

ADDRESSING FOOD INSECURITY

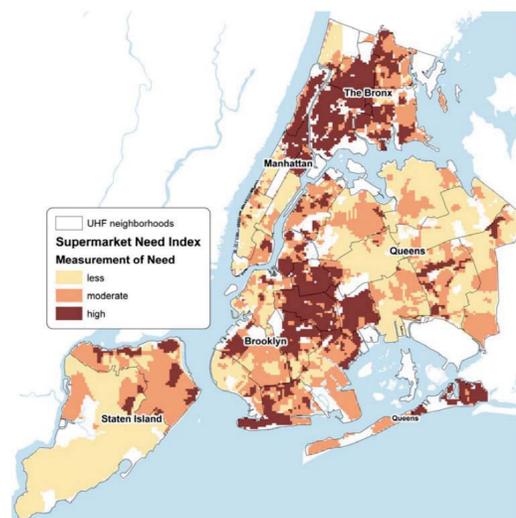
AN ASSESSMENT OF GROCERY STORE ACCESS IN NEW YORK CITY



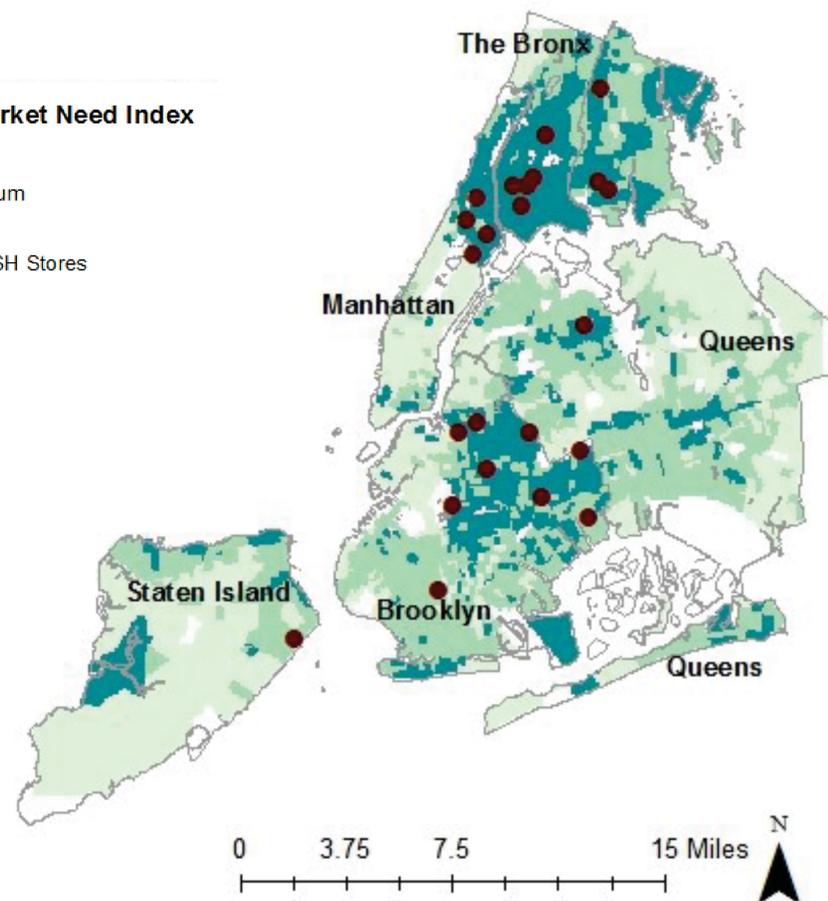
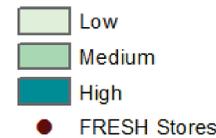
BACKGROUND

In 2015, 12.7 percent of American households were food insecure at least some time during the year. In these households, a lack of money or other resources inhibited one or more household members from obtaining adequate food for an active, health life. Among many ways through which policymakers have investigated food insecurity is by focusing on grocery store access. Municipalities throughout the country, including New York City, have created programs to address grocery store access. In 2008, the Department of City Planning (DCP) determined that three million New York City residents live in areas that have a high need for grocery stores. In order to highlight areas with the greatest need for additional grocery stores, the DCP and the New York City Department of Health and Mental Hygiene created a Supermarket Need Index (SNI), which is pictured to the right. The creation of the SNI demonstrated the need to introduce more

grocery stores to underserved areas and led to the development of Food Retail Expansion to Support Health (FRESH). Since its inception in 2009, FRESH has worked to encourage the development of twenty-three grocery stores through financial and zoning incentives. The aim of this project is to create a new SNI to compare to the SNI developed by the DCP and help determine the current state of New York City grocery store access.



Supermarket Need Index



RESULTS AND LIMITATIONS

The resulting SNI is remarkably similar to the one produced in 2008. The need for supermarkets remains lowest in Staten Island, Queens, and Lower Manhattan. The need for supermarkets remains highest in Northern Manhattan, the Bronx, and Brooklyn, which are also the areas that have witnessed the introduction of the greatest number of FRESH stores. Among the twenty-three approved FRESH projects, one was in Staten Island, four in Northern Manhattan, eight in the Bronx, nine in Brooklyn, and one in Queens.

When analyzing these results, it is important to recognize the limitations that exist. First, it is difficult to generate a complete comparison between the two indexes. While the methodology for creating the new SNI was modeled after that used by the DCP in 2008, the DCP is a New York City agency that has access to data that was not obtainable.

Furthermore, it was challenging to find a data source with a list of food retail that was limited to grocery stores. I first consulted Reference USA and found that convenience stores were also included. I experienced the same challenge with the Department of Agriculture and Market's list of food retail. However, I limited the results to grocery stores by filtering the results to only display food retail stores greater than 6,000 square feet, which matches FRESH's definition of a grocery store.

Lastly, since data was collected from various sources, there was variation in the scope of the data. Population demographic data, for instance, was more exact than health data, as it was collected at the census tract level, whereas the health data was collected at the neighborhood level.

CONCLUSION AND APPLICATIONS

The resulting SNI suggests that little change occurred in the need for supermarket access in New York City since the creation of FRESH. The lack of change is not surprising, as food access is extremely complex, and even if factors like the number of food retail stores have changed, others like health data were not expected to change in such a short period of time. Furthermore, despite the lack of change that occurred, the results are significant in noticing that FRESH stores have targeted areas in the highest need for supermarket access.

These results can be utilized by policymakers to demonstrate the need to continue the introduction of grocery stores in the areas that have already witnessed the introduction of a significant number of FRESH stores. These methods can also be periodically replicated over time to determine if and when there are significant changes in the need for supermarket access in New York City. Lastly, this SNI only incorporates grocery stores, but there are other fresh food sources that can be used to evaluate food access, such as farmers markets. These methods can be replicated to incorporate additional categories of fresh food retail to further evaluate food access.

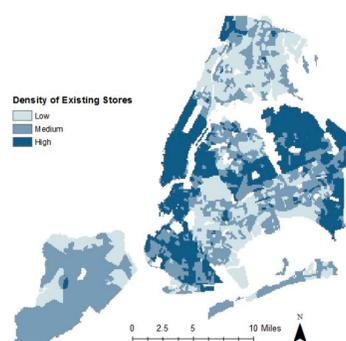
METHODOLOGY

To assess the need for grocery stores throughout New York City, I closely based my methodology on that used by the DCP in creating the 2008 SNI. I aimed to produce a comparable index to demonstrate if and how supermarket need in New York City changed since the creation of FRESH.

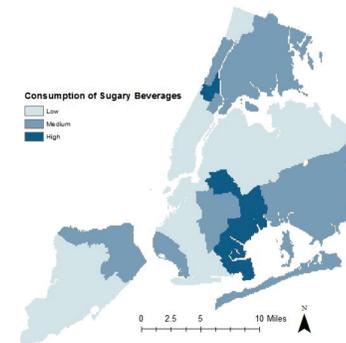
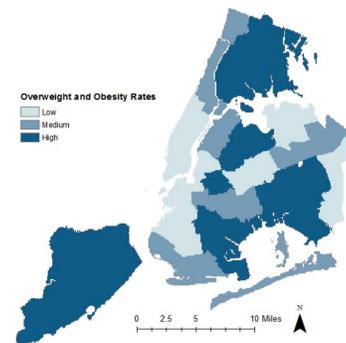
Four main data sources were utilized to gather data. Demographic data, which included population, income, and vehicle access, was acquired at the tract level from the United States Census Bureau's 2014 American Community Survey. Health data, which included the consumption of sugary beverages and the total obese or overweight population, was gathered from the New York City Environment and Health Data Portal at the neighborhood level as determined by the United Way Hospital neighborhood divisions. Lastly, grocery store locations and FRESH locations were collected from the Department of Agriculture and Market's listing of food retail stores and the New York City Economic Development Corporation's list of approved FRESH projects.

Once all data was geocoded, the kernel density was calculated to determine the density of grocery stores and reclassified to show areas with low, medium, and high grocery store density. After, all other data layers were converted to rasters and reclassified according to low, medium, and high levels. Finally, the raster calculator was used to combine the layers using equal weights. The resulting raster was reclassified to demonstrate areas that have a low, medium, and high need for new grocery store retail.

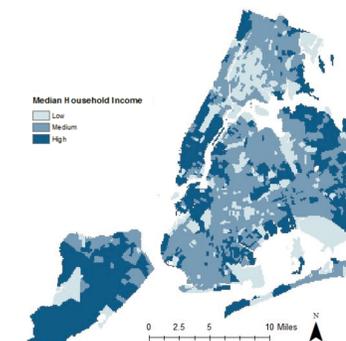
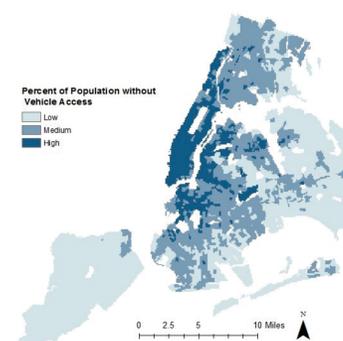
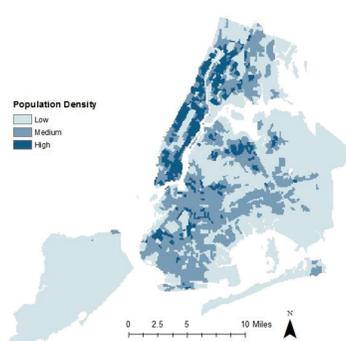
EXISTING GROCERY STORES



POPULATION HEALTH DATA



POPULATION DEMOGRAPHICS



SOURCES

Data Sources: American Community Survey 2014 5-Year, U.S. Census Bureau; NYC Environment & Health Portal (2014); Department of Agriculture and Markets (2016); NYCEDC List of FRESH Stores (2016); Tufts GIS Shared Data Drive
Resources: Alisha Coleman-Jensen, Anita Sing, Christian A. Gregory, and Matthew P. Rabbitt. "Household Food Security in the United States in 2015." United States Department of Agriculture. September 2016. Accessed April 5, 2017; "Food Retail Expansion to Support Health." New York City Department of City Planning; Accessed April 12, 2017; Smith, Laura et al. "Developing a Supermarket Need Index." New York City Department of City Planning. Accessed April 2, 2017.

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