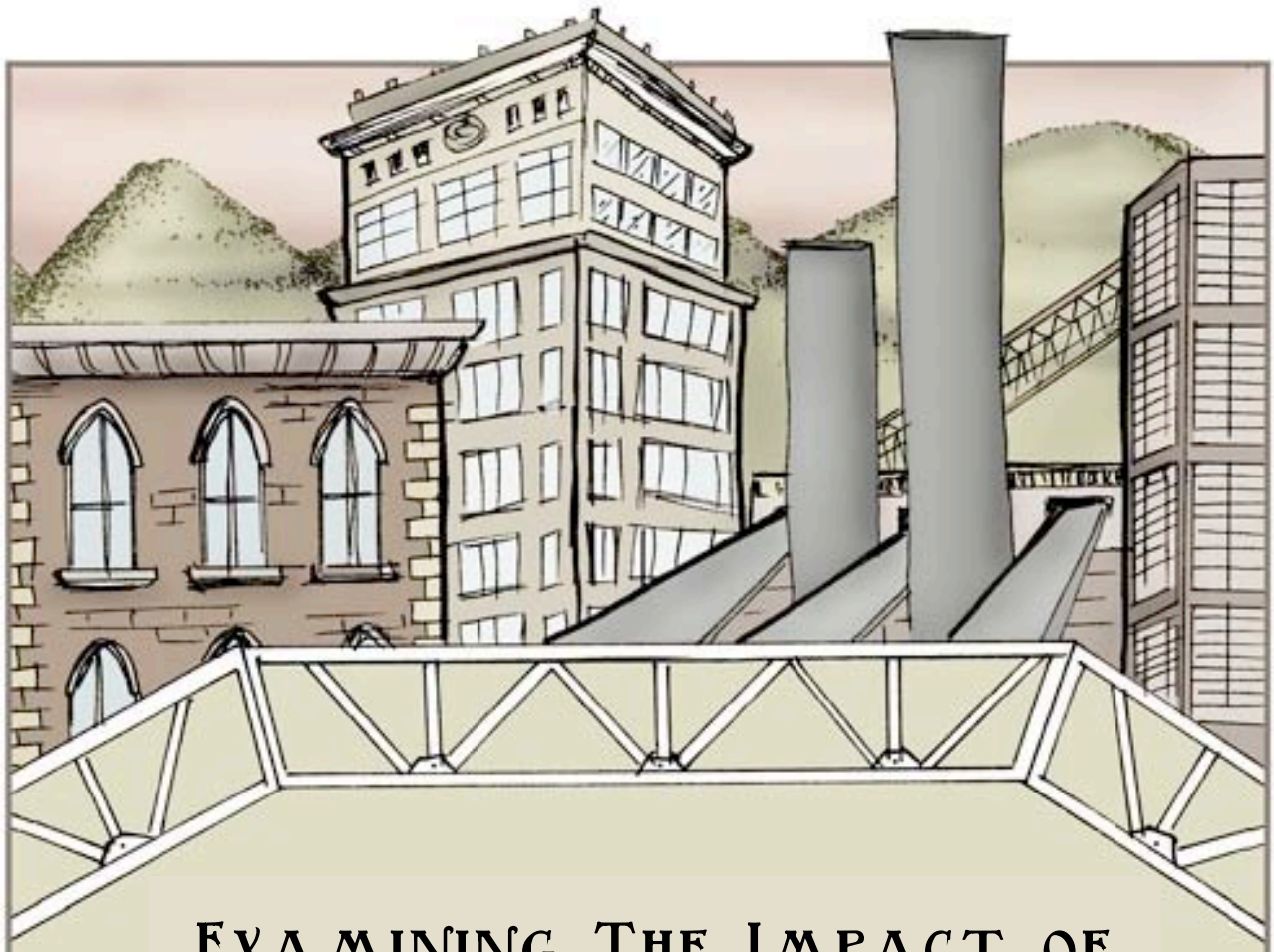

Examining The Impact of Food Deserts & Food Imbalance on Public Health In . . .

Birmingham, Alabama

August 2010

For more information on what Main Street Birmingham
is doing on this issue, visit http://theurbanfoodproject.org/

Mari Gallagher
Research & Consulting Group

Main Street Birmingham
Growing Business Revitalizing Neighborhoods
Empowering Communities

Contents

Thank you
Main Street Birmingham
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We also thank:

Jefferson County Department of Health
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LETTER FROM SPONSOR

While the name Birmingham evokes images of iron and steel heritage or civil rights history, our modern image is becoming synonymous with culinary arts. Award-winning restaurants dot the hills and valleys of the region, and every year at least one of those restaurants or their chefs becomes a finalist for the prestigious James Beard Foundation award. However, this modern reputation is built upon our past. As a city where people came from all over the world to start a new life, our food heritage is diverse. Immigrants from Greece, Italy, Russia and the Middle East as well as Native and African Americans created dishes from the bounty of local farms.

In that tradition, Birmingham today is joining the movement toward healthier food choices. Farmers now sell their freshest produce directly to home cooks. Families raise and collect their own vegetables, eggs and dairy through community gardens and co-ops. Organic foodstuffs are becoming more popular and available in Birmingham's food landscape. However, healthy food is not easily available to all. Birmingham is not unlike other cities where large areas of our urban landscape are considered "Food Deserts." These areas, where healthy food choices are limited, are found in economically and socially distressed areas.

Main Street Birmingham Inc. has a mission to grow businesses, revitalize neighborhoods and empower these communities within the City of Birmingham. As a nonprofit economic development agency in partnership with the City of Birmingham, we are often asked by inner city residents how we can replace the grocery stores that have moved from their communities. In exploring this complicated question, we have come to understand more about the complex relationships of the food industry: from those who grow and produce food, through retailers and wholesalers, to consumers. The food industry is powerful, not only for how it sustains us, but how it can create jobs and economic opportunity.

We are proud to join our partners in bringing more focus to the Food Desert and Food Imbalance issue in Birmingham and finding solutions that can also realize economic revitalization. We are pleased to have worked with Mari Gallagher, a leading national expert in this area, to quantify Birmingham's challenges and opportunities. This study is the first step in a process to not only identify the problem areas, but explore the options for improving them economically, socially and in terms of the communities' collective health. By changing policy, by inspiring the business community and by empowering consumers we will work to ensure that Food Deserts in Birmingham become a thing of the past.

Sincerely,

David Fleming, Executive Director
Main Street Birmingham, Inc.

Foreword

Today, access to healthy food has become a great concern in the United States. It should be. Diet-related ailments and childhood obesity have skyrocketed to distressing levels. Never before has the nation's diet been under such scrutiny. In response, First Lady Michelle Obama launched the national "Let's Move" campaign, enlisting parents, teachers, community leaders, and even celebrity chefs in the fight to change the country's eating habits.

But we can't choose healthy foods if we don't have access to them. That's why the information in this report is so vital, timely, and moving. It clearly documents the extent of Food Desert and Food Imbalance conditions and provides clear recommendations to address both the challenges and opportunities that do exist. This includes innovative ideas such as instituting grocery shuttle vans and promoting healthy food street vendors and vending machines. It also stresses the importance of working with existing store owners to improve food offerings that not only promote health but also turn the wheels of the local economy.

This detailed report is a rich and meaningful contribution to our developing understanding of how community conditions such as poor access to healthy foods affect wellbeing, and how promoting stronger communities enables people to live healthier lives.

Congratulations to the author, Mari Gallagher Research & Consulting Group, and to everyone involved in this effort. We also applaud Main Street Birmingham for sponsoring the study and its many fine partners for their shared commitment to action.

By working together, meaningful solutions are possible.

Peter A. Tatian, Senior Analyst
The Urban Institute
Washington, D.C.

Executive Summary

Recently, First Lady Michelle Obama launched a "Let's Move" campaign to fight childhood obesity and Food Deserts.

All of us were children once.

When we think back to childhood, we remember our home and community. We recall the block where we lived and whether or not it was a well-balanced, life-supporting environment. We can still picture the quality of the local grocery store and whether it was safe to play ball or jump rope outside with friends.

Back then, only a few schoolmates were overweight or obese.

Today, especially in areas where grocery stores are distant and fast and processed foods are plentiful, being overweight or obese is becoming more the norm for children, and healthy food is hard to find.

Feed Your Children Well

Over time, science has repeatedly demonstrated that nutritional intake directly affects health outcomes. That we are what we eat is a medical fact. But to what degree does what we eat and our health depend on where we live and the types of food we can buy?

To What Degree Does Health Reflect The Types Of Foods We Have Access To?

Examining the Impact of Food Deserts & Food Imbalance On Public Health in Birmingham examines this question. Traditionally, our approach to food access and health begins at the block level because of our very simple premise that the vitality and health of any urban community is a block-by-block phenomenon. Our studies in other cities developed block-level food access scores and then identified problem areas by Census tracts. By contrast, in our Birmingham study, Food Desert boundaries are drawn at the block level, strengthening our conclusions and ability to pinpoint specific areas in need of "good food and health" solutions.

In addition to supporting a wide range of actors committed to improving food access and health across Birmingham, this study will support Main Street Birmingham's plan to develop jobs and local markets. Main Street commissioned the research to quantify the relationship today between food access and public health in Birmingham, and to identify where applied solutions would be most strategic and effective moving forward.

Here is what we found:

In Birmingham, over 88,000 people live on blocks where mainstream grocers are distant (we call these areas Food Deserts) or where both grocers are distant *and* unhealthy food is readily available (we call this condition Food Imbalance).

The Road To
BIRMINGHAM

Whether Eating At Home Or At School, CHILDREN Need Healthy Meals On A Regular Basis For A Healthy Life

What Do Food Desert & Food Imbalance Mean?

We define a Food Desert as a large, contiguous area with poor access to mainstream grocers.

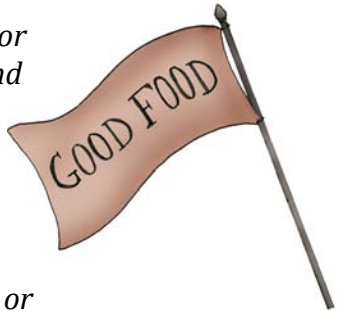
Food Imbalance generally means that it is a Food Desert area and that there is fringe (unhealthy) food nearby. By contrast, in a community with Food Balance, the nearest mainstream grocer is roughly the same distance as the nearest fringe food venue. We consider such an area to be in balance in terms of food access; it is just as easy or difficult to reach one or the other food establishment.

In Food Desert and Food Imbalance areas, it is generally difficult to buy a first-rate apple, tomato, or green bean. Many venues instead specialize in candy, soda, chips, and fried food.

See the Methodology section for more details on how we define and calculate these conditions.

These research terms – Food Deserts and Food Imbalance – and our very detailed methodology that we describe in the forthcoming pages might sound confusing at first, but 5 simple questions convey their meaning:

- *From where you live, can you easily reach a grocery store that sells an assortment of high-quality fresh produce?*
- *Is it easy to buy a first-rate tomato, apple, or green bean, or do the stores near you mostly specialize in candy, soda, and chips?*
- *Can you buy skinless chicken as easily as fast food?*
- *Can you buy low-fat and low-salt products or only highly processed "food" high in salt, fat, and sugar that has little or no nutritional value?*
- *Do you want to eat healthy foods but find it difficult to do so because of where you live?*



The 88,000 people we are talking about would likely find it difficult to purchase healthy food on a regular basis.

These problem Food Desert and Food Imbalance conditions in total comprise over 43 square miles.

Out of the 88,000 people affected, over 23,000 are children.

The large number of people living in these conditions is alarming. Our study generated **empirical evidence that living in a Birmingham area with Food Desert or Food Imbalance conditions impacts quality and length of life.**

Food Imbalance in Birmingham is also a major problem affecting the families. The map on the following page shows the extent of the problem in red. The Birmingham residents who live in these imbalanced areas must travel twice as far or farther to reach healthy foods as they do to reach fringe food that, over time, contributes to lower quality and length of life.

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Research & Consulting Group

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Growing Business Revitalizing Neighborhoods
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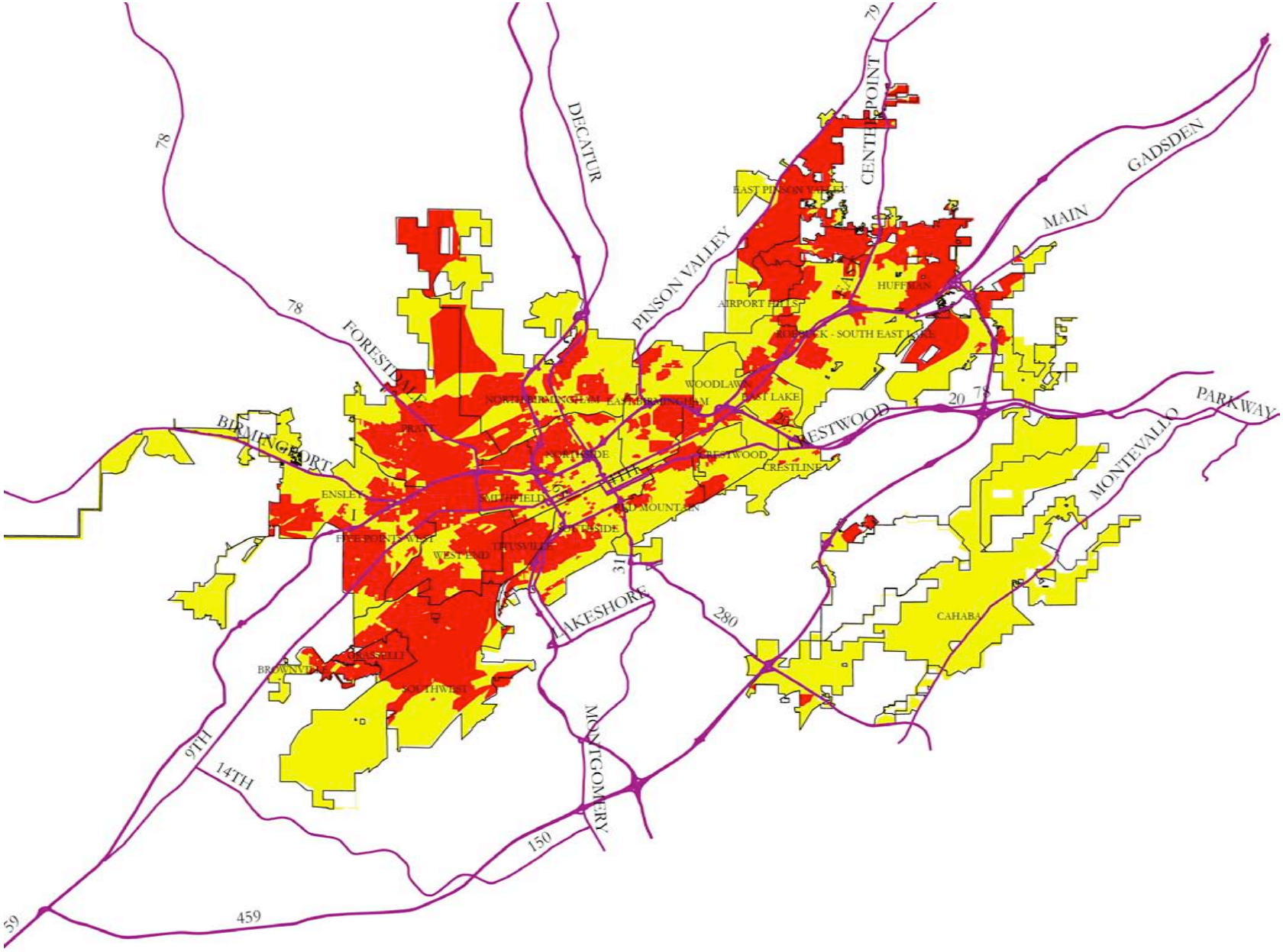
Map 1: Food Imbalance Areas in Birmingham

How to read the map: Areas in red show blocks where the closest healthy food store is more than twice the distance to the closest unhealthy food store. The yellow shading simply shows all other areas of Birmingham.



We found greater "years of life loss" for the general population (children and adults) when there was Food Imbalance – again, we're talking about the condition of healthy food stores being farther away than unhealthy food stores. "Years of Life Loss" (abbreviated YPLL) measures how much additional death there might be from a specific effect (in this case, Food Imbalance) after controlling for other contributing factors. We found that areas of Food Imbalance have 1) more premature death overall, 2) more diet-related death, and 3) more death resulting from cancer. These three findings were all statistically significant at the 95% level.

This effect was larger for smaller changes in Food Imbalance than for larger changes. For example, 71.43 years of life were lost from all causes per 100 people when healthy and unhealthy food stores were equally close. When healthy food stores were twice as far away as unhealthy food stores, all-cause YPLL rose to 80.31 years of additional collective premature death per 100 people (an increase of 8.88 years). However, when healthy food stores were three times as far as unhealthy food stores, all-cause YPLL rose to 85.50 (an additional increase of only 5.19 years). When the analysis controlled for household income in the tract, however, the effect of the Food Balance score on all-cause YPLL and diet-related YPLL was reduced in magnitude by a factor of 10 and was no longer statistically significant. The effect on cancer YPLL remained statistically significant at the 88% level and its magnitude fell by only 1/3 compared to the analysis in which household income in the tract was not included. From this analysis we can generally conclude that **living in an area where there is Food Imbalance correlates with premature death, but the effect lessens when we factor in income.**

The effect on YPLL of distance to the nearest mainstream grocer remained large and statistically significant even after taking account of household income in the tract. For example, the impact of mainstream grocer distance on all-cause YPLL was statistically significant at the 85% level after controlling for household income in the tract. The effects on diet-related YPLL and cancer YPLL were statistically significant at the 95% level after controlling for household income in the tract. **We can conclude that living in areas of Birmingham with Food Desert conditions correlates with more premature death after controlling for other factors and that we should be especially concerned about the prevalence of cancer.**

However, as with all studies, the findings should be used with caution. They are at times suggestive and not conclusive. See the Methodology section and Technical Appendix (the later is a separate document) for data limitations. Nonetheless, we stand by our conclusion that Food Deserts and Food Imbalance pose serious health and wellness challenges to the residents who live within them and to Birmingham as a whole.

Methodology & Data Development

Overview & New Directions

Our methodology rests on the premise that healthy communities are built block-by-block. Our past studies developed block-level food access scores and then identified Food Deserts and Food Imbalance by Census tracts for this reason. However, our Birmingham study sees the advancement of our methodology: the analysis is finalized at the block level, strengthening our conclusions and ability to pinpoint problems and intervene with "good food and health" solutions.

Before detailing our methodology, we begin with some background definitions.

Background Definitions

FOOD DESERTS: Mari Gallagher Research & Consulting Group defines Food Deserts as large contiguous geographic areas that have no or distant mainstream grocery stores. Does this mean that there is no food at all in the Food Desert? No, quite the contrary. Often, Food Deserts have an imbalance of food choice, meaning a heavy concentration of nearby fringe food that is high in salt, fat, and sugar. Many fringe locations also offer "quick meals" that are very convenient but cannot support a healthy diet on a regular basis. The study of Food Deserts is important for every type of community – urban, suburban and rural – because findings from our studies reveal that residents of Food Deserts can suffer worse diet-related health outcomes, including diabetes, cancer, obesity, heart disease and premature death. These effects are independent from other contributing factors.

MAINSTREAM AND FRINGE FOOD: A mainstream grocer is a place where you can support a healthy diet on a regular basis. A fringe food location is the opposite; it is not inherently bad, but if it were the primary food source, local diets and public health would likely suffer. Mainstream grocers need not be part of a major "full service" chain; total square footage is not important. Mainstream grocers can be independent and/or small food stores. The key defining factor is that they sell an assortment of healthy and fresh foods such as produce, fruits, dairy and meats.

Fringe food venues include fast food restaurants and convenience stores. However, they can also include gas stations, liquor stores, department stores, discount bakeries, pharmacies and a multitude of other retailers that sell ready-made, fast, boxed, canned and other types of food products but for whom fresh and healthy food is not the primary line of business. Again, these foods are usually high in salt, fat, and sugar and have very limited if any nutritional value.

COLORS FOR MAPS: We find that maps are easier to read if colors and other features are consistent. Generally, when showing a range of outcomes, we group data on maps into tertiles (equal thirds of the data sorted from lowest to highest) or "threes" (custom groupings when tertiles are not appropriate) and use these colors: red (indicating the worst outcome), neutral or white (indicating a middle outcome), and blue (indicating the best outcome). So mainstream food solutions would be shown as blue and fringe food would be shown as red. The most death by diabetes, for example, would be shown by red and the least death by blue. At times, because of other details and limitations of the map itself, we deviate from these color preferences, but this is the general rule. Also, when we are showing other overlays, such as highest concentration of children under 18, Birmingham community areas, and so on, the colors we use for shading are generally arbitrary.

OPTIMAL DISTANCE TO GROCERY STORE – THERE ISN'T ONE: Based on our work, we believe that there is no perfect distance to a grocery store that would apply to all communities.

For example, we could quantify and map the distances to all mainstream grocers at the block level for all of Alabama, Jefferson County, or Birmingham, but those maps could be misleading. Some areas of the state, county or even within specific neighborhoods are automobile dependent. Conversely, some communities might rely on public transportation or walking.

Each community is unique; a distance such as "five blocks" or "two miles" does not have the same meaning everywhere.

We must first examine the entire "universe" of the study area block-by-block and the relationship of all the blocks together to correctly interpret the meaning of any patterns or distance scores to see if distance maps covering large geographies are appropriate.

We generally do this by first organizing the food access scores across our entire universe at the block level in tertiles – again, data organized from lowest to highest grouped into equal thirds. But then those distance score distribution patterns must be examined; equal thirds might not be an appropriate grouping. If not, new groupings must be determined in terms of the best, middle, and worst food access scores. This latter approach is what was required for the Birmingham study. Following that determination, mapping reveals blocks that cluster. Non- or near-zero population blocks are excluded from the analysis.

FOOD BALANCE: In a community with Food Balance, the nearest mainstream grocer is roughly the same distance as the nearest fringe food venue. We consider such an area to be *in balance* in terms of food access; it is just as easy or difficult to reach one or the other food establishment. The Food Balance Score – developed exclusively by Mari Gallagher Research & Consulting Group – is 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. When communities are in balance, it is easier for parents to choose healthy food for their children. Unlike grocer distance scores, Food Balance scores can be compared across urban, rural, and suburban geographies.

Food Imbalance is a Key Obstacle to Community Health in Birmingham

Food Balance Theory As communities become more out-of-balance in terms of food options, negative diet-related health outcomes increase, holding constant other key factors	
Food Balance Score Description	**Examples**
Far above 1: **High score and worst outcome**	Mainstream food venue is 1 mile away, and fringe food venue is .5 mile away **1/.5 = 2**
Around 1: **Average score and Average outcome**	Mainstream food venue is 1 mile away and fringe food venue is 1 mile away **1/1 = 1**
Far below 1: **Low score and best outcome**	Mainstream food venue is .5 miles away and fringe food venue is 1 mile away **.5/1 = .5**

Table #1: Food Balance Theory

The Convenience Food Factor means that people generally buy food at the places closest to them.

Where you live influences what foods you purchase and consume.

CONVENIENCE FOOD FACTOR: We have developed a new body of work called the Convenience Food Factor, which means that people generally shop for food most regularly at the places closest to them even though they might desire or require for medical reasons more distant, healthier food. Convenience means location or physical access, but other important variables also come into play, such as financial access (the cost and affordability of the food), cultural access (level of comfort with the store) and even the size of the store (the amount of time to get in and out of the store with groceries when you are in a rush).

Block-level Analysis

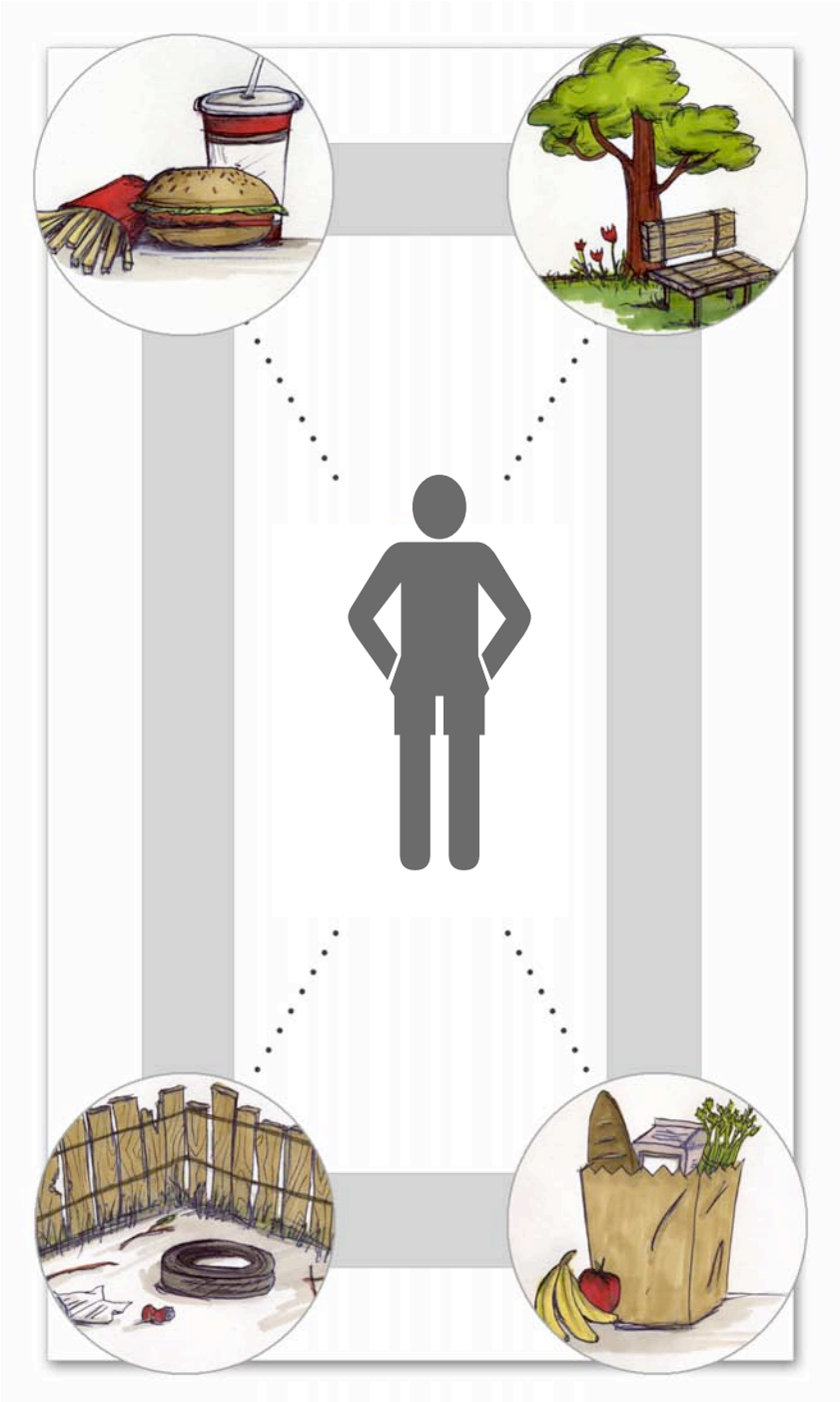


Illustration #1: The Block Where You Live

If this is the block where you live, as shown by the icons, a grocery store, fast food restaurant, park, and empty lot are all an equal distance from the center.

For this particular block, the Food Balance Score would be 1.

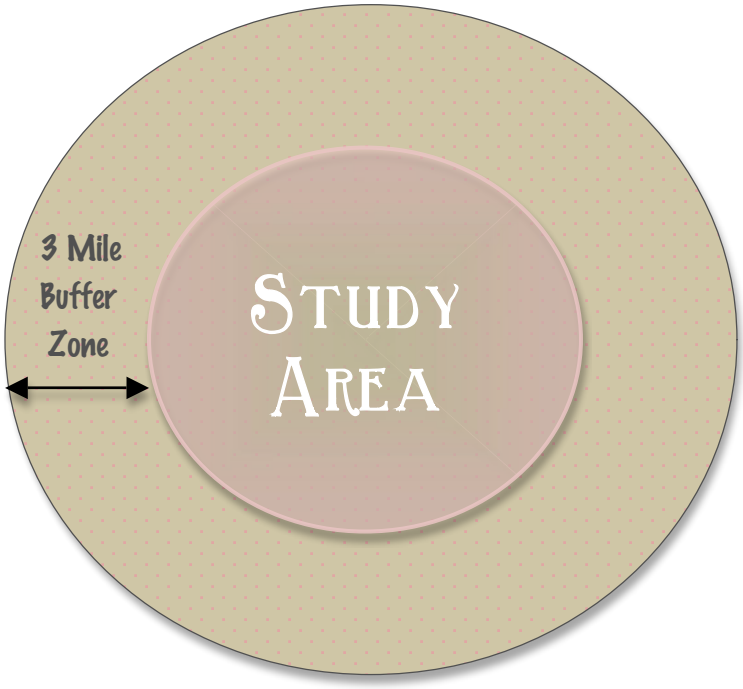


Illustration # 2: Buffer Zone

BUFFER ZONES: A "buffer zone" is a ring that circles the study area. Sometimes a study area is defined by specific borders or boundary lines. For example, the study area might be a city. But if you live on the edge of the city, you might cross the official city line to do some of your shopping. So the data need to include not just the food stores in your city but also those in the larger buffer zone around the city. This is true also for a neighborhood; the stores just outside the neighborhood should also be considered when conducting a neighborhood food access assessment. The "universe" of data must reflect the realities of how people might shop. Generally, for our studies, we use a three-mile buffer zone. For rural areas, the buffer zone might be larger and for urban or smaller geographies, it might be smaller.

Assessing the Local Food Environment

The fieldwork and data collection for this project began in January of 2010. In addition to blocks, our team analyzed patterns by Census tract and official Birmingham Community Areas. Our research objective is to compare food access and diet-related health outcomes while accounting for other contributing factors such as income, education, and race. After documenting neighborhood differences in the availability of grocery stores and fringe food outlets, we test the theory that a balanced food environment is an important key to community health.

In other words, do Food Deserts (areas with no or distant grocery stores) face nutritional challenges evident in poorer diet-related health outcomes, and do those outcomes also worsen when the food desert has high concentrations of nearby fast food alternatives? The health outcomes that we study are diet-related cancers, cardiovascular diseases (heart disease, hypertension, and stroke), diabetes, and rates of obesity across all of Birmingham.

The total blocks in the City of Birmingham are 36% majority White and 64% majority African American. We excluded non- or near-zero population blocks from the final food desert calculation. There are 23 community areas and 99 neighborhood areas. Data sources include: Online retail data providers and retailers' corporate websites; Census data; City of Birmingham retail permit data; Jefferson County death and retail data; and Mari Gallagher Research and Consulting Group field data. More information on the data can be found in the Findings section.

To calculate the average distance to a food venue (such as a grocery store or fringe food restaurant), we measured the distance between the geographic centers of each block and the locations of each food venue in the Birmingham vicinity (the city proper and a geographic buffer zone drawn around it). The distance from the center of each block to each food venue was calculated, using the latitude and the longitude of each food venue and of each block center. Of these distances, the minimum distance was calculated for each block, representing the distance from that block to the nearest food venue by category. The distance score, calculated in miles, is the distance the average person from that block would need to travel to reach a food venue.

The identification of Food Deserts and Food Imbalance in Birmingham was done on a block-by-block basis whereby previously we had identified them by tract with scores brought up first from the block-level. We developed block-level maps of the worst tertile of distances to mainstream grocers to identify clusters of blocks that both were contiguous and had significant populations. Later, a non-tertile grouping of the three outcomes (best, middle, and worst) was adopted. The restriction that the Food Desert blocks have significant populations was imposed not because the food access of those living in low-density blocks does not matter but rather because it facilitates the identification of places with a sufficient density of potential customers that can be realistically served by mainstream food solutions, such as a grocery stores, and other non-market food programs. It would not make sense to calculate scores for highly industrial areas or land clusters with little or no population. For example, we identified an entire Birmingham Census Tract containing only 12 people. The tract and the blocks within it were excluded from our analysis so as not to distort the findings.

In order to estimate the size and characteristics of the population living in Birmingham's Food Deserts, we obtained data for each of the city's 98 Census tracts (95 in Jefferson County and 3 in Shelby County) from the 2000 U.S. Census of Population. Though the Food Desert was determined on a block-by-block basis – a new advancement of our methodology that adds to the robustness of our analysis – the set of demographic information at the block level available from the Census is quite limited (age, race, and the land area of each block). The Census tract is a larger unit, but the demographic details provided at the tract level are more useful. As a result, we identified characteristics at the tract level and apportioned them among the blocks within each tract. We did this on the basis of the share of each tract's population accounted for by each block within the tract.

For example, suppose a tract had 500 households without access to an automobile and that the tract contained three blocks A, B, and C with populations of 500, 250, and 250 respectively. We calculated the fraction of the tract's population in each block (1/2 in A, 1/4 in B, and 1/4 in C) and used these fractions to allocate the 500 total families in the tract without auto access to the three blocks: 250 to block A, 125 to block B, and 125 to block 3.

We then added the quantities for all blocks in the Food Desert together and added the quantities for all non-Food Desert blocks together. If block B was in the Food Desert but blocks A and C were not, then block B would contribute 125 families to the total number of families in the Food Desert without auto access and blocks A and C would contribute 375 families to the total for non-Food Desert families.

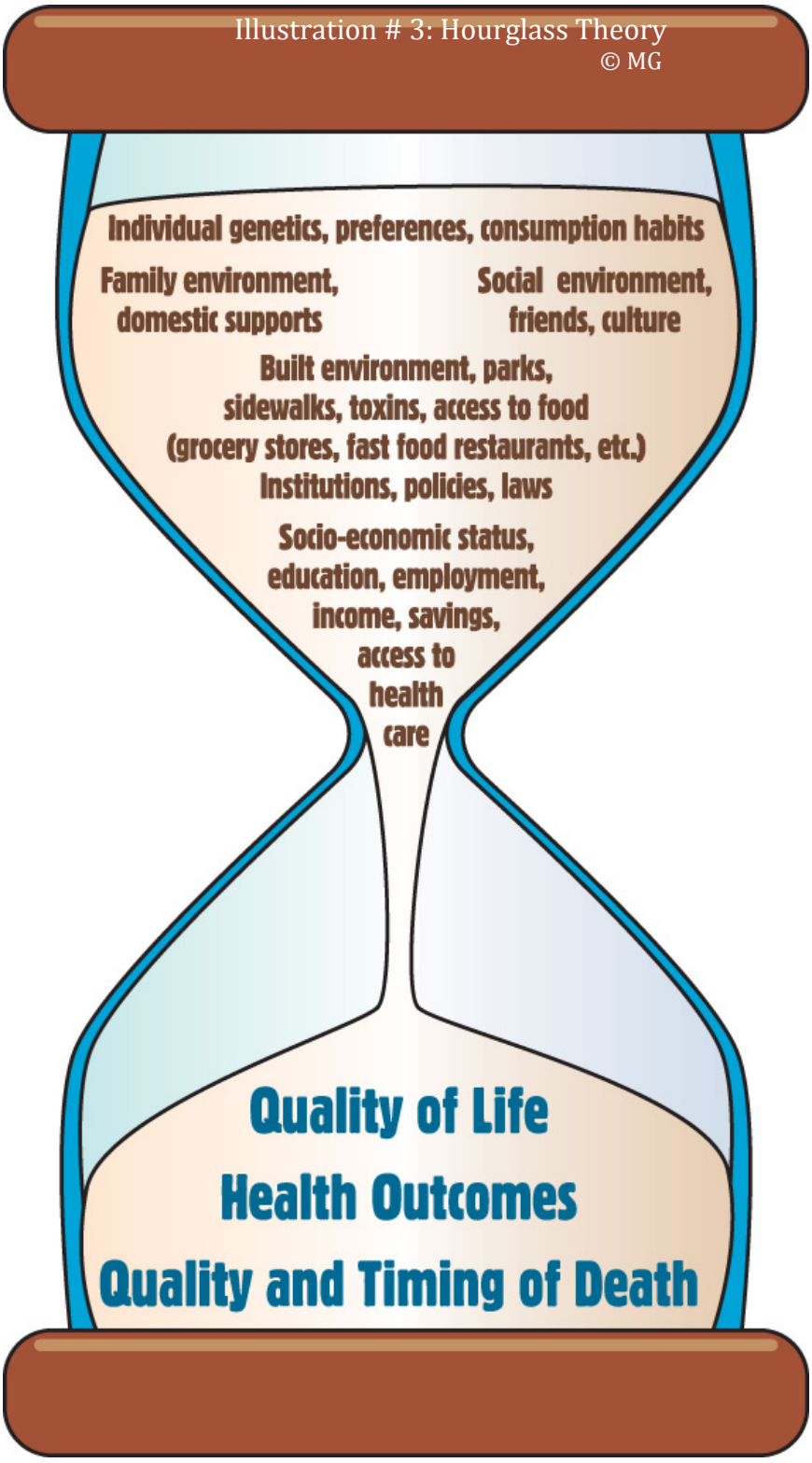
Cardiovascular disease rates and deaths were segregated by those that are diet-related, namely: Essential hypertension, Hypertensive heart disease, hypertensive renal disease, hypertensive heart and renal disease, acute myocardial infarction, subsequent myocardial infarction, certain current complications following acute myocardial infarction, other acute ischaemic heart diseases, chronic ischaemic heart disease, all cerebrovascular diseases (stroke) and artheroscelorosis. Excluded cardiovascular disease rates and deaths: Acute rheumatic fever, chronic rheumatic heart diseases, pulmonary heart disease and diseases of pulmonary circulation and other forms of heart disease not linked to diet-related deaths, such as ones caused by viruses.

The cancers included were: stomach, small intestine, colon and large intestine, tongue, anus, anal canal, anorectum, other biliary, breast, and uterus.

Years of Life Loss (YPLL) is a statistic that measures the total number of life years lost due to premature death in a population from a certain cause. Premature death is usually defined as death at the age of less than 65 or 75 years, or less than the average life expectancy (McDonnell, 1998, and www.musc.edu/bmt737/Spr_1999/pj/ypll.html).

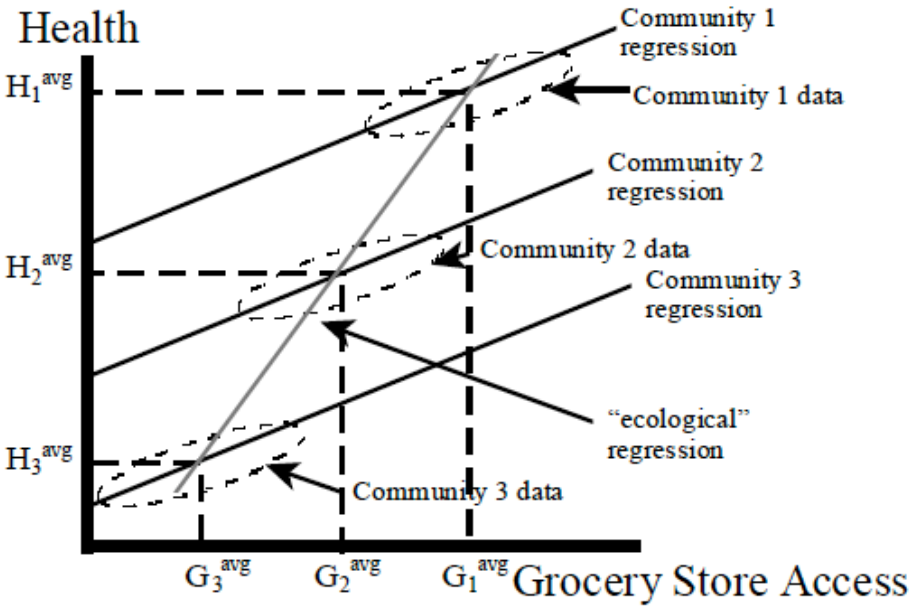
METHOLOGICAL NOTES & LIMITATIONS – Please note that, rather than imposing an arbitrary alpha level cut-off, we follow McCloskey ("The Loss Function Has Been Mislaid: The Rhetoric of Significance Tests," Donald N. McCloskey, The American Economic Review, Vol. 75, No. 2, Papers and Proceedings of the Ninety-Seventh Annual Meeting of the American Economic Association (May, 1985), pp. 201-205) in allowing readers to choose for themselves how to weigh the trade-off between statistical and substantive significance. All of the population statistics are from the 2000 U.S. Census of Population (Summary File 1 100% Data and Summary File 3 1-in-6 Sample Data, and Redistricting Data (P.L. 94-171) Summary File). We recognize the “time factor” challenge in studying food access and health outcomes. How much time needs to pass for the lack of nutritious food access to have an effect on community health? For example, lack of adequate nutrition in childhood might not be evident until later in life. Or it could be evident in childhood obesity patterns. This is not a challenge we can control for in this study, nor do we speculate on the theoretical possibilities of time factors on health impacts, other than in our Hourglass Theory where we illustrate the many non-linear, highly dynamic influences on community health.

Illustration # 3: Hourglass Theory
© MG



A bigger challenge in correlating neighborhood characteristics and health is that neighborhood effects are, by definition, endogenous to the compositional characteristics of neighborhoods. The project recognizes the many complex methodological challenges in isolating cause and effect and holding constant potential statistical confounders, such as income, race, genetics, culture, food preferences, and self-selection into specific types of communities. We utilize national and local best methodological practices, taking deliberate measures to maximize the robustness and accuracy of our data and models, and exercise caution and care in stating our findings. We are particularly mindful of what has been called the "**Ecological Fallacy**."

Here we present a scenario, not based on actual individual level data, but one that should be kept in mind when describing outcomes and findings. Within each community of our scenario, the relationship between access to grocery stores and health is positive (better access ► better health). The relationship is also positive across the entire population (if we pool observations from all three communities, the regression line would coincide with the Community 2 regression line).



If we only have averages by community, we could still conclude that the relationship is positive: the ecological regression line that best fits the average values for the three communities – (H1avg, G1avg), (H2avg, G2avg), (H3avg, G3avg) – slopes upward. But the relationship is stronger when we use community averages than when we use data on individuals (either analyzing all individuals pooled or analyzing individuals separately by community). This is because the communities have very different compositions (Community 1: high health/high access; Community 2: moderate health/moderate access; Community 3: low health/low access).

Based on the ecological regression, the most we can say is "communities with better average access to grocery stores have better average health" – we cannot say that "an individual person who has better access to grocery stores will have better health" (i.e. we need to limit our generalizations to the unit of observation – the community in this case – that we are using, and not generalize to smaller units of observation – the individual).

While we demonstrate in this study the positive association between access to better foods and better diet-related health outcomes and conditions, we must set our findings in the context of the **challenges and limitations of linking cause and effect and of predicting, with certainty, the exact statistical magnitude of the relationship. Furthermore, we recognize population mobility and though we found strong correlations we must keep in mind that the official residence of a person at time of death might not be reflective of the environment in which they lived the majority of their life**.

Nonetheless, we stand by our conclusion that Food Deserts and Food imbalance pose serious health and wellness challenges to the residents who live within them and to Birmingham as a whole.

Steel & Terrain

Officially, as a city, Birmingham is almost 140 years old. At the beginning of its history, railroad tycoons and land barons built a town that became known as the "Magic City" because both population and industry expanded seemingly overnight, like magic. With the population boom, the downtown area grew into a busy grid of neoclassical buildings and streetcar lines.

Birmingham was once nicknamed the "Magic City"

Neighborhoods developed and expanded the urban core, mostly clustering around local plants – plants as in industry, by the way, not as in vegetation. The basin of the city known as Jones Valley did at one time rely instead on lush agriculture and farming. But those historical roots gave way to coke ovens, blast furnaces, and the geological uniqueness of an industrial trinity highly sought by modern man: coal, iron ore, and limestone. The rolling red mountain ridges surrounding the city are actually thought to be the one place on earth where the three raw materials exist simultaneously in abundance. These 30 square miles so rich in minerals – paired with hungry entrepreneurs, labor, and rail lines reaching outward – fueled local steel production. During this period, many of America's traps, cast iron pipes, furnaces, and stoves originally came from Birmingham, where the cost of pig iron in 1884 was $10 to $11; Northern mills were nearly 50% higher. In 1914, at the start of World War I, Birmingham's towering Sloss-Sheffield, now a museum, was among the largest producers of pig iron in the world [Images of America: Sloss Furnaces, 2009, page 8].

The "Magic City" stood tall and proud.

He was the industrial giant of the South.

Population Loss

But the stature of most giants does diminish eventually. The steel industry slumped not only in the South but everywhere across the heartland, becoming noticeable in the early 1970s when Birmingham – once so mighty with his rocky legs and silver breath – experienced a 12% population loss over the previous decade due to the slowing down and closure of many local mills. The regional economy did manage to diversify somewhat. The University of Alabama at Birmingham during this same timeframe began to expand into a major medical and research center and continues to grow throughout the city to this day, contributing economic development, jobs, and prominence. Nonetheless, with each passing generation, population in Birmingham has declined, and its effect was more than evident when our team conducted fieldwork to identify the locations of food venues. In some instances, huge chucks of neighborhoods, especially those centered around a shuttered plant, appeared partially deserted and barren.

Stark population loss in certain pockets of the city and the navigation of the terrain in and around mountain ridges in search of food stores presented new challenges to our work. As our identification of Food Deserts and Food Imbalance was done on a block-by-block basis for non-zero and near-zero population blocks, we had to be particularly mindful of density patterns when conducting the analysis. As a result, we excluded a fair number of Birmingham blocks with low or no population so as not to distort the findings. The restriction that the Food Desert blocks have a minimum level of population was imposed not because the food access of those living in low-density areas does not matter but rather because it facilitates the identification of places with a sufficient mass of potential customers that can be realistically served by mainstream food solutions, such as grocery stores, and other non-market food programs. It would be impractical and misleading to calculate scores for industrial areas or clusters with little or no population. For example, an entire Birmingham Census Tract contains 12 people. The tract and the blocks within it were excluded from the final food desert calculation.

Birmingham Community Areas

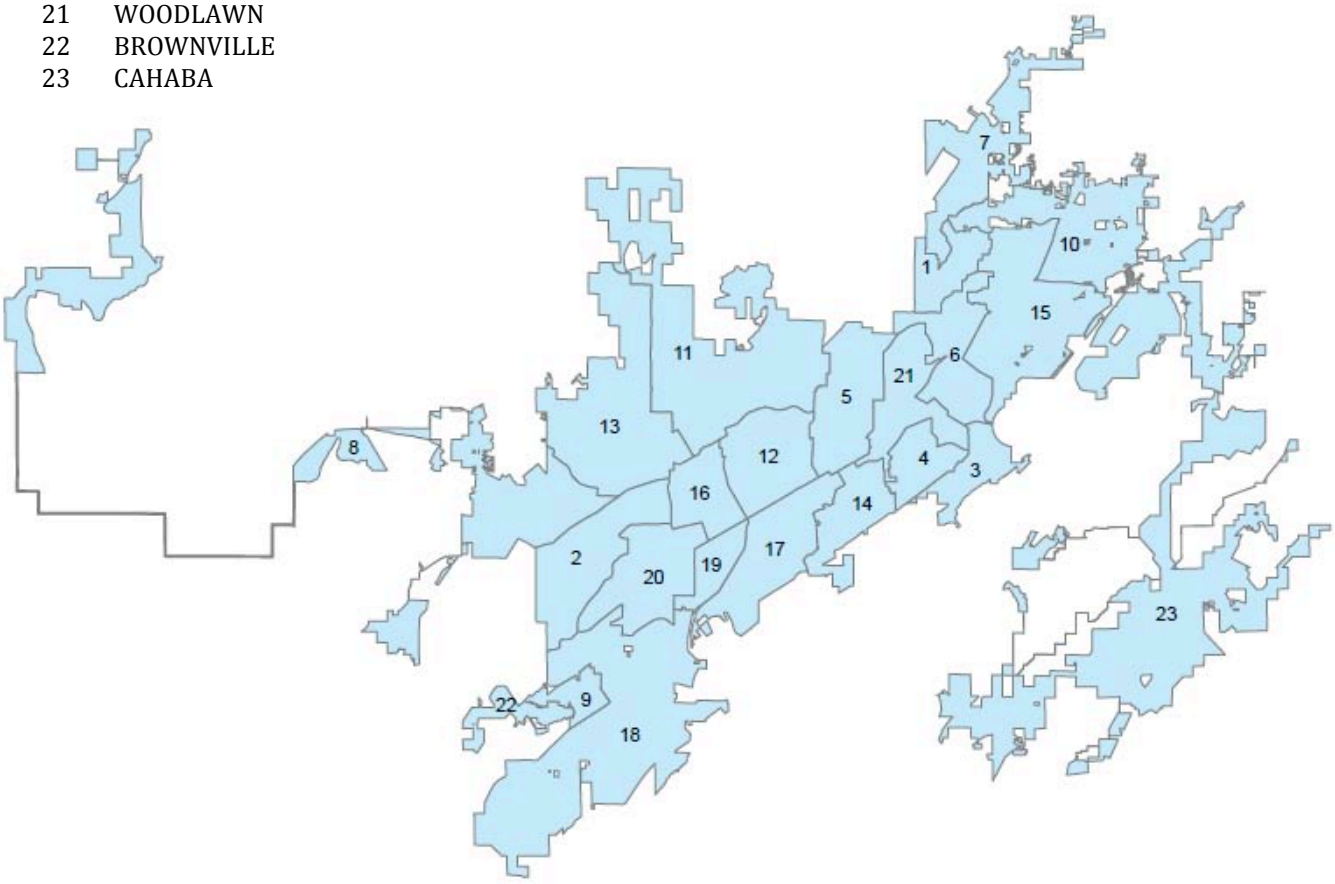
Birmingham has 99 neighborhoods – more neighborhoods than Census tracts – and 23 official communities. We felt the most useful overlay would be by community area so as to be easier to view. See the map on the following page.

1	AIRPORT HILLS
2	FIVE POINTS WEST
3	CRESTLINE
4	CRESTWOOD
5	EAST BIRMINGHAM
6	EAST LAKE
7	EAST PINSON VALLEY
8	ENSLEY
9	GRASSELLI
10	HUFFMAN
11	NORTH BIRMINGHAM
12	NORTHSIDE
13	PRATT
14	RED MOUNTAIN
15	ROEBUCK - SOUTH EAST LAKE
16	SMITHFIELD
17	SOUTHSIDE
18	SOUTHWEST
19	TITUSVILLE
20	WEST END
21	WOODLAWN
22	BROWNVILLE
23	CAHABA

Map #2: Birmingham Communities
See listing on following page.

Table #2: Birmingham Communities
See map on previous page.

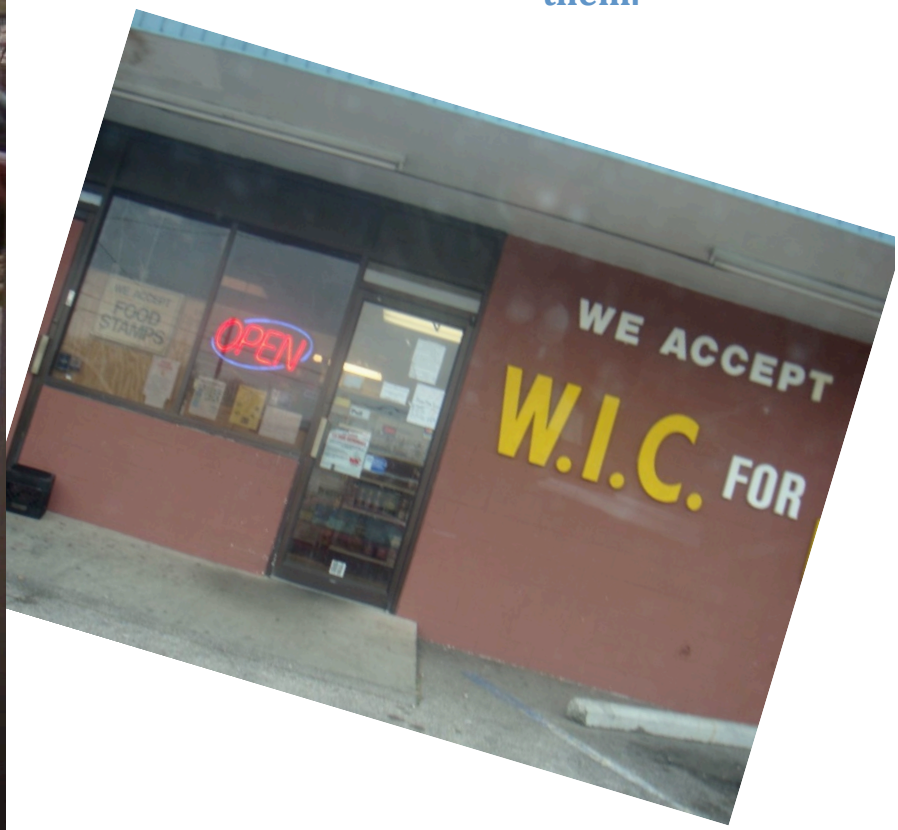
Birmingham has 99 neighborhoods which is more neighborhoods than Census tracts.



Field Photos


N GROCERIES
Ope
24

People shop for food most regularly at the places closest to them.



We analyzed several retail data sources & also conducted fieldwork.

A mainstream grocer is a place where you can support a healthy diet on a regular basis.

Mainstream grocers can be independent and/or small food stores.

The key defining factor is that mainstream grocers sell an assortment of healthy and fresh foods such as produce, fruits, dairy and meats.

A fringe food location is the opposite of a mainstream grocer; it is not inherently bad, but if it is the primary food source, local diets and public health would likely suffer.

Please note that this church is indeed in Birmingham, Alabama, and not in Texas!

Fieldwork provided an opportunity to view neighborhoods & local assets such as churches.

Several faith-based groups are already involved in urban agriculture & educational programs concerning the intersection between food & health.

We generally find that there is not one cause of Food Desert or Food Imbalance.

This means that everyone can do something to improve food access & health!

As part of our fieldwork, we viewed many different kinds of food venues, such as…

-Grocery stores

-Vegetable stands

-Gas station mini marts

-Convenience stores

-Dollar stores

-Fast food restaurants

& more!

We also called a sample of stores. When asked if they carried produce, one store representative said, "No, but we have everything else you need – chips, beer, ice, and so on!"

Many food stores in Birmingham are independently owned & operated

We find that more & more gas stations across the nation, as well as in Birmingham, sell some type of food, although usually not healthy food.

We hope that the **previous Field Photo** section gave the reader a sense of Birmingham's neighborhoods, stores, and people. **Now we turn to detailed findings** concerning food access conditions.

The following tables (3a, 3b, and 3c) provide baseline data for Birmingham on Food Desert and Food Imbalance conditions. The information can be updated regularly to identify if conditions are worsening, improving, or remaining stable.

To develop these tables, we partitioned the city of Birmingham into 4 non-overlapping cells based on two characteristics, either inside or outside the Food Desert and where the Food Balance ratio was either above or below 2. The reader might recall that a Food Balance score of 2, for example, means that healthy food is twice as far as unhealthy food. For a refresher on these terms and metrics, please see the methodology section.

These three tables consist of disjoint populations. This means that one cannot add the figures in Table 3b and 3c to get the figures in Table 3a. For example, as you study the tables, you will see that there are 88,409 people in places that both ARE in the Food Desert and HAVE Food Imbalance Ratios > 2 (Table 3a), there are 66,528 people in places that ARE NOT in the Food Desert and HAVE Food Imbalance Ratios > 2 (Table 3b), and there are 15,422 people in places that ARE in the Food Desert and DO NOT HAVE Food Imbalance Ratios > 2 (Table 3c). The fourth group that makes up the rest of Birmingham's population consists of 73,461 people in places that ARE NOT in the Food Desert and DO NOT HAVE Food Imbalance Ratios > 2 (table not shown). In summary, here are the 4 non-overlapping cells:

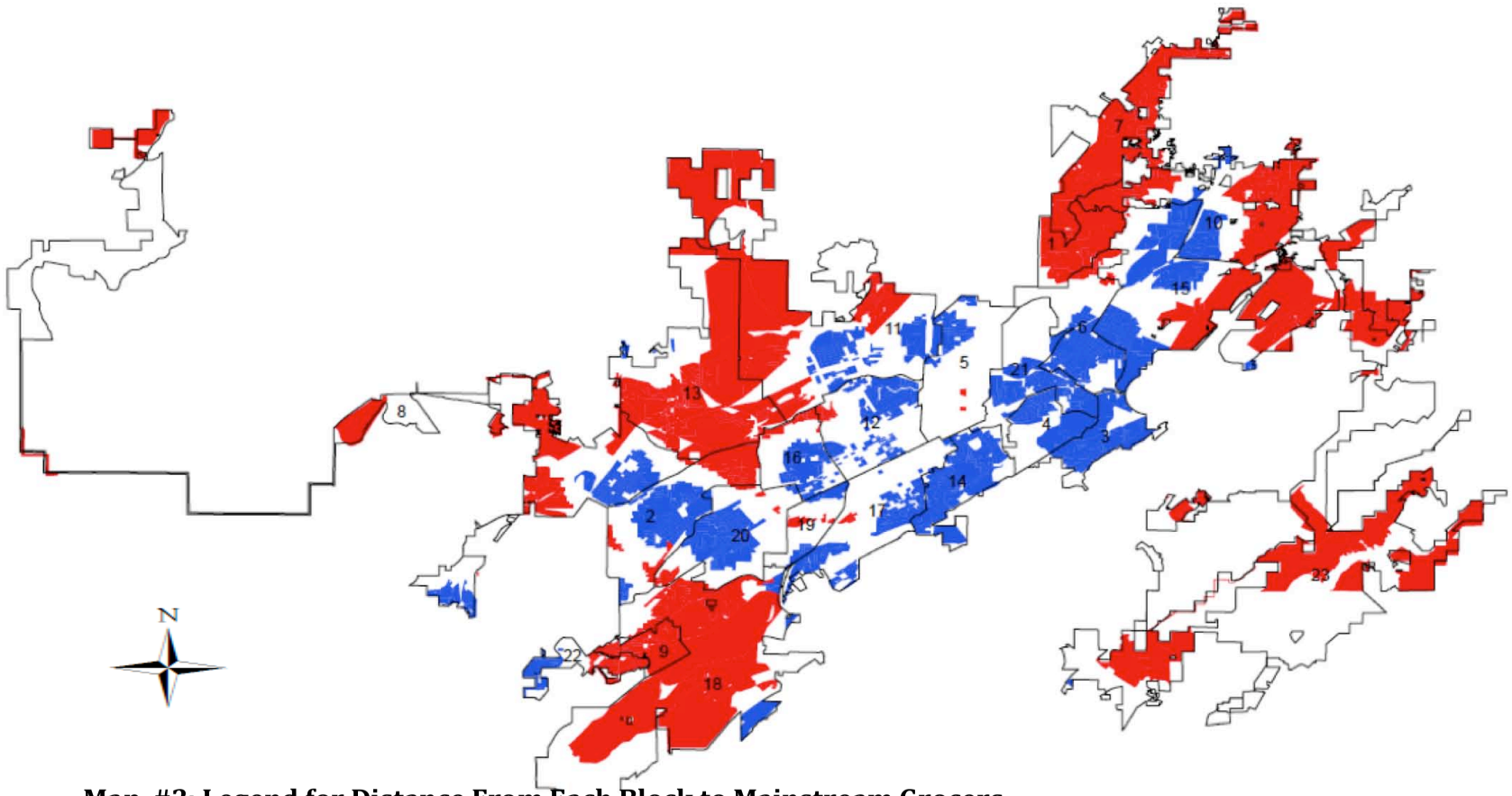
	In Food Desert	**Outside Food Desert**
Ratio > 2	Table 3a	Table 3b
Ratio < 2	Table 3c	Not shown

The following tables are easy to read. For example, in Table 3a we see that 43 square miles of Birmingham together consist of areas that have Food Imbalance and Food Desert conditions. Food Desert *conditions*, as explained earlier, are distinct from the 3 official Food Deserts that we identified. To be in a Food Desert, blocks must cluster, be contiguous, and have a minimum level of population. By contrast, the Food Desert conditions calculation includes all blocks that have poor food access. By comparing Table 3a with Table 3c, we see that, out of those 43 square miles that have Food Imbalance and Food Desert conditions, roughly 29 square miles have only Food Desert conditions. These tables provide the details of how many children or single female heads of households live in these conditions. For example, Food Imbalance and Food Desert conditions affect over 23,000 children in Birmingham. We also see that many households in Birmingham – roughly 20,000 – earn under $25,000 per year. However almost as many households earn over $50,000 per year. Under 7,000 people are single women with children under 18. We continue to describe these data as we introduce maps of these conditions.

Table 3a: 2010 Food Imbalance AND Food Desert Conditions in Birmingham	
Land in square miles	43
Total population	88,409
White population	14,399
African American population	72,598
Latino population	821
Age 0 to 18 population	23,657
Grandparents with primary responsibility of grandchildren under 18	2,475
Single women with children under 18 years old	6,997
Households without an automobile	6,646
Households with income under $25,000 per year	20,735
Households with income over 50,000 per year	18,701
Households with income over 75,000 per year	9,455
Households with incomes over 100,000 per year	4,686

Table 3b: 2010 Food Imbalance Conditions in Birmingham (Without Food Desert Conditions)	
Land in square miles	13.19
Total population	65,528
White population	11,277
African American population	52,099
Latino population	1,318
Age 0 to 18 population	17,030
Grandparents with primary responsibility of grandchildren under 18	1,435
Single women with children under 18 years old	4,227
Households without an automobile	5,784
Households with income under $25,000 per year	15,256
Households with income over 50,000 per year	5,696
Households with income over 75,000 per year	2,374
Households with incomes over 100,000 per year	1,225

Table 3c: 2010 Food Desert Conditions in Birmingham (Without Food Imbalance Conditions)	
Land in square miles	29.21
Total population	15,422
White population	5,866
African American population	9,203
Latino population	228
Age 0 to 18 population	3,676
Grandparents with primary responsibility of grandchildren under 18	682
Single women with children under 18 years old	1,549
Households without an automobile	1,336
Households with income under $25,000 per year	6,901
Households with income over 50,000 per year	14,001
Households with income over 75,000 per year	8407
Households with incomes over 100,000 per year	5,361



Map #3: Legend for Distance From Each Block to Mainstream Grocers In Miles With Community Boundaries

- Birmingham Community Areas
- Best grouping: 0.25 to .75
- Middle grouping: 0.75 to 1.25
- Worst grouping: 1.25 to 5.93

How to read this map: This map and the ones that follow are very easy to read. It shows distance by block to mainstream grocers. Red shows the worst grouping. Blue shows the best and white shows the middle. From the centers of those red shaded blocks, mainstream grocers are between 1.25 miles and almost 6 miles away. Does that mean there is no food in those areas? Not necessarily. Fringe or unhealthy food is often present. The numbers shown correspond to community areas. For a table showing both community numbers and names, see page 22.

Map #4: Legend for Distance From Each Block to Mainstream Grocers in Miles With Community Boundaries – Greatest Distance Only

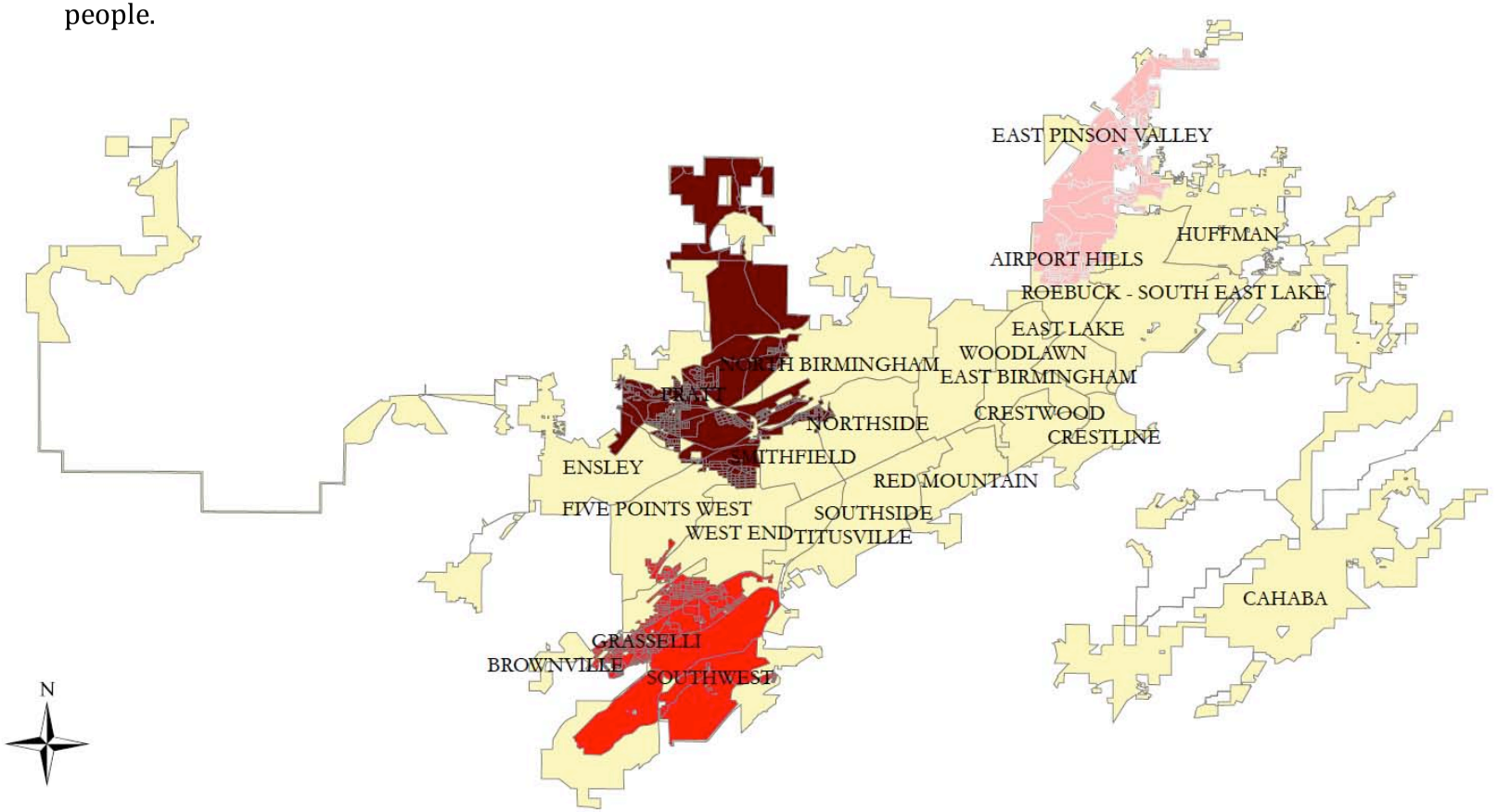
☐ Birmingham Community Areas
■ Worst grouping: 1.25 to 5.93

How to read this map: This map is similar to the previous one except it shows distance by block to mainstream grocers only for the worst grouping, again in red. The numbers shown correspond to community areas. For a table showing both community numbers and names, see page 22.

MARI GALLAGHER
RESEARCH & CONSULTING GROUP

MAIN STREET BIRMINGHAM
Growing Business Revitalizing Neighborhoods
Empowering Communities

How to read this map: This map shows the 3 official Food Desert areas, which is distinct from Food Desert conditions. Food Desert areas must cluster, be contiguous, and have minimal population. Generally, we use the color red to illustrate an unfavorable outcome. We show the 3 areas in increasing shades of red to indicate increasing population. The first area is the lightest red (resembling pink) and contains about 2,600 people. The second darkest contains almost 10,000 people and the darkest (resembling brown) contains almost 13,000 people.



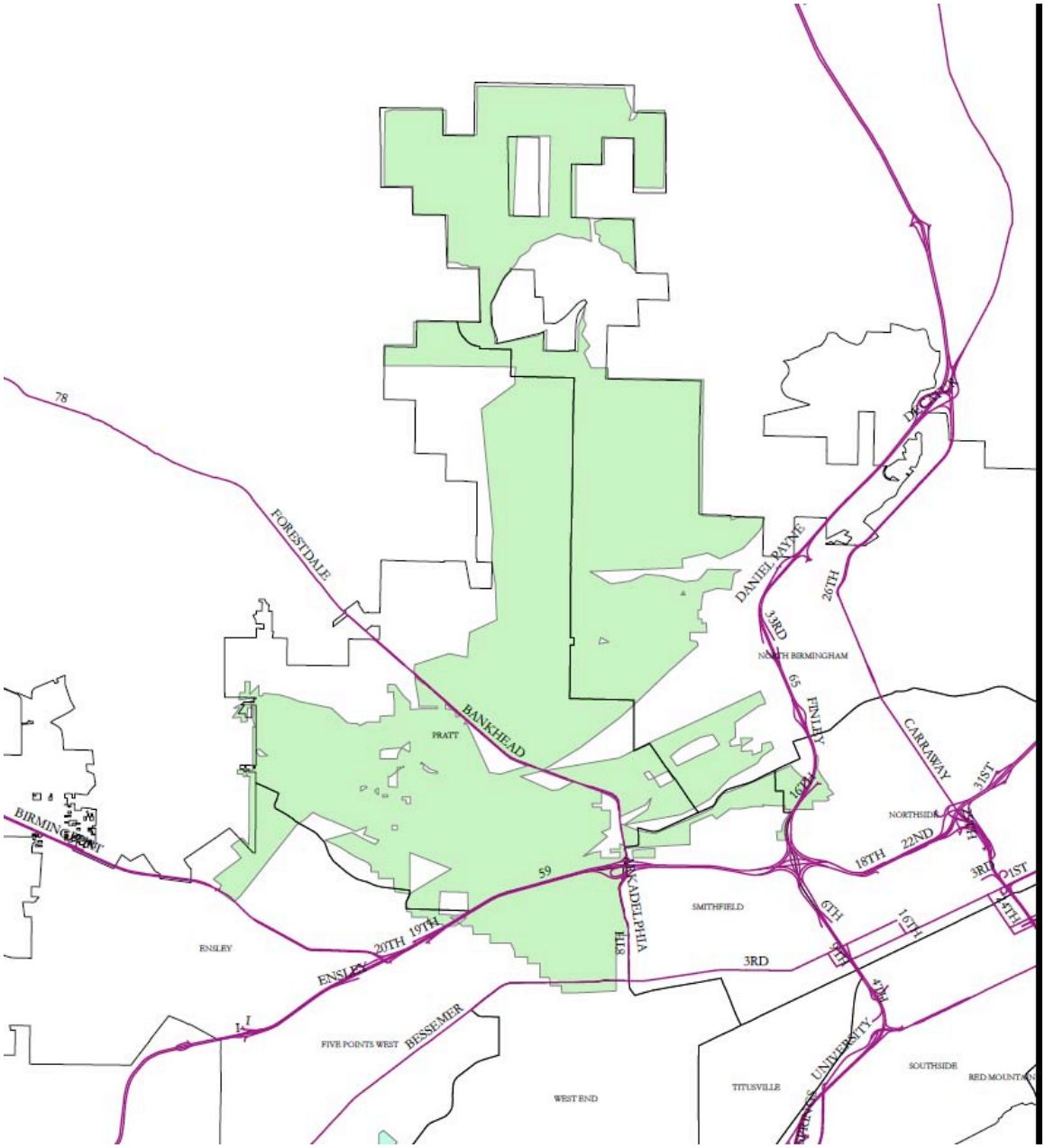
Map #5a: Birmingham's 3 Food Deserts

- Desert #1 – 2,658 people
- Desert #2 – 9,669 people
- Desert #3 –12,936 people
- Community Areas

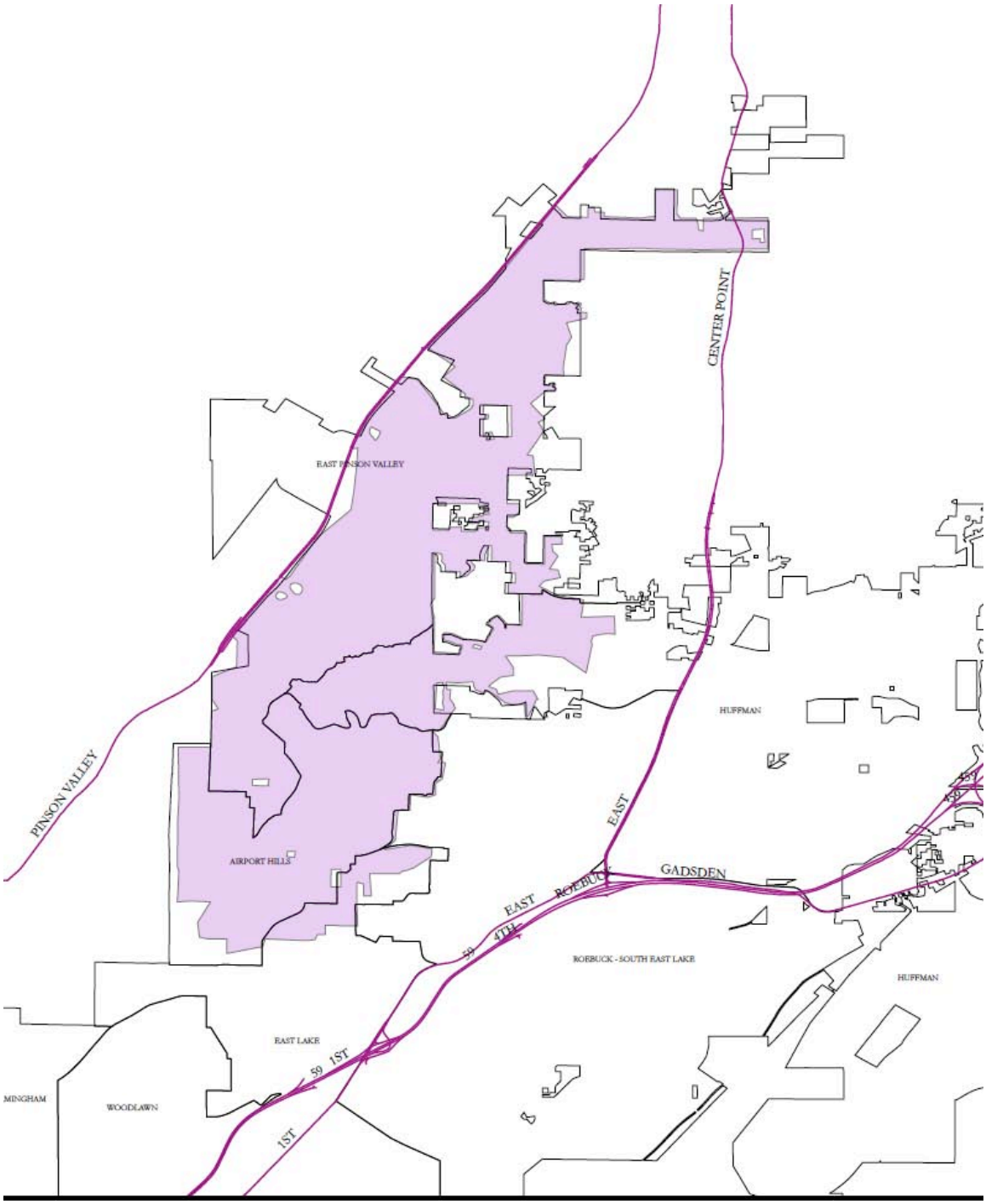
MAPS ON THE FOLLOWING PAGES SHOW DETAILS WITH STREETS

TOTAL: 25,263 IN FINALIZED FOOD DESERTS
(COMPARED TO THE 41,000 IN FOOD DESERT CONDITIONS)

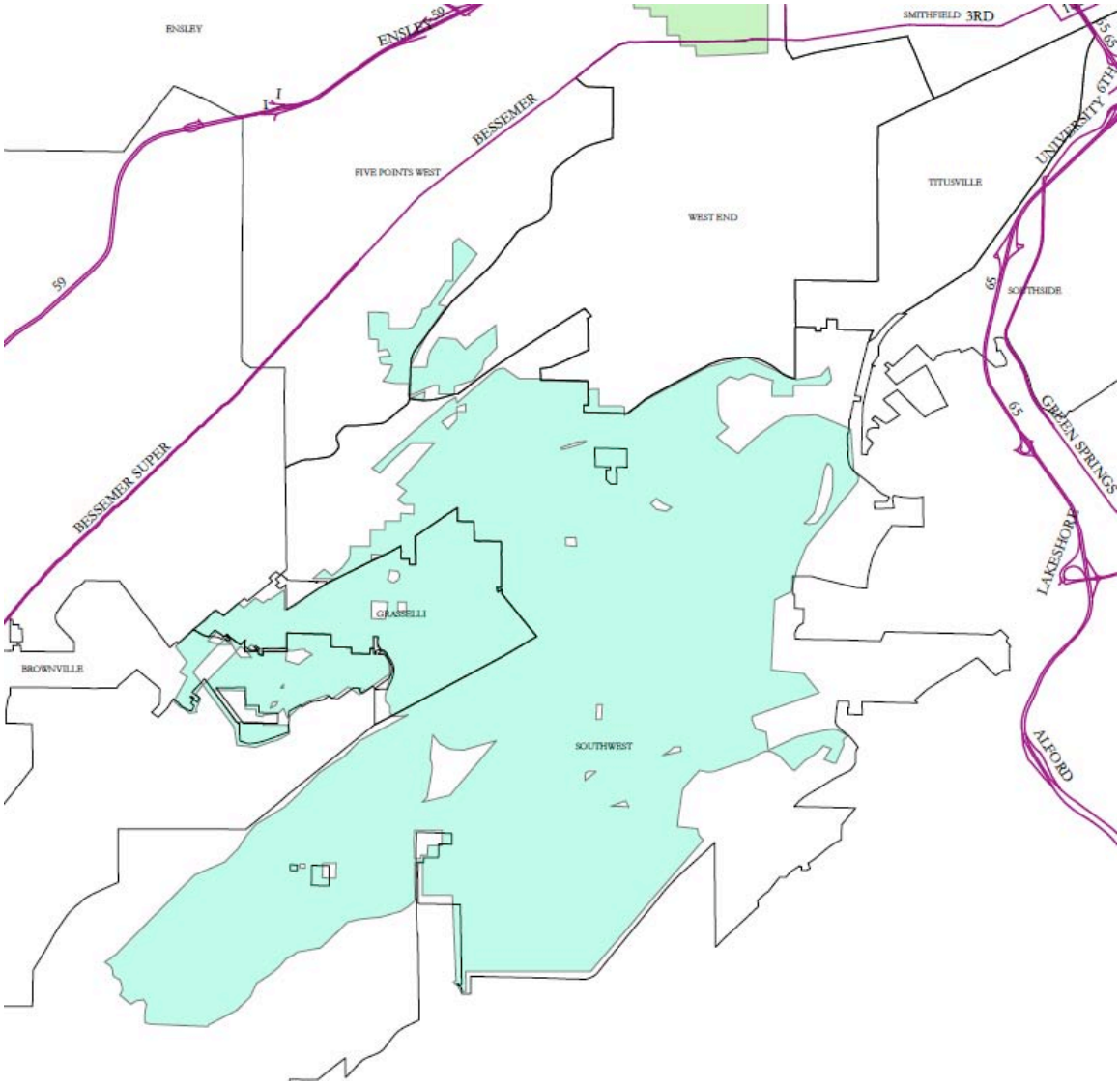
Map 5b: Birmingham Food Desert Drilldown Showing Streets.
Please note that the color green has no significance. It is used because it is easier to read the street text against a non-red color. This Drilldown series also corresponds to the colors used in the forthcoming map that shows Food Deserts and community gardens.



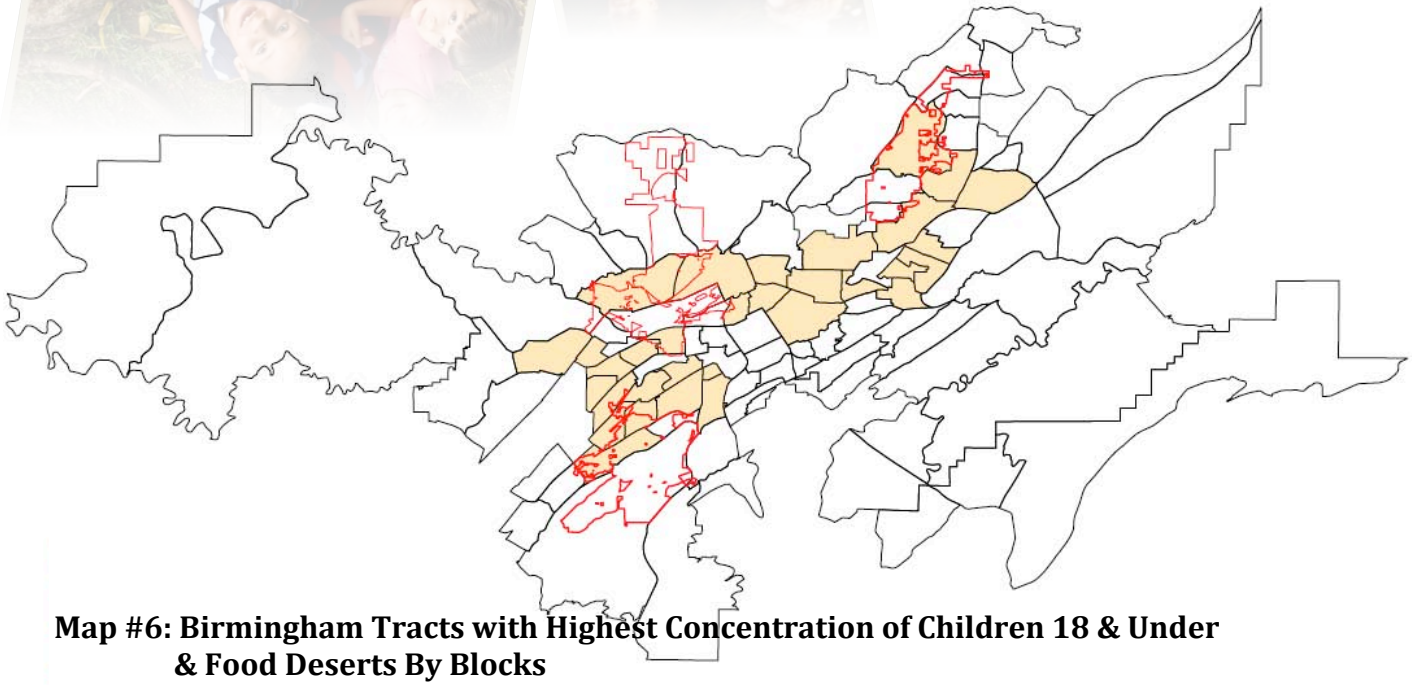
Map 5c: Birmingham Food Desert Drilldown Showing Streets.
Please note that the light purple color has no significance. It is used because it is easier to read the street text against a non-red color and we wish to distinguish it from the] previous drilldown map. This Drilldown series also corresponds to the colors used in the forthcoming map that shows Food Deserts and community gardens.



Map 5d: Birmingham Food Desert Drilldown Showing Streets.
Please note that the teal color has no significance. It is used because it is easier to read the street text against a non-red color and we wish to distinguish it from the previous drilldown map. This Drilldown series also corresponds to the colors used in the forthcoming map that shows Food Deserts and community gardens.



This map shows the highest concentration of children under 18 by tertile with the finalized 3 Food Deserts and can help pinpoint program attention where it is needed most by specific neighborhood areas. Children have special nutritional needs. A healthy diet can help children pay attention in school, develop academically, intellectually, and physically, and avoid disease later in life.



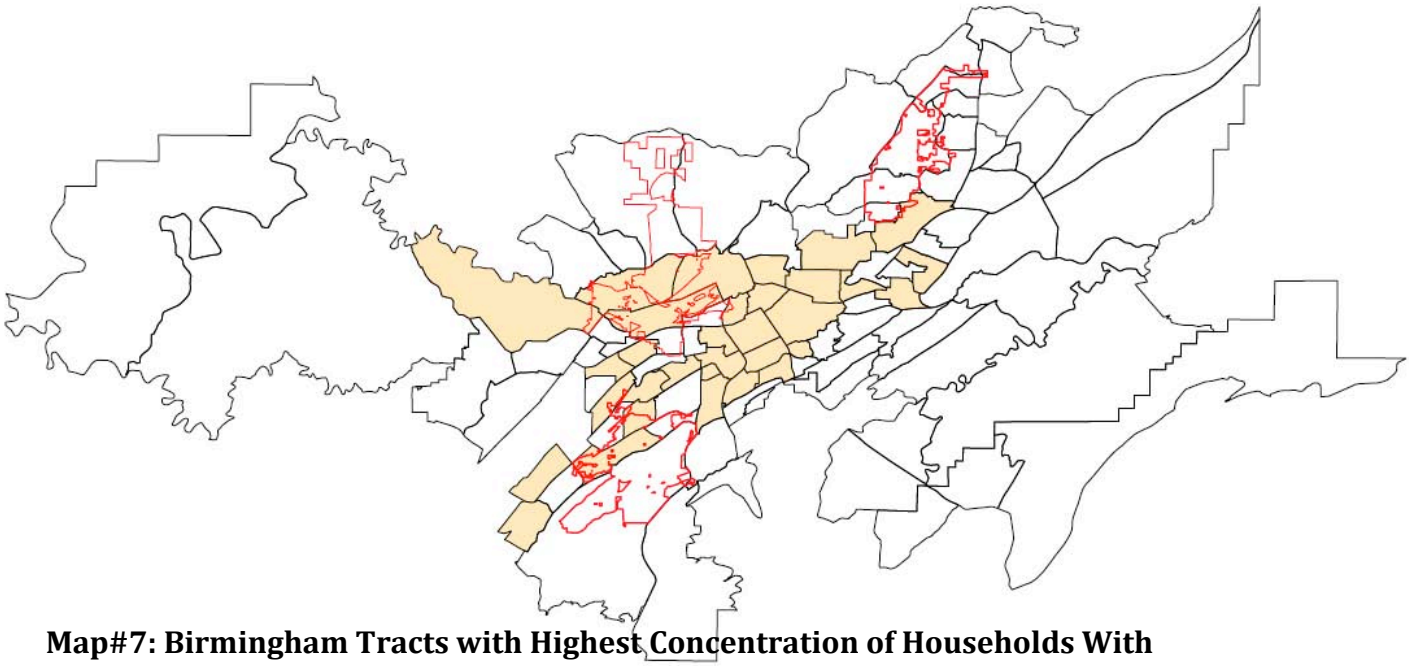
Map #6: Birmingham Tracts with Highest Concentration of Children 18 & Under & Food Deserts By Blocks

☐ Food Desert
■ Highest concentration of children under 18 years of age

All households are affected by what our firm has identified as the Convenience Food Factor, although we find that lower-income households are more vulnerable to it. The Convenience Food Factor means that people generally shop for food most regularly at the places closest to them even though they might desire or require for medical reasons more distant, healthier food. Convenience means location or physical access, but other factors also come into play, such as financial access (the cost and affordability of the food), cultural access (level of comfort with the store) and even the size of the store (the amount of time to get in and out of the store with groceries when you are in a rush).

The impact of the Convenience Food Factor can mean that families turn to fringe food, found in fast food restaurants, convenience stores, dollar stores, gas stations, liquor stores, department stores, discount bakeries, pharmacies, and a multitude of other retailers that sell ready-made, fast, boxed, canned and other types of food products but for whom fresh and healthy food is not the primary line of business. Again, these foods are usually high in salt, fat, and sugar and have very limited if any nutritional value.

Health generally improves once mainstream food access is provided, but further gains would be made through educational programs and greater affordability of healthy foods.

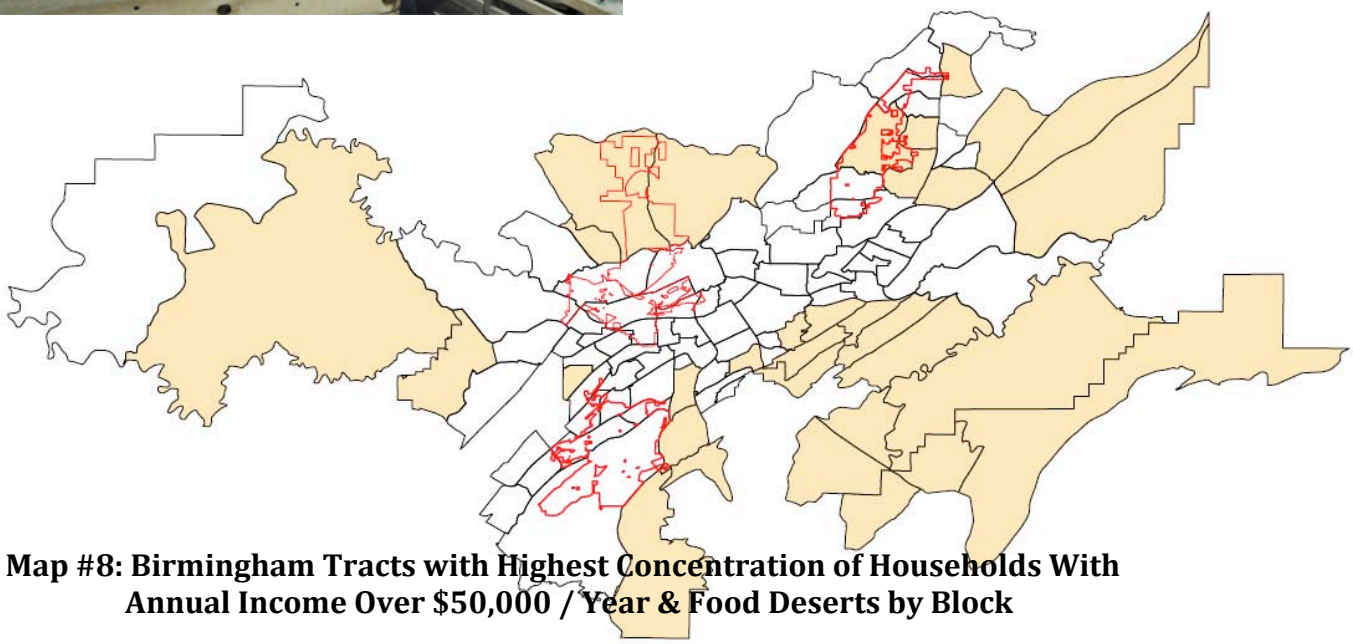


Map#7: Birmingham Tracts with Highest Concentration of Households With Annual Income Under $25,000 / Year & Food Deserts by Blocks

☐ Food Desert
■ Highest concentration of HH with income under $25,000

Not everyone who lives in a Food Desert is poor.

Most middle-income communities have mainstream grocery stores, but surprisingly, some do not.

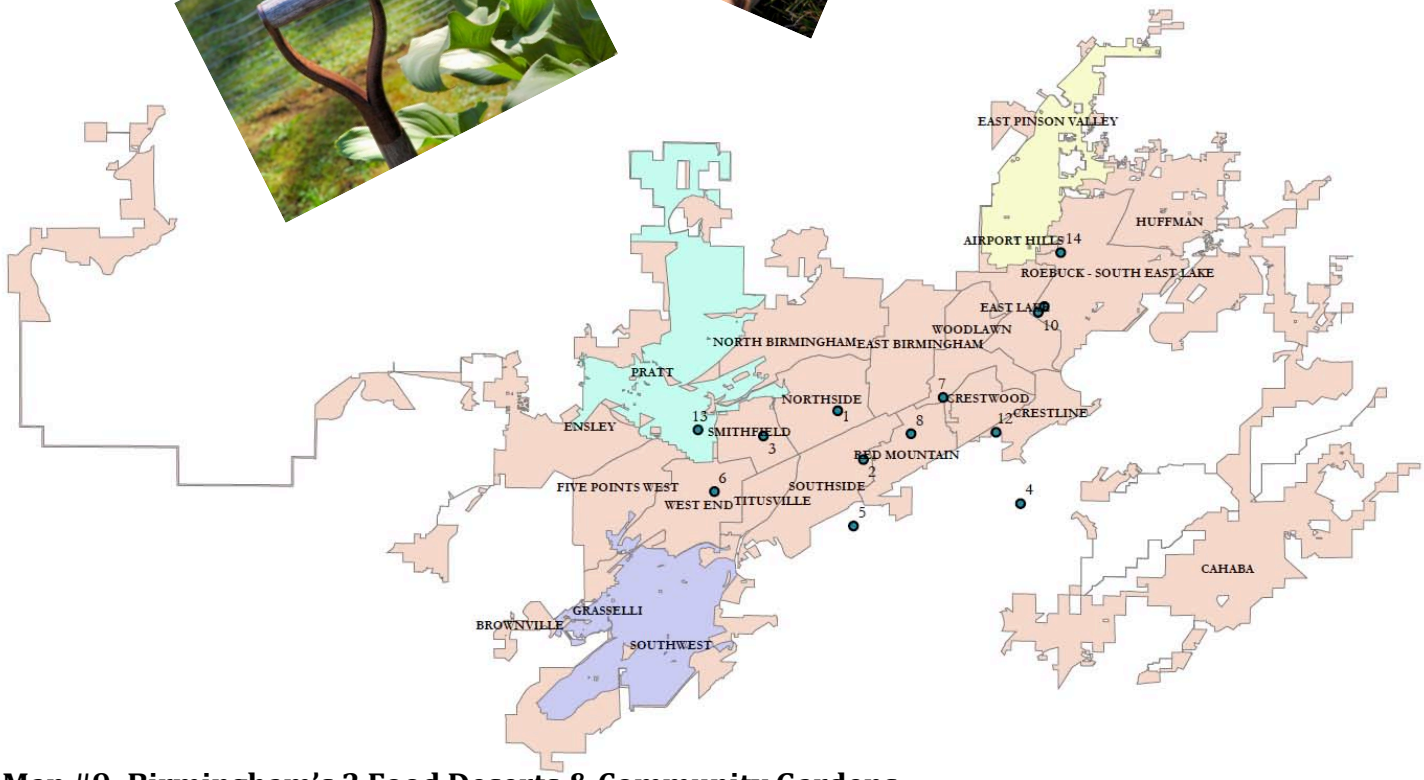


Map #8: Birmingham Tracts with Highest Concentration of Households With Annual Income Over $50,000 / Year & Food Deserts by Block

☐ Food Desert
■ Highest concentration of HH with income over $50,000

Here we see that only one community garden is in the official Food Desert. While community gardens and other urban agriculture programs do not "solve" the Food Desert dilemma, they offer an important connection between residents and the land where healthy food actually comes from. They can also generate community pride, jobs, and safe activities for children.

Only one community garden is in the Food Desert.



Map #9: Birmingham's 3 Food Deserts & Community Gardens

3 Food Deserts • Community Gardens

Please note that these types of dot maps quickly become out-of-date. If you have new or missing information, we encourage you to email it to local officials or community leaders working on this issue.

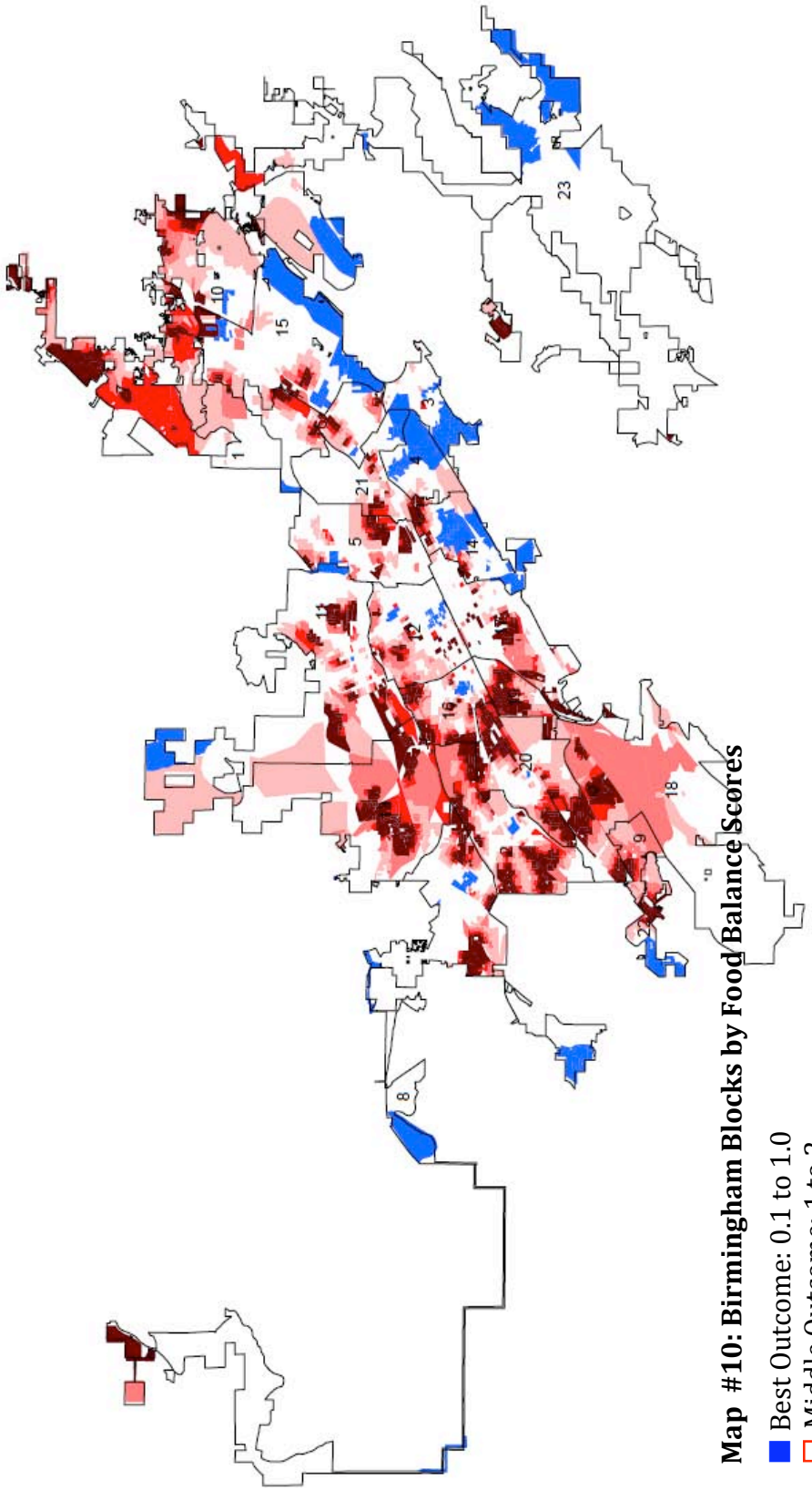
The map on the next page shows Birmingham

Food Balance Scores.

The darker the red, the more imbalance there is on those blocks.

Birmingham Food Deserts cluster, but Food Imbalance is scattered throughout the city.

Food Balance means you can easily choose between mainstream and fringe foods.



Map #10: Birmingham Blocks by Food Balance Scores

- Best Outcome: 0.1 to 1.0
- Middle Outcome: 1 to 2
- Worst Outcome A: 2 to 3
- Worst Outcome B: 3 to 4
- Worst Outcome C: 4 to 5
- Worst Outcome D: 5 and above

SEE MAP WITH STREETS IN EXECUTIVE SUMMARY.

Mortality

We obtained the records of all 19,540 deaths that occurred in Birmingham between 2004 and 2008 from the Jefferson County Department of Health (JCDH). Each record contains the decedent's age, sex, race, and cause of death. Each death was also geocoded by the Department of Health, so we know the Birmingham census tract of the decedent's place of residence at the time of death. We used this information to calculate the "Years of Potential Life Loss" (YPLL) for each census tract. This reveals the total number of person-years (one person living one year) that were lost in the tract due to premature (i.e. earlier than age 75) mortality.

Separate YPLL measures were also calculated for two specific causes of death: diet-related diseases (cancer, cardio-vascular disease, diabetes, and alcohol-related deaths, all taken together) and diet-related cancers (taken separately, where there were sufficient numbers to justify a calculation separate from the diet-related deaths in which cancer was also included). Though we obtained 5 years of deaths from JCDH, the YPLL calculation is done on an annual basis, so it was necessary to weight each death by 0.20 in the following analysis. A YPLL value of 100 per 100 people means that, in this tract, each person's life will end one half year earlier than in a tract with a YPLL value of 50 per 100 people. After calculating for each tract an all-cause YPLL per capita and separate YPLL per capita for diet-related diseases and cancer, we then examined the relationship between these community health measures and access to mainstream grocers and healthy food. This was done by generating a measure of the distance traveled by the average person in each tract to the nearest mainstream and fringe grocer, and calculating the ratio of the distance to the mainstream grocer the distance to the fringe grocer – our Food Balance Score. The block-level distance measures already discussed were used to perform this calculation, together with the total population in each tract and block in the city.

We set our findings in the context of the challenges and limitations of linking cause and effect and of predicting, with certainty, the exact statistical magnitude of these relationships.

Furthermore, we recognize population mobility and though we found strong correlations we must keep in mind that the official residence of a person at time of death might not be reflective of the environment in which they lived the majority of their life.

In order to examine whether the Food Balance Score (the ratio of mainstream to fringe distance) or the mainstream distance itself had an impact on YPLL, we conducted a regression analysis in which YPLL (either all-cause or one of the cause-specific measures) was the outcome of interest. We used the ratio of mainstream to fringe distance or the mainstream distance itself as an independent variable in this analysis. It was necessary, however, to control for influences on community health other than access to healthy food.

For each census tract, we obtained the proportion of the population that was African American, that had less than a high school education, and that had household income below $25,000 per year from the 2000 U.S. Census of Population. Though ideally we would control for all three of these influences simultaneously, they tend to move very closely together across tracts (e.g. tracts with low incomes also have higher minority populations and higher proportions of adults with less than high school educations). This restriction forced us to limit our attention to only one factor apart from food access in analyzing community health. We chose to include the fraction of households with annual incomes below $25,000 per year. The following results are not sensitive to this choice (i.e. if we included one of the two other tract-level demographic variables – proportion minority or proportion with less than a high school education – the same general conclusions would follow).

Without controlling for the fraction of the tract's households with annual incomes below $25,000, a higher Food Balance Score, meaning (mainstream grocer)/(fringe grocer) distance ratio, was associated with a statistically significant (at the 95% level) increase in overall YPLL and both diet-related YPLL and cancer YPLL. This effect was non-linear, however: it was larger for small changes in the ratio than for larger changes. For example, all-cause YPLL was 71.43 per 100 people where the ratio was 1; when the ratio rose to 2, all-cause YPLL rose to 80.31 per 100 people (a rise of 8.88), but when the ratio rose to 3, all-cause YPLL rose to 85.50 (an additional rise of only 5.19). When the analysis controlled for household income in the tract, however, the effect of the ratio on all-cause YPLL and diet-related YPLL was reduced in magnitude by a factor of 10 and was no longer statistically significant. The effect on cancer YPLL remained statistically significant at the 88% level and its magnitude fell by only 1/3 compared to the analysis in which household income in the tract was not included.

Figure #3: Years of Life Loss From Cancer and Food Balance

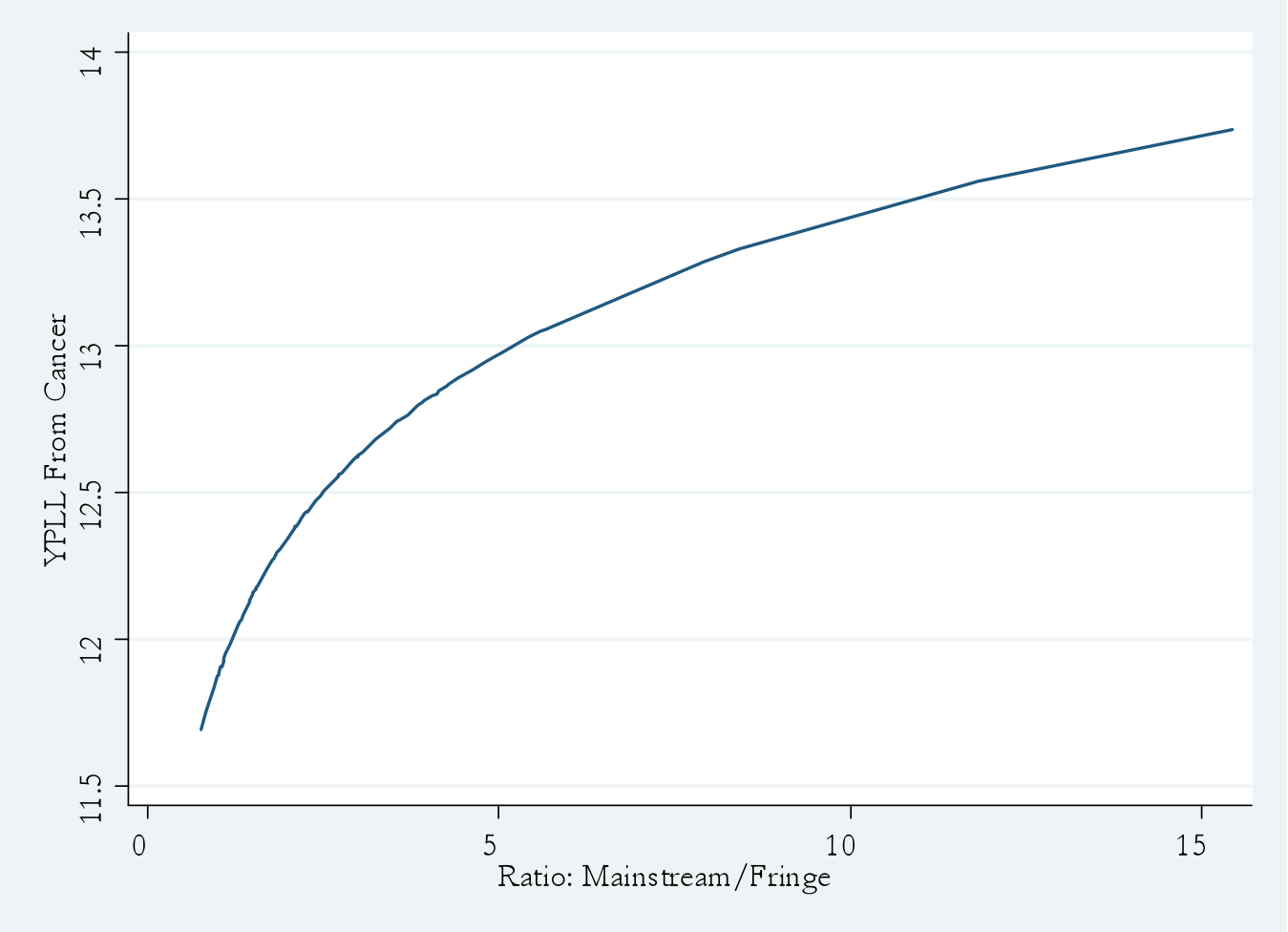
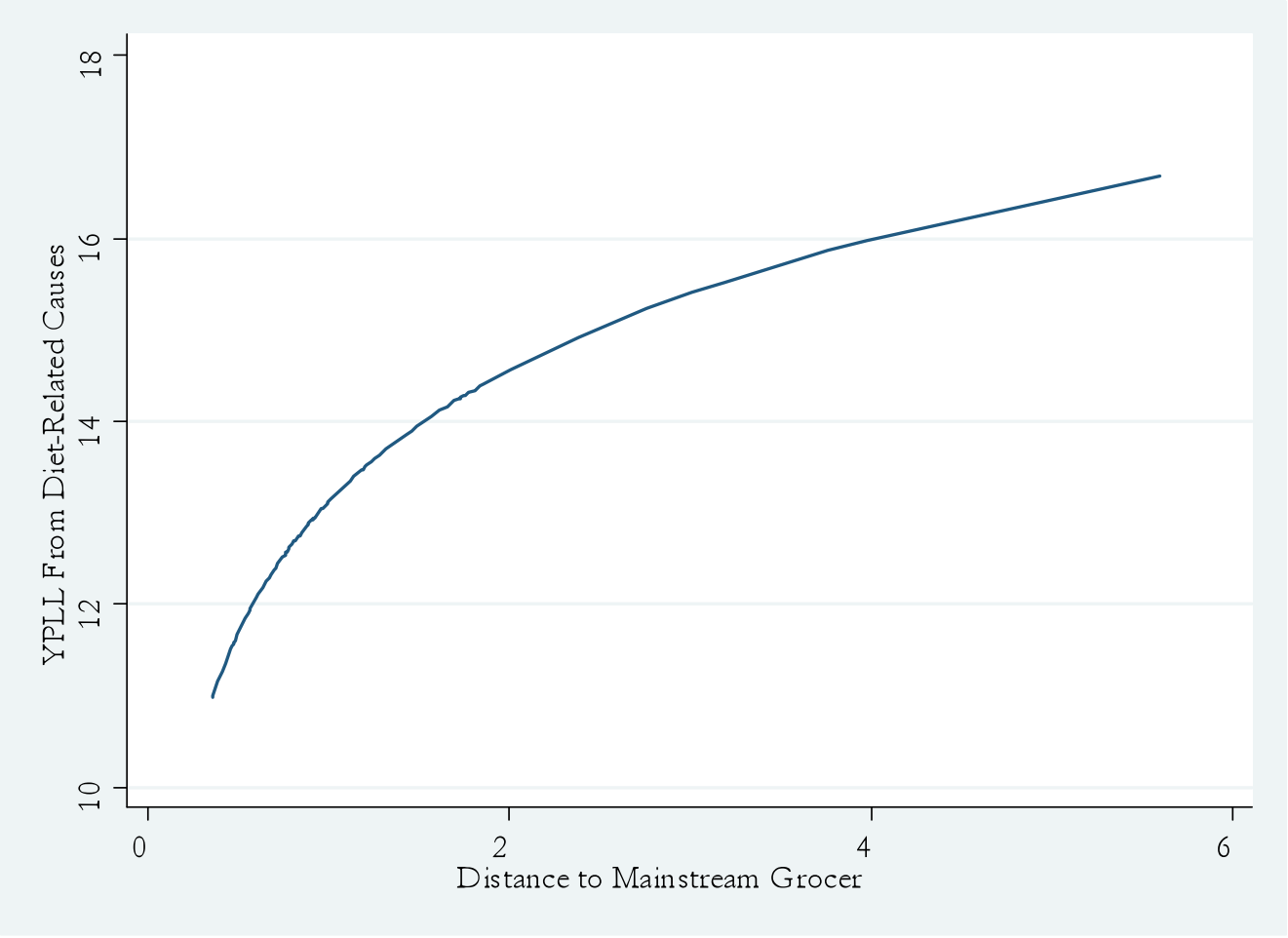
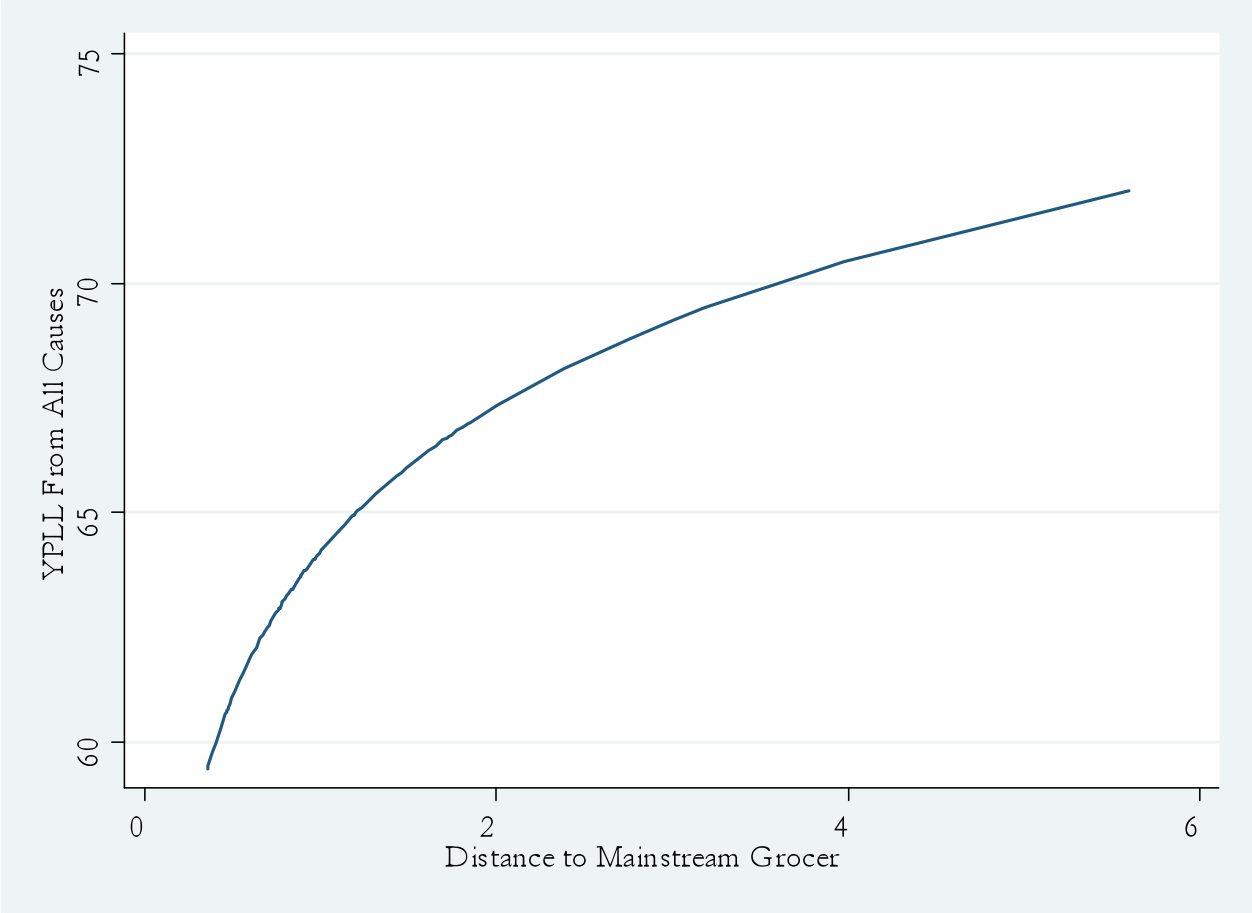


Figure #4: Years of Life Loss From Diet-Related Diseases and Mainstream Grocer Distance



The effect on YPLL of distance to the nearest mainstream grocer was also nonlinear, and it remained large and statistically significant even after taking account of household income in the tract. For example, the impact of mainstream grocer distance on all-cause YPLL was statistically significant at the 85% level after controlling for household income in the tract. The effects on diet-related YPLL and cancer YPLL were statistically significant at the 95% level after controlling for household income in the tract.

Figure #5: Years of Life Loss From All Causes and Distance to Mainstream Grocers



Recommendations

Local land use decisions are, in many respects, public health decisions. And while one plot of land or one grocery store does not directly cause either life or death, or community revitalization or decline, it certainly can influence those outcomes.

As far back as 1926, the Supreme Court rendered an opinion that government has a responsibility to promote and protect public health, and that government can therefore control land use to that end. So to be a community planner and not care about health, or to be a health official and not care about the built environment, means opportunities are lost.

But there are other dimensions of lost opportunities and other actors with responsibilities besides those in government that need to get involved. We're talking about you!

In short, there is not one single cause of the Food Desert or one single solution, either. This is actually good news, because it means that everyone can do something to improve food access and health in Birmingham. Here is our listing of recommendations. We encourage everyone to add to the list and, more importantly, get involved!

1. **Support Local & Regional Food Policy Councils**

   Food policy councils are excellent vehicles for taking concrete steps to improve food access, systems, public awareness, and health. We suggest that local schools also have their own food policy councils, both at the school level and at the district level, and that they include youth representation. Councils are encouraged to focus on their external environment – such as the quality of local grocery stores – but also their own school lunch programs and vending machines. Also consider the school's "choice architecture." Are healthier choices as easy or easier to make than unhealthy choices?

2. **Revamp & Support the Corner Store & Other Independent Grocers**

   Currently, many corner stores focus on selling products such as alcohol, tobacco, and foods that are high in sugar, salt, and fat and have little or no nutritional value. These stores are very successful in infiltrating many lower-income markets where many mainstream grocery stores are absent. If these fringe stores could be revamped to sell more fresh fruits and vegetables, they could positively rather than negatively contribute to public health.

Supporting reform in these preexisting stores as opposed to only focusing on recruiting large chains has a number of benefits. First, the small fringe stores are already there, meaning that no extra funds will be needed for startup. Second, the owners of these stores often already have good relationships with the surrounding neighborhoods – or at least some relationship. They know the market. Finally, working with local stores supports local business and economies, boosting the overall vitality of the community.

Possible action items include working with larger commercial chains and also working with non-profit groups to support smaller stores. Corner stores can collaborate with larger commercial chains in a mentor-mentee and also supplier relationship. The corner store can carry the commercial chain's brand or logo in exchange for advice on which products to purchase. Non-profit groups that work with farmers markets can help test the market for healthier perishables by temporarily providing them with vendor carts that sell healthy foods inside or outside the fringe stores.

Use neutral data to identify which fringe stores would provide the biggest health returns if they crossed over to the mainstream, and prioritize helping those particular stores owners who agree to participate.

One model of this effort is the "market makeovers" performed by the Healthy Eating Active Community in South Los Angeles. This group links up youth with organizers to help infuse local corner stores with healthier options. For more information, go to www.marketmakeovers.com. There are many other examples of corner store successes and a national network of committed practitioners who work everyday to support and improve them. Learn from their best practices and see what the best approach might be in Birmingham.

3. Institute Policies that Promote Health

Every local organization, university, government agency, and employer can set policies and develop programs and infrastructure that promote health or at least do not steer us toward its opposite. For example, do you have snacks at weekly or monthly seminars or staff meetings? What if the policy was to only have healthy snacks such as water and fruit instead of soda and cookies? Look for ways to affect many people at once with a healthy option. Create contests for the best healthy recipe or way to loose weight. Make it fun.

4. **Recruit Mainstream Grocers**

Some Food Desert areas can support new grocery stores. Other areas with low population densities and buying power that cannot support store development might require incentives and subsidies. These sites should then be prioritized based on clear-cut measures. We have found that it is better to spread limited resources and incentives across fewer high-impact sites than to spread the same level of resources thinly across a great number of sites. Public subsidies, if used wisely, can help fill gaps in areas where the market alone cannot necessarily sustain a new store.

Besides subsidies, other city incentives could include low-cost or free land, tax credits to new grocery store developments, and low interest loans or lines of credit, not only to new stores but to existing corner stores to support improvements such as new refrigeration systems or the development of new lines of produce and other healthy perishables. Additional incentives and financing resources such as state-supported financing as well as federal funds should also be identified and utilized.

5. **Convene a Grocer Expo**

At the Expo, grocers could learn about and discuss incentives, priorities, business strategies, and available sites. Usually the Expos are hosted by the local municipality.

6. **Improve Pathways to Mainstream Grocery Stores**

Even when a grocery store is relatively close, either by car or walking, traffic or poorly designed walkways often hinder the efficiency and ease of grocery shopping. In order to increase accessibility, traffic routes and pedestrian walkways to grocery stores must be mapped out and systematically improved. An added traffic light, crosswalk, sidewalk, or bike rack could improve safety and ease of passage to nearby grocery stores. Some communities that have free tourist shuttles expand the route to pass a mainstream grocer to help residents improve access. Review existing zoning and consider how land use changes would improve pathways to grocery stores as well as facilitate new store development.

7. Promote Grocery Shuttle Vans

For individuals who have poor access to grocery stores and no automobiles, a free shuttle van, like the one that the grocery store Ralph's has, for instance, can add to the ease of shopping for groceries, encouraging more shoppers to buy fresh produce instead of relying on processed foods. Not only is the free shuttle van good for the consumer, it is also good for grocery store bottom lines if they generate enough customers and good will.

Market analysis of low-income neighborhoods in five California cities – Bakersfield, Fresno, Long Beach, Oakland, and San Diego – has determined that supermarket-sponsored shuttle services would be financially viable in any of these cities. In fact, the estimated annual revenues per city resulting from these shuttles ranged from $545,700 to $1.5 million (Closing the Grocery Gap, www.allbusiness.com).

8. Develop a Healthy Street Vendors Program

Street vendors are a great way to grab a quick snack or even a meal on the go. As of now, however, street vendors largely sell items such as soft pretzels, chips, and hot dogs. The market should be tested to determine if it is feasible to have street vendors who instead sell food products such as fruits and dip, lightly buttered popcorn, multigrain muffins, and – better yet – fruits and vegetables. More research can be done to identify which healthy foods would have the strongest market in Birmingham.

In addition to selling ready-to-eat healthy snacks, these vendors could also act as mini and mobile farmers markets. Street vendors could increase the convenience of getting perishable groceries. They could link up with bigger grocery stores by carrying their logos and products. This partnership could simultaneously promote healthy eating and providing a source of advertisement for the companies.

Healthy street food is not an oxymoron. If street food is geared toward pleasing the consumers, but also with an eye towards health, the benefits could be notable, because street food is already fast, inexpensive, and convenient. Some models can be found at newyorkstreetfood.com/4914/healthy-street-food-yes-its-possible/.

9. Healthy Vending Machines & Automated Retail

The vending machine is yet another method of food distribution that has previously been used to sell unhealthy food, especially in schools. Vending machines have, however, mastered the art of 24/7 efficiency. Even little changes in the amount of fat, salt, and sugar distributed in vending machines—such as changing from fried to baked chips or sugared juice drinks to natural fruit juices move us in the right direction.

Vending machines can also dispense apples, bags of carrots, low-fat yogurt and multigrain bread instead of soda and candy bars. Right now, this development is a focus in many schools across the country, but could be expanded to government and corporate buildings and just about everywhere.

Some companies that have already begun distributing healthier vending machines include Yo-Naturals, h.u.m.a.n. Healthy Vending, and Vendrite Vending Solutions. Forbes magazine has also published the "Best and Worst Vending-Machine Snacks," which can be found at www.forbes.com/2005/10/05/vending-foods-health-cx_sy_1006feat_ls.html.

Automated retail stores that are small and carry healthy items are also a new option being introduced into the US. Here are the key details about the Shop24 automated "box" or "food basket":

1. Number of SKU's / product cells: 160 – 200 (vary based on product size)

2. Weight of a Shop24 Store: 6,000lbs empty

3. Store footprint: 13.5' x 9' x 10'

4. Product weight can range from under ½ oz - 8lbs (heavier product: gallon of milk)

5. Max height of a product: 13 inches (large box of cereal)

6. Dispensing time: 8 seconds

7. Payment options: cash, credit card, value cards such as university meal cards and EBT

8. Real-time data on product movement

Our firm is working now on an automated store solution for the Food Desert with Shop24. Watch www.marigallagher.com for more information.

10. New Options for Fast Food

Fast food has often been demonized, although today, many fast food companies are working toward healthier options. Instead of immediately writing off fast food as an industry that has no place in a healthy society, health advocates and community leaders should work with existing fast food chains to create more healthy options.

Due to increasing health awareness and concern, many chains such as McDonald's and Burger King have begun lowering the salt content in their foods and pledging to use less fatty oils to cook their French fries. They also offer healthier options such as salads and apples. There are various websites and books educating consumers on how they can eat well, even when eating at fast food venues. Increasing healthiness does not, and should not, necessarily correlate with decreased taste. The successes of these past improvements to fast food should be taken as a motivator to moving forward toward even better-tasting, affordable food. Improving fast food not only increases the wellbeing of consumers, but also can be an impactful selling point as people become more and more conscious of the importance of eating well.

Drive through any city and you'll see that fast food is everywhere. Despite its flaws and historical link to poor health, it remains a force that needs to be addressed. Fast food is typically a convenient and inexpensive "meal fix" for many resource and time-crunched Americans. Instead of insisting that people must spend hours cooking elaborate meals, perhaps we can take some lessons from how fast food is able to operate on such widespread and efficient levels. Fast food has successfully invested in areas that other food venues, such as grocery stores, have abandoned. They offer fast and filling just-in-time food as well as community jobs. convenient, affordable, and healthy that compete with fast food and that also provide jobs and economic development? In Chicago, for example, Peapod and Neighbor developed an attractive 10-piece bag of the "Best Fruit of the Season" for $2.99 to compete with the "happy Meal". More information at www.marigallagher.com.

11. Support Farmers & Community Markets

Farmers and community markets are great sources for fresh fruits and vegetables. They also boost local farming, which can be beneficial to the local economy. Local farming is also better for the environment because it uses less gasoline than large corporations use to ship fruits and vegetables between states or even countries. This fact alone lowers the carbon footprint of local farming. Additionally, farmers markets can be more than just a place to buy food, they can also act as gathering places for community events and education.

Leaders can help promote locally grown food by connecting farmers to different opportunities and places where they can sell their produce and other farm products. These opportunities and places may include schools, hospitals, and restaurants. Farmers markets should also be widely advertised on public radio, magazines such as Penny Saver, and local newspapers.

12. Support Community Gardens & Urban Agriculture

Community gardens and urban agriculture have the potential to increase food, jobs, and community pride. Often, Food Desert areas have ample vacant land that is environmentally clean and available for these projects.

13. Review Mobile Grocer Options

Mobile grocers deliver food to the customer's doorstep after it is purchased online.The advantages of this system are manifold. On the company's side, this system can lead to more efficient tallying of desired foods and also the opening of more markets. On the consumer's side, this system eliminates the need to have your own mode of transportation, which could be beneficial for those who rely on public transport as well as senior citizens or other individuals who may have issues with mobility. This method is both efficient and convenient. However, it can also be more expensive, and not all households are accustomed to ordering groceries – or anything – online. Cultural barriers exist. In addition to Peapod's "Best Fruit of the Season Offering" described earlier, which uses community-friendly drop-off sites rather than traditional online ordering and delivery, other models exist. Cities such as Baltimore, for example, have developed systems where residents can use the library to order their groceries, and pick them up the

next day. For more information about usage of the library as a grocery pick up site, see NPR's "Check It Out: Getting Your Groceries at the Library," which can be found online. "Peaches and Greens" is a mobile food program in Detroit that delivers food off of a truck. What mobile solutions would work in Birmingham?

14. Make High Quality Market Data Available

In micro-markets particularly, "bad data" can be a huge obstacle against grocery store development. Data that truthfully represents the financial viability of the markets for grocery stores in food deserts must be made available to actors who make development decisions and to community leaders who monitor change. This lack of data can be remedied on a market-to-market basis with more accurate "below the radar" drilldowns. Many Food Desert markets can indeed support a mainstream grocery store, but often what is lacking are accurate and available datasets to support those opportunities.

15. Encourage Healthy Cooking & Eating Habits

As we mentioned earlier, it is unrealistic to expect families, hard-pressed for time, to be cooking up elaborate meals, but still, what steps can be taken to move American culture from the television to the kitchen? One innovative idea would be to hold healthy cooking club meetings, where community members could come together and cook bulk amounts of food to be frozen and distributed for future consumption. Not only would this plan lower the cost of food, since buying in bulk is often cheaper, it would also be educational and time-saving.

16. Promote "Food Literacy"

Along with increasing availability of healthy foods, it is also important to ensure that individuals are able to make better decisions about their eating habits by being food literate. Hold classes or health fairs that educate people on how to read food labels and what are appropriate food portions. Teaching financial literacy along with food literacy could help individuals understand how to better budget the money they have for food, and also to understand their options for acquiring affordable foods.

17. Promote Health & Wellness in the Workplace

Eating healthily and getting exercise have been proven to increase brain function and productivity. Maybe if this message is relayed to employers, they can take stock of what these facts mean for the vitality of their employees and their businesses. Simple changes can be made to the workplace in order to increase the health of employees including having healthier foods available at lunchtime, having a water cooler available, and also an area to workout or take a walk. Even encouraging employees to use the stairs a few times a week instead of the elevator is a step in the right direction. If employers start to take more care to ensure the health of their employees, not only will the employees' health benefit, so will the company's productivity.

Another way in which this campaign can be linked to the workplace is through the creation of new jobs through the linkage of job programs with food access and urban agriculture programs. Promoting awareness of the possible opportunities for work in food access and urban agriculture will increase the human resources available to distributing healthy foods and will also provide needed jobs to people in local communities.

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This finding – also statistically significant – helped us develop and introduce our "fringe" food category.

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We released a map of Food Deserts and violent deaths of children, and also our new "Deck Stacked Against You" indicator.

In 2009, we also began a block-level analysis for Peapod, the nation's largest online grocer, to identify locations to improve health of children.

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In 2010 we released a second briefing for Peapod and Neighbor Capital and helped them host a community forum in the Food Desert.

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In 2009 we were invited to the “Magic City” -Birmingham- by Main Street Birmingham & other organizations to speak at a local food summit, and in early 2010 we were retained to conduct this study.

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The Birmingham study presented a new opportunity to identify Food Deserts by block.

We found that, in Birmingham, over 88,000 people live in a Food Desert or Food Imbalance area where it is generally difficult to buy a first-rate apple, tomato, or green bean. Many venues instead specialize in candy, soda, chips, and fried food.

Of those affected, over 23,000 are children.

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This study – in addition to supporting a wide range of actors committed to improving food access and health across Birmingham – will serve as the foundation to Main Street Birmingham's plan to advance good food solutions while developing jobs and local markets. They commissioned the research to quantify the relationship today between food access and public health in Birmingham, and to identify where applied solutions would be most strategic and effective moving forward.

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