SPECIAL REPORT
The Need for More Supermarkets in New Jersey

food for every child
ACKNOWLEDGMENTS
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Executive Summary

New Jersey must address the significant and growing need for supermarkets and fresh food resources in many of its neighborhoods. Numerous factors have led supermarkets to divest from lower-income communities leading to a public health crisis. Food retailers and public-sector development agencies have, in essence, redlined lower-income communities by failing to aggressively combat the factors that have led supermarkets to disinvest from these neighborhoods. These findings are documented in Food for Every Child: The Need for More Supermarkets in New Jersey, researched and written by The Food Trust. The report has led to the creation of the Food for Every Child Initiative which serves to ensure that all children and their families live in communities that have access to safe, healthy, and affordable food. This goal can be achieved by stimulating the development of supermarkets in lower-income neighborhoods.

Despite being one of the most affluent states in the country, New Jersey has over 25 percent fewer per capita supermarkets compared to national averages. Some cities, such as Camden and Trenton, would need to triple their number of supermarkets to adequately serve their residents. In New Brunswick, the number of supermarkets would have to double. The problem is statewide; when measured against the national rate of per capita supermarkets, New Jersey has 269 too few.\(^1\)

In addition to having too few per capita supermarkets, existing supermarkets are unevenly distributed across New Jersey, and lower-income urban centers and rural communities are categorically underserved in respect to supermarket access. The situation in New Jersey reflects national trends. A nationwide study of over 28,000 ZIP codes found that lower-income ZIP codes have 25 percent fewer per capita supermarkets than middle-income ZIP codes.\(^2\)

This lack of access to supermarkets in lower-income neighborhoods negatively impacts people's ability to access nutritious food. Studies demonstrate that the incidence of obesity is disproportionately high in these same lower-income neighborhoods. Obesity rates are over 35 percent higher for those earning less than $15,000 when compared to those earning $50,000 or above in New Jersey.\(^3\)

Increasing the availability of nutritious and affordable food in neighborhoods with high rates of diabetes, hypertension, and other diet-related diseases does not guarantee a reduction in their incidence. But if barriers to supermarket access can be removed, people in these communities can more easily obtain an adequate diet. Furthermore, the development of new stores will be a source of jobs in communities that need them most.

The public sector has a responsibility to provide a safe, nutritious and stable food supply in underserved communities, a fact made all the more poignant by the estimated $630 million New Jersey spends each year treating obesity-related disease.\(^4\) But as supermarkets have replaced earlier forms of food retailing, such as public markets, the public sector has largely withdrawn from involvement in food retailing. Supermarkets later disappeared from many communities, leaving many neighborhoods and large numbers of people without a stable food supply. At the same time the incidence of diet-related diseases increased.

Through mapping, Food For Every Child concludes that many communities in New Jersey with poor supermarket access also have a high incidence of death from diet-related diseases. Access to supermarkets is a key factor in the health and development of a community.

Building upon the early action taken by the New Jersey Economic Development Authority (EDA) and The Reinvestment Fund to finance the development of new stores in urban areas, we call upon state and local governments to take the lead in developing a public-private response to this problem. Solutions that have proven successful elsewhere in the country, such as Pennsylvania’s Fresh Food Financing Initiative, New York’s Healthy Food/Healthy Communities Initiative, the Illinois Fresh Food Fund, and the New Orleans Fresh Food Retail Incentive Program have included:

- Convoking leaders from business, government, public health, civic, and community sectors to develop a strategy to establish more supermarkets in lower- and moderate-income communities.

- Strategic investments with public funds to reduce risks associated with the development of more supermarkets in lower- and moderate-income communities.
food for every child
Introduction

New Jersey has lower poverty rates compared with other states in the region. But concentrated poverty is very high, with a majority of the poor living in urban neighborhoods. And yet throughout the state, there are fewer per capita supermarkets compared to other states in the region. This shortage of supermarkets means that lower-income residents must either spend more money and time to travel out of their neighborhoods to purchase food, or shop at more expensive corner and convenience stores with less selection and, often, lower-quality food. The insufficient access to affordable and nutritious food in lower-income neighborhoods reduces the purchasing power of their residents and may exacerbate long-term health problems resulting from nutritionally inadequate diets.

Lower-income New Jersey residents are likely to suffer from obesity and diet-related health problems at rates significantly higher than those of the population as a whole. Diabetes rates among New Jersey's lowest income residents are over four times higher than those with income above $75,000. For children, obesity has reached alarming proportions; at 18.1 percent New Jersey has the nation's highest incidence of obesity among lower-income children 2 to 5 years old.

Many lower-income families in New Jersey have limited funds with which to purchase nutritionally adequate foods. Additionally, recent increases in the cost of food place further strain on these limited resources. These families are also likely to have few to no places in their communities in which to shop for reasonably priced foods, resulting in unmet demand for nutritious food or long trips to the supermarket.

The state's supermarket deficit could be eased and diet-related health problems decreased by embracing an initiative to build more supermarkets in lower-income neighborhoods, resulting in improved health and nutrition of children.

Such an investment would have positive economic impacts as well, since supermarkets create jobs thereby assisting communities in need. In one recent study, job growth in the area surrounding several newly financed stores generally increased relative to city-wide trends.

The Food Trust wrote Food for Every Child: The Need for More Supermarkets in New Jersey to ensure all children live in communities that have access to safe, nutritious, and affordable food. This report is designed, in part, to stimulate a process which will result in the construction of supermarkets in lower-income neighborhoods. To achieve that goal, this study outlines the extent and implications of the supermarket shortage, identifying gaps in food availability and the resulting relationship between diet-related diseases and lower-income neighborhoods.

Methodology

To demonstrate which neighborhoods lack supermarkets, a geographical representation of food access, income, and diet-related disease was created by mapping the locations of supermarket sales, income, and diet-related mortality data. (See appendix for more detail.) Retail sales data for supermarkets were obtained from TradeDimensions. The New Jersey Department of Health and Senior Services provided 2004 death records for the state, and 2007 demographic projection data were derived from the 2000 U.S. Census.

A series of maps was created using Geographic Information Systems computer mapping software. Weekly sales volume at supermarkets was distributed over a mile radius to plot the concentration of sales, then divided by total population density and $33.69 (the statewide average for weekly sales per person) to calculate a ratio for weekly supermarket sales per person. The ratios were mapped; ratios greater than 1 represent high sales and ratios less than 1 represent low sales. Median household income was multiplied by the number of households to determine total-income density. The term “lower-income” in this report is used to define areas where households have less than median income, except when citing a separate study.

A total of 30,343 diet-related deaths were mapped. “High” diet-related mortality areas are defined as having diet-related death rates greater than the statewide average, and “low” areas have diet-related death rates less than the statewide average. Only New Jersey death data were analyzed, so no comparisons were made with death rates outside of the state.
Key Findings

*Access to food is not evenly distributed in New Jersey. Many people have to travel excessive distances to buy food at a supermarket.*

The uneven distribution of supermarkets is a serious problem in New Jersey. There are large areas of the state with few supermarkets and many neighborhoods where none exist.

**Map 1: Weekly Sales Volume for Supermarkets** shows the location of 1,184 stores throughout New Jersey and the weekly sales volume for each store. The smaller yellow circles represent lower weekly sales volume; the larger red circles represent higher weekly sales volume. The gray shading shows how supermarket sales are distributed across the state.

Data reflects a high concentration of sales in suburban areas, which have a disproportionately large share of supermarkets, while the urban centers and rural communities themselves have very few. The darkest areas, the suburbs surrounding New Jersey’s urban centers, have the highest concentration of supermarket sales; the light areas are where sales are lowest, indicating that few or no supermarkets are located there. Inner cities and rural communities contain some of the lowest concentrations of supermarket sales relative to population. For example, while Camden has few supermarkets, the surrounding suburbs of Marlton and Woodbury have some of the highest concentrations of supermarket sales in the state. Similarly, Trenton has a low density of sales compared to Princeton. New Brunswick contains few supermarkets, while surrounding suburbs such as Edison, Metuchen, and Monmouth Junction are well served. Throughout New Jersey, cities such as Newark and Vineland, as well as large swaths of rural Southern New Jersey, contain low concentrations of supermarket sales. This suggests that many people are traveling considerable distances outside their neighborhoods to buy food at supermarkets.

**DATA SOURCES:** TradeDimensions Retail Database, 2008; U.S. Bureau of the Census, 2000.
A Closer Look at Five New Jersey Cities

A 2007 study by the Urban Institute mapped the geographic patterns of childhood obesity risk factors in census tracts across the United States and revealed that children in five New Jersey cities — Camden, New Brunswick, Newark, Trenton, and Vineland — are predicted to be at particularly high risk for childhood obesity. Residents of these cities have poor access to supermarkets. The chart above depicts the availability of supermarkets in the five cities compared to the U.S. average number of supermarkets per capita.

Compared to the national average, the number of supermarkets in Camden and Trenton would have to triple to adequately serve the population, and New Brunswick would need twice as many supermarkets as it currently has. Each of the cities has too few per capita supermarkets when compared to national averages. There is a pressing need for supermarkets in these cities to ensure that children have access to the nutritious foods needed to maintain an adequate diet and reverse the trend of childhood obesity.
The uneven distribution of supermarkets in New Jersey leaves a disproportionate number of lower-income people without access to nutritious food.

A nationwide study of over 28,000 ZIP codes found that lower-income ZIP codes have 25 percent fewer supermarkets than middle-income ZIP codes. Additionally, when measured against the national rate of per capita supermarkets (11.6 per 100,000 residents), New Jersey has too few, with just 8.5. By this measure, New Jersey could support 269 additional supermarkets.

Map 2: Supermarket Sales and Income shows the distribution of supermarket sales and the distribution of income throughout the state. The red areas represent neighborhoods that are not adequately served by supermarkets. People in yellow areas also have a lower density of supermarket sales. However, these communities are higher-income, and residents are more likely to be able to drive to stores, shop at small specialty and fresh food purveyors, or rely on grocery-delivery services.

Higher-income areas with higher supermarket sales have the best access to food resources and are indicated by the green areas of the map. In some lower-income areas, there are communities with higher than average supermarket sales volumes, as highlighted in blue.

Highlighted in Map 3: Low Supermarket Sales and Low Income are areas with low supermarket sales because there are few to no supermarkets. Income is also lower in these areas, indicating that families living there face more difficulty travelling to the areas where supermarkets are concentrated, especially when public transit options do not offer a convenient route. This map, then, identifies those areas where people have lower incomes and insufficient access to a supermarket, including Camden, Vineland, Bridgeton, Salem, Atlantic City, Hammonton, Lakewood, Trenton, New Brunswick, Perth Amboy, Phillipsburg, Newark, and Paterson.

MAP 3
Low Supermarket Sales and Low Income

- Red: Low income, low sales
- Gray: Not low income, not low sales
- White: Non-residential
- Black: Major roadways

There is a connection between lack of access to nutritious food and diet-related disease. Emerging research demonstrates a relationship between supermarkets and obesity. One recent study found lower body mass index among adolescents who live near a supermarket. Another study documented that fruit and vegetable intake increases as much as 32 percent for each additional supermarket in a community.

Map 4: Income and Diet-Related Deaths shows mortality data by income in New Jersey for diet-related diseases. The red areas indicate a higher than average rate of diet-related deaths occurring in lower-income areas. The yellow areas indicate a higher rate of diet-related deaths occurring in higher-income areas of New Jersey. The blue and green areas indicate a lower rate of diet-related deaths.

Diet-related diseases, such as hypertension, obesity, and diabetes, create untold suffering and expense in communities. And New Jersey spends an estimated $630 million each year treating obesity-related disease. Diet-related deaths are associated with many factors, including the procurement of a nutritionally adequate diet. As the maps show, many communities are not well served by supermarkets. For lower-income neighborhoods and areas, the lack of a supermarket negatively impacts people’s ability to obtain an affordable, nutritionally adequate diet.

Map 5: Areas with Greatest Need shows lower-income communities in New Jersey where there are low supermarket sales because there are few to no supermarkets located there and a high number of deaths due to diet-related disease. These areas have the greatest need for more supermarkets.

As this and previous maps demonstrate, many places in New Jersey are underserved by supermarkets. As a result, lower-income residents have to rely on expensive and limited convenience stores or travel long distances to shop for affordable food. At the same time, the incidence of diet-related deaths is extremely high, especially in inner-city and rural communities.

To provide affordable and nutritious food in neighborhoods, New Jersey should target new supermarket development to lower-income areas where there are high rates of diet-related diseases and few supermarkets.

Increasing the availability of nutritious and affordable food in neighborhoods with high rates of diet-related diseases does not guarantee a reduction in their incidence. However, removing barriers to obtaining a nutritionally adequate diet is a critical component of a comprehensive strategy to improve people’s health.

MAP 5
Areas with Greatest Need

- High death, low income, low sales
- Other
- Non-residential
- Major roadways

Conclusion

The lack of access to supermarkets is a problem in many neighborhoods throughout New Jersey, especially in lower-income areas where the incidence of obesity is alarmingly high. Five communities in New Jersey where children are at an increased risk for becoming obese have a notable shortage of stores selling nutritious food.

The lack of nutritious food in neighborhoods means that residents must shop at convenience and corner stores. Diets that rely on food from convenience stores are often higher in sugary and fattening foods that contribute to diet-related disease.

The public sector needs to invest in supermarket development in underserved neighborhoods to help combat increasing rates of obesity and diet-related illnesses. Many communities have few to no supermarkets. The greatest needs are in those neighborhoods where the incidence of diet-related disease is highest. Such an investment would have positive economic impacts as well, since supermarkets bring jobs to communities that need jobs most.

The public sector has a responsibility to help provide a safe and nutritious food supply in underserved communities in order to safeguard public health and promote economic development. Over the past 50 years, the public sector has largely withdrawn from food retailing. Supermarkets later withdrew from many communities, leaving large numbers of people without a stable food supply. At the same time, the incidence of diet-related diseases increased in these communities.

These consequences are stark for people of lower incomes. People who live in lower-income areas without access to supermarkets suffer from diet-related deaths at a rate higher than that experienced by the population as a whole. Based on additional studies conducted by The Food Trust and others, access to fresh, affordable, and nutritious food plays a role in determining what people eat. People with access only to poor food choices eat poorly.16, 17

Through mapping, this study shows that many lower-income communities in New Jersey have both poor supermarket access and a high incidence of diet-related deaths. New Jersey has too few supermarkets compared to national averages. This study demonstrates that this issue is related to significant health problems that adversely impact lower-income neighborhoods.

Recommendations

The number of supermarkets in a neighborhood is a key factor contributing to the health and economic development of that community. People living in lower-income areas without access to supermarkets suffer from diet-related deaths at a rate higher than that experienced by the population as a whole.

In response to this problem, we are making two key recommendations to New Jersey's state and local governments to erase the gap in the number of supermarkets between lower- and higher-income communities.

1. New Jersey needs to convene leaders from the business, government, public health, civic, and community sectors to develop a strategy to create more supermarkets in lower-income communities.

2. State government should build upon the early action taken by the New Jersey Economic Development Authority (EDA) and The Reinvestment Fund to finance new stores and create a grant and loan program to support local supermarket development projects statewide in order to increase the availability of affordable and nutritious food in underserved communities.
Appendix: GIS Methodology

SUPERMARKET SALES
Retail food outlet data was received from The Food Trust in database file format (FOODTEXP.dbf), and plotted in ArcGIS 9.3. Store locations were mapped using the latitude and longitude coordinates for each record as provided by TradeDimensions (fields: X = SLONG, Y = SLAT). The data were refined for analysis by retaining only “supermarkets,” stores having an annual sales volume greater than or equal to $2 million. The resulting data set contained 773 supermarkets sited throughout New Jersey with an aggregate, weekly sales volume of $305,256,347.65. A surface that represents estimated weekly supermarket sales per square mile was interpolated using the ArcGIS Spatial Analyst kernel density function (2.75 mile search radius, 100 foot cell size). The results for the density of supermarket sales are displayed in Map 1: Weekly Sales Volume for Supermarkets.

POPULATION
U.S. Census block group population estimates for 2007 were obtained from the ESRI Data & Maps CD-ROM. Block groups with no population were removed from the analysis. Population values were then commuted to an ArcGIS point file depicting block group centroids. A surface that represents estimated population density (per square mile) was interpolated using the ArcGIS Spatial Analyst kernel density function (2.75 mile search radius, 100 foot cell size).

INCOME
Year 2000 median household income, number of households, and total population were used to calculate the odds ratio of per capita income at the U.S. Census tract level. First, tract-level per capita income was determined by multiplying median household income by the number of households, and then dividing by tract population. The statewide per capita income was calculated by multiplying the statewide median household income by the total number of households in the state, and then dividing by the total statewide population ($64,197 * 3,215,289) / 9,060,961 = $34,719.25). Finally, the local per capita income was divided by the statewide per capita income ($34,719.25) to obtain the income odds ratio for each tract. A raster grid of the odds ratio was then interpolated using inverse distance weighting (100ft cell, 12 point search radius). An income odds ratio of 1 is equal to the statewide value.

SALES AND POPULATION
The statewide sales to population ratio was calculated by dividing New Jersey’s total weekly supermarket sales by the total state population ($305,256,347.65 / 9,060,961 = $33.69). Local sales-to-population ratios were then obtained by dividing the weekly sales volume surface by the population density surface using the Spatial Analyst raster calculator. Finally, the odds ratio of sales to population was then obtained for each supermarket by dividing the raster grid representing the local sales to population ratio by the statewide ratio ($33.69). An odds ratio of 1 is equivalent to the statewide rate. Values below 1 are less than the statewide rate. An odds ratio of 2 indicates that the local area experiences twice the statewide sales to population ratio. The resulting surface is displayed in Map 2: Supermarket Sales and Income.

SALES AND INCOME
The sales to population and per capita income odds ratio raster grids were reclassified into high and low areas (3 = at or below average income; 5 = above average income; 3 = at or below sales average; 10 = above sales average). The reclassified raster grids were added to reveal four combinations of income and sales status. They are displayed in Map 3: Low Supermarket Sales and Low Income.

DIET-RELATED DEATHS
Mortality data, which contained a list of ICD-10 codes indicating the cause of death, was obtained for the most recent year available. Diet-related deaths were defined as deaths due to the following: neoplasms (stomach, other digestive organs, breast); endocrine, nutritional, and immunity disorders (non-insulin dependent diabetes mellitus); and diseases of circulatory systems (hypertension, myocardial infarction, heart disease). Mortality data was made available at the census tract level of geography. The data was summarized for each tract to obtain a count of diet-related deaths per tract and tabular data was joined to tract polygon polygon shapefile. A point shapefile was created for each tract where points represented the center (or centroid) of the tract polygon.

DIET-RELATED DEATHS AND POPULATION
Given mortality data is for tract geographies, tract population data was obtained from ESRI’s census tract data, which provides demographics based on data from the U.S. Census. The total number of diet-related deaths attributed to each tract was divided by the total population of that tract. This result was then divided by the statewide ratio of diet-related deaths to total population (30,343 / 8,414,350 = 36.06101 diet-related deaths per 10,000 people) to create an odds ratio. The odds ratio, assigned to the tract centroid, was then used to interpolate a raster grid (inverse distance weighted, variable search radius with 9 points considered, and 100 foot cell size).

The raster grid of the odds ratio for diet-related deaths was reclassified into two levels—below and above 1. An odds ratio of 1 or less means the local number of diet-related deaths per capita is less than or equal to the statewide rate of diet-related deaths. An odds ratio greater than 1 means the local rate is greater than the statewide rate of diet-related deaths. The reclassified raster was converted to a polygon shapefile consisting of the areas with high and low diet-related deaths.

DIET-RELATED DEATHS AND INCOME
The polygon shapefile of high and low values for diet-related deaths was merged, using a union, with the polygon shapefile of high and low values for per capita income, which was created for Map 3: Supermarket Sales and Income. Areas with high and low diet-related death rates were matched with areas with high and low income odds ratios. The result is displayed in Map 4: Income and Diet-Related Deaths.

DIET-RELATED DEATHS, SALES AND INCOME
The polygon shapefile of high and low values for the odds ratio of diet-related deaths was merged, using a union, with the polygon shapefile of high and low values for the odds ratios of supermarket sales and per capita income. Areas with high odds ratios for diet-related deaths were matched with areas with low odds ratios for supermarket sales and income. The result is displayed in Map 5: Areas with Greatest Need.
Endnotes

1 National supermarket data based on data from the Food Marketing Institute (www.fmi.org) and U.S. Census Bureau (www.census.gov). NJ figures from TradeDimensions.


4 http://www.cdc.gov/obesity/causes/economics.html


9 In the analysis, 2008 TradeDimension data for supermarkets and grocery stores with sales above $2 million.

10 See appendix.

11 http://www.urban.org/UploadedPDF/411773_childhood_obesity.pdf


13 National supermarket data based on data from the Food Marketing Institute (www.fmi.org) and U.S. Census Bureau (www.census.gov). NJ figures from TradeDimensions.


Building Strong Communities Through Healthy Food

The Food Trust, a nonprofit organization based in Philadelphia, was founded in 1992 in response to the critical need for stable, nutritious, and non-emergency food supplies in urban neighborhoods. Now in its second decade, the Trust is a national leader in the increasingly active dialogue concerning the diet-related health problems that are endemic in America’s lower-income communities.

With partners at The Reinvestment Fund and the Greater Philadelphia Urban Affairs Coalition, the Trust manages the Fresh Food Financing Initiative (FFFI), a public/private partnership that works to increase supermarkets and healthy corner stores in economically disadvantaged communities throughout Pennsylvania. To date, the FFFI has financed more than 65 food retail projects in lower-income communities across Pennsylvania, which will create or retain more than 3,700 jobs and 1.4 million square feet of retail space. The initiative was named one of the Top 15 Government Innovations in American Government for 2008 by Harvard University’s John F. Kennedy School of Government and recognized by the Centers for Disease Control and Prevention with its Pioneering Innovation Award.

The Trust works in Philadelphia-area schools and recreation centers, teaching and motivating youth in grades K-12 to adopt healthier lifestyles, including choosing more nutritious foods and getting regular physical activity. In addition, the Trust developed and implements the Kindergarten Initiative, an innovative school-based program that teaches young children about healthy eating by providing nutrition education and fresh fruit-and-vegetable snacks in the classroom as well as field trips to local farms. Trust educational programs are geared to children and families from economically disadvantaged communities in which culturally diverse, minority populations predominate. The Kindergarten Initiative was chosen as the model for a statewide initiative in Pennsylvania, which provides grants to schools across the state to start similar programs.

As the Regional Lead Agency for the Mid-Atlantic Farm to School Network, The Food Trust promotes and provides technical assistance to farm-to-school projects in the Mid-Atlantic region (Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, and Washington, DC). The Trust also operates 30 regional farmers’ markets with community partners and advocates for public policies that promote good nutrition in schools and communities.

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