfectly capable of walking an extra few miles per week.

If we shift our focus to rural food deserts, we face a similar issue. Researchers tend to define a rural food desert as a neighborhood in which the closest grocery store is more than ten miles away.<sup>234</sup> But anyone who has spent a significant amount of time in rural areas knows that it is perfectly normal to drive ten miles or more for routine purchases, and that rural people don't view this as a great hardship, because driving long distances is just part of rural life.\* It is true, unfortunately, that some people in rural areas have to drive more than 20 miles to get to a grocery store, but according to the USDA, this is a problem faced by only 0.0009 percent of the population.<sup>235</sup>

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\* This is confirmed by data from the U.S. Federal Highway Administration, which show that the average rural resident drives about 10 more miles per day than city dwellers. See: U.S. Dept. of Energy, Office of Energy Efficiency and Renewable Energy, Vehicle Technology Office, "Fact #759."

Contrary to the idea that food desert residents are stuck with corner stores and convenience stores, studies suggest that most food desert residents do their shopping at supermarkets. One study found that households located in zip codes without any supermarkets still bought nearly 90 of their groceries at supermarkets.<sup>236</sup> The same study found that lower-income households spend roughly the same percentage of their grocery dollars at supermarkets as higher-income households: “Households with income below \$25,000 spend about 87 percent of their grocery dollars at supermarkets, while households with incomes above \$70,000 spend 91 percent.”<sup>237</sup> In three separate studies of SNAP participants, one found that 93 percent of SNAP households obtained “most of their groceries” from supermarkets,<sup>238</sup> another found that 90 percent of SNAP households “shop primarily at a supermarket,”<sup>239</sup> and another found that SNAP participants spent 84 percent of their SNAP benefits at supermarkets or supercenters.<sup>240</sup> A study of food deserts in Pittsburgh found that food desert residents “purchase most foods from full-service supermarkets.”<sup>241</sup> A study of Philadelphia neighborhoods with high proportions of residents on public assistance (e.g., SNAP) found that, despite living in areas “saturated” with convenience stores and corner stores, 94.5 percent of residents did their primary food shopping at large chain supermarkets.<sup>242</sup>

Furthermore, there is evidence suggesting that the average food desert resident doesn’t spend much money at corner stores and convenience stores. According to the USDA, “[F]ood purchases at convenience stores make up just 2 to 3 percent of total food expenditures for low-income consumers.”<sup>243</sup> One of the aforementioned studies on SNAP participants found that less than 1 percent of SNAP households reported relying on convenience stores for food.<sup>244</sup> A study of nearly 12,000 food-related trips in Atlanta found “low income participants, non whites [sic] and those without a vehicle visiting a grocery store more often than other types of [food] stores.”<sup>245</sup> A study found that the lowest-income families spend a slightly higher percentage of their grocery dollars at convenience stores than higher-income families, but that they also spend a much higher percentage of their grocery dollars at supercenters with very low prices, which

“more than offsets” the slight difference in convenience store purchases.<sup>246</sup> The same study concludes, “Overall, we find little difference in the type of stores in which poor and rich households shop for food. Thus, the data contradict the notion that lower-income households are forced to shop at high-priced convenience stores because they lack access to other types of stores.”<sup>247</sup> The authors of the aforementioned study of Philadelphia neighborhoods agree: “[C]orner and convenience stores . . . are often a source of impulse purchases, snack foods, tobacco, and beverages . . . [and therefore] should not be misconstrued as primary food shopping destinations, even for lower-SES [socioeconomic status] urban residents who often live near them.”<sup>248</sup> A study that compared shopping habits before and after a new supermarket moved into town found that shopping habits stayed roughly the same; instead of spending less at convenience stores and drug stores, people merely shifted their grocery dollars from the old supermarket to the new one—“even in food deserts.”<sup>249</sup> It seems that corner stores and convenience stores serve roughly the same purpose inside food deserts as they do outside of them, namely to cater to people who don’t want to wait in a long line for a single bottle of soda or a bag of chips.

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It is also worth noting that while the dominant perspective deems corner stores, convenience store, and fast-food restaurants as the problem and supermarkets as the solution, supermarkets also carry junk food\*—“vast quantities” of it, according to one study.<sup>250</sup> When researchers examined shelf space in a variety of food retailers in southern Louisiana and Los Angeles County, they found that supermarkets devote an average of 75.2 percent more shelf space to “carbonated beverages, salty snacks, cookies and pastries, and candy” than to fruits and

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\* There is a subtle—if not always recognized—distinction between junk food and unhealthy food. Junk food is typically cheap, packaged, and ready-to-eat (e.g., chips), while unhealthy food is any type of food that is bad for one’s health, irrespective of price, packaging, or readiness-to-eat. So while all junk food is unhealthy food, not all unhealthy food is junk food.

vegetables.<sup>251</sup> A study of the food environment in King County, Washington found that supermarkets typically contain numerous departments that function as miniature stores within the store—bakeries, delis, meat counters, quick-service restaurants (e.g., selling Chinese food to go), and coffee shops—and that these departments would be categorized as unhealthy food sources if they were standalone businesses;<sup>252</sup> in this sense, a supermarket is more like a city block lined with various stores rather than a single, monolithic store. A nationwide study of food purchasing found that nearly half of “packaged food purchases”—a group that includes foods of varying healthiness—came from chain supermarkets, and of those purchases, nearly half of their calories came from “savory snacks,” “grain-based desserts,” sugary soft drinks, and alcohol.<sup>253</sup> A longitudinal study of households across the U.S. found that people who shopped at chain supermarkets bought approximately the same amount of junk food as people who shopped at a combination of supermarkets and convenience stores.<sup>254</sup> As previously mentioned, a study found that lower-income shoppers in Philadelphia spend an average of \$20.78 per week on junk food from supermarkets, which is roughly 21 percent of what they spend at supermarkets overall.<sup>255</sup> A study of food deserts in Pittsburgh found that most of the junk food in the diets of food desert residents came from supermarkets.<sup>256</sup>

Given that supermarkets contain vast quantities of unhealthy food, and that food desert residents do most of their shopping at supermarkets, it is clear that food desert residents are exposed to plenty of unhealthy food even without the help of corner stores, convenience stores, and fast-food restaurants. Put another way, even if every corner store, convenience store, and fast-food restaurant disappeared from the face of the earth, food desert residents would still be able to buy unhealthy food with ease. Furthermore, unhealthy food lurks in all sorts of places that aren't on the dominant perspective's radar. A study of 1,253 street segments in the Bronx, New York found that a third of all non-food storefront businesses—“barber shops, gyms, hardware stores, laundromats,” and so on—sold food, and of those businesses, two-thirds only sold junk food.<sup>257</sup> To say that junk food is widely available, therefore, would be an

understatement. As the author Laura Shapiro puts it, “[J]unk food . . . lives right in the house with us, greets us on the street, finds us at work, and raises our children for us.”<sup>258</sup>

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Lastly, the dominant perspective tends to treat the process of obtaining groceries as one that is limited to heads of households buying groceries for themselves in a single trip that starts from home and ends at home. But there are other ways. First, some food desert residents buy groceries on the way home from work or while doing other errands. The aforementioned study of food-related trips in Atlanta found that “[m]any trips to purchase food begin at locations other than home,” and that “people get food from a variety of locations, many of which are outside of their local community.”<sup>259</sup> A study that used GPS to track individuals’ movement patterns found that it is very common for people to encounter supermarkets outside their neighborhoods.<sup>260</sup> Second, some residents receive groceries from family, friends, or community organizations. A study of low-income families living in 30 rural counties in 17 states found that it was common for people to receive groceries through community food pantries and through “an enduring safety net” of family, friends, and even acquaintances, who supply “food for the family and money to buy groceries.”<sup>261</sup> A study of elderly populations in rural North Carolina found “a very high level of food sharing,” with seniors routinely receiving “garden produce, wild game or fish, homemade baked goods, home-cooked food, groceries, and whole meals.”<sup>262</sup> A USDA study of “food acquisition events”—instances where a household obtained food in some way—found that SNAP participants received free food nearly 30 percent of the times they obtained food, whether through schools, workplaces, food banks, Meals on Wheels, or friends and family.<sup>263</sup> Third, some residents shop for groceries online and then have them delivered. According to researchers from Queensland University of Technology’s Business School, online grocery shopping “has enjoyed strong growth” and is predicted to “continue to grow

exponentially in the coming years.”<sup>264</sup> Fourth, some residents use a free shuttle to the grocery store provided by the store or by a senior living facility. A feasibility study of supermarket shuttle operations reported that “successful shuttle programs [have been] operated by supermarkets in low-income urban areas of New York, Newark, Charleston, Houston, and Los Angeles.”<sup>265</sup> A study of 190 senior apartment buildings found that, of 19 services commonly offered in senior living facilities—from hairdressing to housekeeping—grocery shuttle service was offered more than any other.<sup>266</sup>

#### **4.5. Conclusions about Foundational Idea 1**

Contrary to the dominant perspective, multiple lines of evidence suggest that the average food desert isn't a poverty-stricken “nutritional wasteland”—a term used by the Obama administration<sup>267</sup>—filled with people who are helpless or nearly so. As noted above, most food desert residents have cars, and if they don't, most have spouses, partners, family members, friends, or neighbors who do. Most get their groceries at supermarkets, and it is common to bypass the closest supermarket in search of better selections, better prices, and better shopping environments. If they don't have access to a car, chances are they live fairly close to a grocery store and can walk, bike, or take public transit there. Once they get to the store, they can expect to be confronted with an abundance of food that is inexpensive by any historically or geographically informed standard. And if they absolutely can't make it to the grocery store, there are probably more healthy options around than they realize. At the same time, unhealthy food is everywhere—including supermarkets and many non-food businesses—so if food desert residents want to eat unhealthy food, they have many options beyond the corner stores, convenience stores, and fast-food restaurants that preoccupy the dominant perspective.

There are some unfortunate areas, of course, that perfectly embody the dominant perspective's image of food deserts. The evidence suggests, however, that they are not representative of the majority of food deserts. If the data and studies above are correct, the



average food desert is not a very remarkable place; while perhaps not an ideal place to live, it is not a wasteland either. As one study put it, “Blithely accepting the ‘food desert’ designation without further investigation would lead one to conclude that some neighborhoods are much worse off than they actually are.”<sup>268</sup>

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The dominant perspective tends to oversimplify the relationship between proximity to healthy food and access to healthy food. In most cases, living far from a grocery store is not a major problem if one has a car, while living close to a grocery store is not a major benefit if one is disabled or elderly. This means there are plenty of people who live far from grocery stores who have no problem getting groceries, and there are plenty of people who live close to grocery stores who have problems getting groceries. It’s not as simple as “closer = easier.”

It is true that all other things being equal, living far from a grocery store makes it more difficult to get groceries. But how much more difficult? And what are the effects of that difficulty? Suppose we have two low-income people who have a strong preference for buying food at grocery stores rather than at corner stores, convenience stores, and fast-food restaurants. Both own cars, but one lives 3 miles from the nearest grocery store and the other lives 6 miles from the nearest grocery store. Given that neither live within walking distance of the store, both must drive. With normal traffic, it takes 10 minutes to drive to the grocery store 3 miles away and 20 minutes to drive to the grocery store 6 miles away. Both people have to go through the effort of driving, parking, shopping, loading groceries into the car, driving home, parking, and unloading groceries out of the car, but the person who lives closer will save an extra 20 minutes of driving roundtrip. Now, 20 minutes is not an insignificant amount of time—especially for a person who is busy and stressed—but there’s no reason to assume that it’s enough time to induce a person with a strong preference for buying food at grocery stores to

switch to buying most of their food at a nearby corner store, convenience store, or fast-food restaurant. Granted, it might occasionally induce someone to choose a non-grocery store option, but it wouldn't consistently override a person's strong preferences.

People who work in public health fields are quick to point out that small effects in individuals can have large consequences when multiplied across populations. They publish studies that purport to show how a miniscule change in individual behavior—say, reducing salt intake by  $\frac{1}{2}$  a teaspoon per day—could ultimately prevent tens of thousands of deaths per year.<sup>269</sup> By this logic, if the person who lives 6 miles from the grocery store is induced to buy a small amount of unhealthy food *slightly more often* than the person who lives 3 miles from the store, this could have grave consequences when scaled up to the national level. However, even if we accept this leap—and we should be hesitant to do so—there are so many lifestyle and environmental factors that are more dangerous than the occasional junk food purchase that it doesn't make sense to single it out as being especially worthy of our finite attention.

What about the psychological suffering that comes from the extra 20 minutes of driving? This would vary from person to person, of course, so it is possible that the hypothetical low-income person who lives farther from the store would experience great anguish at having to drive an extra 20 minutes roundtrip. I think for most low-income people, however, it would just be a minor inconvenience. Indeed, if driving an extra 20 minutes a couple times a week was a major hardship, very few people would tolerate living in sprawling, car-dependent, traffic-prone metropolitan areas like Los Angeles, Dallas, or Atlanta. Furthermore, I suspect that most low-income people have bigger problems on their minds. If we want to help them, we should consider helping with those larger concerns.

## Chapter 5

### Foundational Idea 2: On the Knowability of Food Deserts

*“What sorts of entities are these, which can be brought into being simply by drawing lines on a map?” –Barry Smith*

#### 5.1. Foundational Idea 2 stated

*Food deserts are objective, discoverable, and measurable.*

#### 5.2. Ten examples of Foundational Idea 2 in food desert discourse

*Example 1: “[S]tudies have discovered food deserts in older urban [areas]. . . .”<sup>270</sup>*

*Example 2: “Our previous work . . . discovered the presence of food deserts in low-income, inner-city neighbourhoods. . . .”<sup>271</sup>*

*Example 3: “[H]ierarchical cluster analysis is [used] . . . to locate food deserts. . . .”<sup>272</sup>*

*Example 4: “It is therefore necessary to identify spatial variations in access to food in order to locate ‘food deserts.’”<sup>273</sup>*

*Example 5: “[Researchers] found food deserts in . . . neighborhoods with low socioeconomic status. . . .”<sup>274</sup>*

*Example 6: “The objective of this study was to develop a methodology to identify food deserts in rural environments.”<sup>275</sup>*

*Example 7:* “This has spurred the development of ways to identify and measure food deserts.”<sup>276</sup>

*Example 8:* “[T]his article employs the combination of visualization tools with a customized analysis method to measure food deserts. . . .”<sup>277</sup>

*Example 9:* “[S]tudies . . . have documented the existence of food deserts. . . .”<sup>278</sup>

*Example 10:* “It is apparent that there is an underrepresentation of food deserts with the USDA system. . . .”<sup>279</sup>

### **5.3. Evidence and arguments in favor of Foundational Idea 2**

Social science is predicated on the idea that we can use reason and the scientific method to help us understand the social world.\* Instead of relying on tradition, accepted wisdom, and popular opinion, we can go out into the world, measure objects and phenomena, and come to our own conclusions. We can put aside our ideological and cultural baggage and give unbiased answers to important questions like “What causes unemployment to rise?”, “How do dictators come to power?”, and “Why do democracies rarely wage war against each other?” Armed with this knowledge, we can change our policies and our communities in ways that make the world a better place for everyone.

Food deserts are real things that can be measured by social scientists. They are areas, and areas can be measured; they are distant from grocery stores, and distance can be measured; they are filled with people who have low incomes, and people can be counted and income can be

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\* I’m referring mainly to the broad tradition of social science that seeks to emulate the natural sciences. This tradition, often called “naturalism,” is based on the idea that the social world can be studied in more or less the same way as the natural world—through careful observation, precise measurement, and unbiased analysis.

measured; and so on. The study of food deserts therefore follows the typical social science formula of selecting a social object or phenomenon, collecting data on it, analyzing that data, and then presenting the results to other researchers and the general public.

Moreover, food desert researchers have found statistical associations between food deserts and social problems such as obesity,<sup>280</sup> depression,<sup>281</sup> racial segregation,<sup>282</sup> and more. Dozens of studies suggest that there are causal relationships behind these associations—that food deserts can actually *cause* obesity and depression, or that food deserts can *be caused by* racial segregation. If these causal relationships are real, then we should feel no compunction in saying that food deserts are real things that exist in the world. Indeed, causation is one of the best proofs of existence, because a thing must exist in order to make something happen.

No one is saying that food deserts exist in the way that tables and chairs exist, or even in the way that nation-states or chess clubs exist. You can't reach out and touch food deserts, and food deserts don't have founding charters or membership rolls. However, the same could be said for the Midwest, or suburbs, or "wine country," and yet we agree that these places are real. And if they are real, they are objective, because their existence is not merely a matter of personal opinion.

#### **5.4. Evidence and arguments against Foundational Idea 2**

Even if food desert research is a rather unremarkable case of social science in action, that doesn't mean that it is true. Below I present a variety of interconnected issues that I think should engender skepticism toward the objectivity of food deserts. This in turn should engender skepticism toward the entire project of trying to measure food deserts with scientific precision.

##### **5.4.1. A note about terminology**

Some of the terms I will be using in this and subsequent chapters—such as "objective" and "scientific"—have been discussed at great length in the philosophical and social science

literature, and they are still being debated in some circles. I don't want to dive deep into those debates, though, so for the purposes of the following discussion, I will be using the terms in their most general, vernacular sense—the way an educated layperson would use them: “Objective” in the sense of “not based on personal feelings and opinions,” and “scientific” in the sense of “objective [not based on personal feelings and opinions], rigorous, systematic, analytical, precise, etc.” The term “operationalization,” however, is a bit of jargon that is entirely absent from everyday conversation, and I use it frequently in the next section, so I should explain it briefly at the outset.

Natural scientists seek to quantify physical properties such as mass, temperature, and pH, and they employ an array of instruments for this purpose. This process can be as straightforward as putting an object on a scale, or as complex as using telescopes and satellite imagery to analyze the atmosphere of a distant planet. In either case, scientists—at least those working in stable, well-established fields—usually have a reasonably firm grasp of what they are measuring, so there is very little debate about what those measurements mean. Chemists don't spend a lot of time these days engaging in deep discussions about the meaning of the term “temperature.”\*

Social scientists seek to quantify social concepts such as deviance, prosperity, and aggression. However, these things are not measurable in the way that mass, temperature, and pH are. In order to measure them—or, more skeptically, *try* to measure them—social scientists must engage in a two-step process that leaves a lot of room for personal judgment and disagreement. The first step is to define the concept, because it's best to have a firm idea of what you are measuring before you try to measure it.<sup>†</sup> The second step is to “operationalize” the

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\* They used to, though. See: Chang, “Inventing Temperature.”

<sup>†</sup> The political scientist Paul Marshall writes, “[I]f we are vague about what our theoretical terms refer to, then we can only be vague as to whether [sic] our indicators indicate them.” See: Marshall, “Recent Conceptions.”

concept, which means specifying exactly how the object or phenomena of interest will be measured. This is more context-dependent than defining a concept, because a single concept can be manifested in the social world in multiple ways depending on what kinds of people and groups are involved.\*

Suppose, for example, that we want to study aggression in sports, so we choose to measure aggression in individual basketball players and basketball teams as a whole. We start by defining the concept, and we choose the definition found in Merriam-Webster's Dictionary: "hostile, injurious, or destructive behavior or outlook especially when caused by frustration."<sup>283</sup> Now we must decide how to measure this. It is clear that individual players and basketball teams exhibit aggression in different ways, so we decide to operationalize the concept in individual players and basketball teams differently. For individuals, we use the Modified Overt Aggression Scale (MOAS), which was developed by psychologists in 1988:<sup>284</sup>

The MOAS is divided in four domains: (1) verbal aggression, (2) aggression against objects, (3) aggression against self, and (4) aggression against other people. A score from 0 to 4 is assigned to each act: 0 indicates no aggressive behavior and higher scores indicate increasing severity. The score in each category is multiplied by a factor assigned to that category: 1 for verbal aggression, 2 for aggression against objects, 3 for aggression against self, and 4 for aggression against other people. Thus, the total MOAS score ranges from 0 (no aggression) to 40 (maximum grade of aggression).<sup>285</sup>

For basketball teams, we realize it would make the most sense to focus on rule violations that are already codified in the game, such as personal fouls, flagrant fouls, and technical fouls.

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\* These steps are often contentious in natural science as well, but the natural sciences tend to do a better job of settling the ensuing debates. This is partly why the French polymath Henri Poincaré said, "The natural sciences talk about their results. The social sciences talk about their methods."

These fouls could then be tallied and weighted in some fashion, producing the Basketball Team Aggression Score (BTAS). So while the MOAS and BTAS are both based on the exact same definition of aggression, they are different operationalizations of the concept.

#### 5.4.2. Food desert definitions and operationalizations

Almost all researchers agree that food deserts are low-income neighborhoods where healthy food is inaccessible in one or more ways (i.e., Foundational Idea 1), but—as I mentioned in the previous chapter—this leaves a lot of room for interpretation. How low does income need to be in order to be considered “low-income”? How big is a neighborhood? Which foods are healthy? How do we distinguish between something that is accessible only with great inconvenience from something that is truly inaccessible? And so on. Researchers have disagreed on these details, and as a consequence there is a dizzying array of definitions and operationalizations in the food desert literature.

Nearly all definitions claim that food deserts are necessarily low-income areas, but some definitions<sup>286</sup> claim that food deserts are merely more likely to be found in low-income areas. Some definitions focus on urban areas,<sup>287</sup> some on rural areas,<sup>288</sup> some on both urban and rural areas,<sup>289</sup> some on suburban areas,<sup>290</sup> some on “urban, rural, and all areas in between,”<sup>291</sup> some on “residential areas,”<sup>292</sup> and some just on “areas.”<sup>293</sup> Most focus on healthy food, but some focus on “heart-healthy food,”<sup>294</sup> some focus on food that has the rare (and arguably redundant) distinction of being “healthy and nutritious,”<sup>295</sup> and some focus just on fruits and vegetables.<sup>296</sup> Some say food must be fresh,<sup>297</sup> affordable,<sup>298</sup> high-quality<sup>299</sup> (or at least “acceptable quality”<sup>300</sup>), safe,<sup>301</sup> sufficient,<sup>302</sup> varied,<sup>303</sup> “culturally appropriate,”<sup>304</sup> “culturally sensitive,”<sup>305</sup> or some combination thereof. Some claim that food can be inaccessible not just due to distance or cost but to a lack of time for grocery shopping,<sup>306</sup> a lack of time for cooking,<sup>307</sup> a lack of cooking skills,<sup>308</sup> a lack of cooking equipment,<sup>309</sup> social reasons,<sup>310</sup> psychological reasons,<sup>311</sup> lifestyle reasons,<sup>312</sup> “knowledge factors,”<sup>313</sup> “attitudinal factors,”<sup>314</sup> and an “unwillingness to consume



locally-available [sic] fruit and vegetables.”<sup>315</sup> Some argue that having a grocery store nearby isn’t enough, because “[a] healthy community . . . is one that has a *variety* of places to buy nutritious foods [italics added].”<sup>316</sup>

Even if everyone agreed on these components of a definition, there are still many ways to operationalize each component. Consider the term “poor urban area,” taken from an early definition in the literature.<sup>317</sup> “Poor” has been operationalized to mean living below the state-determined poverty line,<sup>318</sup> earning the bottom quintile of income,<sup>319</sup> and—going back to the USDA income requirement mentioned earlier—“a poverty rate of 20 percent or more, or a median family income less than 80 percent of the State-wide median family income; or a tract in a metropolitan area with a median family income less than 80 percent of the surrounding metropolitan area median family income.”<sup>320</sup> “Urban area” has been operationalized to mean only densely populated areas such as New York or San Francisco,<sup>321</sup> 21 specific metropolitan areas,<sup>322</sup> and any metropolitan area.<sup>323</sup>

Now consider how the physical accessibility component of food desert definitions—generally speaking, how close neighborhoods are to grocery stores—has been operationalized. Some studies measure distance using simple spatial buffers,<sup>324</sup> some use network distances,<sup>325</sup> some measure from the centroids of census blocks,<sup>326</sup> some measure to the population centroids of census block groups,<sup>327</sup> some measure to the population centroids of census tracts,<sup>328</sup> some measure to the centroids of population-weighted ZIP Code Tabulation Areas,<sup>329</sup> some measure from food outlets to each individual household,<sup>330</sup> some use gravity-based models,<sup>331</sup> some use 2-step floating catchment areas,<sup>332</sup> some use 2-step floating catchment areas combined with a kernel density function (aka the “KD2SFCA method”),<sup>333</sup> some use guard areas to account for edge effects,<sup>334</sup> some use time-weighted standard deviational ellipses,<sup>335</sup> and some create raster surfaces that delineate areas according to travel cost.<sup>336</sup> Some evaluate proximity in relation to walking;<sup>337</sup> some to driving;<sup>338</sup> some to walking, driving, and public transit;<sup>339</sup> some to walking, biking, and driving;<sup>340</sup> and some to walking, biking, skateboarding, driving, and public transit.<sup>341</sup>

Some argue that food outlets that are more than half a mile from the population centroid are inaccessible to pedestrians; if more than a mile, they are inaccessible to drivers; and if there is no bus or subway stop within a quarter mile, they are inaccessible to public transit users.<sup>342</sup> Some put aside simple binaries of accessible versus inaccessible and instead use nested zones of access based on 0.25, 0.5, and 1.0 mile network buffers which translate to areas of high, medium, and low accessibility, respectively.<sup>343</sup> One study uses “The Food Balance Score – developed exclusively by Mari Gallagher Research & Consulting Group,” which is based on “the distance from the center of every block in the study area to the closest mainstream food venue divided by the distance to the closest fringe food venue.”<sup>344</sup> Another study focuses on travel costs, arguing that a food outlet is too far away if people must spend more than a certain percentage of their food budget traveling to it.<sup>345</sup> Another proposes a 20-minute drive time limit, but only as long as the residents are both low-income and rural.<sup>346</sup> Another proposes a 15-minute walk time limit, assuming a walking speed of 3 miles per hour.<sup>347</sup> Yet another proposes a 10-minute drive time for urban residents and a 20-minute drive time for rural residents, but argues that we need to carefully distinguish between “convenient availability” and “reasonable availability.”<sup>348</sup>

Lastly, consider the operationalizations of the term “healthy food outlet.” Some studies limit healthy food outlets to supermarkets,<sup>349</sup> some include “fruit and vegetable stands” or “fruit and vegetable sources,”<sup>350</sup> some include farmers’ markets,<sup>351</sup> some include “food hubs,”<sup>352</sup> some include “healthy bodegas,”<sup>353</sup> and some include any food outlet except convenience stores.<sup>354</sup> Some include convenience stores, “snack shops,” and “a recent ‘virtual grocery’ innovation, Internet groceries.”<sup>355</sup> Even when researchers agree on the inclusion of supermarkets, they often disagree on how to distinguish supermarkets from other kinds of grocery stores. Some say supermarkets need to be at least 2,500 square feet<sup>356</sup> or at least 10,000 square feet<sup>357</sup> or at least 30,000 square feet.<sup>358</sup> Some go beyond square footage and say that a supermarket needs to have annual sales of at least \$1 million<sup>359</sup> or \$2 million<sup>360</sup> or \$5 million.<sup>361</sup> The number of

employees can be a factor as well, with researchers claiming that a store needs at least 5,<sup>362</sup> or 18,<sup>363</sup> or 50<sup>364</sup> employees in order to be considered a supermarket. Some researchers argue that stores with 1 to 19 employees should be considered “small supermarkets,” stores with 20 to 49 employees should be considered “medium supermarkets,” and stores with 50 or more employees should be considered “large supermarkets.”<sup>365</sup> Others opt to expand existing classification schemes to include large retailers, such as Costco, that seem *supermarket-y enough* to count as supermarkets.<sup>366</sup> One study bypassed all these criteria by simply stating, “Stores selling 4 or more types of fruits and vegetables were considered healthy.”<sup>367</sup> One researcher took the opposite approach by presenting an expansive list of store types and store brands found in the United Kingdom: “bakers, butchers, chemists, convenience stores (differentiated between those with 10 or more kinds of fresh fruit and vegetables and those with under 10), ethnic minority grocery stores (e.g. Chinese, Halal/Asian, Polish), farm shops, fishmongers, garage forecourt stores, greengrocers, post offices, supermarkets (Aldi, Asda, Budgens, Lidl, Morrison, Marks & Spencer, Sainsbury, Tesco, Waitrose, also differentiating between local and full stores, such as Tesco Express) and other stores also offering food items (e.g. Home Bargains, Wilkos). NB Chemists and post offices, although not food stores, are [also included].”<sup>368</sup> In a different study this same researcher also speculated that “[p]erhaps ‘food deserts’ can exist as fractions of a household” if some people within a household eat poorly compared to the rest.<sup>369</sup> Another researcher argued that a healthy food outlet can’t eliminate a food desert unless it sells healthy food “in enough quantity and variety so as to provide for one-stop shopping for a week’s worth of groceries.”<sup>370</sup>

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I think this grab bag of definitions and operationalizations demonstrates that there is not much constraining this process. It’s as if researchers are standing in front of a massive control

panel, and no matter how they adjust the knobs, flip the switches, and turn the dials, a machine spits out a food desert—one that seems roughly as good as any other. After all, many of the decisions involved in creating these food desert definitions and operationalizations appear to have no real scientific rationale behind them. There is no discernible reason, for example, to choose a distance threshold of 400 meters versus 500 meters, or a poverty threshold of living below the state-determined poverty line versus earning the bottom quintile of income, or a sales threshold of \$1 million versus \$2 million. The decisions seem arbitrary, or at least partly so, and I suspect that researchers are aware of it, because they rarely even try to justify these decisions.\* This is understandable on the one hand, because if you know that a justification is not going to succeed, why bother? On the other hand, however, it smacks of an intellectual cop-out.

This is not to say that all of their decisions are arbitrary, or that all of their more arbitrary decisions are equally arbitrary. For example, it wouldn't make sense to choose a distance threshold of 1,000 miles or a poverty threshold of 500 times the poverty line. Perhaps, then, such decisions should be called "semi-arbitrary," because they seem neither totally arbitrary nor totally non-arbitrary. Regardless, within certain vague limits of what "makes sense" or what is "reasonable," it seems equally defensible to pick an employee threshold of 5 employees rather than 18 employees or a sales threshold of \$1 million rather than \$2 million. This conundrum is described memorably by University of Aberdeen computer scientist Kees Van Deemter: "Certain precisely specified thresholds have entrenched themselves in various research communities, but they are about as rational as throwing a big party when we turn 30: with equal justification, we could have postponed the party until we turn 33.33. . . ."371

It is true that a certain amount of arbitrariness is necessary to make science work. There is no clear demarcation between a cloud and the air around it, and so in order to study certain

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\* A group of researchers has noted that "[s]tudies using buffer distance-based measures only occasionally provided a rationale for the buffer distances they selected. . . . [S]ome researchers have noted the lack of criteria for determining suitable buffer distances. . . ." See: Caspi et al., "Local Food Environment."

characteristics of clouds, scientists need to *just agree* on where a cloud begins and ends. They are aware that they don't have the strongest reasons to put the line here versus a few feet away, but they recognize that they need to put a line *somewhere*. This might just be a one-off stipulation—"For the purposes of this study, the cloud begins here"—or, if enough scientists reach a consensus, it could reach the status of a disciplinary convention. In either case, the decision is arbitrary to some degree. Indeed, it is redundant to say that a convention is arbitrary, according to the famed philosopher David Lewis.<sup>372</sup> Such conventions are necessary for quantifying anything with "fuzzy boundaries"—such as clouds, mountains, ecosystems, and orbitals—and yet their arbitrariness doesn't seem to be much of a hindrance to the success of the sciences that use them.

One might argue, then, that food deserts are like clouds: They have fuzzy boundaries, and therefore researchers need to create conventions to study them, and that's the end of it. But it's not just the boundaries of food deserts that are fuzzy. *The entire concept* is fuzzy, and so the very *existence* of food deserts in specific locations is also on shaky ground—which is a much bigger problem. It is therefore not merely the size and shape of food deserts that's at stake; it's also whether certain places are considered food deserts at all. Food deserts can pop in or out of existence across a landscape depending on how they are defined and operationalized. A small change in the operationalization of the term "healthy food outlet," for example, can make every healthy food outlet in an area "disappear" and thus make a food desert "appear." This can also happen even if an operationalization remains unchanged, such as when the annual sales of a supermarket cross a sales threshold (e.g., \$1 million) and then dip below it the following year.

Scenarios like these are not just speculation. A study of the San Francisco Bay Area argued that many of the area's food deserts were, in fact, the opposite—namely, "food oases."<sup>373</sup> A study of a small town in Maine found that the percentage of people in food deserts dropped from 43 percent to 30 percent when the method for measuring distance to grocery stores was changed from Euclidean distance to network distance.<sup>374</sup> A study of Kings County, Washington

found that estimates of “total vulnerable populations [i.e., people in food deserts]” varied from 4 percent to 33 percent depending on the definition used.<sup>375</sup> A study of New Orleans found that “commonly-used constructs in the food desert literature result in prevalence rates for New Orleans of anywhere from 17% to 87% of the city's 175 census tracts”<sup>376</sup>; in other words, there is a *fivefold difference* in the number of food deserts (30 census tracts versus 152 census tracts depending on which definition was used. An analysis of six categories of food desert methodologies concluded that “[e]ach highlighted different patterns of high and low accessibility and had large disagreement in whether a given block group had high or low accessibility.”<sup>377</sup>

I call this the “conceptual malleability” of food deserts. It stems from the fact that the concept of food deserts is an amalgamation of hazy social concepts, such as proximity, convenience, health, poverty, affordability, food quality, cultural appropriateness, and more. These concepts have been debated since the dawn of civilization, and their meanings are constantly in flux. Thus, even if we could get an entire research community to agree on the meaning of *one* of these concepts—an unlikely event—this agreement wouldn’t last very long as new researchers enter the field and subsequently challenge the old interpretations. And it is virtually guaranteed that researchers would have disagreements about the remaining concepts.

With this in mind, let’s revisit the comparison between food deserts and clouds. Clouds are produced when enough water vapor condenses onto microscopic particles (e.g., dust, salt, soot to make the water visible to the naked eye. Meteorologists may have minor disagreements about arcane details of cloud formation and classification, but this doesn’t lead to debates about whether the big, fluffy, white things in the sky are clouds or something else entirely—perhaps large balls of cotton?—or to philosophical discussions about *what clouds really are*. Conceptual malleability is thus a non-issue here.

Several years ago a study was conducted on how everyday people understand the size and shape of their neighborhoods. Researchers asked 58 adults in Stoke-on-Trent, England to draw their neighborhoods on a map, and then compared each drawing to a simple 1-mile buffer around the participant’s house.\* The neighborhoods drawn by the participants ranged from 0.3 percent to 111 percent as large as the 1-mile buffers, with the average neighborhood being 16 percent as large as the buffer. The average participant therefore perceived their neighborhood to be *84 percent smaller* than the 1-mile buffer frequently used by researchers. When the researchers used “network buffers”—buffers that are measured along existing streets—instead of straight-line buffers, the range grew to 0.6 percent to 245 percent, meaning that at least one person drew a neighborhood that was almost 2.5 times the size of the buffer.<sup>378</sup>

So which neighborhood drawing is the “right” one? All the participants in the study were competent adults who lived in the area, so each participant would seem to possess roughly the same amount of authority on the issue. If we suppose that one of the participants had a degree in urban planning and another was a writer who is known for her deep understanding of the local culture, it *might* make sense to give their drawings more weight. Still, their credentials and status shouldn’t provide them with the authority to decide the matter entirely themselves. How do we decide, then?

We face the same question with food deserts. How do we adjudicate between conflicting definitions and operationalizations? How do we decide which definition or operationalization is “right”?

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There seems to be a handful of approaches to this problem of adjudication, each with its strengths and weaknesses:

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\* Incidentally, a 1-mile buffer is exactly how many food desert studies define a neighborhood.

*Appeal to authority:* We let an authority decide the issue. This would be a person, group, or organization who arrived at their position of authority due to some combination of knowledge, credentials, and influence. The USDA, for example, would be a prime candidate. This approach would be the easiest, but it also amounts to punting on the issue, because there is no actual adjudicating involved—only passing the ball to others who will adjudicate.

*Appeal to convergence:* We let the research community continue to debate the issue in the hope that they will converge on the right answer. This puts a lot of faith in the idea that smart people will eventually come to the same conclusions. While this perspective is defensible—and maybe even a safe bet—it is also dismissive of the very real possibility that researchers *won't* come to the same conclusions. After all, convergence is not guaranteed.

*Appeal to pragmatism:* We approve of any definition and operationalization that researchers find useful. If a definition or operationalization succeeds in generating results that people value, then we have no reason to criticize it.\* This approach equates truth with utility—a move that is supported by some philosophers (albeit in a more nuanced form) but rejected by most. Competing conceptions of truth aside, this approach effectively dismisses any concerns about motivated reasoning and other cognitive biases, as it gives a pass to researchers who are trying to get certain results for personal or political reasons.

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\* This is the type of pragmatism one is most likely to encounter outside of a few rarified contexts (e.g., graduate-level philosophy classes). It only partly resembles the philosophical tradition of the same name that began in America in the late nineteenth century. As such, it might be more appropriate to call it what the philosopher Susan Haack and others have called it: “vulgar pragmatism.”



*Appeal to science/scientism:* We examine the definitions and operationalizations one by one and evaluate their scientific rigor. If none are sufficiently rigorous, we say so—and perhaps create our own. This maintains a strong commitment to the truth (i.e., in the way most people define it). However, it also forces us to take sides on the debates over the hazy social concepts that underlie food deserts, such as “What is health?” It also forces us to take sides on a number of decisions that are rather arbitrary.

Suppose we adopt the last approach and decide to examine the various definitions and operationalizations in the literature. We are disappointed by what we see in the literature, so we resolve to bolster the scientific rigor of food desert research. How would we go about achieving this? One place to start would be to conduct a study on transporting groceries by foot, as this would give us a more scientific reason to choose a particular distance threshold. We could recruit 100 adults, give each an average load of groceries to carry, and make them walk various distances. After each trial of walking, we could ask them about how they felt—“Was the distance inconvenient? Was it ‘too far’ to walk?”—and then measure various biomarkers such as heart rate, respiration, perspiration, and cortisol. The results would probably be wide-ranging, but we could take the average. With the average in hand, we could declare—with more scientific certainty than anyone else has attained on the subject—what a reasonable distance was to expect people to walk if they are carrying groceries. Food desert researchers could then finally agree on a distance threshold that was maximally calibrated with people’s abilities and preferences.

Would this lead to better food desert operationalizations? In one sense, yes. Adopting this new threshold would represent a small increase in scientific rigor and a small decrease in arbitrariness. I’m inclined to think, however, that this would represent merely an increase in the *appearance* of scientific rigor, because food deserts are probably not the kind of thing one can be rigorously scientific about. An analogy will help us understand why.

Magazines are constantly publishing articles with titles like “2019 Best Cities to Retire”<sup>\*</sup> and “America’s Most Creative Cities.” Most of these articles have some sort of methodology behind their rankings. When evaluating cities for retirees, the authors will factor in things like the number of golf courses and the number of sunny days per year, and when looking for signs of a city’s creativity, they will factor in things like the number of art exhibits and the number of music venues per capita. There is always some semblance of reason behind this; after all, most retirees enjoy golf courses and sunny weather, and most creative types enjoy art exhibits and music venues. These articles make no pretensions of being scientific, however, and readers are not anticipating something scientific. There is thus no mismatch in expectations, because nearly everyone recognizes that qualities such as “best for retirees” or “most creative” are largely subjective—they depend on opinions about what is best and what is creative. If we compare this to food desert research, it appears that food desert research is engaging in a similar activity, but with pretensions of being scientific. When push comes to shove, how is creating an index of healthy food accessibility any different than creating an index of city creativity? The two activities appear to be methodologically indistinguishable.

Our increase in scientific rigor with regard to walking thresholds would therefore be comparable to an increase in scientific rigor with regard to music venues per capita. We can imagine the authors of “America’s Most Creative Cities” discovering that their music-venue-counting methodology failed to include coffee shops that host singer-songwriters on Friday nights and subsequently updating their rankings to account for this new, more accurate dataset. Do we really think that the authors would have gotten any closer to identifying the most creative cities in America?

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<sup>\*</sup> Thanks to Steve Egbert for this example.

### 5.4.3. Observational studies

Perhaps the statistical associations that have been found between food deserts and various undesirable social phenomena can rescue the idea that food deserts are objective. Taken together, these associations are some of the best evidence in favor of the idea, because—as I mentioned near the beginning of the chapter—it suggests that food deserts might be causing certain phenomena; and if they are causing certain phenomena, they must exist, and if they exist, they must be objective in some way. This makes sense, but I'm not persuaded. The reason is that most of these associations come from observational studies, and observational studies tend to produce weak, equivocal results rife with caveats and fine print. Moreover, observational studies can only suggest causality, not infer it.

In observational studies, researchers look at variables in a population and see if there are any meaningful associations between those variables. One of the most famous examples of this is the research that led to the discovery that smoking causes lung cancer. Researchers collected data on thousands of smokers and nonsmokers and found that smokers contracted lung cancer at much higher rates than nonsmokers—15 to 30 times higher, according to the CDC.<sup>379</sup> This research was observational rather than experimental because the researchers didn't manipulate any variables. They didn't, for example, randomize people into two groups, instruct one group to smoke and the other not to smoke, and then wait to see if one group experiences more instances of lung cancer. Thankfully, they just collected data on a mix of smokers and nonsmokers who were going about their lives, and then used statistical techniques to uncover the relationship between smoking and lung cancer.

The case of smoking and lung cancer is one of the very few unambiguous success stories stemming from an observational study, however.<sup>380</sup> Most observational studies show relatively small differences between groups of people, and the differences are usually prefaced by a litany of qualifying factors—factors the researchers themselves know could render the results null and meaningless. One food desert study, for example, used multilevel modeling to analyze data from

random census tracts in four cities. After adjusting for several sociodemographic characteristics and behaviors (e.g., race, income, physical activity), the researchers found that the census tracts with at least one supermarket within its boundaries were associated with a 6 percent lower prevalence of “overweight” (i.e., people being overweight) and a 17 percent lower prevalence of obesity.<sup>381</sup> However, they also found that the presence of at least one non-supermarket grocery store—a grocery store that was neither a convenience store nor a “large corporate owned ‘chain’ food store”—was associated with a 3 percent *higher* prevalence of overweight and a 7 percent *higher* prevalence of obesity.<sup>382</sup> When the authors compared census tracts with only supermarkets to census tracts with various combinations of supermarkets, grocery stores, and convenience stores, the results were perplexing: Tracts with only grocery stores had a higher prevalence of overweight and obesity than tracts with only convenience stores; tracts with all three types of store had exactly the same prevalence of obesity and almost the same prevalence of overweight as tracts with no food stores at all; and tracts with only supermarkets and grocery stores had a higher prevalence of obesity but a lower prevalence of overweight.<sup>383</sup> After presenting this hodgepodge of results, the authors present a list of methodological concerns that is worth quoting in full:

First, the cross-sectional design of this study does not allow the establishment of a temporal relationship between the local food environment and obesity. Second, individuals were not asked where they shop for food, so misclassification may have occurred if the census tract does not represent the area relevant to the food shopping habits of a particular individual. For instance, reliance on the local environment for food may differ by other factors such as transportation use. This may be more of an issue for African Americans, as the proportion of households without a private vehicle in predominately black census tracts is 30% versus 7% in white neighborhoods. Third, we have assumed that the local food environment has remained stable between 1993 and

1999. Fourth, the possibility that obese individuals select neighborhoods with certain types of stores cannot be eliminated, nor can the possibility that market research locates supermarkets in areas where individuals maintain a healthy body weight. Fifth, the local food environments that individuals have been exposed to over their life course may be a more relevant predictor of obesity levels in adulthood than the contemporaneously measured environment. Sixth, other neighborhood-level variables associated with the presence of different types of stores could also account for the findings. For example, neighborhoods with supermarkets may be safer and have more recreational resources. We attempted to account for neighborhood factors associated with physical activity by controlling for individual-level measures of physical activity, but other pathways linking neighborhoods to obesity could also play a role. Finally, the types of available food stores were used as crude estimates for availability and cost of healthy foods because there is some evidence that, at least in the U.S. context, supermarkets often offer a greater variety of healthy and affordable foods.<sup>384</sup>

Not exactly reassuring. Nevertheless, the study's abstract concludes: "Results from this study suggest that characteristics of local food environments may play a role in the prevention of overweight and obesity."<sup>385</sup>

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We should also be concerned that a nontrivial amount of human judgment is involved in the statistical analysis of observational study data. The statisticians S. Stanley Young and Alan Karr illustrate this with the following example.<sup>386</sup> The CDC looked for traces of 275 chemicals in the urine of roughly 1,000 people, each of whom provided information about 10 demographic variables (e.g., income, education, ethnicity) and health status with regard to 32 medical

outcomes. After analyzing the results, the agency claimed that bisphenol A (more popularly known as “BPA”)—a chemical found in certain plastics and resins in consumer products—was associated with cardiovascular problems, liver enzyme abnormalities, and diabetes. Young and Karr write, “There are 275 [chemicals] × 32 [medical outcomes] = 8800 potential endpoints for analysis [in the CDC data]. Using simple linear regression for covariate adjustment, there are approximately 1000 potential models, including or not including each demographic variable. Altogether the search space is about *9 million* models and endpoints [italics added].”<sup>387</sup> They then wryly note, “The [researchers] remain convinced that their claim is valid.”<sup>388</sup>

Even when a methodology seems defensible, it is common for observational studies to be contradicted by subsequent studies or fail to produce the same results when other researchers attempt to replicate them. Because of this, Young and Karr declare that “any claim coming from an observational study is most likely to be wrong. . . .”<sup>389</sup> Outrageous as this statement may seem, they back it up with data. Their most sobering example is the replication rate for a group of 12 randomized clinical trials that tested 52 observational claims: “[The trials] all confirmed no claims in the direction of the observational claims.” Concerned that the gravity of that sentence would be lost on some readers, they drive the point home: “We repeat that figure: 0 out of 52 [claims were replicated]. To put it another way, 100% of the observational claims failed to replicate. In fact, five claims (9.6%) are statistically significant in the clinical trials *in the opposite direction* to the observational claim.”<sup>390</sup> This is especially worrisome given that randomized clinical trials are among the best, most rigorous, and most well-funded studies in science. Indeed, according to the famed physician-scientist John Ioannidis—one of the world’s foremost authorities on the statistical analysis of medical data—observational studies “seem hopeless, with rare exceptions,” given that “[e]ven minimal confounding or other biases create noise that exceeds any genuine effect.”<sup>391</sup> Even big datasets “just confer spurious precision status to noise,” he writes.<sup>392</sup>

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The year before Ioannidis lamented the hopelessness of most observational studies, he conducted a study that highlighted these problems in a memorably irreverent way. He and his colleague Jonathan Schoenfeld used software to randomly select 50 ingredients from a cookbook called “The Boston Cooking-School Cook Book” and then searched the epidemiology literature for observational studies that assessed the cancer risk posed by each ingredient. The search yielded 264 studies that covered 40 of the 50 selected ingredients. According to the studies, the following foods were associated with either an increase or a decrease in cancer risk: veal, salt, pepper spice, flour, egg, bread, pork, butter, tomato, lemon, duck, onion, celery, carrot, parsley, mace, sherry, olive, mushroom, tripe, milk, cheese, coffee, bacon, sugar, lobster, potato, beef, lamb, mustard, nuts, wine, peas, corn, cinnamon, cayenne, orange, tea, rum, and raisin.<sup>393</sup> In other words, 80 percent of the ingredients were associated with cancer either positively or negatively, which prompted Ioannidis and Schoenfeld to title the article “Is Everything We Eat Associated with Cancer?”<sup>\*</sup> While the main finding and the title were surely enough to embarrass epidemiologists, they took it a step further, writing that “the vast majority of these claims were based on weak statistical evidence,” that “[m]any single studies highlight implausibly large effects,” and that “[e]ffect sizes shrink in meta-analyses.”<sup>394</sup>

Ioannidis also recently evaluated a meta-analysis published in *The American Journal of Clinical Nutrition*<sup>395</sup> that claimed that eating “risk-decreasing” foods decreases one’s likelihood of dying from any cause by 56 percent and eating “risk-increasing” foods increases one’s likelihood of dying from any cause by 200 percent.<sup>†</sup> If these findings were taken seriously and

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<sup>\*</sup> They didn’t find any studies on the cancer risk posed by bay leaf, cloves, thyme, vanilla, hickory, molasses, almonds, baking soda, ginger, or terrapin. See: Schoenfeld and Ioannidis, “Everything We Eat.”

<sup>†</sup> The authors of the meta-analysis use causal language (“results in”), correlational language (“is associated with”), and probabilistic language (“can lead to”), so it is difficult to pin down their exact position about the causality of these factors.

treated as causal factors that applied to a lifespan of 80 years, Ioannidis writes, this would mean that eating 12 hazelnuts per day would add 12 years to one's life, eating 1 mandarin orange per day would add 5 years to one's life, eating 1 egg per day would subtract 6 years from one's life, and eating 2 slices of bacon per day would subtract an entire decade from one's life ("an effect worse than smoking").<sup>396</sup> "Could these results possibly be true?", he asks rhetorically.<sup>397</sup>

Most epidemiologists are at least aware of the problems with observational studies, and for some, this has fostered an unsettling amount of skepticism toward their own field. As the science journalist Gary Taubes reports, "[M]ost epidemiologists interviewed . . . said they would not take seriously a *single* study reporting a new potential cause of cancer unless it reported that exposure to the agent in question increased a person's risk by at least a factor of 3. . . ."<sup>398</sup> In other words, even if a study claimed that being exposed to a pathogen increased a person's cancer risk *threefold*, most epidemiologists interviewed by Taubes would nevertheless worry that this finding was the result of bias, confounding factors, or poor methodology—especially if the study was small and lacked biological data to support the hypothesized connection. Taubes goes on to quote an epidemiologist from the University of California, Los Angeles, who argues that a study claiming a twofold increase in risk is worth taking seriously, "but not that seriously."<sup>399</sup>

Recall that the aforementioned food desert study found increases or decreases in rates of overweight and obesity that were as low as 3 percent—*1/100th* of the increase that would make the epidemiologists interviewed by Taubes take a study seriously, and only marginally seriously at that. Other related studies have announced similarly small results: Features of the urban environment in Toronto and Vancouver were found to explain 6 percent of residents' Body Mass Index (BMI, a measure of body fatness);<sup>400</sup> in the greater Boston area, the perception that there was a supermarket nearby was associated with an increase in fruit and vegetable consumption of half a serving per day;<sup>401</sup> having access to a grocery store was associated with an increase in fruit consumption of 84 grams per day<sup>402</sup> (the equivalent of less than half of a medium-sized apple);



every additional meter of grocery store shelf space in New Orleans dedicated to fresh vegetables was associated with an increase in vegetable consumption of 0.35 servings per day.<sup>403</sup> Given the small size of these associations—and the fact that weight gain and eating habits are determined by a wide range of factors that interact in complex ways—it is almost guaranteed that the associations would disappear or change dramatically if more factors were accounted for, or if the studies were repeated in different areas, or if the studies were repeated by different researchers.

The dream for researchers is to discover associations that are so consistently large that “plausible alternative causal explanations are unimaginable,” as Taubes and his colleague Nina Teicholz put it.<sup>404</sup> The associations discovered by food desert researchers, however, are so small and inconsistent that plausible alternative causal explanations are quite imaginable. As such, they don’t lend convincing support to the idea that food deserts are objective.

#### 5.4.4. Data source inaccuracies

The situation is even more bleak when we consider the data sources used in these studies. The aforementioned study of how BMI varies with features of the urban environment, for example, relied on asking people how much they weigh. Not only is it well known that people lie about their weight when surveyed, there is evidence that this lying is getting more extravagant with time.<sup>405</sup> Heavier people also tend to lie more about their weight,<sup>406</sup> presumably due to the stigmas they face. Thus, given that low-income people tend to be heavier, and food deserts are usually defined as low-income areas, it is likely that the weight surveys used in many food desert studies are even more inaccurate than the average weight survey. Similarly, the aforementioned studies about increased fruit and/or vegetable consumption relied on food recall surveys, which rival weight surveys in terms of their (un)reliability. The study about supermarket perceptions in greater Boston evaluated the diets of participants by asking them to “rate the frequency of consumption within the last week of 100% orange or grapefruit juice, other 100% juices, not counting fruit drinks, other fruit, green salad (with or without other

vegetables), other vegetables (not counting potatoes), and baked, boiled, or mashed potatoes.”<sup>407</sup> The available responses to this question were “never, once, 2-4 times, nearly daily, and twice or more daily,” which the researchers then converted to daily servings of “0, 0.14, 0.43, 1 and 2 servings, respectively.”<sup>408</sup> The study that found a small increase in fruit consumption used a similar survey method, while the study that looked at grocery store shelf space in New Orleans only asked participants about their fruit and vegetable consumption in the previous 24 hours. When the results of surveys like these are compared with various biomarkers in the blood and urine of survey participants, the survey results are often found to be wildly inaccurate.<sup>409</sup> This mismatch was demonstrated again recently when a group of scientists examined nearly 40 years of food recall data and found that 58.7 percent of men and 67.3 percent of women gave calorie intake estimates that were “not physiologically plausible.”<sup>410</sup> Commenting on this and similar findings, the study’s lead scientist denounced all research based on food recall surveys—a category that covers enormous swaths of research across many academic fields—as “a vast collection of nearly baseless anecdotes.”<sup>411</sup> According to Washington Post columnist Tamar Haspel, the best way to understand the problems with food recall surveys is fill one out yourself: “Maybe you know how often you ate pie last year, but do you know how often you ate ‘foods with oils added or with oils used in cooking (do not include baked goods or salads)’?”<sup>412</sup> She then goes on to quote John Ioannidis, who gives a predictably devastating assessment: “With this type of data, you can get any result you want. You can align it to your beliefs.”<sup>413</sup>

Similarly, the third-party data sources used by researchers to locate food outlets have been shown to contain a troubling number of omissions, inconsistencies, and errors. A study that examined two large commercial databases found that one of the databases undercounted grocery stores and supermarkets by 39 percent and the other undercounted them by 42 percent.<sup>414</sup> Another study comparing two commercial databases found a 40 percent difference in the number of grocery stores and supermarkets listed in them.<sup>415</sup> Another study found rampant misclassification in a database of New Jersey food outlets that led to a *sevenfold*

overcounting of supermarkets and grocery stores and a threefold undercounting of convenience stores.<sup>416</sup> Another study found that out of 3,653 supermarkets tallied across two databases, only 2,312 (63 percent) were listed in both databases.<sup>417</sup> Another study used field research to test the accuracy of a public directory and found that only 36.9 percent of food outlets were correctly listed and 29.6 percent of outlets were missing.<sup>418</sup> One study of three databases found that 20 percent of food outlets were listed with addresses that were sufficiently inaccurate to put them in the wrong census tracts, and that only 29 to 39 percent of addresses were accurate within 100 meters.<sup>419</sup> To be fair, not all studies have found such high levels of inaccuracy. A study in Scotland, for example, found that 8 out of every 9 food outlets listed in the Glasgow City Council directory were listed accurately.<sup>420</sup> Nevertheless, even minor inaccuracies can propagate through the system and completely undermine a study. As Ioannidis and his colleague Muin J. Khoury put it, “[R]esearch accuracy is dictated by the weakest link.”<sup>421</sup>

#### 5.4.5. Natural experiments

Conducting experiments is clearly a superior way to find meaningful associations between phenomena than examining observational data. By manipulating variables and seeing how other variables respond, researchers can gain much more insight into causal relationships. When it comes to social phenomena, however, conducting experiments is often impossible, infeasible, or unethical. For example, although it would settle many of the questions that keep food desert researchers up at night, no one is going to randomly select people, force them to move into food deserts, and then see what happens to their health. In cases like this, researchers have to settle for what are sometimes called “natural experiments,” which are observational studies that have a quasi-experimental component.\* Researchers observe what happens when individuals or groups are exposed to some condition, but the condition is not

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\* This is why some people call these studies “quasi-experimental studies.”

chosen by researchers. For example, they can see what happens to food desert residents when a grocery store moves into town, but they don't have any part in the grocery store moving into town. In this case the variable of "food desert status" was manipulated—which is better than no variable being manipulated—but it was manipulated by a non-researcher—which is worse than it being manipulated by a researcher. Like all compromises, natural experiments leave everyone mildly dissatisfied, but it's hard to do social science without them.

Observational studies greatly outnumber natural experiments in the food desert literature. Given the methodological superiority of the latter, one might hope that the natural experiments in existence could do a better job of supporting the idea that food deserts are objective. Alas, this is not the case, because many of the results from natural experiments have been just as weak and equivocal as the results from observational studies or have actually undermined the idea that improving access to healthy food makes any substantive difference at all. Consider the following example. Researchers at the University of Saskatchewan recently found that after a grocery store opened in a Saskatoon, Saskatchewan food desert, residents spent an average of 70 cents (Canadian dollars) more on vegetables every time they went grocery shopping.<sup>422</sup> This is an interesting finding, but given that most studies discuss food servings per day instead of dollars spent per trip, I had to do some calculations in order to make it easier to compare with other studies. According to data from Dalhousie University, Canadians shop for groceries an average of 1.29 times per week.<sup>423</sup> An increase of 70 cents per trip multiplied by 1.29 trips per week equals an increase of 88.9 cents per week, or 12.7 cents per day. A one-pound bag of fresh baby spinach costs \$4.97 at Walmarts in Canada (as of February 2020).<sup>424</sup> The bag contains 7 servings, so each serving costs 71 cents (54 cents U.S.). This means that, in terms of servings of spinach, the introduction of a grocery store resulted in former food desert residents increasing their spinach purchasing by an average of less than *a fifth of a serving* per day. And that's just purchasing, not eating. Given that Canadians throw out roughly a pound of food per day,<sup>425</sup> it is more or less guaranteed that the actual increase in

vegetable *consumption* would be lower. The study's authors decided to accentuate the positive, however, concluding that their results show that "when given geographical access to healthy foods . . . low-income neighborhood residents will make healthy food purchases."<sup>426</sup>

Other studies show similar results. After a new grocery store opened in a Leeds, England food desert, a study found that residents increased their average intake of fruits and vegetables by a truly infinitesimal amount: 0.04 servings. Eager to show that some residents improved their diets significantly, the researchers quickly point out that 60 percent of residents with the poorest diets increased their average intake of fruits and vegetables by 0.44 servings. Perhaps half a serving of fruits and/or vegetables is better than nothing, but fruit juice was included in their criteria, so it's entirely possible that some residents "improved" their diets by drinking half a cup of apple juice—a beverage that has almost as much sugar per ounce as Coca-Cola.\* As with the Saskatoon study, the researchers came to a rather generous conclusion: The effect of the store opening was "positive but modest."<sup>427</sup>

Some natural experiments show that the introduction of a grocery store has no effect on healthy food purchasing at all. In what appears to be the most rigorous and comprehensive study ever conducted on the subject, researchers conducted a multi-year investigation of the changes brought about by the opening of a Shop 'n Save supermarket in a Pittsburgh food desert. Researchers assessed travel distance, fruit and vegetable availability, healthy food and unhealthy food availability (i.e., if the store carried healthy and unhealthy versions of the same food), junk food availability, food prices, and even the presence or absence of factors that could dissuade people from shopping at the new store, such as loitering, panhandling, graffiti on the building, garbage in the parking lot, and so on. The results were disappointing: The new store had both positive and negative effects on the local food environment, and thus "caused little

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\* A 12 fluid ounce can of Coca-Cola has 39 grams of sugar, while 12 fluid ounces of apple juice has 35.8 grams of sugar. See: U.S. Dept. of Agriculture, Agricultural Research Service, "Apple juice"; U.S. Dept. of Agriculture, Agricultural Research Service, "Coca-Cola."

improvement in net availability of healthy foods.”<sup>428</sup> Unlike the previous two studies I discussed, however, the researchers were not so optimistic: “While the HFFI [Healthy Food Financing Initiative] assumes that residents will shop in their own neighborhoods if healthy foods are available there (‘if we build it they will come’), we and other researchers have failed to find support for this assumption.” A related study—conducted in the same area by many of the same researchers—found that the only positive result that could be directly tied to the store opening was “improved *perceived* access to healthy food [italics added].”<sup>429</sup> In other words, the residents *believed* that healthy food was more readily available, but this belief didn’t lead to any appreciable change in the behaviors being studied; the residents didn’t increase their consumption of fruits, vegetables, or whole grains, and they didn’t lose any weight.<sup>430</sup>

#### 5.4.6. Aggregation and uncertainty

There are two methodological problems that afflict all geographically oriented social sciences, including food desert research. These are the Modifiable Areal Unit Problem and the Uncertain Geographic Context Problem. Both have been hiding in the background of the previous discussion, but now I want to address them head-on.

The Modifiable Areal Unit Problem (MAUP) is the name given to the fact that any attempt to aggregate discrete objects or phenomena into areal units has the potential to introduce bias and error.<sup>431</sup> For example, there are many ways to aggregate the discrete objects called “people” into an areal unit called “the Kansas City metropolitan area,” and each has consequences for how one understands Kansas City. The U.S. Census offers two official aggregations, the “Kansas City, MO-KS, Metropolitan Statistical Area” and the “Kansas City-Overland Park-Kansas City Combined Statistical Area.” The former includes 14 counties and an estimated population of 2,143,651 (as of July 2018), while the latter includes 22 counties and an estimated population of 2,239,127 (as of July 2018).<sup>432</sup> The Mid-America Regional Council, a coalition of local governments, argues instead that the metro has 9 counties and a population of

2,086,771 (as of April 2010),<sup>433</sup> while many local organizations and businesses include 5 counties<sup>434</sup> with an estimated population of 1,812,536 (as of July 2018).<sup>435</sup> So while all four of these aggregations are defensible, they each create a different map and a different population estimate. Moreover, while all four are based on counties, one could just as easily aggregate cities, towns, school districts, or even neighborhoods instead, which would produce even more maps and population estimates. The MAUP therefore applies to any situation in which modifying the size or shape of an aggregation has the potential to affect area-based variables (e.g., population) and thus any subsequent analysis of that aggregation. Gerrymandering is perhaps the most notorious example of the MAUP in action.

The Uncertain Geographic Context Problem (UGCoP) is concerned with the fact that it is impossible to know exactly how areas affect individual people. Not knowing how areas affect individual people means there will always be some level of uncertainty about what size, shape, and time frame of areal units should be used when studying a human geography topic.<sup>436</sup> Suppose, for example, we want to understand how living in metropolitan Kansas City might affect residents' political preferences. One of our first tasks would be to select a size, shape, and time frame for the variable "metropolitan Kansas City." After interviewing residents of the area, we decide that the 9-county delineation and a 5-year time frame is the most appropriate. The UGCoP reminds us that no one has the same spatial experience of metropolitan Kansas City—some spend most of their time on the Kansas side of the metro, some spend most of their time on the Missouri side—and that very few have lived in the area for the same length of time, so we can never say for sure what effect it has on political preferences.

The connection between these concepts and food deserts is straightforward. Food desert researchers have to wrestle with both the MAUP and the UGCoP, because aggregating people into food deserts is subject to the MAUP, and evaluating the effects of food deserts on individuals is subject to the UGCoP.<sup>437</sup> These are methodologically thorny tasks that leave a lot

of room for bias and uncertainty. This doesn't mean that it's impossible to study food deserts, but it severely circumscribes the kinds of inferences we can make.

### **5.5. Conclusions about Foundational Idea 2**

The dominant perspective tends to treat food deserts as objects in the world that are just waiting to be brought to light and studied by neutral observers. This is apparent in the language that researchers use and in the precision and sophistication they employ in their quantitative analyses. If researchers thought food deserts were merely metaphorical or a matter of interpretation, they wouldn't use words like "discover," "locate," "find," "identify," "measure," "document," and "underrepresent," and they wouldn't put so much effort into precisely measuring distance, gathering fine-grained demographic data, calculating average food prices to the cent and average incomes to the dollar, making complex maps, and applying sophisticated statistical techniques. The only other explanation for this behavior would be disingenuousness, but there is no evidence of that.

The multitude of problems I have detailed in this chapter should cast serious doubt on the objectivity of food deserts and the entire project of studying food deserts with scientific rigor. As we have seen, the concept of food deserts is excessively malleable, the statistical associations reported in food desert studies are not very convincing, and many of the data sources used by food desert researchers are unreliable. On top of that, all food desert research is subject to the Modifiable Areal Unit Problem and the Uncertain Geographic Context Problem, which undermine any effort to understand socio-spatial phenomena.

It is possible that these obstacles can be overcome. In the meantime, however, skepticism seems to be the only intellectually defensible position. The burden of proof, moreover, remains on the dominant perspective. It should be up to the dominant perspective to prove that food deserts are objective and measurable, not for us to prove that they are not.



## Chapter 6

### Foundational Idea 3: On the Nature of a Healthy Diet

*“Food—one of the most basic of human needs—  
is widely understood as a cornerstone of health.”*

*—Carolyn C. Cannuscio, Amy Hillier, Allison Karpyn, and Karen Glanz*

#### 6.1. Foundational Idea 3 stated

*There is a scientific consensus regarding the nature of a healthy diet. A healthy diet features an abundance of fresh fruits and vegetables; modest portions of whole grains, lean meats, and low-fat dairy; and a minimal amount of salt, sugar, and fat—especially saturated fat and trans fat.*

#### 6.2. Ten examples of Foundational Idea 3 in food desert discourse

*Example 1:* “Numerous studies have shown that eating fruit and vegetables protects against cardiovascular disease, cancer and Type II diabetes. . . . Therefore, consumption of fresh fruits and vegetables is recommended by dietitians, but not everyone can access these foods easily.”<sup>438</sup>

*Example 2:* “[F]resh produce is often unavailable in a food desert. Since fruits and vegetables are an essential part of a healthy diet, access to fresh produce is necessary for good health.”<sup>439</sup>

*Example 3:* “One aspect of the food environment that has garnered particular attention is the availability of affordably-priced healthful foods such as fresh produce, low-fat dairy, lean meats and whole grains.”<sup>440</sup>

*Example 4:* “[L]ess than half of all 88 stores surveyed [sold] any fresh fruits and vegetables. . . . [The] study shows a lack of produce or healthy food options (e.g., whole-grain breads and pasta, lean meats, and low-fat dairy products). . . .”<sup>441</sup>

*Example 5:* “These convenience stores and fast food restaurants don’t typically sell the variety of foods needed for a healthy diet such as fresh fruits and vegetables, whole grains, fresh dairy and lean meat products.”<sup>442</sup>

*Example 6:* “Food deserts are rural or urban areas where access to foods like broccoli, apples, chicken breasts, and other fresh nutritious products is limited and finding these foods is difficult and time consuming.”<sup>443</sup>

*Example 7:* “[T]hose who shop less frequently at supermarkets purchase fewer healthier options—fresh fruits, vegetables, and milk.”<sup>444</sup>

*Example 8:* “In simplest terms, food deserts are places where grocery items—staples as basic as a loaf of bread, a carton of milk, a bag of apples or potatoes—are not affordable or easily accessible.”<sup>445</sup>

*Example 9:* “The only places for Deanwood’s 5,000 residents to buy food in their neighborhood are corner stores, abundantly stocked with beer and Beefaroni but nearly devoid of fruit, vegetables, and meat.”<sup>446</sup>

*Example 10:* “When you’re trying to figure out what to fix your young children for dinner and you realize you need milk and eggs and a bag of salad greens and chicken breasts, and you have no choice but to load everyone in the minivan and drive five miles through

traffic to get to the store, you're feeling the impact of development patterns that have made Atlanta the third-worst urban food desert in the country (behind only New Orleans and Chicago)."<sup>447</sup>

### **6.3. Evidence and arguments in favor of Foundational Idea 3**

This dietary approach is backed by a nearly endless supply of peer-reviewed studies, medical professionals, research institutions, multinational corporations, and government agencies. As with all scientific subjects, it is wise to defer to the experts. This is especially true given that the various health and wellness fields are notorious for attracting quacks, charlatans, and snake oil salesmen.

### **6.4. Evidence and arguments against Foundational Idea 3**

The dominant perspective of food desert research is explicit about the fact that it recommends this dietary approach—what I will call “the conventionally recommended diet”—because it is recommended by mainstream nutrition authorities such as the USDA and the American Heart Association. This is understandable, because the dominant perspective is primarily concerned with a social problem (i.e., food deserts) rather than with the scientific minutiae of nutrition. People who participate in food desert discourse are rarely nutrition experts, so it makes sense for them to simply side with the conventional dietary wisdom.

I will be arguing that this a mistake, for two reasons. The first reason is that the field of nutrition is rife with instability, controversy, and even acrimony, and as such, we should be hesitant to follow the advice of nutrition authorities uncritically. I address these issues in the next two sections: In “Doubting the nutrition authorities, Part 1,” I discuss changes in dietary advice and a pattern of cagey and disingenuous behavior on the part of government agencies, while in “Doubting the nutrition authorities, Part 2,” I focus on bitter controversies surrounding the latest federal nutrition guidelines. The second reason is that anthropological research and

clinical trials have shown that humans thrive on a wide variety of diets, and therefore the conventionally recommended diet doesn't deserve to be treated as the sole path to health. This in turn undercuts the notion that food desert residents are consigned to ill health unless conventionally recommended foods are made more accessible to them.

#### 6.4.1. Doubting the nutrition authorities, part 1: Instability

Are eggs healthy or unhealthy? If you were born in the twentieth century, chances are you have heard a lot of conflicting information about the healthiness of eggs, and you have probably changed your mind on the subject at least once. Confusion over eggs is so pervasive that it has been the butt of jokes for decades. In 1998, the comedian Lewis Black complained, “[People used to say] eggs are good. And then they said eggs were bad! And then they said eggs are good! And then they said they were bad. And then they said the yellows were actually bad but the whites are [*interrupts himself*]*—MAKE UP YOUR MIND!*”<sup>448</sup> Even the Washington Post nutrition columnist Tamar Haspel recently called eggs the “poster food for we-don't-know-jack-about-diet.”<sup>449</sup>

If eggs were the only food that the nutrition establishment has flip-flopped on, there wouldn't be much cause for concern. Unfortunately, this is not the case. “Medical-science ‘never minds’ are hardly secret,” writes journalist David H. Freedman: “Studies have gone back and forth on the cancer-preventing powers of vitamins A, D, and E; on the heart-health benefits of eating fat and carbs; and even on the question of whether being overweight is more likely to extend or shorten your life.”<sup>450</sup> Doctors now sing the praises of high-fat foods such as olive oil, avocados, and nuts—and sometimes even animal fats<sup>451</sup>—but as recently as the 1980s fat was so feared in American society that the American Heart Association urged people to snack on “low-fat cookies . . . hard candy, gum drops, sugar, syrup, honey, jam, jelly, marmalade (as spreads)” because these items were low in fat.<sup>452</sup> Just a couple decades before that, the USDA counseled American adults to drink 2 or more glasses of whole milk per day “combined with other foods, in

ice cream and in cheese,” to eat 3 to 5 eggs per week, and to add 2 or more tablespoons of butter to food per day.<sup>453</sup>

These changes are viewed as a sign of progress by many. After all, the history of science is filled with examples of dramatic transformations and even “paradigm shifts” that are disconcerting at the outset but that eventually push scientific knowledge forward. Nutrition science is going through a period of extraordinary growth, the argument goes, so the ensuing growing pains are naturally going to ripple outward to nutrition policymakers such as the USDA. We should therefore be patient as the authorities figure things out.

This is a plausible interpretation, and it is undeniable that nutrition science and policy have progressed in certain ways. However, there are reasons to be less optimistic. Recall the litany of methodological problems I described in the last chapter: the unreliability of food recall surveys, the poor track record of observational epidemiology, the manipulability of statistical data, the myriad factors that observational studies do not account for, and so on.

As Tim Spector, professor of genetic epidemiology at Kings College in London, puts it, “No other field of science or medicine sees such a lack of rigorous studies. We can create synthetic DNA and clone animals but we still know incredibly little about the stuff that keeps us alive.”<sup>454</sup> There is much more uncertainty in nutrition science than is commonly realized,<sup>455</sup> and this has led to a range of controversies—some of which I describe later—that should be unsettling to anyone who subscribes to what could be called “the Whig interpretation of nutrition history.”\*

Another cause for skepticism is a pattern of evasive and deceptive behavior on the part of nutrition authorities. Consider the federal government’s official nutrition guidelines, the Dietary Guidelines for Americans (DGA), which are written by the USDA and the Department of Health and Human Services (HHS). In 1995, the DGA was still recommending a low-fat diet

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\* Historians use the term “Whig interpretation of history” (or “Whig history,” or “Whiggish history”) to denote “celebration[s] of the present by means of a conception of inevitable progress.” See: Wilson and Ashplant, “Whig History.”

that “provides no more than 30 percent of total calories from fat,”<sup>456</sup> as it had for many years. Five years later, the DGA began recommending a moderate-fat diet. While this change was mildly disconcerting, given decades of strong anti-fat messaging from the USDA/HHS and others, it was defensible in light of changing attitudes toward fat among leading nutrition scientists. The problem, however, is that the maximum calories from fat stayed the same: “Aim for a total fat intake of no more than 30 percent of calories, as recommended in previous editions of the Guidelines,” the DGA now stated.<sup>457</sup> The switch from low-fat to moderate-fat was thus merely a change in terminology rather than a genuine change in advice. Deep in its report, the USDA/HHS’s scientific advisory panel, the Dietary Guidelines Advisory Committee (DGAC), justified this switch on utilitarian grounds, writing that the term “low-fat” seemed to lead to “a less healthy ratio of unsaturated fat to carbohydrates,” while “moderate-fat” seemed “less restrictive by allowing total fat to approach the 30 percent level.”<sup>458</sup> In other words, the DGAC thought that the policy of calling the diet “low-fat” might be inadvertently encouraging people to eat too many carbs, and that rebranding the diet as “moderate fat” might help prevent this unintended effect. This rebranding was not publicized by the USDA/HHS, however, presumably because they knew that some people would view it as condescending or worse. By making their recommended diet appear to be higher in fat when it wasn’t—and effectively hiding this fact—the USDA/HHS treated people as incapable of following their recommended diet without a form of mild deception. The strategy did not last long, though, because five years later, in 2005, the DGA quietly dropped talk of low-fat diets and moderate-fat diets altogether, opting instead to simply recommend that 20 to 35 percent of calories come from fat.

In 2015 the situation became downright puzzling. The DGAC had recently contradicted decades of mainstream dietary advice by arguing that replacing fat with carbohydrate doesn’t decrease the risk of cardiovascular disease, and that eating cholesterol doesn’t have a significant impact on blood cholesterol. “[D]ietary advice should put the emphasis on optimizing types of dietary fat and not reducing total fat,” the DGAC wrote, adding that “[c]holesterol is not a

nutrient of concern for overconsumption.”<sup>459</sup> In response, the USDA/HHS followed this advice—or so it seemed. The 2015-2020 DGA contains no obvious mention of an upper limit on total fat intake, to the point that Frank Hu, chair of the Department of Nutrition at Harvard University and a member of the DGAC, and Walter Willet, the most cited nutritionist in the world,<sup>460</sup> both publicly declared that the DGA had removed the limit.<sup>461</sup> But the limits are still technically there. Buried in a handful of scattered paragraphs are mentions of keeping total fat within “the AMDR”—the Acceptable Macronutrient Distribution Ranges. These ranges are set by the National Academy of Medicine (formerly the Institute of Medicine\*), a nonprofit organization, and they prescribe the minimum and maximum number of calories that should come from protein, fat, and carbohydrate. To find the AMDRs in the DGA, one must go to Appendix 7 on page 97, where there is a table of “Daily Nutritional Goals for Age-Sex Groups.” The row titled “Total Fat, % kcal” displays “20-35” for all the columns that include females and males ages 19 or older.<sup>462</sup> The recommended range for total fat calories is therefore the same as it has been since 2005: 20 to 35 percent. But uncovering this fact requires so much detective work that two of the world’s most prominent nutrition scientists—one of whom is a member of the DGAC—failed to notice it.

The USDA/HHS’s evasiveness on this subject is underscored by a series of emails in 2016 between them and Adele Hite, a registered dietician who at the time was writing a doctoral dissertation on the DGA.<sup>463</sup> Hite had read that the upper limit on total fat intake had been removed from the DGA, but had also noticed the DGA’s scattered references to the AMDR for total fat, so she decided to ask the USDA/HHS the following question: “In the 2015 DGA policy document, is there a recommended limit on the percentage of calories in the diet that should come from fat, and if so, what is it?”<sup>464</sup> The USDA/HHS responded with the following:

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\* The Guidelines were written before this name change, so the text refers to the “IOM” (Institute of Medicine) instead of the National Academy of Medicine.

Thank you for your email. The 2015-2020 Dietary Guidelines for Americans recommends following a healthy eating pattern that accounts for all foods and beverages within an appropriate calorie level. Key Recommendations describe the components of a healthy eating pattern and highlight components to limit. Additionally, supporting text acknowledges that healthy eating patterns should be within the Acceptable Macronutrient Distribution Ranges (AMDRs) for protein, carbohydrates, and total fats. For example, page 35 of the PDF states that “healthy eating patterns can be flexible with respect to the intake of carbohydrate, protein, and fat within the context of the AMDR,” and Table A3-1, which outlines the Healthy U.S.-Style Eating Pattern, one example of a healthy eating pattern, states that “calories from protein, carbohydrate, and total fats should be within the AMDRs.”<sup>465</sup>

Perplexed by this rather oblique answer, Hite wrote back, explaining that the DGA seemed to be recommending one thing while the AMDR seemed to be recommending another. “So, to put it quite simply,” Hite asked, “have the upper limits on percentage of calories from total fat been removed? Would it be possible to get an official ‘yes’ or ‘no’ answer to that question?”<sup>466</sup> The USDA/HHS responded with the following:

Thank you for your email. The 2015-2020 DGAs recommends total fat intake within the AMDRs. As you know, the AMDRs are set by the Health and Medicine Division (formerly the Institute of Medicine), not through the Dietary Guidelines process. An upper limit on total fat intake was not removed from the DGA. The AMDR for total fats for adults is 20-35% of total kcal.<sup>467</sup>

This confirmed that the DGA does still recommend restricting total fat intake, but that the limit is only listed in a single row of a single table on page 97 of a 122-page document.<sup>468</sup> It



appears that the USDA/HHS is trying to distance themselves from the issue of total fat intake, even though total fat intake is a crucial component of any set of nutrition recommendations. I suspect they believe that total fat intake should be limited, but are hesitant to outright recommend it for fear of pushback from certain colleagues and constituencies.

This tension is also apparent in the USDA/HHS's MyPlate website ChooseMyPlate.gov. In its general dietary advice, the site doesn't stress limiting fat intake, but it nevertheless counsels citizens to:

- “Move to low-fat and fat-free milk or yogurt.”<sup>469</sup>
- “Choose lean or low-fat cuts of meat like round or sirloin and ground beef that is at least 92% lean.”<sup>470</sup>
- “Trim or drain fat from meat and remove poultry skin.”<sup>471</sup>
- “Complete your meal with a cup of fat-free or low-fat milk.”<sup>472</sup>
- “Pop a bag of low-fat or fat-free popcorn for a healthier snack.”<sup>473</sup>

Meanwhile, in an “Answers to Your Questions” section, the site states, “The *2015-2020 Dietary Guidelines* does not encourage a low-fat diet (meaning low in total fats) — in fact its healthy eating style examples can contain up to 35% of total calories per day from fat”<sup>474</sup>—the same upper limit that has been in place since 2005. So while the site does not explicitly encourage a low-fat diet, it encourages people to choose lower-fat foods.

The USDA/HHS display a similarly ambivalent attitude toward cholesterol. In the DGA, the text explicitly states that the upper limit on cholesterol intake has been removed, but then immediately adds that “this change does not suggest that dietary cholesterol is no longer important to consider” when deciding what to eat.<sup>475</sup> “As recommended by the IOM [Institute of Medicine],” they continue, “individuals should eat as little dietary cholesterol as possible while consuming a healthy eating pattern.”<sup>476</sup> Their reasoning for this seemingly contradictory

position is that foods high in cholesterol also tend to be high in saturated fat, which they believe is harmful. This is analogous to saying that people should limit their intake of whole wheat toast because whole wheat toast is usually topped with butter or jelly, which they believe are unhealthy. Why not just tell people to limit their intake of butter and jelly? Two paragraphs later, the USDA/HHS admits that “[a] few foods, notably egg yolks and some shellfish, are higher in dietary cholesterol but not saturated fats . . . [and therefore] can be consumed. . . .”<sup>477</sup> In my analogy, then, egg yolks and some shellfish are the equivalent of whole wheat toast without butter or jelly. As with total fat, it seems that the USDA/HHS wants to say one thing about cholesterol but feels compelled to say another. It’s as if they want people to limit their cholesterol intake irrespective of saturated fat, but given that their scientific advisory panel absolved cholesterol as “not a nutrient of concern for overconsumption,”<sup>478</sup> they compromised by trying to make cholesterol guilty by its association with saturated fat.

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The nutrition authorities want to be seen as steadfast, forthright professionals who can be trusted to guide our eating habits. However, by downplaying and even concealing how much their advice has changed—and how much nutrition science has shifted under their feet—they are showing themselves to be less than fully trustworthy. Moreover, they are sowing the seeds of their own irrelevance in the eyes of the public, and as we will see later, some of those seeds are starting to sprout.

#### 6.4.2. Doubting the nutrition authorities, part 2: Controversy

Food has almost reached the level of religion and politics in terms of its ability to inspire heated debate. It’s easy to assume that the nonexperts are generating most of the heat, but nutrition scientists and physicians tend to be just as impassioned, if not more so. “[O]ne of the

few verifiable laws about dietetics,” the historian Felipe Fernández-Armesto declares, “is that the experts always disagree.”<sup>479</sup> “[F]anatical opinions abound in nutrition,” laments John Ioannidis, the physician-scientist whose work I discussed in the previous chapter.<sup>480</sup> Glancing at the diet book section of the local bookstore is enough to see this. Every conceivable way of eating is advocated, usually by people with impressive affiliations and various letters next to their names, and harsh words for rival diets are common. Physician and popular diet book author John McDougall, for example, has been known to call diets other than his ultra-low-fat, starch-based diet “the make yourself sick diets”<sup>481</sup> and “fake news.”<sup>482</sup>

The DGAC’s report that I mentioned in the last section is a particularly good example of the controversial nature of nutrition. Formally called “The Scientific Report of the 2015 Dietary Guidelines Advisory Committee” (hereafter “the Report” or “the DGAC Report”), the Report was intended to provide the USDA/HHS with unbiased advice, based on the best science available, on what should and should not be included in 2015-2020 DGA.<sup>483</sup> It was written by 14 scientists who describe themselves as “recognized as experts in a broad range of domains, including food and nutritional sciences, medicine, epidemiology, nutrition and health policy, public health, and related areas.”<sup>484</sup> Containing 421 pages, 10 appendices, and hundreds of references, it is one of the most comprehensive accounts of the current state of nutrition science. Despite its impressive pedigree and scholarship, however, the Report has provoked bitter dispute among scientists, physicians, journalists, activists, industry leaders, the general public, and even Congress. To put the magnitude of the controversy into perspective, the number of public comments submitted to the USDA/HHS regarding the Report was over 14 times greater than the previous DGAC report that came out five years earlier.<sup>485</sup>

The epicenter of the controversy was an article by journalist Nina Teicholz that was published in the *BMJ* (formerly the *British Medical Journal*) in 2015. Titled “The Scientific Report Guiding the US Dietary Guidelines: Is It Scientific?”, the article argues that the Report

doesn't accurately reflect the current state of nutrition science and thus "risks giving a misleading picture."<sup>486</sup> Below is a sampling of the article's claims:

- The Report used "weak scientific standards," which made the DGA susceptible to biases and agendas both inside the USDA/HHS and outside it.<sup>487</sup>
- In 2010 the USDA set up a Nutrition Evidence Library (NEL) to facilitate systematic reviews of nutrition topics, but the DGAC ignored the NEL for 70 percent of the topics addressed in the Report, choosing instead to rely on reviews by the American Heart Association, the American College of Cardiology, and other professional organizations, which use different standards and have strong ties to the food and pharmaceutical industries. The American Heart Association is particularly suspect in this regard, because it receives funding from vegetable oil manufacturers while recommending that consumers choose vegetable oils over saturated fats.<sup>488</sup>
- The Report's analysis of the research on saturated fat was selective and incomplete. Notably absent is a discussion of the Women's Health Initiative—the largest nutrition study ever conducted—which found that participants who followed government recommendations to lower saturated fat intake "observed no benefits . . . in incidence of fatal and non-fatal coronary heart disease events and total cardiovascular disease, including stroke."<sup>489</sup>
- Low-carbohydrate diets were largely dismissed in the Report as being insufficiently studied, even though dozens of studies—including 74 randomized control trials—have been conducted on them since 2000.<sup>490</sup>
- The Report recommends vegetarian diets and nearly vegetarian diets, but the NEL review of vegetarian diets found that evidence of the diet's ability to fight disease is "limited," which is the NEL's lowest rank of evidence. Moreover, the NEL contains

eight reviews on fruits and vegetables, but none of them found “Strong (grade 1)” evidence that fruits and vegetables provide unique health benefits.<sup>491</sup>

- There is little rigorous evidence that directly supports the Report’s dietary recommendations. Three large trials funded by the National Institutes of Health found that a low-fat, low-saturated-fat diet is ineffective in combating heart disease, cancer, diabetes, or obesity. One of these trials was the aforementioned Women’s Health Initiative, in which roughly 49,000 women spent an average of seven years eating a low-fat diet centered on fruits, vegetables, and whole grains, only to find “no significant advantage of this diet for weight loss, diabetes, heart disease, or cancer of any kind.”<sup>492</sup>
- Some of the members of the DGAC have conflicts of interest that are not stated in the Report. For example, one member has received funding from the Tree Nut Council, the California Walnut Commission, and vegetable oil producers Bunge and Unilever. Another member has received funding from Luminari, which “produces health related multimedia content for General Mills, PepsiCo, Stonyfield Farm, Newman’s Own, and ‘other companies.’”<sup>493</sup>

These claims were met with both praise and outrage. The most salient reaction was a letter to the editor of the BMJ that was initially signed by 194 people. The letter claimed that Teicholz’s article was “riddled with errors” and “based on non-facts” and therefore should be retracted<sup>494</sup>—an unusually strong request, given that retraction requests are usually reserved for cases of fraud and for errors sufficiently egregious to invalidate an entire study.<sup>495</sup> In response, the BMJ asked two independent reviewers to conduct their own formal post-publication reviews of the article. The reviewers agreed that the article contained some inaccuracies, but disagreed that the article should be retracted.<sup>496</sup> The BMJ subsequently published several corrections and clarifications, as well as a reply from Teicholz herself.

On the surface, the controversy over Teicholz's article appears to be within the realm of normal scientific debate. Upon closer inspection, however, multiple agendas emerge. The letter to the BMJ editor was written by Bonnie Liebman, the Director of Nutrition for the Center for Science in the Public Interest (CSPI), an advocacy organization that calls itself "America's Food and Health Watchdog."<sup>497</sup> CSPI is legendary for its aggressive anti-fat campaigning. In the mid-1980s, for example, it launched a "Saturated Fat Attack" campaign to convince the public to avoid saturated fat,<sup>498</sup> and in the mid-1990s it launched a "1% or Less" campaign to convince the public to only drink skim milk or 1% fat milk.<sup>499</sup> More recently it has lobbied the USDA to require cancer warning labels on packages of bacon and other processed meats.<sup>500</sup> CSPI is best known among certain nutrition circles, though, for its role in convincing the food and restaurant industries to use partially hydrogenated vegetable oils instead of the customary animal fats and palm oils.<sup>501</sup> This push was intended to lower the amount of saturated fat in the American diet, and in this respect it was successful, but it did so at the cost of dramatically increasing consumption of industrially produced trans fats,\* which are abundant in partially hydrogenated vegetable oils. Industrially produced trans fats are so clearly harmful that they transcend normal partisan boundaries in nutrition; nearly everyone agrees that they are extremely unhealthy.<sup>†</sup> CSPI would later help lead the charge against partially hydrogenated oils and trans fats, but without assuming any responsibility for their role in the surge of trans fats in the American food supply. Indeed, the "Victories" section of their website includes the following: "1989: CSPI campaign spurs major hamburger chains to stop cooking french fries in beef fat" and "2013: . . . CSPI brings attention to restaurants still using partially hydrogenated oil,

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\* Some trans fats are found naturally in certain animal products, including human breast milk. These fats are more controversial than industrially produced trans fats, because some studies suggest they might be beneficial to health. See: Wang et al., "Beneficial Effects."

† Tamar Haspel writes, "What have we learned, unequivocally enough to build a consensus in the nutrition community, about how diet affects health? Well, trans-fats are bad. Anything else, and you get pushback from one camp or another." See: Haspel, "Here's What."

including Long John Silver’s and Church’s Chicken, which both agree to phase out the harmful ingredient.”<sup>502</sup> They don’t connect the dots between these two actions.

Liebman initiated the signature-gathering campaign for her letter, but emails obtained by journalist Peter M. Heimlich via a Freedom of Information request show that one of the major players in the campaign was Frank Hu, one of the 14 authors of the Report that Teicholz criticized.<sup>503</sup> “I would greatly appreciate if you can ask your colleagues in Spain and other European countries to sign the letter,” Hu wrote to a Spanish colleague. “I think it is extremely important to retract the terrible BMJ article for the sake of science and public health.”<sup>504</sup> The email spread like a chain letter across the globe. Within three days, there were signatures from the United States, Canada, the United Kingdom, Australia, New Zealand, the Netherlands, Belgium, Spain, France, Germany, Austria, Greece, Italy, Sweden, Norway, Finland, Mexico, Guatemala, and Brazil.<sup>505</sup> Of the resulting 194 signatures, 35 were from Spain, presumably because Hu happened to forward the email to a Spanish colleague. Most of the signatures were from scientists and doctors—including all 14 authors of the Report—but some were from professors of public policy, science policy, food policy, psychology, neuroscience, sustainable food systems, sustainable agriculture, environmental health sciences, and physical therapy. There were also signatures from nine graduate students and one management consultant.<sup>506</sup>

Six weeks later, the number of signatures listed on the BMJ website mysteriously dropped from 194 to 178:<sup>\*</sup> 17 disappeared, and one appeared. The reason for this is unknown, but Heimlich and fellow journalist Dean Sterling Jones point out that it happened shortly after BMJ’s Executive Editor Theodora Bloom announced that the BMJ would not publish CSPI’s letter until “all signatories . . . declare their competing interests” (a requirement that is standard practice for the journal).<sup>†507</sup>

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<sup>\*</sup> BMJ’s website claims that Liebman’s letter has 174 signatures on it, but I counted 178. See: Liebman, “Rapid Response.”

<sup>†</sup> Heimlich did eventually figure out why one signature was retracted. See: Heimlich, “Colorado Prof.”

Several months later, journalist Ian Leslie of The Guardian shed more light on who had signed the letter:

They were happy to condemn the article in general terms, but when I asked them to name just one of the supposed errors in it, not one of them was able to. One admitted he had not read it. Another told me she had signed the letter because the BMJ should not have published an article that was not peer reviewed (it was peer reviewed). Meir Stampfer, a Harvard epidemiologist, asserted that Teicholz's work is "riddled with errors," while declining to discuss them with me.<sup>508</sup>

Despite their unwillingness or inability to discuss the specific problems with Teicholz's article, the scientists were "noticeably keener" to disparage Teicholz herself, according to Leslie.<sup>509</sup> "I was frequently and insistently reminded that Teicholz is a journalist, and not a scientist, and that she had a book to sell, as if this settled the argument," Leslie writes.<sup>510</sup>

Indeed, despite being a fairly mild-mannered journalist who has a good reputation within the journalism community—and whose work has been published in some of the world's most prestigious newspapers and magazines—Teicholz appears to touch a nerve with mainstream nutrition authorities. "[I]f Teicholz gets her way," writes Neal Barnard, MD, founder and president of the Physicians Committee for Responsible Medicine, "the 2015 Dietary Guidelines for Americans will soon recommend that Americans start gorging on butter, meat, and cheese . . . [which] means more obesity, diabetes, and heart disease."<sup>511</sup> Speaking to Politico, professor and acclaimed author Marion Nestle confesses, "What I find so distressing is that [Teicholz's work] just further confuses the public."<sup>512</sup> The staunchest foe of Teicholz, however, is David Katz, MD, the Director of the Yale-Griffin Prevention Research Center. Katz is a longtime defender of the DGAC and DGA, a prominent voice in health media, and a sought-after consultant for food, health, and wellness companies. Katz has claimed that Teicholz's work



“reeks of conflicts of interest,”\* that Teicholz herself is “shockingly unprofessional,”<sup>†</sup> and that “I have been in rooms filled with the who’s who of nutrition and I have never seen such unanimous revulsion as when Miss Teicholz’s name comes up.”<sup>513</sup> In a remark that prompted angry letters to his employer,<sup>514</sup> Katz said that Teicholz is “an animal unlike anything I’ve ever seen before.”<sup>515</sup> When Teicholz questioned the link between saturated fat and heart disease in an article for the Wall Street Journal, Katz took to the Huffington Post to deride her article as a mere marketing ploy for her book, to mock her for “play[ing] the iconoclast card . . . [which is] getting old, frankly,” and to predict that she will roll her eyes at his criticisms “on the way to cash her royalty checks.”<sup>516</sup> He also suggested that Teicholz might not have even read the study that her article is based on, reminded the reader that she has no formal training in epidemiology, and falsely claimed that she is selling a diet book.<sup>517</sup> In another Huffington Post piece, Katz insinuated that Teicholz is a “parasite of science,”<sup>518</sup> and in an open letter to the editors of the BMJ, he compared Teicholz’s article about the DGAC Report to “someone selling horse paperweights [being] invited to critique the Olympic equestrian team.”<sup>519</sup> When the New York Times published an op-ed by Teicholz, Katz lamented in a blog post that the Times had “allocate[d] its imprimatur and rarefied real estate to an infomercial masquerading as an Op-Ed” and was therefore “complicit in the death of expertise.”<sup>520</sup>

It is more or less standard practice in nutrition debates for opponents to accuse each other being beholden to agribusiness interests and “Big Food,”<sup>521</sup> so Katz’s accusations about Teicholz’s conflicts of interest are not surprising. Nevertheless, Katz’s curriculum vitae shows that he has received funding from a wide variety of food, supplement, pharmaceutical, medical,

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\* Teicholz states at the bottom of her BMJ article that she is the author of a popular book, a board member of a nutrition non-profit, and has received “modest honorariums for presenting my research findings presented in the book to a variety of groups related to the medical, restaurant, financial, meat, and dairy industries.” See: Teicholz, “Scientific Report.”

† According to Leslie, however, Katz did not provide any examples to support the accusation of unprofessionalism, despite repeated requests. See: Leslie, “Sugar Conspiracy.”

and health coaching companies. In research grants alone he has received \$916,295 from the California Walnut Commission, \$731,441 from Hershey, \$633,000 from Quaker Oats, \$335,196 from the Egg Nutrition Board, \$327,200 from the Egg Nutrition Center, and \$89,699 from KIND (the maker of KIND bars).<sup>522</sup> He was also paid \$3,500 per hour to help defend the yogurt maker Chobani in court when the company was sued for calling the sugar in its products “evaporated cane juice.”<sup>523</sup> The Western Sugar Cooperative sought his help in court as well.<sup>524</sup> In a similar vein, Katz has defended his opinions by saying “I don’t have a diet to sell,” but his website states that he is the author of “The Flavor Point Diet: The Delicious, Breakthrough Plan to Turn Off Your Hunger and Lose the Weight for Good,” “The Flavor-Full Diet: Use Your Taste Buds to Lose Pounds and Inches with This Scientifically Proven Plan,” “The Way to Eat: A Six-Step Path to Lifelong Weight Control,” and “How to Eat: All Your Food and Diet Questions Answered.”<sup>525</sup>

Another example of Teicholz’s radioactivity among mainstream nutrition authorities is the fact that she was disinvited from a panel discussion at a National Food Policy Conference in Washington, DC. The organizer of the conference invited Teicholz to participate, but when the three other panelists learned of her invitation, they objected, and at least one threatened to withdraw from the panel unless Teicholz was disinvited. In an email obtained by Peter M. Heimlich via a Freedom of Information request, panelist Barbara Millen wrote to panelist Angela Tagtow that she had contacted the organizer of the event regarding Teicholz’s participation:

I just had a rather long conversation with [the organizer] and expressed my great concern that he invited Nina Teicholz to the panel without informing us. . . . [T]he inclusion of Ms. Teicholz changed the panel quite negatively and could result in quite antagonistic [sic] situation. I suggested he reconsider including her and indicated that I would hate to withdraw but would do so if necessary. I also expressed that . . . he and

other [sic] in his organization should have been aware of Ms. Teicholz' public views on the DGAC report and the DGAs and that I found it very surprising that they included her at all but certainly without discussing the possibility with the other panelists in advance of making the invitation.<sup>526</sup>

All three panelists were affiliated with organizations that I have discussed at length and that Teicholz has criticized: Millen was the lead author of the DGAC Report; Tagtow currently calls herself “an entrepreneur, systems thinker, leadership developer, solution-based innovator, and a change maker,”<sup>527</sup> but at the time of the panel she was a high-ranking official at the USDA;<sup>528</sup> and the other panelist, Margo Wootan, was part of the leadership at CSPI.<sup>529</sup> “To my mind,” Teicholz told Politico, “this is an effort to exclude uncomfortable realities, where you simply don't allow alternative viewpoints to be part of the conversation.”<sup>530</sup> “I'm comfortable defending my positions in front of critics,” Teicholz told the National Review; “Why aren't they?”<sup>531</sup> Her ouster also prompted an online petition titled “Reinstate Teicholz on Food Policy Panel” that went on to garner 4,420 signatures.<sup>532</sup> Eventually, Teicholz was replaced by the President and CEO of the Alliance for Potato Research and Education.<sup>533</sup>

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Teicholz wasn't the only notable critic of the DGAC Report and the DGA, however. The Chair of the Department of Cardiovascular Medicine at the Cleveland Clinic called the Report “an evidence-free zone.”<sup>534</sup> The Head of the Department of Nutrition, Exercise and Sports at the University of Copenhagen wrote that the DGAC seemed “completely dissociated from the top level [sic] scientific community” and “unaware of the most updated evidence.”<sup>535</sup> A Fellow in the American College of Physicians and member of the Board of Directors of the National Board of Physician Nutrition Specialists argued in the Wall Street Journal that we should ask “whether

the guidelines are to be trusted and even whether they have done more harm than good.”<sup>536</sup> A professor and dean emeritus of the Department of Nutrition at The Ohio State University claimed that “what’s clear to many in the scientific community is that the dietary guidelines report is not ready for primetime.”<sup>537</sup> The journal *Nutrition* published an editorial arguing that the DGA recommendations “are based on weak, limited, and inconclusive scientific data,” “are not compatible with adequate essential nutrition,” and “have contributed to the increase of chronic diseases.”<sup>538</sup>

Such criticisms, combined with the public’s increasing skepticism toward nutrition authorities, prompted Congress to hold a hearing on the subject in October 2015. Much of the hearing consisted of USDA Secretary Tom Vilsack and HHS Secretary Sylvia Burwell defending their agencies from a barrage of sharp questions and comments from members of Congress. “[M]ost of [my constituents] don’t believe this stuff anymore,” said Representative Collin C. Peterson of Minnesota.<sup>539</sup> “There is a belief . . . that [DGAC members] . . . were searching for the science to back up what they already believe to be true, instead of using the best available science,” said Representative Austin Scott of Georgia.<sup>540</sup> “[T]he citizens want to know that we are not using science to justify ideology,” said Representative Trent Kelly of Mississippi.<sup>541</sup> In response, Vilsack defended the DGA and the DGA-creation process, but admitted that the agencies rely upon judgement and “well-informed opinion,” given that the science is not settled.<sup>542</sup> “I wish there were scientific facts,” Vilsack said, “but the reality is stuff changes, right? Stuff changes.”<sup>543</sup> He also repeatedly stressed that the aim of the DGA is to prevent diseases, not cure them—a fact that did not sit well with some members of Congress, who pointed out that roughly half of Americans have one or more chronic diseases, many of which are directly connected to diet.<sup>544</sup> Dissatisfied with Vilsack’s and Burwell’s responses, Congress passed a measure in December 2015 mandating an external review of the DGA-creation process. This was an unprecedented move, for the nuts and bolts of making the DGA had always been the province of the USDA and HHS. Congress ultimately selected the National Academies of

Science, Engineering, and Medicine (NASEM) to conduct the review, and paid them \$1 million for their services.<sup>545</sup>

The hearing and subsequent congressional measure prompted outcries from the nutrition establishment. The president of CSPI derided the hearing as “theater of the absurd” and complained about the “clueless” members of congress in attendance.<sup>546</sup> The Atlantic intoned, “It is dangerous to imply that all interpretations of data and history should be given equal weight.”<sup>547</sup> The president of the American Academy of Pediatrics and the president of the American Medical Association jointly declared, “Our patients deserve nutrition guidance that is free of political interference.”<sup>548</sup> The Physicians Committee for Responsible Medicine sent a letter to Vilsack and Burwell threatening to sue the USDA and HHS if they “weakened” their cholesterol warnings.<sup>549</sup>

Nevertheless, NASEM conducted their review, and in September 2017, they presented their findings. In a 422-page document, they detail a multitude of problems with how the DGAC is selected and how the DGA is created, including a lack of transparency, a lack of diversity in expertise, and a lack of standardization in the scientific review process.<sup>550</sup> “To develop a trustworthy DGA,” NASEM writes, “the process needs to be redesigned.”<sup>551</sup> The issue of trust is a recurring theme: I counted 62 instances of trust-related words—“trust,” “mistrust,” “trusted,” “trustworthy,” or “trustworthiness”—over the course of 45 pages.

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Strictly speaking, the turbulence and acrimony I have described have no logical bearing on whether the nutrition authorities are correct about what we should eat. The authorities might be right in spite of their cagey, evasive, and occasionally high-handed behavior. But the continuing presence of rancorous debate over the most basic elements of nutrition demonstrates that the science of diet is far from settled. In the absence of certainty, we have to decide whom

to trust. The behavior of the nutrition authorities should make us consider reserving at least some of our trust for other voices in the debate.

#### 6.4.3. Unconventional dietary wisdom

Human beings eat a bewildering variety of foods, and many of them are a far cry from the fresh fruits and vegetables, whole grains, lean meats, and low-fat dairy recommended by mainstream nutrition authorities. Consider some of the unfamiliar dishes catalogued by author Jerry Hopkins in his book “Strange Foods”: Calf brains, sheep tongues, chicken feet, pig ears, lamb’s cheek, chopped rooster wattle, deer sinews, fish heads, fish eyes, rattlesnake steak, steamed water beetles, fried locusts, and seaweed jelly.<sup>552</sup> Hopkins also points out that humans routinely eat whales, sharks, elephants, giraffes, yaks, kangaroos, beavers, horses, dogs, cats, rats, hamsters, gerbils, bats, ants, termites, earthworms, silkworms, sea slugs, cactus, flowers, and algae.<sup>553</sup> “I have eaten deep-fried bull’s testicles in Mexico,” Hopkins writes, “live shrimp sushi in Hawaii, mice cooked over an open wood fire in Thailand, pig stomach soup in Singapore, minced water buffalo and yak butter tea in Nepal, stir-fried dog and ‘five penis wine’ in China, and the boiled blood of a variety of animals in Vietnam.”<sup>554</sup> Many of these foods are quite nutritious to boot. In an article from 1942 called “Unusual Foods of High Nutritive Value,” a doctor and a researcher praise the ancient Greeks for eating “roasted entrails and goat’s stomach filled with blood,” the ancient Hebrews for eating locusts, the Navajo for eating the entire abdomens of sheep and goats, the Bushman of Africa for eating termite eggs, Germans for eating blood sausage, western plains Indians for eating grasshoppers and crickets, West Indians for eating the large grubs found inside palm tree trunks, and Sri Lankans and Africans for eating fist-sized giant snails.<sup>555</sup>

The populations regularly consuming these foods have been, on average, much healthier than Westerners. Since at least 1843, doctors have noted that the chronic diseases that commonly afflict Westerners—obesity, diabetes, cancer, heart disease, stroke, Alzheimer’s, and

so on—seem to be nearly absent from non-Western, non-industrialized populations.<sup>556</sup> This observation has been confirmed by subsequent anthropological and epidemiological studies, prompting some scholars to dub these diseases “diseases of civilization,” “diseases of affluence,” and “Western diseases.” The question that has plagued doctors and medical researchers since then is: To what extent are these diseases a product of the Western diet?

It’s hard to say, unfortunately. Non-Western, non-industrialized populations differ from Westerners in many ways besides diet, so it is exceedingly difficult to disentangle the effects of diet from the effects of other lifestyle factors—such as exercise and stress—without large, expensive clinical trials.\* However, as Nina Teicholz points out, “[A]lthough epidemiology cannot demonstrate causation, it can be used reliably to show the *absence* of a connection.”<sup>557</sup> So while we can’t say that the diets of these populations are single-handedly making them healthy—perhaps their diets are more or less neutral from a dietary perspective, and their superior health is due mostly to other lifestyle factors—we *can* say that their diets aren’t single-handedly making them sick.† This is important because it shows that people can achieve robust health while following diets that bear little resemblance to—or are even the complete opposite of‡—the conventionally recommended diet. This in turn casts doubt on the dominant perspective’s assertions that an abundance of fresh fruits and vegetables, whole grains, lean meats, and low-fat dairy is necessary for health.

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\* Genetics is another factor to consider, but there are enough comparisons of genetically similar populations in disparate environmental settings (e.g., rural Japanese women vs. urban Japanese-American women) to show that diet and lifestyle are much more important to the etiology of most chronic diseases.

† Even if we assume that the diets of non-Western, non-industrialized populations are unhealthy, there is no good evidence that non-dietary factors can fully offset the negative effects of an unhealthy diet, let alone produce superior health. As a group of doctors and scientists recently wrote in a medical journal editorial, “You cannot outrun a bad diet.” The diets of these populations are therefore almost certainly neutral or better. See: Malhotra, Noakes, and Phinney, “It Is Time.”

‡ Consider the diet of the Inuit, which is comprised almost exclusively of animal fat and protein.

Suppose we agree that the conventionally recommended diet isn't necessary for health. Can we say that it is sufficient? That is, does it promote health, all other things being equal? The answer is: Probably, at least in some cases. When adhered to closely—a rare feat\*—the conventionally recommended diet seems to be a reasonably healthy diet for reasonably healthy people. Like any diet, it has its critics. Researchers argue that it is too high in carbohydrate (especially for people with metabolic problems such as obesity and diabetes),<sup>558</sup> too high in omega-6 fatty acids,<sup>559</sup> too low in protein,<sup>560</sup> and more. However, most would agree that it is better than the abysmal diet of many Americans.

The problem is that while the conventionally recommended diet might generate good results, other diets might generate similar or better ones. When researchers randomized 160 non-dieting Americans to four widely diverging diets that were popular in the early 2000s—Atkins, Ornish (which shares many similarities with the conventionally recommended diet), Weight Watchers, and Zone Diets—they found that each diet “modestly reduced body weight and several cardiac risk factors. . . .”<sup>561</sup> A similar study randomized 181 people to three of the aforementioned diets (Atkins, Ornish, and Zone) and found that people lost weight on all of them.<sup>562</sup> A meta-analysis of 48 randomized trials covering a total of 7,286 individuals found that “[s]ignificant weight loss was observed with any low-carbohydrate or low-fat diet,” and that the difference in weight loss between diets was “small.”<sup>563</sup> Even diets that don't restrict calories achieve results. A review of clinical trials that compared calorie-unrestricted low-carb diets to calorie-restricted low-fat diets found that both diets helped people lose weight and improve blood lipids.<sup>564</sup>

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\* According to the USDA, “About three-fourths of the population has an eating pattern that is low in vegetables, fruits, dairy, and oils. More than half of the population is meeting or exceeding total grain and total protein foods recommendations, but . . . are not meeting the recommendations for the subgroups within each of these food groups. Most Americans exceed the recommendations for added sugars, saturated fats, and sodium.” See: U.S. Dept. of Agriculture and U.S. Dept. of Health and Human Services, “Current Eating Patterns.”



This is not to say that all diets are equally healthy or produce the same outcomes, of course. In the study comparing Atkins, Ornish, and Zone Diets, for example, the Atkins group lost twice as much weight as the other groups, and the review of clinical trials on low-carb and low-fat diets found that low-carb was typically better at improving HDL cholesterol and triglyceride values, while low-fat was typically better at improving total cholesterol and LDL values.<sup>565</sup> Moreover, a few diets are actually worse than the average American diet. “Fruitarian” diets, for example—consisting primarily of fruit, and in some cases only *fallen* fruit<sup>566</sup>—have been shown to be dangerously low in essential nutrients, and have led to at least one high-profile illness<sup>567</sup> and at least one death.<sup>568</sup>

On the whole, though, the research suggests that simply *trying* to eat healthy on a consistent basis is much of the battle for many Americans, regardless of exactly how “healthy eating” is defined. For all the variability of popular diet plans, most of them agree on cutting out the worst junk food offenders—chips, candy, fries, donuts, sugary soda, and so on. Avoiding these foods does most of the heavy lifting in popular diet plans. Beyond this simple advice lies a quagmire of conflicting research that even nutrition scientists can have trouble navigating.

Moreover, recent advances in genetics, epigenetics, and gut flora research support the idea that there isn’t one way of eating that is best for everyone.<sup>569</sup> Far-fetched as it may seem, some of us might do better eating boiled spinal cord and fermented seal flipper (as the Inuit do<sup>570</sup>) or massive amounts of sweet potatoes and little else (as Papua New Guinea highlanders do<sup>571</sup>) rather than the recommended salads, skinless chicken breasts, and skim milk. It is also worth remembering that the DGA—the paradigmatic statement of the conventionally recommended diet—is explicitly designed to prevent, not treat, chronic disease. This suggests that the conventionally recommended diet might not be the best option for people struggling with obesity (a chronic disease, according to the American Medical Association<sup>572</sup>), diabetes, and other diet-related diseases.

### 5.5. Conclusions about Foundational Idea 3

The dominant perspective displays an easy confidence when it comes to the subject of what food desert residents should be eating. In their view, it is self-evident, or at least scientifically indisputable, that food desert residents need to eat an abundance of fresh fruits and vegetables—and perhaps some whole grains, lean meat, and low-fat dairy—in order to have any chance at achieving or maintaining health. As I have shown in this chapter, however, this idea is neither self-evident nor scientifically indisputable, and the nutrition authorities who promulgate it are less than fully trustworthy.

If food desert residents don't need to follow the conventionally recommended diet in order to be healthy—and if there are other diets that might serve them equally well or better—then much of the energy behind the dominant perspective is arguably misplaced. Instead of directing their considerable cognitive and financial resources toward ensuring maximum access to conventionally recommended foods, adherents of the dominant perspective should consider redirecting those resources toward other goals that are likely to have a greater impact on the health and wellbeing of food desert residents. Recall from previous chapters that most food desert residents have access to a car, willingly bypass the closest supermarket in order to shop at better supermarkets across town, and only increase their fruit and vegetable intake by a trivial amount when a new supermarket moves into the neighborhood. I suspect, therefore, that being able to walk less than a third of a mile to buy fresh broccoli is a much lower health-related priority for the average food desert resident than, say, finding affordable health insurance, getting help to quit smoking, or finding nursing care for elderly family members.

## Chapter 7

### Conclusion

*“The scientific man is not in the least wedded to his conclusions.”*

*–Charles Sanders Peirce*

*“This study found little evidence that poor locational access to food retail provision is associated with lower fruit and vegetable consumption. However, before rejecting the commonsense notion that neighbourhood access to fruit and vegetables affects personal consumption, research that measures fruit and vegetable access more precisely and directly is required.”*

*–Jamie Pearce, Rosemary Hiscock, Tony Blakely, and Karen Witten*

The dominant perspective believes that millions of people live in impoverished neighborhoods that contain no fresh, affordable, healthy food, and that this leaves them little choice but to eat unhealthy food (Foundational Idea 1). As I have shown, however, the evidence suggests that these neighborhoods are diverse places filled with people of varying incomes, life circumstances, daily routines, and expectations. It is true that there are pockets of extreme poverty where access to healthy food is a concern—along with concerns about violent crime, homelessness, drug use, vandalism, and more—but most food deserts seem to be fairly unremarkable places. Most food desert residents have a car or access to one, do the bulk of their grocery shopping at supermarkets, and choose to shop at supermarkets that are farther away than the nearest one. Some shop for groceries on the way home from work, some use grocery delivery services, and some receive groceries from friends and family or food pantries. Compared to people across the globe or to people in the past, they spend less of their income on groceries. They buy junk food with some regularity, but they tend to buy it at supermarkets

along with the rest of their groceries. While they sometimes use corner stores and convenience stores, they generally don't rely on them in any serious way. Many are overweight or obese, but it's not clear whether the proportion of overweight and obese people living in food deserts is appreciably higher than people of similar socioeconomic status living outside of food deserts. Ultimately, then, the dominant perspective's narrative about food deserts is not very credible.

The dominant perspective believes that food deserts are objective, discoverable, and measurable (Foundational Idea 2). As I have shown, however, food deserts are a hazy concept that can be plausibly defined and operationalized in countless ways, and that this has led to a runaway proliferation of methodologies and no obvious way of adjudicating between them. Food desert researchers often rely on data sources that are unreliable and have considerable leeway in their analysis of data. Nearly every step of the research process is subject to the Modifiable Areal Unit Problem and the Uncertain Geographic Context Problem, complicating any subsequent interpretation or comparison. Interventions to remedy food deserts have failed to generate results that are sufficiently consistent or compelling to support the idea that food deserts exert causality. Estimates of food desert coverage have varied as much as fivefold in a single study, and researchers have publicly debated whether certain neighborhoods should be considered food deserts or food oases. Ultimately, then, the dominant perspective does not have a strong claim to scientific respectability.

The dominant perspective believes that there is a scientific consensus regarding the nature of a healthy diet and that it is obvious what food desert residents should be eating (Foundational Idea 3). As I have shown, however, the field of nutrition is fractious, the nutrition authorities have a track record of questionable behavior, and there is copious evidence that humans can thrive on diets other than the conventionally recommended one. It is far from certain that the health of food desert residents is dependent on easy access to conventionally recommended foods, or that increasing access to conventionally recommended foods would make a significant difference to the health of food desert residents. The dominant perspective's

desire to re-engineer thousands of food environments is therefore rooted largely in hypotheses and speculation. Ultimately, then, the dominant perspective has little justification for its sociopolitical ambitions.

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Anyone with a basic understanding of society knows that there is going to be a certain number of people at any given time who can't obtain the food they need in order to be healthy. It's also obvious that those people are more likely to be poor, without a car, disabled, or elderly. And while it's clear that living far from a grocery store can be a hindrance for some people, it's equally clear that living close to a grocery store isn't much of a help if you have limited mobility or no money. This leads to one of my persistent concerns about the dominant perspective: It doesn't seem to tell us much more than common sense does. Indeed, after years of being immersed in food desert discourse, I don't feel like I've learned anything particularly deep or insightful about how food fits into the lives of everyday people. Most of what I've learned relates to the worlds of social science, journalism, government, and activism, rather than to the world that the rest of us live in.

Increasing access to conventionally recommended foods would obviously benefit the lives of some food desert residents to some degree. Who wouldn't want to live within a stone's throw of a well-stocked grocery store with affordable prices? The problem is that there are many other things that would benefit the lives of food desert residents, and some of those things might be more important or more desirable. The question, therefore, shouldn't be, "Would this improve the lives of food desert residents?" but rather, "Would this improve the lives of food desert residents *more than other courses of action?*" Or, if we wanted to demonstrate maximum respect for the preferences and autonomy of food desert residents, we could ask, "Would food desert residents themselves prefer this over other courses of action?" It might very

well be that a significant number of food desert residents would rather use outside money and expertise to improve local schools, repair infrastructure, or build civic organizations than to lure a chain supermarket into town. Who are we to dictate their list of priorities?

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Academics continue to offer refinements to the study of food deserts, such as including a temporal dimension—“When Are Food Deserts?” is the title of a recent article<sup>573</sup>—and using GPS to precisely track how people go about procuring food. These refinements will surely help paint a more detailed picture of the various obstacles that can stand in the way of healthy eating. But I can’t help but notice that while the number and sophistication of food desert methodologies has increased over the decades, the quality of the Western diet has stayed more or less the same. We’re at a point in history where there has never been more elite human energy dedicated to understanding and changing food environments, and yet people stubbornly keep eating what they want to eat. Obesity rates keep rising, as do the rates of diabetes and other diet-related diseases. As the political commentator Jacob Sullum wryly notes, “Of all the risk factors for disease and injury, it seems, freedom is the most pernicious.”<sup>574</sup> Instead of admitting failure and changing course, however, the technocratically inclined are doubling down by developing more methodologies, publishing more articles, convening more experts, creating more committees, devising more incentives, and passing more laws.

Perhaps the tides will turn and someone will figure out a non-coercive, non-manipulative way to change the way people eat.\* After years of studying this topic, though, I’ve come to believe that only a profound shift in culture will have a meaningful impact on the American diet. Every food-related decision we make is influenced by countless factors relating to taste,

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\* Whether it is even ethical to do so is an open question, but that is beyond the scope of this dissertation. For an excellent discussion of this topic, see: White, “Manipulation of Choice.”

convenience, price (real or imagined), upbringing, habit, social convention, health, emotion, and more, and most of these factors are fiercely resistant to policy. “Getting Americans to really change their eating . . .” writes political scientist Eric Oliver, “would require a level of totalitarianism that would make even Kim Jong Il blush.”<sup>575</sup> Culture works at a deeper level than policy, and thus exerts a type of power that policymakers can only dream of.

This can be illustrated by comparing two scenarios. In the first scenario, a man has spent his entire life in a small town in Italy where the eating traditions haven’t changed for centuries. Every night he sits down with friends and family, drinks a glass of wine, and slowly eats a home-cooked, multi-course dinner made from fresh, local ingredients. His diet is the stuff of dieticians’ fantasies, and yet he needs no nudging to eat this way. Why not? First, his social life revolves around it. Choosing to eat a microwavable meal alone would mean not just missing out on high-quality food but missing out on important interactions with loved ones. Second, the experience is enjoyable. The food tastes good, and eating with friends and family is fun, due to the presence of strong connections, high social trust, and a relaxed pace of life. Third, the food is provided by someone else—namely someone’s mother, whose entire job and community standing is based on providing nourishment and comfort to others. (Only the most dedicated fan of junk food would refuse a plate of vegetables that was expertly prepared by an elderly Italian woman.) Fourth, the town’s food culture is such that the man would likely be teased or even shamed for eating low-quality, low-brow food such as fast food.

Compare that scenario to a typical suburban American family. Both adults in the household have full-time jobs, life is fast-paced and hectic, and the closest friends and family are 35 minutes away—50 minutes if there’s traffic. On a typical weeknight, the parents get home in the late afternoon, and the kids are hungry. Each parent has already spent 10 or 11 hours on work-related tasks—getting ready for work, commuting, working, commuting again—so preparing an elaborate meal and cleaning up afterwards is not a particularly enticing prospect. Dinner is thus cobbled together from whatever is in the fridge and pantry: Leftover pork chops

from the weekend, Kraft Mac and Cheese, whatever fruit happens to be lying around, canned corn, a couple of Pop Tarts, some milk. Only two of the four members of the family eat at the table, because one of the kids is at rehearsal and one of the parents has decided to save time by eating and doing yesterday's dishes at the same time. The meal is consumed swiftly and with little enjoyment, but it gets the job done.

Most doctors, dieticians, and nutrition scientists—not to mention foodies and bon vivants—want Americans to move in the direction of the Italian example, and with good reason. However, think of all that stands in the way: Families in which every adult works, geographically dispersed friends and family, the stresses of competing in a dynamic economy, the habit of equating busyness with success, the pervasive attitude of “work hard, play hard,” and so on. These things are deeply rooted in American culture. Changing them will require the cooperation and coordination of hundreds of millions of people.

This explains why interventions to remedy food deserts have had such little success. Plopping a grocery store down in a neighborhood of busy, stressed people—in a country where food is often regarded as an inconvenient necessity or a quick fix for anxiety and boredom—is not going to make much of a difference if residents' life structures, attitudes, and preferences stay the same. Healthy food usually takes more work: It's harder to keep stocked, because it tends to spoil faster; it's harder to prepare, because it tends to require chopping or cooking or dressing; it's harder to clean up afterwards, because it tends to dirty multiple pots and pans; and it's even harder to eat, because it tends to require more chewing (e.g., eating a salad), more utensil work (e.g., cutting asparagus), and more fuss (e.g., eating chicken off the bone). A lot is going to have to change for the average busy, stressed American to voluntarily take on more work, especially if she doesn't believe that her efforts will provide any short-term benefits, whether in pleasure or positive feedback from loved ones.

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This doesn't mean the situation is hopeless. Many Americans are laying the groundwork for a healthier future. In his book "The United States of Arugula: How We Became a Gourmet Nation," journalist David Kamp details how chefs, restaurateurs, and cookbook authors have inspired millions to refine their palates, try new ingredients and cuisines, and prize quality over convenience. "[F]ood is one area of American life where things just continue to improve," Kamp writes. "If we're cooking at home, we have a greater breadth and higher quality of ingredients available to us. If we're dining out, we have more options open to us, and a greater likelihood than ever that we'll get a good meal, no matter the price point."<sup>576</sup> Granted, middle- and upper-class people have been the primary beneficiaries of this "food revolution," as Kemp calls it, but working-class people have benefited too. Grocery stores in working-class neighborhoods used to only carry items like canned corn, ketchup, and iceberg lettuce, but now they also carry rice pilaf, fresh salsa, and spring greens. All across the country—not just in hip, urban areas—there are more farmers' markets, farm-to-table restaurants, and community-supported agriculture programs than ever. Americans are taking food more seriously.

It's not clear whether this will translate into widespread improvements in concrete, measurable health outcomes such as obesity rates. I suspect that many people who have recently broadened their gustatory horizons are still eating a lot of unhealthy food in between their arugula salads. It's a start, though, and I'm much more optimistic about these kinds of unplanned, grassroots-level shifts in our food culture than the top-down, managerial strategies advocated in food desert discourse. If the American way of eating is sick, then nudging people to eat better and micromanaging their food environments is merely treating the symptoms—and not very effectively at that. Changing the food culture would be treating the cause of the disease.

## Appendix A

### Research Contribution

As the term “dominant perspective” suggests, there is also a—shall we say—*non-dominant* perspective in food desert discourse.\* There are hundreds of academic studies, newspaper pieces, and magazine articles that express strong skepticism toward the dominant perspective, especially toward Foundational Idea 1. Even the USDA’s seminal 2009 study is critical of many prevailing notions about food deserts.<sup>577</sup> In that sense, this dissertation is not breaking any new ground. Chapter 4 (“On the Nature of Food Deserts”) in particular can be seen as a “greatest hits” compilation of research from the non-dominant perspective, albeit presented in a novel format.

To my knowledge, however, this dissertation does break new ground in four ways. First, it unifies various claims, moral attitudes, and philosophical assumptions found in food desert discourse into a meaningful, cohesive whole—namely, the dominant perspective. Second, it delves deeper into conceptual issues. While some researchers have touched on the methodological concerns I discuss, Chapter 5 (“On the Knowability of Food Deserts”) goes farther by confronting the meta-methodological and philosophical problems that lurk behind those concerns. Along the way, it crosses more disciplinary lines and takes more risks. Third, it questions the conventional dietary wisdom. I’m not aware of any other work that expresses strong skepticism toward the dominant perspective in food desert discourse *and* the conventional dietary wisdom. This dissertation is therefore doubly heterodox when it comes to the issue of healthy food accessibility. Fourth, it exhibits a moral and political point of view that is rare in food desert discourse. As I argue in Chapter 4 (“On the Nature of Food Deserts”), most authors treat food desert residents as “passive and immobile,” to use Jerry Shannon’s phrase,<sup>578</sup>

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\* The usual antonyms for “dominant” aren’t a good fit here.

and as nearly helpless without the assistance of “us”—the concerned onlookers. A minority of authors go to the other extreme by asserting that food deserts are a complete non-issue and by showing no regard for people who do, in fact, have trouble obtaining certain foods. I try to chart a middle course by presuming that most food desert residents are active, mobile, and perfectly capable of managing their own lives, while still acknowledging that inadequate food access is a genuine problem for a small subset of the population.

## Appendix B

### A Case Study

I've had several personal experiences that conflict with the dominant perspective's narrative of food deserts. The most memorable one comes from my time as a delivery driver for a Hy-Vee supermarket in Mission, Kansas, a nondescript suburb of Kansas City. After a few months of working there I discovered that a leafy, middle-class neighborhood across from my store was a food desert according to USDA standards. At first I thought this was a mistake, because the neighborhood didn't seem impoverished in any way, and it was so close to the Hy-Vee I could literally see it from the store's parking lot. But when I looked deeper into the matter, I realized that the USDA hadn't made a mistake; the neighborhood *was* technically a food desert according to their criteria. As it turned out, the neighborhood—sometimes called Mission Meadows—is located in census tract 503.01, which the USDA considers both low-income and “low-access”:<sup>579</sup> low-income because the bulk of its residents are working class or lower-middle-class, and low-access because most of these residents are concentrated in apartments in the northern half of the tract,<sup>\*</sup> which is farther from the Hy-Vee.<sup>†</sup> (See *Figure 3*, p. 111.) In other words, unlike the residents of Mission Meadows, most of the people in the census tract are neither middle-class nor close to the supermarket.

Google Maps' Street View shows that Mission Meadows is a typical Middle-American neighborhood (see *Figure 4*, p. 111) and that it is visible from the parking lot of Hy-Vee (see

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<sup>\*</sup> This high concentration of apartments is reflected in the fact that census tract 503.01 has the second highest density of housing units out of the county's 131 census tracts. (See: “2010 Census Summary File 1: GCT-PH1 - Population, Housing Units, Area, and Density: 2010 - County -- Census Tract,” available at: [https://factfinder.census.gov/bkmk/table/1.0/en/DEC/10\\_SF1/GCTPH1.CY07/0500000US20091](https://factfinder.census.gov/bkmk/table/1.0/en/DEC/10_SF1/GCTPH1.CY07/0500000US20091).)

<sup>†</sup> The low-access requirement has multiple levels and is more complex overall than the low-income requirement, but the part that is relevant here is that a census tract must have “a significant number (at least 500 people) or share (at least 33 percent) of the population is greater than ½ mile from the nearest supermarket, supercenter, or large grocery store for an urban area or greater than 10 miles for a rural area.” See: U.S. Dept. of Agriculture, Economic Research Service, “Documentation.”

*Figure 5*, p. 112). At the entrance of the neighborhood is a house that many Americans would feel lucky to own. According to the real estate website Realtor.com, the house at 5830 Riggs\* is a 1,448 square-foot house worth \$239,600 (as of February 2020), featuring 4 bedrooms, 1.5 bathrooms, a brick chimney, a sun room, and a 0.35-acre lot with full-shade trees (see *Figure 6*, p. 112).<sup>580</sup> The house is also located in the Shawnee Mission School District—widely regarded as one of the best school districts in the region—and near a wide variety of shops and amenities, including Hy-Vee, which is less than a quarter-mile away (see *Figure 7* and *Figure 8*, p. 113).

Clearly, it doesn't make sense to call Mission Meadows a food desert. But I would go farther and say that it doesn't make sense to call the rest of the census tract a food desert either. There are six apartment complexes in the tract, and when I worked at Hy-Vee I delivered to each of them routinely. I spent hundreds of hours in the neighborhood—driving the streets, bringing groceries and prescriptions into homes, talking to residents. My van was a common sight in the area, and I had many “regulars” who knew me by name. Based on that experience, I can say with confidence that the vast majority of residents—including the poorer ones—had cars and had no trouble getting groceries. Of my customers who had their groceries delivered, most did so out of convenience, not necessity; “I just hate going to the store” was a phrase I heard often. The few customers who had their groceries delivered out of necessity were usually disabled or elderly. Moreover, I never witnessed any indication that people in the area felt like they had to buy food at convenience stores or fast-food restaurants.

This is anecdotal evidence, of course, but it shouldn't be ignored.

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\* This address is sometimes listed as “5830 Riggs St.” and sometimes as “5830 Riggs Ave.”

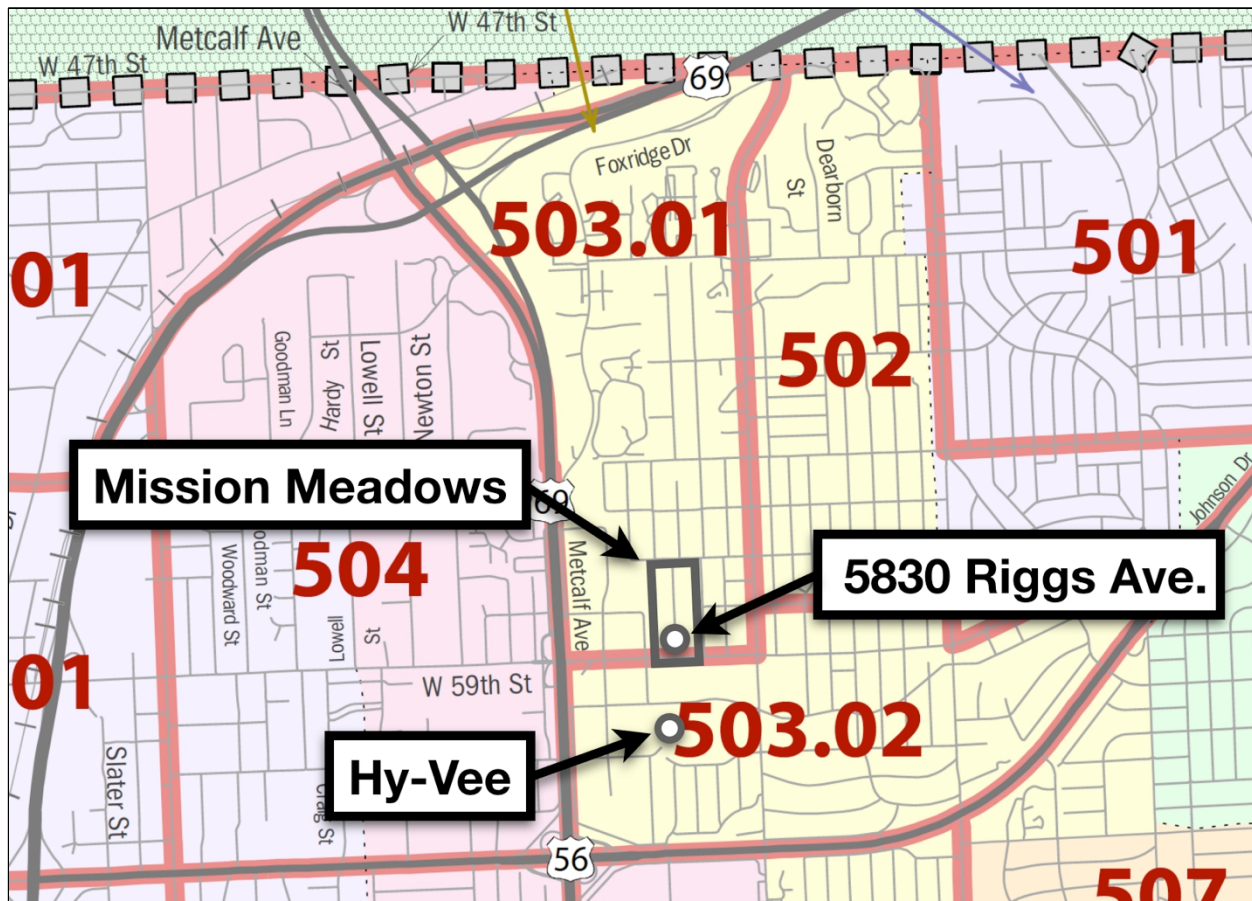


Figure 3. Census tract map of a section of northeastern Johnson County, Kansas. (Wyandotte County, Kansas is to the north of the line of gray boxes.)



Figure 4. Google Street View of Mission Meadows, from the perspective of Riggs Ave.



Figure 5. Google Street View of Mission Meadows, from the perspective of Hy-Vee.

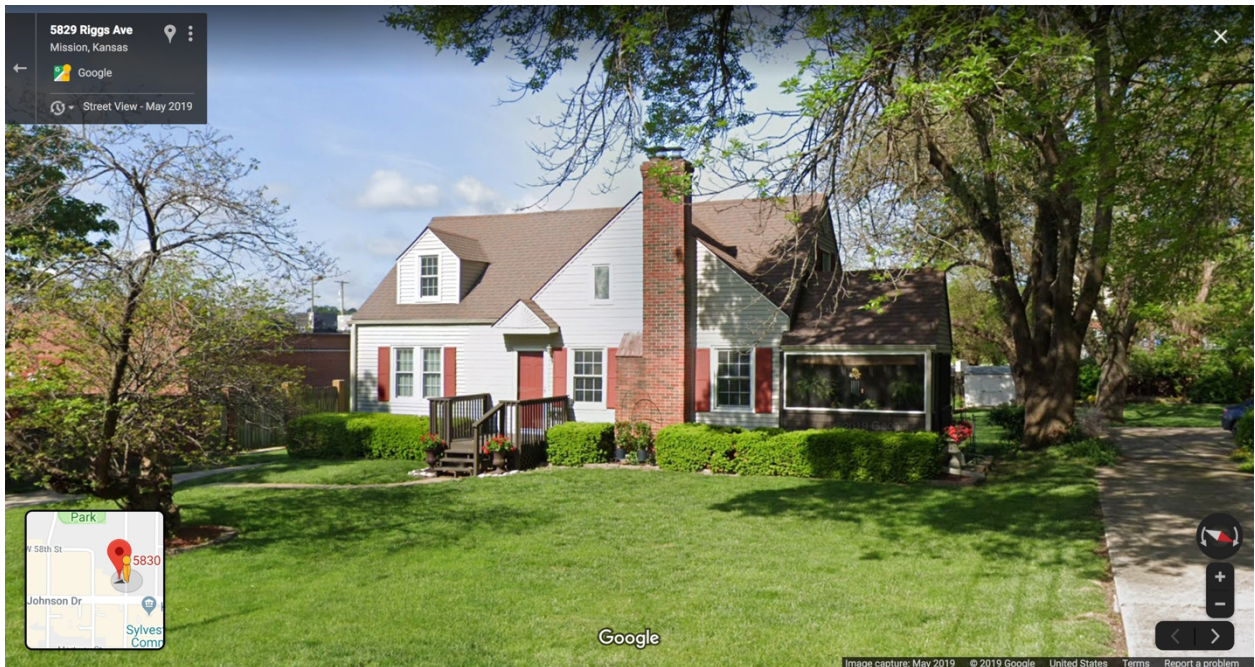


Figure 6. Google Street View of 5830 Riggs Ave., Mission Meadows. (The address listed in the upper left corner is incorrect.)



Figure 7. Google Street View of Hy-Vee and 5830 Riggs Ave. Hy-Vee is on the left (inside the red circle), and 5830 Riggs Ave. is on the right.

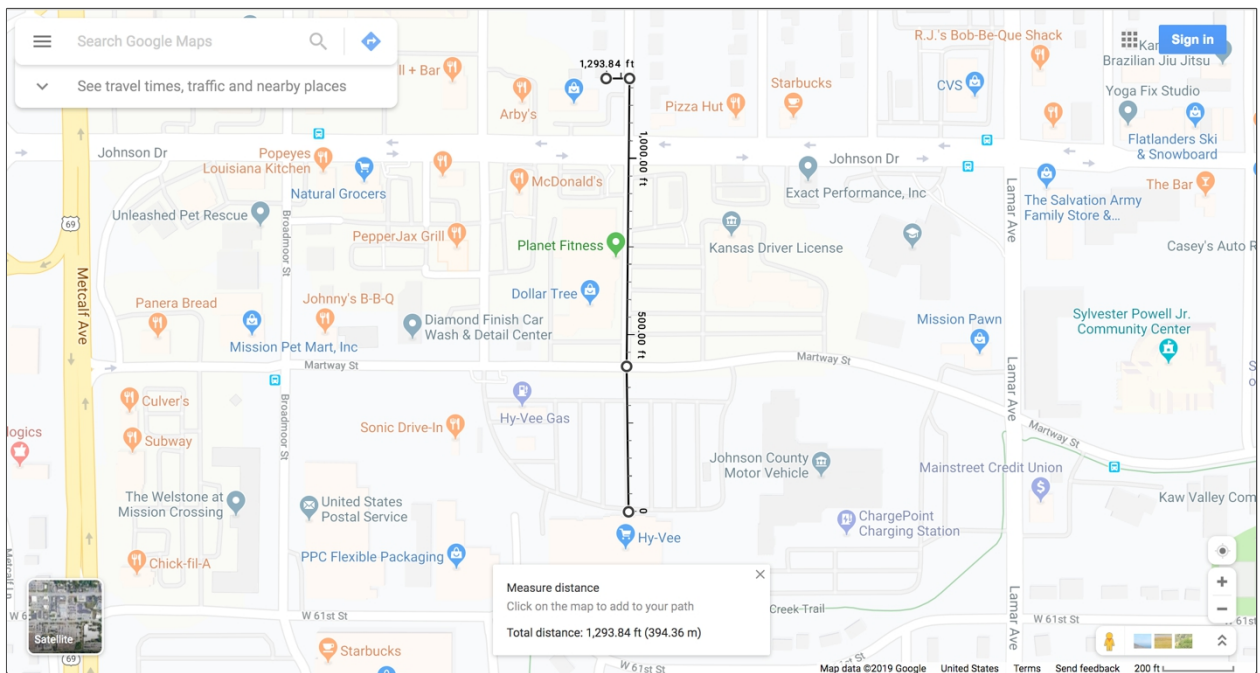


Figure 8. Google Maps measurement of the distance between 5830 Riggs Ave. and Hy-Vee.



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- <sup>1</sup> World Health Organization, “Obesity and Overweight.”
  - <sup>2</sup> Richtel and Jacobs, “American Adults.”
  - <sup>3</sup> Stanley, “Big Nation.”
  - <sup>4</sup> Ambinder, “Beating Obesity.”
  - <sup>5</sup> Oz and Roizen, “Healthy-and-Obese.”
  - <sup>6</sup> Rosser, “Treating Morbid Obesity.”
  - <sup>7</sup> Bray and Popkin, “Dietary Fat Intake.”
  - <sup>8</sup> Malik, Schulze, and Hu, “Intake of Sugar-Sweetened Beverages.”
  - <sup>9</sup> Hall et al., “Ultra-processed Diets.”
  - <sup>10</sup> Howell and Kones, “Calories in, Calories Out.”
  - <sup>11</sup> He et al., “Changes in Intake.”
  - <sup>12</sup> Slavin, “Dietary Fiber and Body Weight.”
  - <sup>13</sup> Daniels and Popkin, “Impact of Water Intake.”
  - <sup>14</sup> Maher et al., “Independent and Combined Associations.”
  - <sup>15</sup> Gangwisch et al., “Inadequate Sleep.”
  - <sup>16</sup> Robinson et al., “Screen Media Exposure.”
  - <sup>17</sup> Laermans and Depoortere, “Chronobesity.”
  - <sup>18</sup> Raoult, “Obesity Pandemics.”
  - <sup>19</sup> Greenway, “Virus-Induced Obesity.”
  - <sup>20</sup> Harris, Bargh, and Brownell, “Priming Effects.”
  - <sup>21</sup> Cummins and Macintyre, “‘Food Deserts’—Evidence and Assumption”
  - <sup>22</sup> Cummins and Macintyre, “‘Food Deserts’—Evidence and Assumption”
  - <sup>23</sup> Cromidas, “Fresh Oasis.”
  - <sup>24</sup> Talley, “Wal-Mart, SuperValu to Open.”

- <sup>25</sup> Hirsch, “Grocery Shelves Barren.”
- <sup>26</sup> Briggs, “Delivery Is Oasis.”
- <sup>27</sup> Watanabe, “Jewish Groups.”
- <sup>28</sup> Eversley, “Programs Cropping Up.”
- <sup>29</sup> Rosenberg, “Food Desert Map.”
- <sup>30</sup> Gray, “Urban Food Deserts.”
- <sup>31</sup> Berube, “Not Lost.”
- <sup>32</sup> Gunlock, “What ‘Food Deserts’?”
- <sup>33</sup> Week staff, “America’s ‘Food Deserts.’”
- <sup>34</sup> Sullum, “Mirage.”
- <sup>35</sup> Philpott, “Is Walmart the Answer.”
- <sup>36</sup> Goodman, “Studies Find No Evidence.”
- <sup>37</sup> Wilson, “Dinner.”
- <sup>38</sup> Walton, “Food Deserts.”
- <sup>39</sup> *An Act to Provide for the Continuation of Agricultural Programs.*
- <sup>40</sup> U.S. Dept. of Agriculture, Economic Research Service, “Affordable and Nutritious Food.”
- <sup>41</sup> U.S. Dept. of Health and Human Services, Administration for Children and Families, Office of Community Services, “CED Healthy Food.”
- <sup>42</sup> Walgreens, “Offering Fresh Food.”
- <sup>43</sup> Aubrey, “First Lady.”
- <sup>44</sup> Križan et al., “Potential Food Deserts.”
- <sup>45</sup> Osorio, Corradini, and Williams, “Remediating Food Deserts.”
- <sup>46</sup> Breyer and Voss-Andreae, “Food Mirages.”
- <sup>47</sup> Leete, Bania, and Sparks-Ibanga, “Congruence and Coverage.”
- <sup>48</sup> Osorio, Corradini, and Williams, “Remediating Food Deserts.”

- <sup>49</sup> Barrie, “Urban Agriculture”; Shaw Food Solutions Ltd., “Food Desert Finder (UK).”
- <sup>50</sup> McMillan, “Food’s Class Warfare.”
- <sup>51</sup> Sbicca, “Growing Food Justice.”
- <sup>52</sup> Lupinacci and Happel-Parkins, “Food for a Common(s) Curriculum.”
- <sup>53</sup> Reid, “Food Prisons.”
- <sup>54</sup> Krupp, “Yards with Non-native Plants.”
- <sup>55</sup> Clarke, Eyre, and Guy, “Deriving Indicators.”
- <sup>56</sup> New York Times editorial board, “Fresh Food.”
- <sup>57</sup> Klamann, “Grocery Desert.”
- <sup>58</sup> Chronicle of Higher Education, “Paul Quinn.”
- <sup>59</sup> Kliff, “Don’t Blame Food Deserts.”
- <sup>60</sup> Bansal, “Healthy Bodegas.”
- <sup>61</sup> Wertheim-Heck, Raneri, and Oosterveer, “Food Safety.”
- <sup>62</sup> Neal, “Culinary Deserts.”
- <sup>63</sup> McEntee et al., “Reframing Food Access.”
- <sup>64</sup> Fleischhacker, Flournoy, and Moore, “Meaningful, Measurable, and Manageable.”
- <sup>65</sup> Neal, “Culinary Deserts.”
- <sup>66</sup> Lucan et al., “Sources of Foods.”
- <sup>67</sup> Cummins and Macintyre, “Systematic Study.”
- <sup>68</sup> Story et al., “Creating Healthy Food.”
- <sup>69</sup> Morland, “Evaluation.”
- <sup>70</sup> Caspi et al., “Local Food Environment.”
- <sup>71</sup> Thornton, Lamb, and Ball, “Employment Status.”
- <sup>72</sup> Christian, “Using Geospatial Technologies.”
- <sup>73</sup> Christian, “Using Geospatial Technologies.”

- 74 Christian, "Using Geospatial Technologies."
- 75 Christian, "Using Geospatial Technologies."
- 76 Banwell et al., "Evolving Food Retail."
- 77 French and Wechsler, "School-Based Research."
- 78 Williams et al., "Objective Food Environment."
- 79 Williams et al., "Objective Food Environment."
- 80 Cerin et al., "Neighborhood Design."
- 81 Williams et al., "Objective Food Environment."
- 82 Alber, Green, and Glanz, "Perceived and Observed."
- 83 Alber, Green, and Glanz, "Perceived and Observed."
- 84 Gamba et al., "Measuring the Food Environment."
- 85 Story et al., "Creating Healthy Food."
- 86 Glanz et al., "Healthy Nutrition Environments."
- 87 Lytle and Fulkerson, "Assessing the Dietary Environment."
- 88 Lucan et al., "Sources of Foods."
- 89 Story et al., "Creating Healthy Food."
- 90 French and Wechsler, "School-Based Research."
- 91 Harris, Bampton, and Aboueissa, "Two Methods."
- 92 Nau et al., "Exploring the Forest."
- 93 Blanchard and Matthews, "Retail Concentration."
- 94 Clark et al., "Food Hub."
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