

The Right to a Nutritious Diet: Examining Food Gaps Through an Environmental Justice Lens

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Abstract: Current research suggests that areas that are socioeconomically and racially distinct from one another differ in their types of food available. This raises three fundamental issues: are there differences in the quantity and type of food outlets in these different communities; do any observed differences in quantity and type of food places appear to hinder access to a nutritious diet; and what are the potential implications and solutions for these communities. This paper examines the differences in quantity and type of food outlets in two socioeconomically distinct areas of San Diego, with an emphasis on the availability of supermarkets due to their associated health benefits. Through an examination of the local food environment in these communities I determined that the environmental justice lens is applicable in cases of lack of access to a nutritious diet due to the noted barriers in access experienced by Non-White and low-income groups in this study.

Key words: food environment, health disparities, environmental justice, disinvestment

The Environmental Justice Connection to Dietary Choices

The right to a healthy environment is recognized internationally as a basic human right (Rio Declaration, UN, 1992). The definition of environment must expand beyond simply clean land, air, and water, the reference points that typically come to mind, to also include the communities that we live in, urban as well as rural, and the built environment that surrounds us. A healthy environment would also include access to, or does not inhibit access to, eating a nutritious diet along with outlets for physical activity. Using this expanded definition of the environment, each community must have access to, or not hinder access to, a healthy lifestyle. One of the biggest problems currently facing the United States right now, however, are the vast health disparities that exist among communities, which typically fall along race and class lines. Therefore, it is important to examine the racial and socioeconomic differences that exist between communities as possible contributors to these health disparities. There are two components of the built environment that must be considered: Opportunities for physical activity and the local food

environment. The latter is the focus of this paper, particularly the distribution of and access to supermarkets as research indicates the lack of access to supermarkets is associated with a higher prevalence of overweight and obesity, (Morland, 2002; Morland et al. 2008).

The lack of access to a nutritious diet and its health consequences is a well-researched phenomenon, and through an examination of the food environment in San Diego, I aim to contribute to this growing body of research. My main objective, however, is to place the lack of access to a nutritious diet into the environmental justice literature, as the communities that experience the detrimental effects of inadequate food sources are overwhelmingly low-income and non-white. Although the environmental justice framework is primarily used to address health hazards such as the placement of toxic waste facilities because of their negative health effects on people living nearby, the lack of access to a nutritious diet must be considered a form of environmental racism for the negative health effects it has on residents that must live in these communities (Morland, 2001; Morland, 2006).

The environmental justice movement seeks to address equitable spatial distribution of environmental burdens and benefits, whereby groups, typically non-white and low-income are exposed to greater burdens adversely affecting their health (Environmental Protection Agency). In order to place access to a nutritious diet into the environmental justice literature, it must be understood that race and class are relational concepts that are historically created and this process affects the distribution of resources (Mullings, 2005). This resource distribution then constrains and enables what appear to be voluntary lifestyle choices (Mullings, 2005). In this case persons that are constrained in access to a nutritious diet may be forced to choose other less nutritious options, adversely affecting their health.

Although race and class have been identified as relational concepts and they cannot be

separated in this study, it is important to note that race legacies of the past—slavery and segregation—do continue to shape the present including class standing. As discussed by Omi & Winant (1994) race is a social and structural formation that is used as a way to explain and comprehend the world. The understanding of the world in terms of race is then “routinized and standardized” in social and political organizations affecting the power structure and (unequal) distribution of resources (Omi & Winant, 1994). The resource of concern here is lack of access to a nutritious diet.


The fact that poor diet and physical inactivity is the second leading actual cause of death in the United States (Mokdad et al. 2001) demonstrates that the lack of access to a nutritious diet may be more toxic to an individual’s health than living near a toxic waste facility. The placement of access to a nutritious diet in the environmental justice literature would serve to strengthen the environmental justice movement, aid those groups the movement seeks to assist, and help to eliminate health disparities, one of the primary goals of the U.S. Department of Health and Human Services (Healthy People 2010).

Through the study of two socioeconomically distinct communities of San Diego, I examined the distribution of and access to a nutritious diet to demonstrate the applicability of an environmental justice framework. The first part of this paper takes stock of the quantity and type of food locations in each study area through several means, including the mapping of the spatial distribution of these locations. The second part of this paper focuses on access, which is measured in terms of transportation to food places, cost, and availability of items on the Thrifty Food Plan shopping list. Through the examination of the food environments of these two communities, I compared the results to other case studies in order to see what methods may work in order to assist those that live in underserved communities. This case study provides evidence

that the placement of this issue in the environmental justice literature is appropriate as there are differences observed in access to a nutritious diet that appear to be correlated to race and socioeconomic status.

Food Disparities: An Environmental Justice Perspective

Health disparities along class and racial lines are a well-documented phenomenon in the United States. As reported in “Healthy People 2010,” biological and genetic characteristics do not explain the health disparities experienced by African Americans, Hispanics, American Indians, and other non-white groups (U.S. Department of Health and Human Services, 2010). A major indicator of socioeconomic status is race due the history of racialization in the United States involving residential segregation based on this characteristic. In fact, according to Schneider (2006), socioeconomic status is the biggest indicator of health risks, with those at the lower end of the scale having a higher mortality rate than those on the higher end of the scale. When this is coupled with research by Mokdad et al. (2004), which found that the second highest actual cause of death in the United States after tobacco is poor diet and physical inactivity, a question arises regarding how these two pieces are related and whether being on the lower end of the socioeconomic scale means that an individual will be exposed to an environment that promotes this unhealthy lifestyle, or at least inhibits a healthier one. In order to try to understand, explain, and reverse this negative trend, the examination of the built environment has become an area of concern for public health officials. Mokdad’s (2004) study falls in line with the typical examination of the built environment’s two components: opportunities for physical activity and the local food environment. . While both of these are critical issues, opportunities for physical activity are outside the limited scope of this paper, and the focus is on the local food environment.

There is a vast amount of research addressing the association of health and the local food environment. Morland et al. (2008) found that there was a significant relationship between fast food density and obesity, while similar research conducted by Lopez (2007) found that communities with a high fast food density did not have higher rates of obesity. However, Lopez (2001) and Morland et al. (2002) both found that availability of a supermarket was significantly related to a lower Body Mass Index. Through a study of the availability of supermarkets, small grocery stores, and convenience stores, Morland et al. (2002) again found that the availability of a supermarket was associated with a lower prevalence of obesity and overweight and the presence of convenience stores and small grocery stores was associated with a higher prevalence of obesity and overweight. Short et al. (2007) counters this evidence with a discussion of the importance of the “small, full-service food retailers who contribute to urban food security by providing a wide variety of relatively low-cost foods that may also target the special needs of local ethnic groups” (352). It is important to consider ethnic needs of the community and it is recognized that these small markets may in fact be better than a supermarket in understanding specific needs of the local residents. Since the primary concern here is the importance of access to supermarkets in relation to health outcomes, the emphasis of this paper will be placed on the availability of supermarkets. 

Within academic research a number of studies analyze the existence of what scholars have termed **food deserts** and supermarket gaps, all of which focus on the lack of access to nutritious foods in low-income and predominantly Non-White communities. Obstacles to maintaining a nutritious diet have such significant health effects that they should be qualified as an environmental justice issue, in that they present a problem that overwhelmingly plagues racial minorities and low-income communities (Morland 2001, 2006; Sallis, 1986).

At the core of the environmental justice movement is the response to environmental racism, where racial minorities and low-income groups are burdened with the uneven distribution of environmental dangers and hazards. This refers to any policy or practice, intended or unintended, that differentially affects or disadvantages individuals, groups, or communities based on race or color (Brulle et al. 2006). Julie Sze's (2007) study of toxic waste facilities in New York demonstrates the way low-income communities suffer disproportionate effects of environmental problems and that they are at a greater risk for health related problems because of the placement of such facilities in their communities. Although environmental justice is usually applied to more extreme cases of environmental racism, a broader definition may be applied to the health problems that stem from lack of access to a nutritious diet. Rather than limiting the application of environmental justice to the placement of toxic facilities in these communities, one must also consider the lack of investment in these neighborhoods and its health effects.

Smith (2001) defines economic and social disinvestment as the withdrawal of, or refusal to invest capital in neighborhoods or facilities for reasons that cannot be justified on the basis of prevailing macroeconomic conditions or legitimate evaluations of local risk. This phenomenon takes place in low-income often predominantly non-white communities. It is on this basis that lack of access to a nutritious diet should be placed in the environmental justice literature. Pawasarat et al. (2001) discusses the disparities between the amount of purchasing power that actually exists versus what is perceived to exist in a low-income community in Milwaukee. As Pawasarat explains, a major barrier in attracting businesses such as supermarkets to certain areas are the stigmas associated with the areas, or as he describes: "the negative marketing stereotypes associated with city neighborhoods are 'urban legends' that have to be overcome in order to attract new business" (7). Urban legends, referring to stereotypes of areas as blighted, make these

areas less likely to receive aid and even basic necessities that are common in areas that are seen as good regions; typically the middle and higher class communities.


The collection of stereotypes associated with a given community that mark it as blighted has been referred to specifically as territorial stigmatization. Disinvestment is often both a cause and effect of a place's stigma. Wacquant (2007) discusses the stigmas of race, nationality, and religion and says that it is these labels that a territorial stigma is akin to, since it can be transmitted through lineages and equally contaminate all members of a family. It is this "territorial stigmatization that is linked to the emergence of zones reserved for the urban outcasts... and whether or not these areas are in fact dilapidated and dangerous, and their population composed essentially of poor people, minorities, and foreigners, matters little in the end: the prejudicial belief that they are sufficient to set off socially noxious consequences"

(Wacquant 68). In cases of lack of access to supermarkets for low-income communities primarily composed of a mix of Non-White groups, this idea of territorial stigmatization must be considered as part of the explanation for this lack of access, with the health disparities being one of the "socially noxious consequences" Wacquant speaks of.

By broadening the typical application of environmental justice to include disparities in access to a nutritious diet through disinvestment and the subsequent placement of this issue in the environmental justice literature, the movement may be strengthened and aid the groups it seeks to protect in yet another manner. These inequities in the built environment, as discussed by Thiele, Morland, Lopez, and others, have such severe health implications that I argue it may be just as detrimental to one's health as living near toxic waste facilities that Sze addresses.

Measurement of the Food Environment

In order to place access to a nutritious diet into the environmental justice literature it is important to examine the food environment. Such an examination serves to demonstrate that some Non-White and low-income groups are faced with a greater risk of negative health effects due to their food environment. The environmental justice movement seeks to protect racial minorities and residents of low-income areas from negative health effects of their environment. However, the fact that these groups may face negative health effects due to their local food environment, stemming from lack of access to a supermarket, clearly demonstrates that any region that faces this lack of access should qualify as an environmental justice issue.

The primary goal of this case study was to examine the availability of and access to a nutritious diet as an environmental justice issue in two distinct communities of San Diego: Southeastern San Diego (Subregional Area 5), which includes 21 neighborhoods in the southeastern area of the City of San Diego, and a portion of North San Diego (Subregional Areas 14 and 15), which includes the communities of Rancho Bernardo, Carmel Mountain Ranch, Poway, and a portion of Scripps Ranch (see Map 1). It is important to note that these two areas are different in total area, with North San Diego being substantially larger than Southeastern San Diego. However, they are similar in their total populations, part of the reason the areas were chosen, as the food outlets in area have the opportunity to serve roughly the same amount of people. 

The two areas comprised in this study were chosen due to their differences in race and ethnicity and socioeconomic status, North San Diego being higher income and predominantly White and Southeastern San Diego being more racially diverse and lower income. The demographic differences observed are partially due to the unique development of the areas. Southeastern San Diego is an older community and before the passing of the Rumford Fair

Housing Act in 1963 this was one of the only portions of San Diego where there were not racially restrictive covenants banning people of particular racial groups from living in the area (Harris, 1974). This created a concentration of minority groups in the area still observed today. North San Diego on the other hand, is primarily composed of master planned suburban communities, which attracted a middle class population that is still present today.

In assessing the differences in food availability in Southeastern San Diego and North San Diego, it was important to ascertain the differences between the areas racially and socioeconomically. Racial densities of each area were mapped in order to examine the association of race with food store availability. In addition, the following variables were used to assess socioeconomic status: Household income, gross rent as a percentage of household income, and educational attainment. All information was gathered from the last complete census administration conducted in 2000. Access to a nutritious diet is often not constrained to set administrative areas, therefore a one mile buffer around each area was included to cover food places where the residents of the study areas are likely to shop. This buffer was utilized as other studies were noted as problematic for leaving out many food outlets that were just outside of administrative boundaries (Neckerman, 2009). Residents of an area do not do their shopping within these strict boundaries; therefore it is important to consider areas adjacent to the set administrative boundaries of a community. A one-mile distance to a supermarket was used in this study to correlate with the new USDA Food Atlas tool used to identify food deserts, which they define as areas where 40% of the residents live more than one mile from a supermarket.


In order to measure access several components were examined. First, the quantity and type of retail food outlets were surveyed and separated into four categories: supermarkets, small markets, fast food outlets, and convenience/liquor stores. A list of retail food outlets was

collected from the California Department of Public Health. Each location on the list was verified to still be in business and placed into one of the four categories of food outlets. These outlets were then mapped using Geographic Information Systems (GIS) to analyze the spatial distribution and the differences between the two areas.

Definitions of Food Outlets

Supermarket	Large chain retail outlet over 6,000 square feet in size.
Market	Retail food market 6,000 square feet or fewer.
Fast Food	Quick service outlet where food can be prepared or served quickly.
Convenience/Liquor Store	Retail stores that often stock a variety of snacks, beer, liquor, and some fruits and vegetables.

Table 1: Definitions of Food Outlets

The second component of access was a price and availability survey at four different food outlets in each area. This was done using the USDA's Thrifty Food Plan (TFP), which represents a "minimal cost, nutritious diet" and was created to feed a family of four—two parents and two children—and contains a total of sixty-five different items accompanied by recipes to make healthy meals using all of the items on the list. This list was taken to each store to determine whether one could buy everything on the list and to compare the prices of each item and total cost for the entire list. The least expensive option was chosen for each item on the list, therefore sizes or volumes of each item varied from store to store. To correct for the difference in sizes, the lists were standardized calculating the price per ounce, or other volume indicated, to determine the cost of each item by the amount indicated necessary by the TFP. This price comparison represents the cost for the amounts indicated as needed by the TFP, and not actual amounts that may be purchased in many cases; however this was the only way to make meaningful comparisons among the stores. hough the Thrifty Food Plan may be criticized for not being

the most nutritious diet plan, it was chosen because it feeds a small family on a limited budget. The use of a standard list with a large variety of items provided me with the ability to make an unequivocal comparison between the stores.

While doing the survey of the stores, I also measured the approximate size of the fresh produce sections as a percentage of the entire store. Fresh fruits and vegetables are an essential element of any healthy diet and the percentage of each store devoted to this section demonstrates the emphasis of this in each store and differences between the areas. Differences in the layout of the fresh produce sections, particularly the variation in the amount of open space between the stores, made measurement of this section by just area difficult therefore this is not discussed for all stores.

The last component of access considered was transportation. This includes two different variables: vehicle availability and public transit available. Vehicle availability and transit time were gathered from the 2000 census and public transit information was gathered from the Metropolitan Transit System (MTS), which serves the areas studied.

There are several limitations of this study to take note of. First, due to time constraints, not every supermarket was examined. Therefore, the differences observed may be unique to the stores observed and may not represent the entire areas. However, the selected stores were chosen because they are spread out throughout the areas examined to include a range of places that service people in the entire areas studied. In addition, two chain supermarkets common in Southern California, an Albertsons and a Vons, were compared from each area as a constant to see if there was any significant variation. Another limitation was encountered when I was collecting price information at FoodLand in Southeastern San Diego as I was asked to leave because they do not allow anyone to write down prices for competitive reasons. I had collected

nearly all of the information needed and have utilized what was collected; therefore, this is still included in one of the four stores evaluated. However, items that were not checked are noted with an asterisk (*). A third limitation is the differences observed may be a matter of visiting the stores on different days where price differences and availability of items may be due to a particular sale that is uncommon or visiting a store just before it is about to receive a shipment of new merchandise and may have just run out of any particular item.

Findings and Analysis

In order to place the unequal distribution of access to a nutritious diet into the environmental justice literature race and class differences must be observed to demonstrate that there is in fact a greater burden placed on Non-White and low-income groups. Differences in access to a healthy diet may negatively affect the health of these two groups thus their local food environment becomes an issue of environmental justice. In assessing the two areas of this study it is important to first have a closer look at the socioeconomic statistics of the areas. As shown in Table 2 we see that the communities are very different from one another. Southeastern San Diego is incredibly diverse, with each of the four race categories being nearly equal to one another. Although Southeastern San Diego is a diverse area, there is some segregation between the races as shown in Map 2. North San Diego is much less diverse than Southeastern San Diego, with 77% of the population identifying as White, with the next largest population being Asian and Pacific Islanders at 14%, and the Black and Other populations both less than 10% of the population. In terms of Hispanic Origin (Ethnicity), the areas are again very different, with Southeastern San Diego having a much larger Hispanic population than North San Diego.

Population by Race and Hispanic Origin, 2000

	Southeastern San Diego		North San Diego	
	<i>Total Population</i>	<i>Percentage</i>	<i>Total Population</i>	<i>Percentage</i>
White	41,027	26%	60,728	77%
Black	35,185	23%	2,087	2%
Asian/PI	35,529	22%	14,433	14%
Other	44,384	29%	5,861	7%
<i>Total</i>	<i>156,125</i>	<i>100%</i>	<i>83,109</i>	<i>100%</i>
Hispanic	61,809	40%	6,488	8%
Non-Hispanic	94,316	60%	76,621	92%
<i>Total</i>	<i>156,125</i>	<i>100%</i>	<i>83,109</i>	<i>100%</i>

Table 2: Population by Race and Hispanic Origin, 2000
Source: SANDAG profile Warehouse

In addition to the variance in race and ethnicity between the two areas, there were also differences in the household income levels and educational attainment levels. Southeastern San Diego had an annual median household income of \$41,014 while North San Diego had a median household income of \$73,061 in the year 2000¹. Income levels are very strongly connected to educational attainment levels and as expected, the rate of college graduates in North San Diego, 58%, was much higher than in Southeastern San Diego, 22%. With a clear understanding of the differences between the areas, it is now important to look at differences in access to a nutritious diet.

Components of Access: Places, Transportation, Price, and Availability

Places: Quantity and Type

The first component of access is an analysis of the quantity and type of retail food outlets in each area. Looking at sheer numbers, the two areas look similar in quantity to one another, in all categories. Both North San Diego and Southeastern San Diego have a total of 17 supermarkets. However, within the administrative boundaries of each, there are only 9 in Southeastern San

¹ Median Household income is in 1999 dollars. Source: SANDAG Profile Warehouse

	Food Outlets	
	Southeastern San Diego	North San Diego
Supermarkets Total	17	17
<i>Within administrative area</i>	9	16
<i>Within 1-mile buffer</i>	8	1
Small Markets Total	30	10
<i>Within administrative area</i>	24	9
<i>Within 1-mile buffer</i>	6	1
Fast Food Total	54	76
<i>Within administrative area</i>	31	76
<i>Within 1-mile buffer</i>	23	0
Convenience/Liquor Total	27	15
<i>Within administrative area</i>	12	14
<i>Within 1-mile buffer</i>	15	1
Total food outlets:	100	116

Table 3: Food Outlets

Source: California Department of Public Health

Diego compared to 16 in North San Diego. The small market category has a large difference in terms of quantity with 30 in Southeastern San Diego and 10 in North San Diego. In the fast food category, the areas experience a large difference in total quantity with Southeastern San Diego at 54 and North San Diego at 76. There is a greater quantity of convenience stores in Southeastern San Diego compared to North San Diego with 27 and 15 respectively. These numbers take on greater significance when looking at the spatial distribution of food outlets and the differences between the two communities of this case study.

In the small market category, Southeastern San Diego has three times as many as North San Diego. This is common in other communities similar in demographics to Southeastern San Diego. The small market is an incredibly important asset to any community as they have the ability to cater to specific ethnic needs of local populations and visits to several small markets in Southeastern San Diego and North San Diego demonstrated this. There are many Hispanic small markets in Southeastern San Diego and those visited carried a wide variety of Hispanic foods that may not be available at a larger supermarket due to standardized stocking practices. In

addition, the small markets had many of their items listed in both Spanish and English clearly catering to the large Spanish speaking population that lives in the area. In North San Diego, there are fewer small markets, which is not surprising considering the lack of racial and ethnic diversity in the area. This may also be related to the predominant use of automobiles in the area as small markets are common where people walk to shop and are larger stores are more common where people drive. The small markets in North San Diego tend to be fruit and vegetable stands compared to the more ethnically focused stores located throughout Southeastern that cater to specific cultural needs of the people that live in the community, such as the Muang Lao Market, Asian Food Market, and Mi Tienda Market. While the diverse populations that live in Southeastern San Diego create a demand for these specialty stores, the fact that these types of stores are not in North San Diego may serve as a way of maintaining the racially homogenous status quo that exists in the North San Diego area due to the difficulties people may face in trying to purchase culturally acceptable foods.

Looking at the spatial distribution of the 30 small markets as seen on Maps 2 and 3, 24 are located within the jurisdiction of Southeastern San Diego and six are located within the buffer zone. In addition, the markets that are within the boundaries of Southeastern San Diego are well dispersed throughout the community. However, they tend to be located towards borders of the community rather towards the center. In North San Diego, there are fewer markets, but they are well dispersed throughout the area as well.

In the fast food category the two areas experience a large difference in quantity. North San Diego has a total of 76, compared to a total of 54 in Southeastern San Diego. The difference is even greater when considering that within the administrative boundaries of Southeastern San Diego there are 31 compared to a total of 76 in North San Diego. A partial explanation for this

phenomenon may be the broad definition used for this category from the California Department of Public Health that includes many restaurants that do not have a drive-through and are simply fast-service including smoothie shops and sandwich shops where food is made to order, rather than being pre-prepared. This distinction is important to note, as many of the fast food outlets counted here are not the typical calorie-dense hamburger places such as McDonald's or Burger King. Within the definition used here, there are many places that offer healthier food options, such as sandwich shops and smoothie bars, and further research is needed to analyze the differences, if any, between the types of fast food offered in each community.

In looking at the spatial distribution of fast food restaurants in both Southeastern San Diego and North San Diego as seen in Maps 2 and 3, they are clustered along the main arterials. A difference can be seen, however, in North San Diego where the fast food outlets are spread throughout the entire area and in Southeastern San Diego, they cluster around the edges with few centrally located. Although the preponderance of fast food in both places, particularly North San Diego, may seem alarming, studies on the existence of fast food outlets and rates of overweight and obesity have been inconclusive to date (Lopez, 2007). However, an abundance of fast food restaurants with a shortage of supermarkets has been associated with negative health outcomes (Morland, 2009; Lopez, 2007), therefore the abundance of fast food must be considered relative to supermarkets.

The availability of supermarkets is considered most relevant to health outcomes due to their correlation to overweight and obesity as identified in numerous studies (Morland, 2002; Morland, 2008; Lopez, 2007). In addition, Sallis (1986) found that San Diego supermarkets were more likely to carry "heart-healthy" foods than smaller neighborhood markets indicating the likelihood of one being able to sustain a healthier diet by having access to a supermarket. In

Southeastern San Diego and North San Diego, based on the numbers listed in Table 3, it appears that the two areas have similar access to supermarkets. However, nearly half of the supermarkets available to the residents of Southeastern San Diego are outside the administrative boundaries in the 1-mile buffer zone. In addition, six of the nine supermarkets located within the administrative boundary fall along the border of the administrative boundaries of Southeastern San Diego.

It is also important to consider the location of the supermarkets in each area and whether or not the supermarkets are well dispersed ensuring easy access for all residents. This is where the greatest differences lie between Southeastern San Diego and North San Diego. In Southeastern San Diego, there are a total of nine supermarkets within the actual boundaries of the area, and there are an additional eight in the buffer zone. In Southeastern San Diego, the majority of supermarkets are located along and just outside the administrative boundaries. The location of the supermarkets primarily along the borders of Southeastern San Diego is especially important when one takes a closer look at the concentrations of race in the area.

As shown in Map 2 of the location of food outlets and primary race, or largest concentration of a racial group, throughout Southeastern San Diego, there is a correlation between the location of supermarkets and racial density. All census tracts of Southeastern San Diego where the primary race is White have access to a supermarket within one mile except for a small strip near the center of the area. However in the other three race categories, there are numerous census tracts where the nearest supermarket lies outside a one-mile radius. This demonstrates the difference in access experienced by Non-Whites and Whites in Southeastern San Diego and thus the relevance of the environmental justice lens. Spatial proximity to a supermarket is a critical factor in ensuring access to a nutritious diet. The increased distance to a supermarket here demonstrates inequity that falls along racial lines in Southeastern San Diego.

This provides evidence that this is an environmental justice issue as it places a greater burden on racial minorities in maintaining access to a nutritious diet.

When comparing the difference in the spatial distribution of food outlets in Southeastern San Diego to North San Diego mapped against racial densities, there are also some areas in North San Diego that do not have access to a supermarket within one mile. However, the portions of North San Diego and Southeastern San Diego that are greater than 1-mile from a supermarket differ in their median household income, as seen in Maps 4 and 5. In Southeastern San Diego, the portions greater than 1-mile from a supermarket have a median household income of less than \$40,000 or between \$40,000 and \$80,000. In North San Diego, on the other hand, those that live more than 1-mile from a supermarket, all have a median household income between \$80,000 to \$120,000 or \$120,000 to \$160,000. Being in a higher income bracket allows people greater freedom to choose where they want to live and thus may choose to live in areas that are more secluded, rural, and zoned as residential as is the case in the North San Diego. In addition, the areas of North San Diego that have a median household income between \$40,000 to \$80,000 all have access to a supermarket within 1-mile. The differences in median household income, a marker for class status, seen here demonstrate the relevance of an environmental justice lens as those of lower class status experience barriers in access to a nutritious diet.

Transportation

The second component of access considered is transportation. Transportation to places to purchase healthy foods is critical and oftentimes low-income areas have less access to a vehicle therefore access to public transportation is critical. A lack of access to a supermarket due to inadequate transportation would demonstrate an environmental justice issue because people would then be forced to shop at places that may not satisfy nutritional needs and may cost more

as supermarkets typically offer lower prices. Access to supermarkets is considered here to be the most important due to the evidence that demonstrates their correlation to positive health outcomes and the lack of supermarkets to negative health outcomes. It is important to consider two variables here: vehicle availability and public transit options available. Based on census data from 2000, both areas are similar in their vehicle availability, with the majority having one or two vehicles per household. One notable difference is observed in the “No Vehicle” category where 10% of the population of Southeastern San Diego does not have a vehicle and only 4% in North San Diego do not have a vehicle. This equals approximately 1,900 more residents of Southeastern San Diego without a vehicle compared to North San Diego. This may indicate a slightly greater need for public transportation in Southeastern San Diego as compared to North San Diego. When looking at the public transit available in Southeastern San Diego and Rancho Bernardo, there are many bus lines and several trolley stops located near each supermarket. In both Southeastern San Diego and North San Diego, near each supermarket there are typically between 2 and 4 bus or trolley stops and each area averages 3 bus stops near each supermarket. Transportation in this case is similar between the two areas studied and the differences observed are not sufficient to consider this for placement in the environmental justice literature. Further research regarding the use of public transportation, transportation from one supermarket to another, and perceived safety of public transportation would help to determine that transportation may definitively be included or excluded as a barrier in access to a nutritious diet for this particular case study.

Price and Availability

The final component of access measured price and availability using the USDA’s Thrifty Food Plan (TFP). The purpose of this was to determine whether or not each store had all 65

items on the shopping list and to compare prices between the two areas. Several studies have found that prices tend to be higher in low-income communities, largely communities of color, which places a great strain on these families that have less disposable income (Bitler & Haider, 2009). Not having all of the items on the TFP and/or having to pay a higher price for the items available indicates the relevance of the environmental justice lens when Non-White and low-income groups disproportionately experience this problem.

A total of eight supermarkets were evaluated in both Southeastern San Diego and North San Diego. In Southeastern San Diego, out of the four supermarkets visited, two stores—both large chain supermarkets—had all 65 items the TFP mandates. The total for all items at this store was \$171.98, with the bulk of the cost difference in the Meat category due to a particularly high price on ground turkey. At the second store visited, Pay-Low Supermarket, 12 of the items were either not available, and the total for all items available was \$113.42. Comparing the prices for all 54 items from the TFP available at Pay-Low to the same items at Albertson's there is a difference of \$22.03 with Albertson's being the more expensive store. The primary difference is observed in the fresh fruits and vegetables section. Each store had all items available in this section, however Pay-Low was less expensive by \$16.79, nearly a third the cost of Albertson's.

Thrifty Food Plan: Percentage of Items Available, Total Cost of Produce, and Total Cost of Basket								
	Southeastern San Diego Supermarkets				North San Diego Supermarkets			
	Foodland	Vons	Albertsons	Pay-Low	Trader Joe's	Vons	Albertsons	Henry's
% Of Items Available on TFP	94%*	100%	100%	82%	88%	100%	100%	98%
Total Price of Fresh Produce	\$21.51*	\$32.45	\$28.57	\$11.78*	\$27.72	\$33.16	\$31.80	\$19.23
Total Price	\$98.19*	\$169.89	\$155.54	\$112.42	\$155.17	\$165.43	\$151.37	\$184.04

*This number includes only the items checked before being asked to leave.

Table 4: Thrifty Food Plan: Percentage of Items Available, Total Cost of Produce, and Total Cost of Basket
Source: Original Research Data, May 2010

Both stores had a substantial portion of the store dedicated to fresh produce, however Pay-Low had a larger percentage of its store, nearly 20% compared to approximately 10%, dedicated to this section. Another observation noted at the Pay-Low Supermarket was the assortment of fresh produce available such as the four different types of banana, compared to only two at Albertson's.

The third store visited was Foodland, where I was not able to collect all of the information needed. However there are some comparisons that can still be made. At this supermarket, 47 items were checked for availability and 46 items were available for a total of \$100.19. For the same 46 items at Albertson's the total cost was \$100.20, the two stores being nearly identical in cost. When comparing the list of items available at both Pay-Low and Foodland there are 42 items available for comparison that total \$84.04 at Foodland and \$71.55 at Pay-Low indicating that Pay-Low offers the lowest prices. Foodland's fresh produce section was similar in size and selection to Pay-Low, both providing a greater variety of fresh fruits and vegetables than the local Albertson's.

Looking at the stores in North San Diego, both Albertson's and Vons had all 65 items on the list. Each category was within \$2 of each other, except for the Meat category where a \$10.62 difference was observed. The overall price differences between the Albertson's and Vons was \$10.26 with Albertson's being less expensive. When comparing these to the stores in Southeastern San Diego, the Albertson's in Southeastern is more expensive than the Albertson's in North San Diego and the Vons in Southeastern San Diego was also more expensive than the North San Diego location. Henry's Market in North San Diego was missing only one item on the TFP list, demonstrating very strong access to a nutritious diet. Although Henry's is one of the highest priced stores, it has the second lowest total price in the fresh produce section. The largest

price difference is observed in the cost of frozen orange juice, which cost approximately twice as much as all of the other stores examined, raising the total cost significantly. Henry's had a clear health focus, with nearly half of the store dedicated to a wide variety of fresh produce, free cholesterol testing, free cardiovascular health examinations, and a large nutritional supplement section. The Trader Joe's in North San Diego was missing a total of 8 items although the price of all the items that were available on the TFP was greater than the Albertson's in both Southeastern San Diego and North San Diego.

Across the board, the Pay-Low Supermarket had the lowest prices. However it was missing 17% of the items on the Thrifty Food Plan shopping list. While some of the items may have been able to be replaced with other similar items, the large number of items missing indicates that someone may have to go to a second store to get all of the items needed. This may either raise total cost if the items are not priced as low as Pay-Low and there are additional losses by not having all of the items available in one place like at Albertson's. The amount of money saved shopping at Pay-Low is reduced when one begins to calculate additional driving time and shopping time by having to go to multiple stores. Time spent traveling to multiple stores represents an opportunity cost whereby one could, and likely prefers to, spend the extra time with family, preparing a meal, or working. When someone is weighing the time it will take to buy food and prepare a meal, the longer it takes to do so, the more attractive faster options become as time is a finite resource.


Lessons Learned: The Importance of Access to Food as an Environmental Justice Issue

The findings from this study demonstrate several ways in which an environmental justice lens is appropriate when applied to gaps in access to supermarkets. While Southeastern San Diego as a whole has many food outlets, lack of access to a nutritious diet due to distance from a

supermarket, some noted price differences, and the absence of items on the Thrifty Food Plan shopping list demonstrate a lack in access to a nutritious diet that is experienced by at least some in the area. The most notable difference was seen in the availability of a supermarket for Non-White residents in Southeastern San Diego. Where the predominant race of the area was White, supermarkets were closer and there were a higher number of supermarkets available. The patterns observed may place the residents of Southeastern San Diego at a greater risk for obesity, overweight, and their correlated diseases, and as shown in Map 2, this is primarily Non-White groups. In addition, the price and availability comparison between the two areas indicated that one may be able to purchase items at a lower cost at the Pay-Low Supermarket in Southeastern San Diego, but it might also take longer to acquire all of the items one needs as two of the three stores observed did not have all of the 65 items on the TFP. This represents an opportunity cost that cannot be measured within the confines of this paper, however further research could be conducted to determine actual costs associated with this. Price differences between the same chains in the two different areas of this study are particularly revealing in that both stores in Southeastern San Diego were more expensive than their North San Diego counterparts. Although these findings are not a large enough sample to be statistically significant, it is a clear indicator that an environmental justice lens is applicable because the lower-income community is being subjected to higher prices.

The negative health outcomes that may be experienced by Southeastern San Diego residents in accessing supermarkets through spatial proximity, price, and the unavailability of items on the TFP demonstrate the ways in which an environmental justice lens is applicable. Environmental justice seeks to correct the unequal distribution of health burdens placed on racial minorities and low-income communities. The local food environment in Southeastern San Diego,

as well as many other communities like it, meets the conditions necessary to qualify as an environmental justice issue because portions of the community face greater difficulties in gaining access to supermarkets than Non-White, higher-income counterparts.

The differences observed may be addressed by local, state, and federal government by recognizing access to a nutritious diet as a basic human right and treating the lack of access as an environmental justice issue due to the overwhelming number of communities experiencing this issue being communities of color and/or low-income. There are several ways in which the United States government has begun implementing policy to ensure that all citizens have access to a nutritious diet. In February 2009, the Obama administration released details on the Fresh Food Financing Initiative, which aims to bring grocery stores and other healthy food retailers to underserved communities across the United States, and to eliminate food deserts completely in seven years. By providing grocery stores and smaller markets with financial and technical assistance, this program will help to ensure these stores are carrying items needed for their local patrons to maintain a nutritious diet. This is modeled after the Pennsylvania Fresh Food Fund, which has been successful in bringing supermarkets to underserved areas identified as not having access to a nutritious diet (Giang et al., 2008). Although the Obama Administration's Fresh Food Financing Initiative does not focus solely on supermarkets, it is modeled after the Pennsylvania program where there has been an emphasis on supermarkets. 

The Fresh Food Fund serves several important functions. First, it makes it a priority to identify food deserts that exist across the country by providing funding to identify these areas. Second, it increases awareness of the issue of food deserts and brings attention to the issue of access to a nutritious diet. Raising awareness of this issue is an important step in identifying access to a nutritious diet as a basic human right and expanding the definition of a healthy

environment to include this element. Defining the right to a healthy diet as a basic human right would mean that the government is partly responsible in providing it. Finally, it aims to ensure that all communities have access to a healthy diet. While it may not be able to bring supermarkets to all communities, the Fresh Food Fund looks to ensure that smaller markets and convenience stores do provide healthy options such as fresh fruits and vegetables. This would not only benefit the store's customers but it also may bring in additional income for the storeowners.

There are further questions raised after conducting this research that require more study. This paper, and many other case studies looking at food deserts and lack in access to a nutritious diet, focus on the importance of the supermarket. However this assumes that "if you build it, they will come," which may not be the case, and it is understood here that simply building a supermarket will provide an opportunity to improve the overall health of the community. That said, all people should have the equal opportunity to maintain a healthy diet and not having access to a supermarket is a major barrier to this. Education on what constitutes a healthy diet and what people should and should not eat is another important variable in this study that is not addressed but must be taken into consideration as well. A healthy diet is associated with the ability to perform well in school. Education on what constitutes a healthy diet along with reinforcement of this by having access to healthy foods is a critical issue that must be considered for underserved communities.

Although the results of this study are not provided from a large enough sample to be considered statistically significant, this research has demonstrated the applicability of the environmental justice lens. The environmental justice movement seeks to protect people, particularly low-income communities and communities of color, from the unequal distribution of

environmental hazards. Including lack of access to a nutritious diet as an environmental hazard, due to known correlations with the lack of access to a supermarket and higher rates of overweight and obesity. The placement of access to a nutritious diet in the environmental justice literature would serve to strengthen the environmental justice movement by addressing a major contributor to the disparities in health that disproportionately affect Non-White and low-income communities.