



Produce for the People?: Analyzing Farmers Market Location & Access in New York City

Timothy Ittner

SOC 1340: Principles and Methods of GIS

14 December 2016

Background

Participation in the local food movement has increased dramatically in the United States with the farmers market being one of its most widespread and heavily promoted forums in urban centers like New York City (Gillespie 2007). Proponents argue that the interactions and transactions that occur at markets not only benefit market participants but also have broad benefits for the neighborhoods in which they are located and for society itself (Lyson 2007). Critics of the movement often point to it as a white, middle-class (or above) movement that excludes people of color and other marginalized communities (Guthman 2011). These competing visions raise several important questions, notably: where are farmers markets located and who has access to them? Using data from the United States Department of Agriculture (USDA) and US Census Bureau, I explore the location of farmers markets throughout New York City in 2016 and access to them across geography and demographic variables.

Materials & Methods

Data were located from a number of sources and integrated in ArcGIS, which was used to bring each of these data sources into one coherent dataset and to analyze the relationships among variables.

- Data for New York City administrative and political boundaries were obtained from the New York City Department of Planning.
- Data for population characteristics and census tracts were generated by the American Community Survey (ACS) and obtained through SimplyMap, a web-based mapping and data analysis application.
- Data for farmers market locations were obtained from the USDA's Agricultural Marketing Service.

A base layer for the dataset was created in ArcGIS by mapping and outlining the boundaries for each census tract in New York City. After that, data from the ACS and USDA that included population characteristics and locations of farmers markets were overlaid into their respective census tracts and associated using a spatial join. The number of farmers markets and density of farmers markets in each of New York City's five boroughs were calculated in ArcGIS and graphed in Excel. The distance from each census tract to the nearest farmers market was calculated in ArcGIS and graphed in Excel against demographic variables for class and race.

Results

I. Geography

Farmers markets are not equitably distributed across New York City's five boroughs. According to *Figure 1*, Manhattan and Brooklyn have the most farmers markets (n=48), followed by Bronx (n=41), Queens (n=20), and Staten Island (n=4).

While the difference in number of farmers markets among boroughs is notable, boroughs also range in population; therefore, it is important to consider farmers market density, or markets per unit population. *Figure 2* shows that Manhattan is the most saturated with farmers markets with 2.92 markets per 100,000 people followed by Bronx (2.82 markets per 100,000 people), Brooklyn (1.82 markets), Queens (0.85), and Staten Island (0.84).

Manhattan has the most farmers markets in terms of both count and density while Queens and Staten Island have the least.

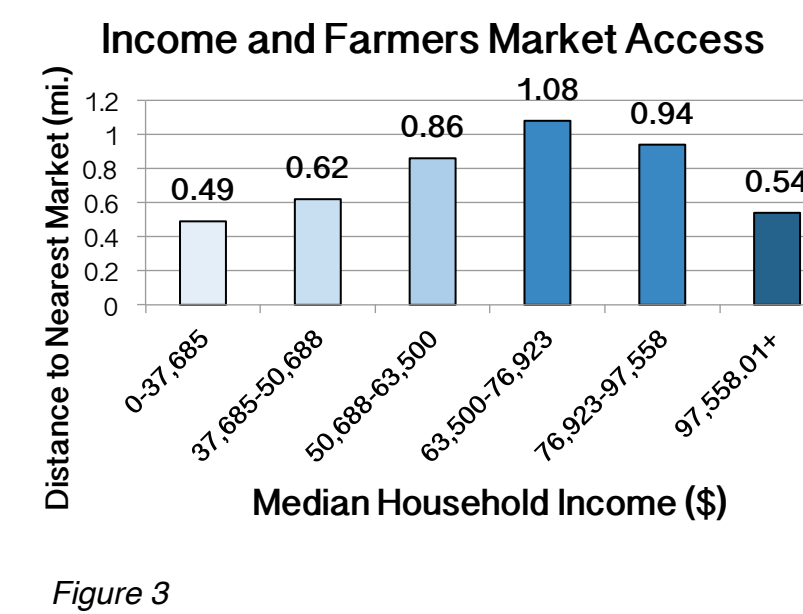
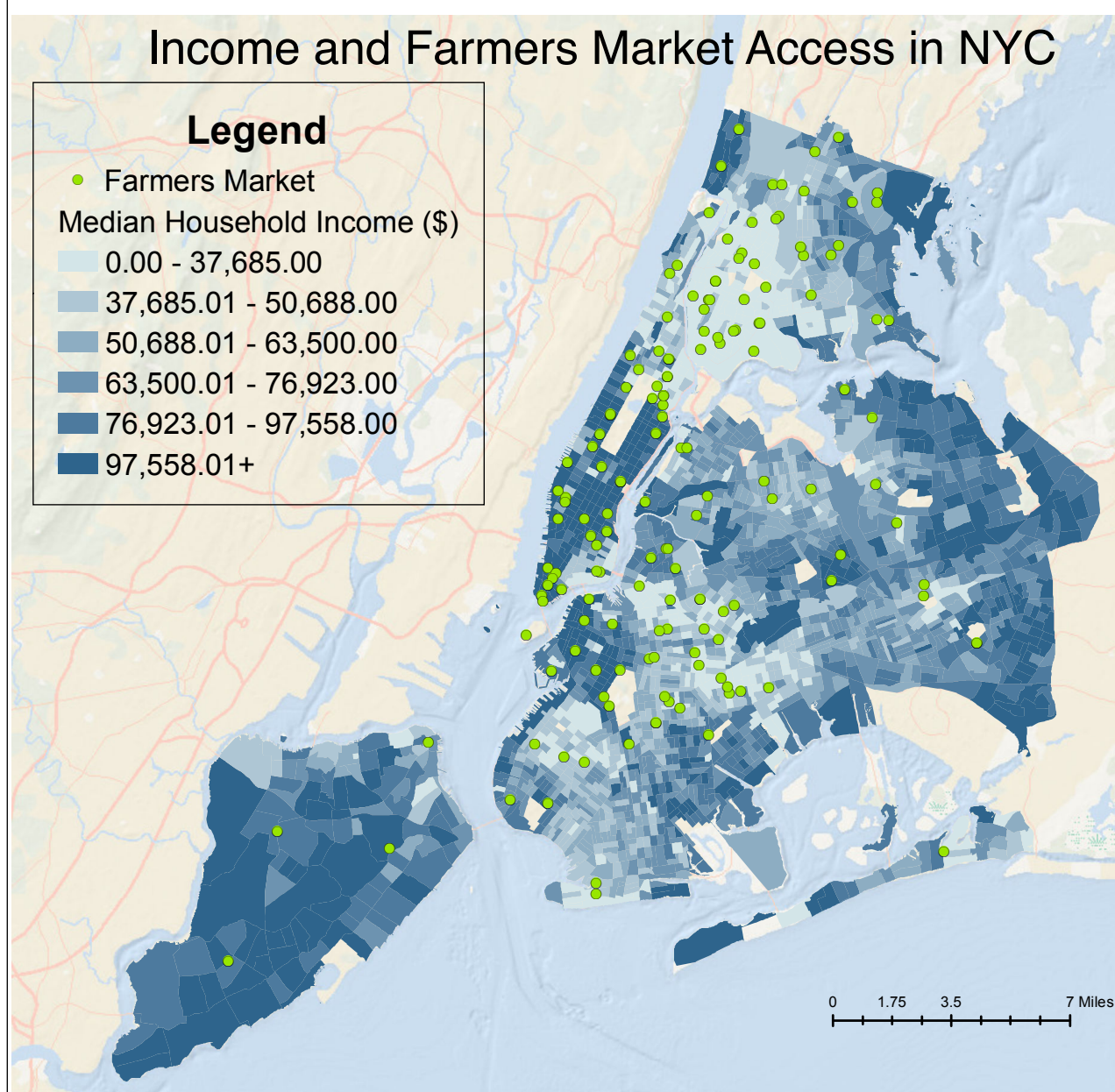
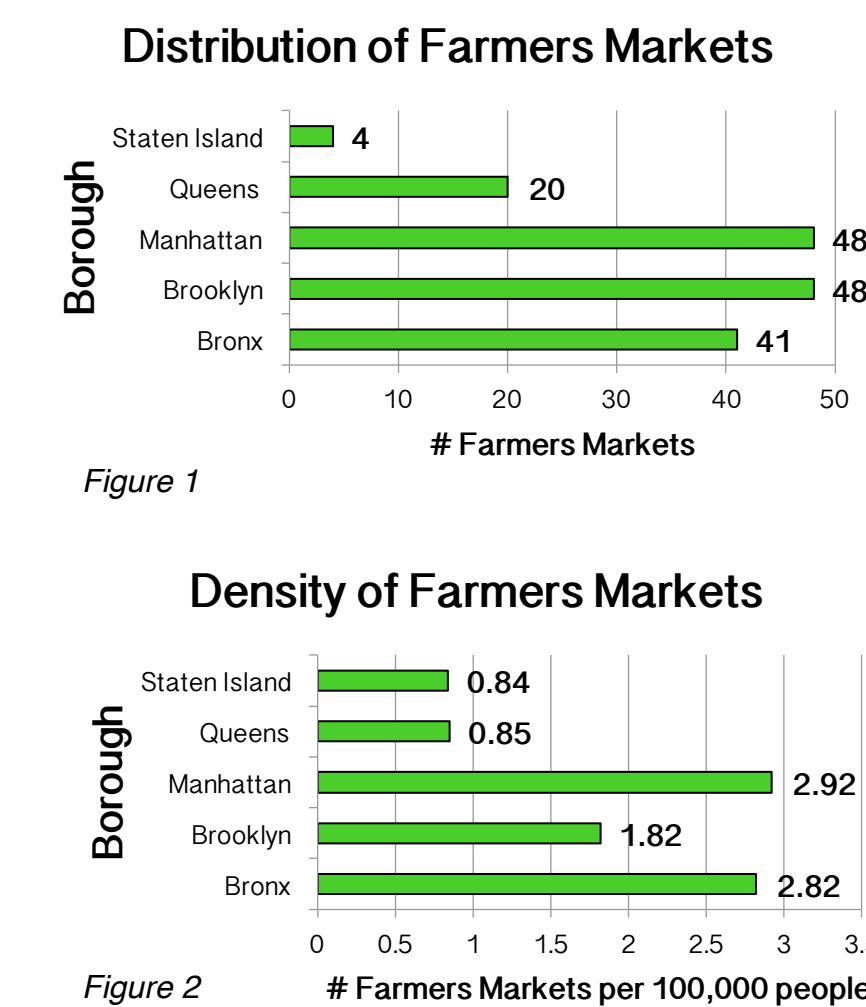


Figure 3 shows the average distance to the nearest farmers market for each income sextile. Census tracts with median household incomes in the lowest sextile of the distribution are located closest to a farmers market. This distance increases through the second and third sextiles before reaching a maximum distance of 1.08 miles for the fourth sextile and progressively decreasing for the fifth and highest sextiles of the distribution.

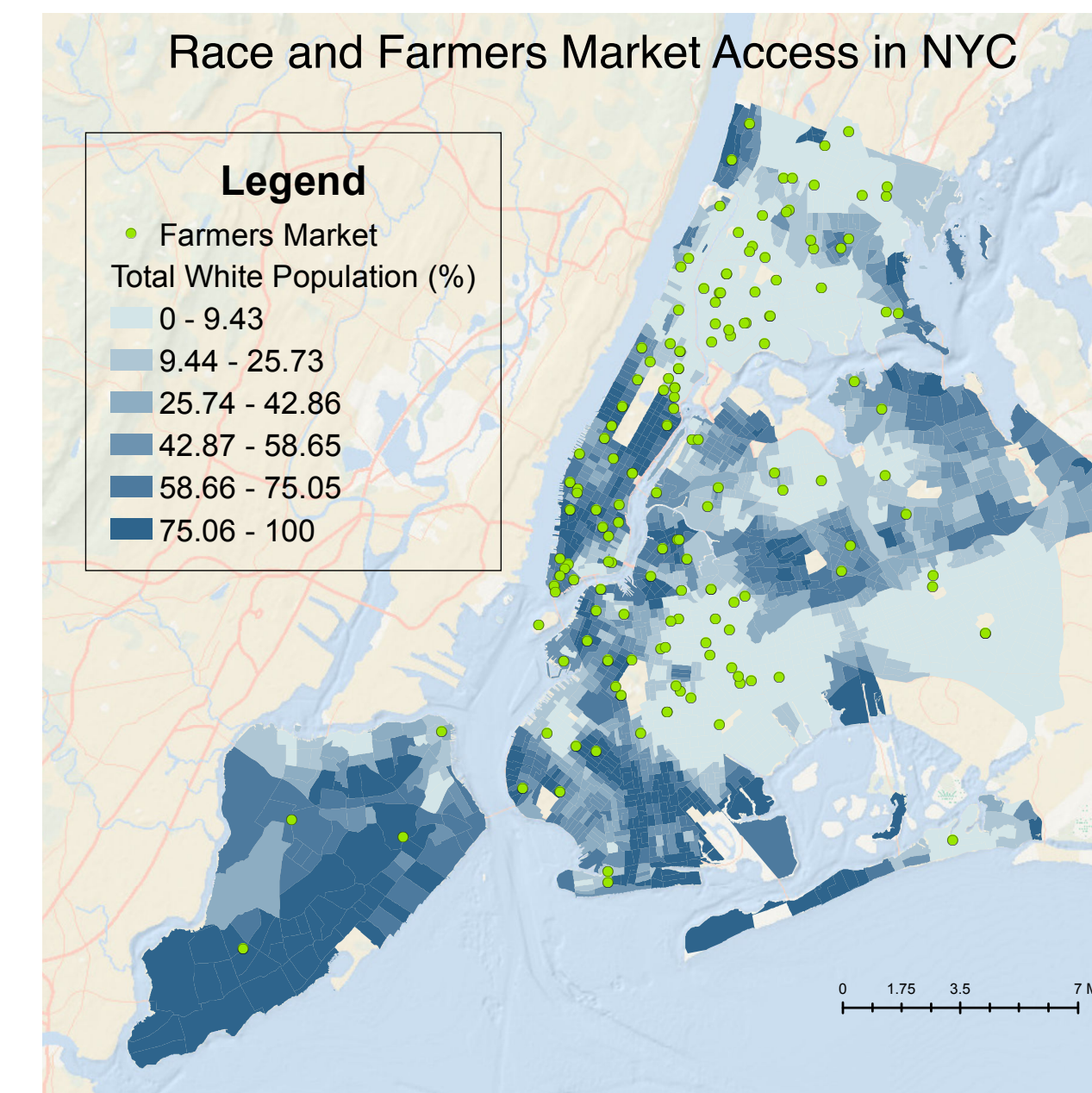
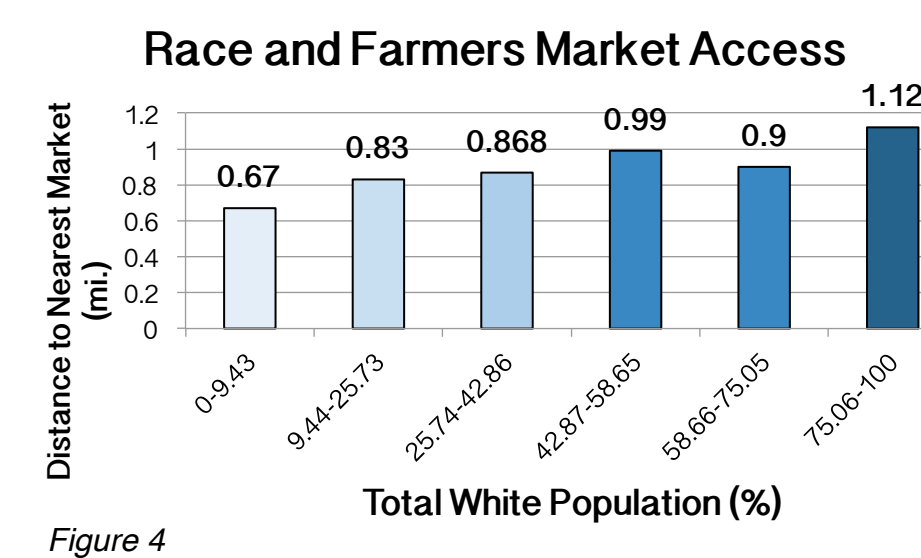
II. Socio-economic Status

Given the interest in the relationship of social class and farmers markets, city-wide access to markets was considered based on socio-economic status. Census tracts were divided into income sextiles based on their median household incomes as reported in the ACS.

III. Race

Given the criticism of farmers markets as a white movement, city-wide access to farmers markets was also considered based on racial diversity. Census tracts were divided into sextiles based on the percentage of the total population that was White, non-Hispanic as reported in the ACS.

Figure 4 offers evidence against the accusation of farmers markets (in New York City) as a white movement. Census tracts with the lowest white population proportions are located closest to a farmers market (distance=0.67 miles). This distance consistently increases as the white population proportion increases, with the exception of a brief decline in the fifth sextile, before reaching a maximum distance (1.12 miles) for census tracts with the highest white population proportions.



Conclusions

- Farmers markets are not equitably distributed throughout New York City's boroughs.
- Census tracts in NYC with a median household income in the tails of the income distribution are located nearest to farmers markets.
- Census tracts in NYC with a higher proportion of white residents are located farther from farmers markets.

References

Gillespie, G., D.L. Hilchey, C. Hinrichs, and G. Feenstra. 2007. "Farmers' Markets as Keystones in Rebuilding Local and Regional Food Systems." *Remaking the North American Food System: Strategies for Sustainability*, ed. C. Hinrichs, and T. Lyson, 65-83. Lincoln, NE: University of Nebraska Press.

Guthman, J. 2011. "'If They Only Knew': The Unbearable Whiteness of Alternative Food." *Cultivating Food Justice: Race, Class and Sustainability*, ed. A. Alkon, and J. Agyeman, 263-282. Boston: Massachusetts Institute of Technology.

Lyson, T.A. 2004. *Civic Agriculture: Reconnecting Farm, Food, and Community*. Boston, MA: Tufts University.



Union Square Greenmarket

<https://hirosdigitalartgallery.files.wordpress.com/2013/12/1100195.jpg>