

Final Project: Mapping NYC Community Gardens

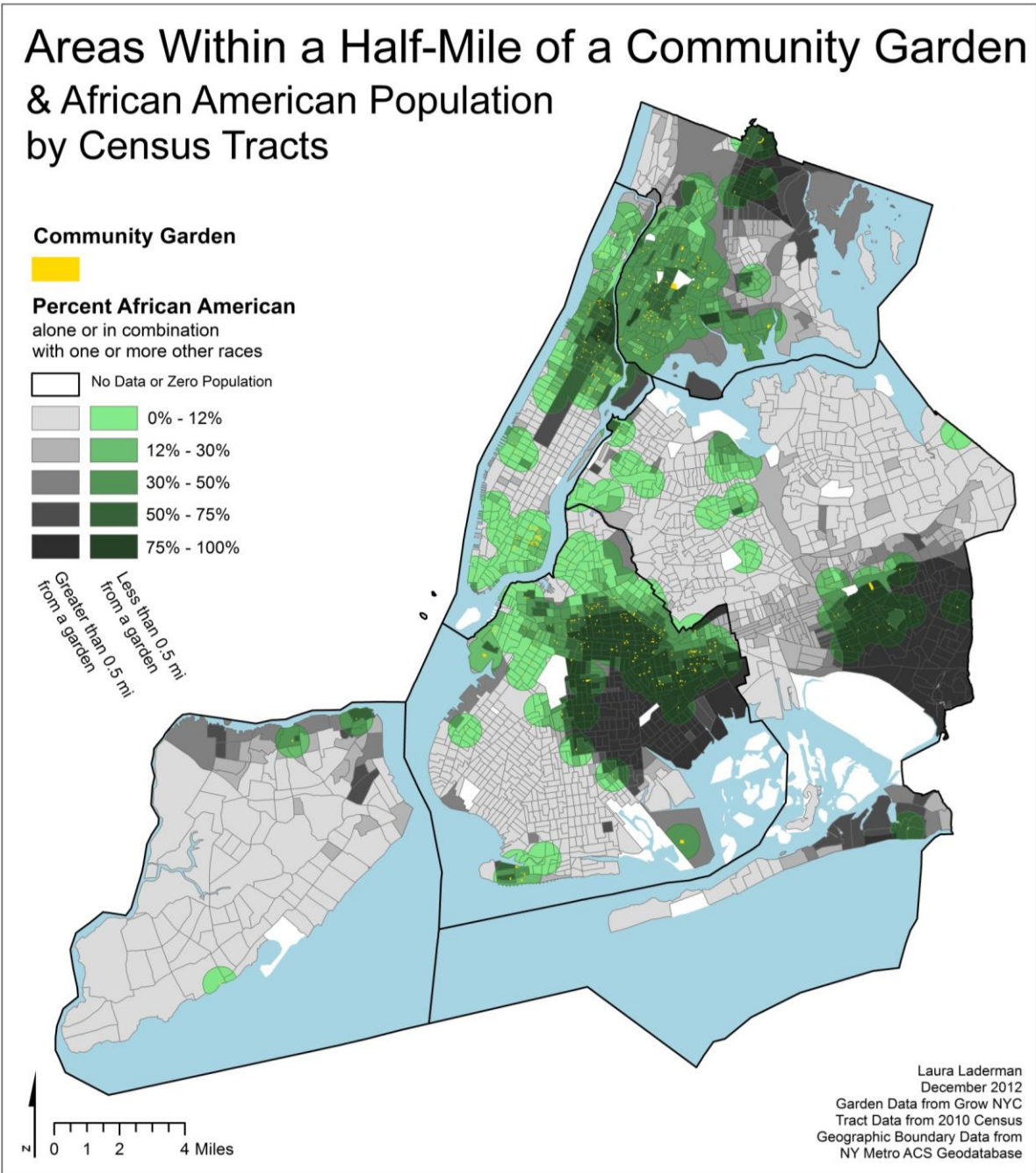
Methods

A shapefile representing New York City community gardens as polygons was obtained from GrowNYC. The inventory upon which this data is based was last conducted in 2010. Demographic data and tract boundary shapefiles were downloaded from the 2010 Census. A table of income data was downloaded from the 2011 American Community Survey. Additional geographic boundary shapefiles were downloaded from the New York Metropolitan ACS Geodatabase. All data files were projected into UTM Zone 18N coordinates.

First, the census tracts file, which already contained demographic data, was clipped to a file of land masses in NYC to select only the desired tracts. This also created a more accurate estimate of the area of each tract, as some tracts were depicted as extending into bodies of water despite that no people live in these parts of them. From this new area, a population density field was created by dividing the total tract population by the area of the tract on land. A half-mile buffer was created around the community gardens shapefile and was dissolved into a single polygonal record. A second copy of the tracts shapefile was added to the map and was then clipped to the half-mile buffer layer to create a file that includes the demographic information of each tract included in the buffer, as well as the area of the portion of the tract included in the buffer. In this attribute table of the new tracts buffer file, a field for the number of people living within the buffer was created by multiplying the population density value for each tract by the area of the portion of the tract within the buffer. To find the number of people of a particular demographic category, new fields were created by multiplying the number of people in the buffered part of the tract by the number of people of the particular demographic group in the whole tract and dividing by the total number of people in the whole tract. All of these procedures are based on the assumption that the density of the various populations and the overall population is uniform across the whole tract. In actuality this is not true, but the tracts are small enough that the demographics can be assumed not to change too dramatically across their area.

To create the final maps, the tracts across the entire city and the tracts within the buffer were symbolized with graduated colors with the same class breaks. A natural breaks classification scheme was adjusted manually to create the final breaks. Green was chosen to depict the areas within the buffer because gardens are associated with green vegetation. The colors of the rest of the city were chosen to replicate as well as possible their corresponding green color in terms of saturation and brightness so that the transition from the portion of a tract outside the buffer to the portion inside would be as seamless as possible. The dark to light trends should be maintained across the whole map so that the overall demographic trends are not obscured by the color changes. It should look like a green film has merely been placed over the areas near gardens. This allows the viewer to see the demographic trends in the areas near the gardens as well as how they fit with the city as a whole. The gardens themselves were colored yellow to make them stand out as much as possible despite their very small size.

Results



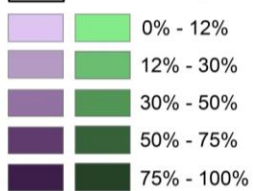
Areas Within a Half-Mile of a Community Garden & Hispanic or Latino Population by Census Tracts

Community Garden



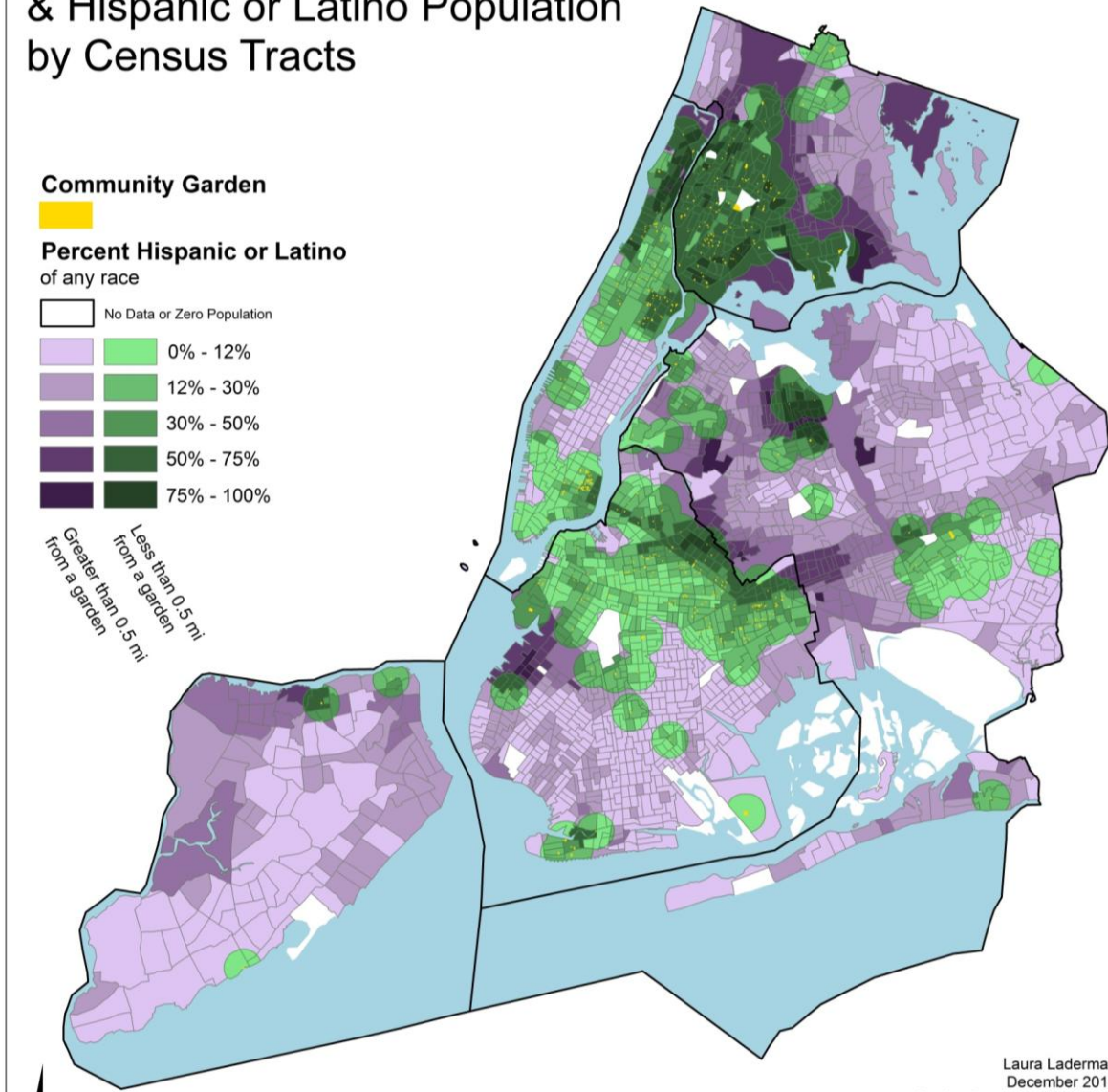
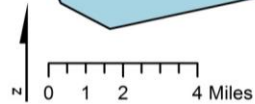
Percent Hispanic or Latino of any race

No Data or Zero Population



Greater than 0.5 mi from a garden

Less than 0.5 mi from a garden



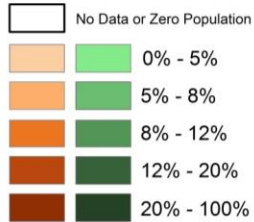
Laura Laderman
December 2012
Garden Data from Grow NYC
Tract Data from 2010 Census
Geographic Boundary Data from
NY Metro ACS Geodatabase

Areas Within a Half-Mile of a Community Garden & Population 65 and Over by Census Tracts

Community Garden

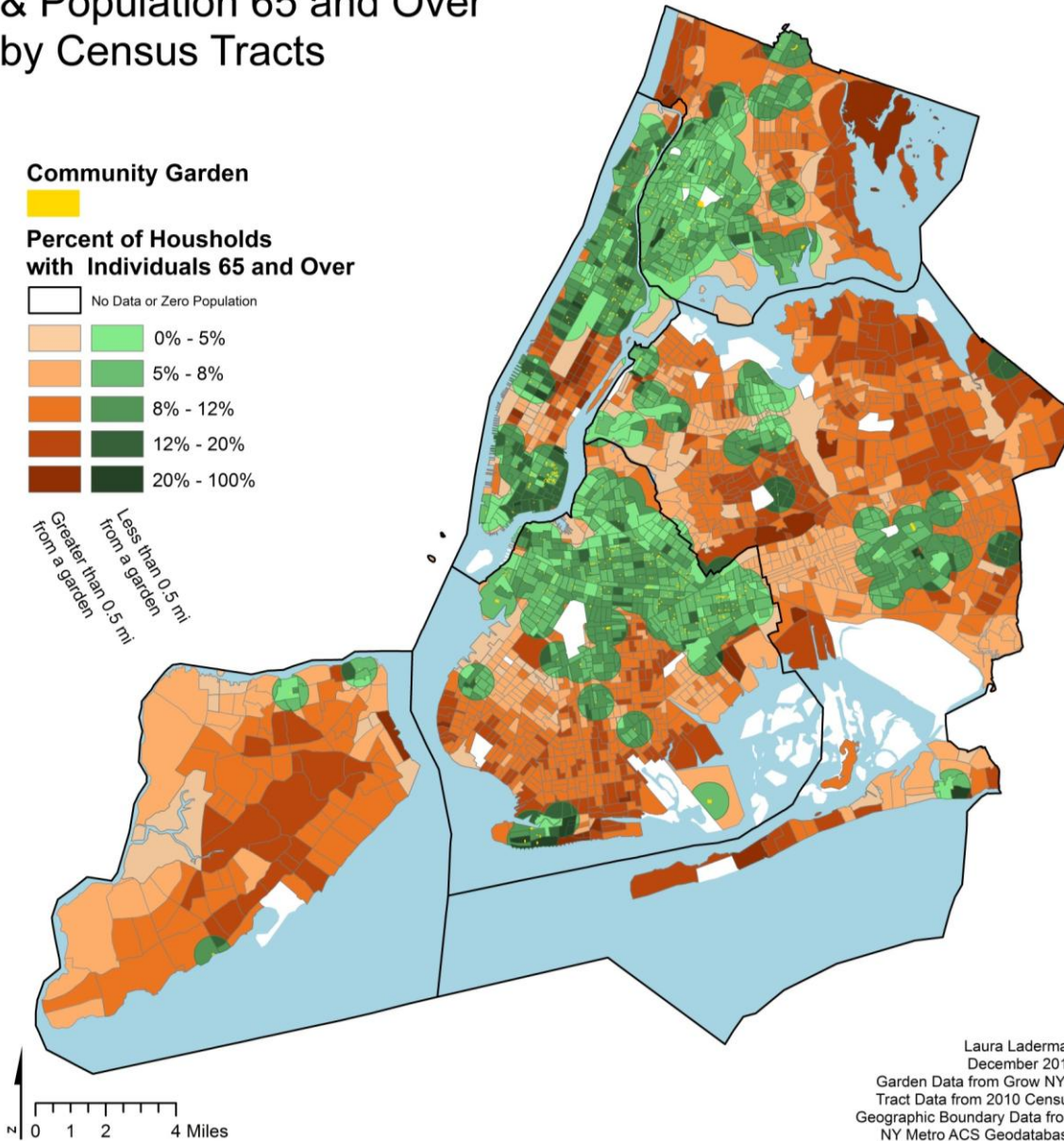


Percent of Households with Individuals 65 and Over



Less than 0.5 mi
from a garden

Greater than 0.5 mi
from a garden



Laura Laderman
December 2012
Garden Data from Grow NYC
Tract Data from 2010 Census
Geographic Boundary Data from
NY Metro ACS Geodatabase

Conclusions

There are 483 community gardens in New York City, and 3,928,135 people, 48% of the city, live within half a mile of at least one. This number only includes gardens that are open for anyone to participate or obtain a plot in, so it does not count private gardens for particular apartment complexes, most school gardens, or any other urban farming operations. Thus this study indicates the minimum possible impact that urban agriculture is having on New York City, but it also the most widely accessible subset of gardens.

The numerical analysis of the data corresponding to the maps indicates that 37% of the people living within half a mile of a garden identified as African American alone or in combination with any other races, compared to 27% of all New York City residents. 37% of people near gardens identified as Hispanic or Latino regardless of race, while 29% of the city as a whole did. 37% and 9% of residents near gardens identified as some part White or Asian respectively, compared to 46% and 14% overall. Thus the areas in which gardens are located are more African American and Hispanic, and less White and Asian, than the city as a whole.

In terms of age, 22% of households within the buffer reported having residents age 65 or older, compared to 25% of households in the whole city. The number of households with children under age 18 was about the same in both areas – 32% within half a mile of a garden and 31% in the city overall. The gardens are serving children at a rate consistent with that of the city as a whole, but are underserving seniors slightly.

Finally, 21% of the families living near a garden had an income in the 12 months before the 2011 ACS that was at or below the poverty line, compared to 17% of families in the city as a whole. The gardens are providing produce at low cost to a population that is more poor than the city overall.

In the first map, it is apparent that the African American population is primarily clustered in two areas in Brooklyn and Queens, as well in smaller areas in the north Bronx and Harlem, with lower percentages spread across the Bronx and northern part of Manhattan. There is a high concentration of community gardens in Harlem, the south Bronx, and Brooklyn, but relatively few in the north Bronx or Queens. There are large sections of the areas of high African American population in Brooklyn and Queens that are not within half a mile of a community garden.

From the second map, it appears that the Hispanic population is not as heavily concentrated as the African American population, but more dispersed. It is not that there are fewer Hispanic residents, as the percentages indicate, but they are less concentrated in particular areas. The areas of highest concentration are the Bronx, the northern tip of Manhattan, and a few spots in Brooklyn and Queens. While many of these areas of high Hispanic population are near gardens, particularly in the Bronx, Manhattan, and northern Brooklyn, there are many areas not served by gardens. Also, those areas that are, aside from the Bronx, tend to be served by a fairly low density of gardens, so the majority of residents are probably not able to take advantage of them.

The third map reveals that community gardens are not serving residents over 65 very well. While some of the areas with gardens are serving fairly high percentages of older residents, particularly on the Lower East Side, in areas in northern Manhattan, and in southern Brooklyn, there are many areas of high over-65 population that are not near gardens. An increase in gardens in north and central Queens, southern Brooklyn, the north Bronx, and Staten Island would help better reach this population. One final note about this map: although the final class seems extremely large, there was one tract with a very low population in which every

household had someone over 65, which was an outlier. The rest of the data in that class is concentrated between 20 and 40 percent.

Some of the limitations of this analysis include the assumption of uniform populations across census tracts, the exclusion of not fully public gardens, and a lack of consideration of the density of gardens. While these maps show in which areas residents are within an accessible distance of a garden, it is likely that a single garden cannot serve the needs of all residents within a half mile radius of it. Thus an area with a higher density of gardens is better able to provide fresh produce to a higher portion of residents. Also, the half mile accessible distance may not be reasonable for all populations, particularly residents over 65 who may not be able to walk that far.

Some interesting further analyses to conduct include taking into account density of gardens, as well as including more information on the types of services provided by gardens, including whether they grow produce or only flowers, and how plots are allocated or produce is distributed. Finally, it would be interesting to learn more about community support and utilization of the gardens – whether they were created and are sustained and used only by people living in their immediate neighborhoods, or if they are maintained by outsiders. While many gardens are developed because of the action of the community, they are also often created by do-gooders who see the lack of fresh produce in an area and want to provide alternatives. While both are valid, it is important that community gardens be valued and well integrated into the communities they seek to serve. Finally, this analysis points to the seemingly common trend of more affluent residents tending to see gardens as an alternative source of food for those who have trouble affording it, and not something that everyone should be advocating, creating, and using. In New York there are comparatively very few community gardens in the more White, higher income areas. More research should be conducted into ways to encourage community gardening in all communities, including ways to create gardens in more developed areas with less open space, such as rooftop gardening.