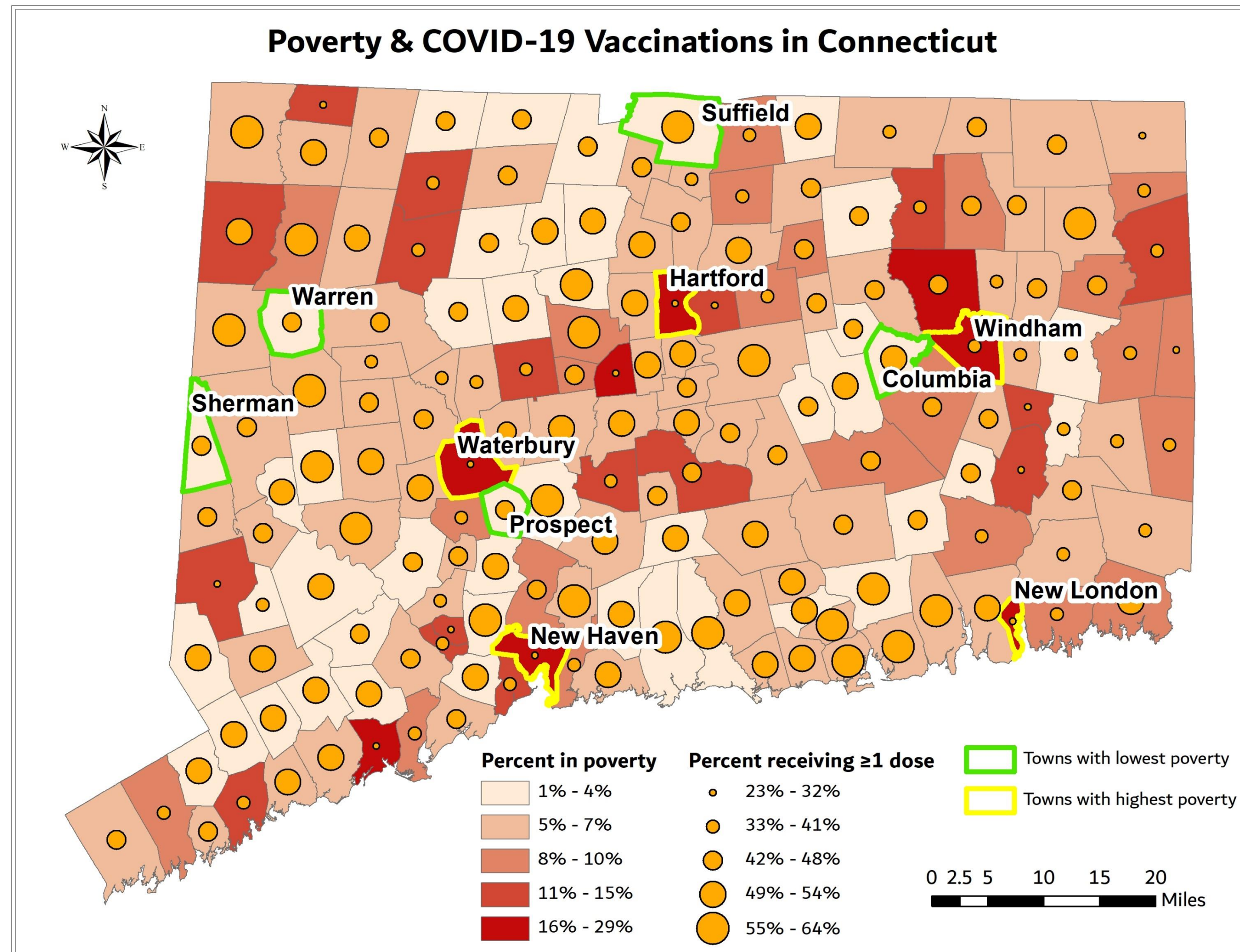




Poverty, COVID-19 Risk and Vaccinations in Connecticut Towns as of April 7, 2021

Dan Barrett
GEOG 463
Department of Geography, CCSU
4/19/2021

1. Poverty and Vaccinations



Introduction

The first confirmed case of COVID-19 in Connecticut was announced by Governor Ned Lamont on March 3, 2020 ("Governor Lamont Announces First Positive Case of Novel Coronavirus Involving a Connecticut Resident") and the first vaccine was administered on December 14, 2020 (Austin). As of April 7, 2021, Connecticut has administered at least one shot to 1,425,433 of its residents.

Because many low-income people work in service jobs that are deemed essential and that put them at higher risk for exposure to COVID-19, an exploration of whether there was any relationship between poverty and vaccinations in towns across the state could be useful. Knowing whether people living in poverty have the same access as others to vaccinations can inform vaccine distribution and indicate whether there may be barriers to access that should be addressed, such as a lack of transportation to vaccination sites, site hours that are incompatible with people's daily schedules, or a lack of access to health care generally.

It is important to note that in this study 'vaccination' means *at least one dose* administered.

Data

Shapefiles of Connecticut towns were gathered from the state's Department of Energy and Environmental Protection, population and poverty data from the United States Census Bureau, table S1701 were used, and data on COVID-19 cases and vaccinations was found on Connecticut's Open Data website. Connecticut's COVID-19 data included town population and vaccine coverage percentages, but the population data from the U.S. Census were used instead and calculations were done to get the percentages necessary for this study. The Census data table was cleaned in Excel to remove several unneeded fields before importing it into a geodatabase and using it in ArcMap.

Method

In order to associate the data tables with Connecticut's towns, an attribute join was performed. The population and poverty Census data was joined to the towns shapefile, then the state's COVID-19 data was joined as well. Both joins were based on the town name as that field was common to all data.

The various data were then displayed as layers on each map. The bottom layers were symbolized using graduated colors and the layers on top were symbolized with graduated symbols. A comparison of the data was then possible visually and any patterns or outliers were noted. Several data queries were performed to highlight towns that met certain criteria that illustrated well a pattern or correlation. Those highlighted towns were symbolized with a thick, colored border and a label with the town name. The town name labels were converted to annotations so they could be moved to avoid conflict with neighboring symbols.

Discussion

When the percentage of people in poverty in a town is compared to the percentage of vaccinations administered, a pattern seems to emerge. Many of the towns with low percentages of poverty among their residents also have high percentages of their residents that have received at least one vaccine shot. The inverse is also true, towns with a large percentage of people living in poverty have low percentages of vaccinations. In the first map, five each of the highest and lowest percentages of poverty are highlighted. Table 1 shows the same pattern and also illustrates that vaccinations for towns with a high percentage of residents in poverty are well below the state average.

The same relationship appears again when comparing poverty percentage in a town to the percentage of confirmed COVID-19 cases. The higher the percentage of poverty in a town, the higher the percentage of confirmed cases. The same 10 towns, five each for high poverty percentage and low poverty percentage, are highlighted in the second map. And again, the average percentage of confirmed cases in the poorer towns—12%—is significantly higher than the state average percentage of 8.5%.

Map 3 shows that towns with an overall high percentage of confirmed cases often also have administered vaccinations to a smaller percentage of their residents. Of the seven towns with the highest percentages of confirmed cases, four of them (Hartford, Bridgeport, Waterbury, and New Britain) also rank among the five least vaccinated towns.

It is, perhaps, to be expected that towns with larger populations have administered at least the first dose of a vaccine to smaller percentages of their residents than have towns with smaller populations—as seen in the fourth map—even if all towns vaccinate at the same rate. However, it is more likely that low-income people live in towns with larger populations, making the sheer number of people vying for vaccines yet another barrier to access. There are some outliers, however, that have both populations under 10,000 and vaccination percentages below 32%. These are rural towns and have an average poverty percentage (9.4%) higher than the state average (6.5%). They are highlighted in map 4.

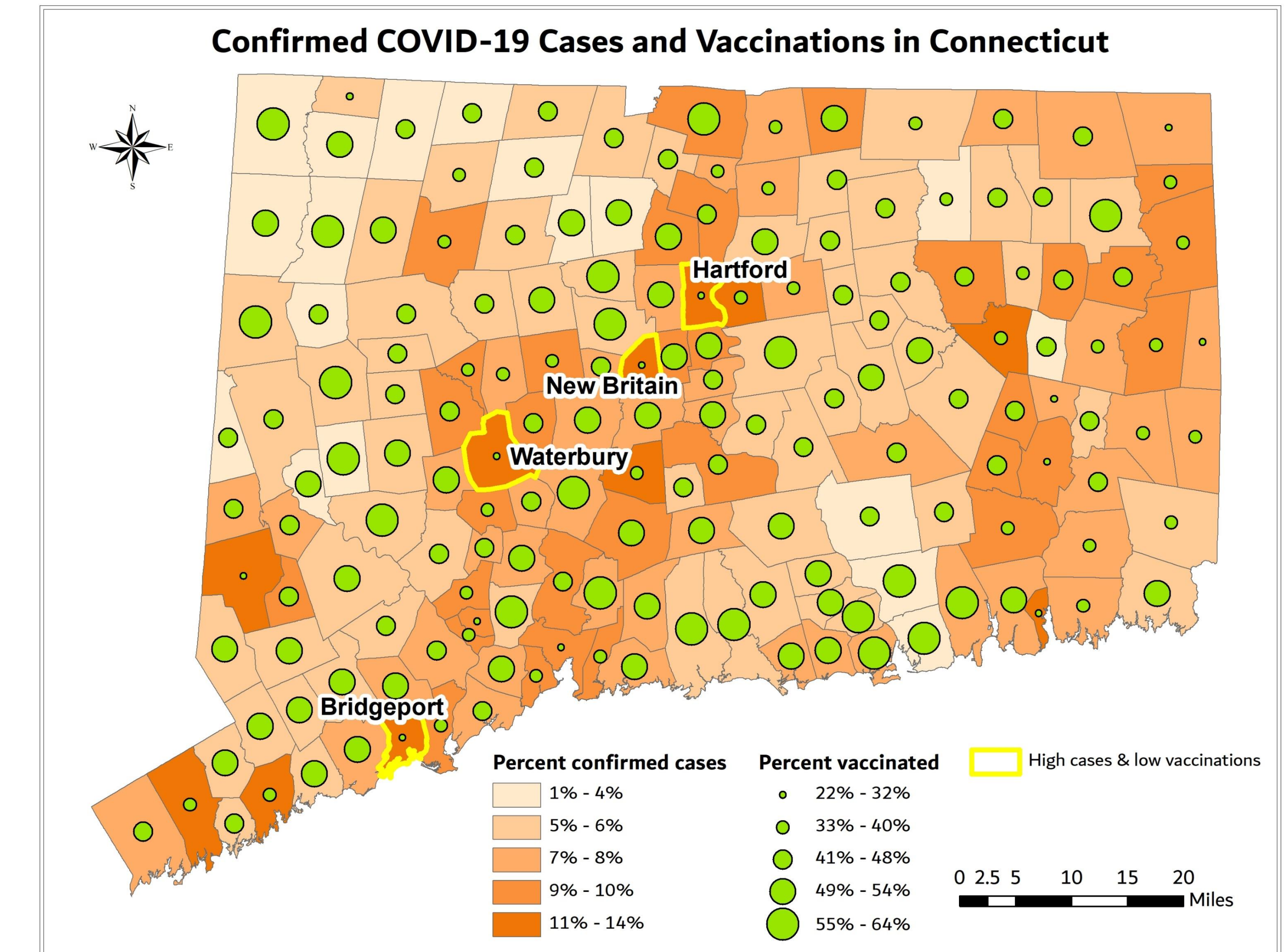
Sources

Data: ct-deep-gis-open-data-website-ctdeep.hub.arcgis.com; data.census.gov; data.ct.gov

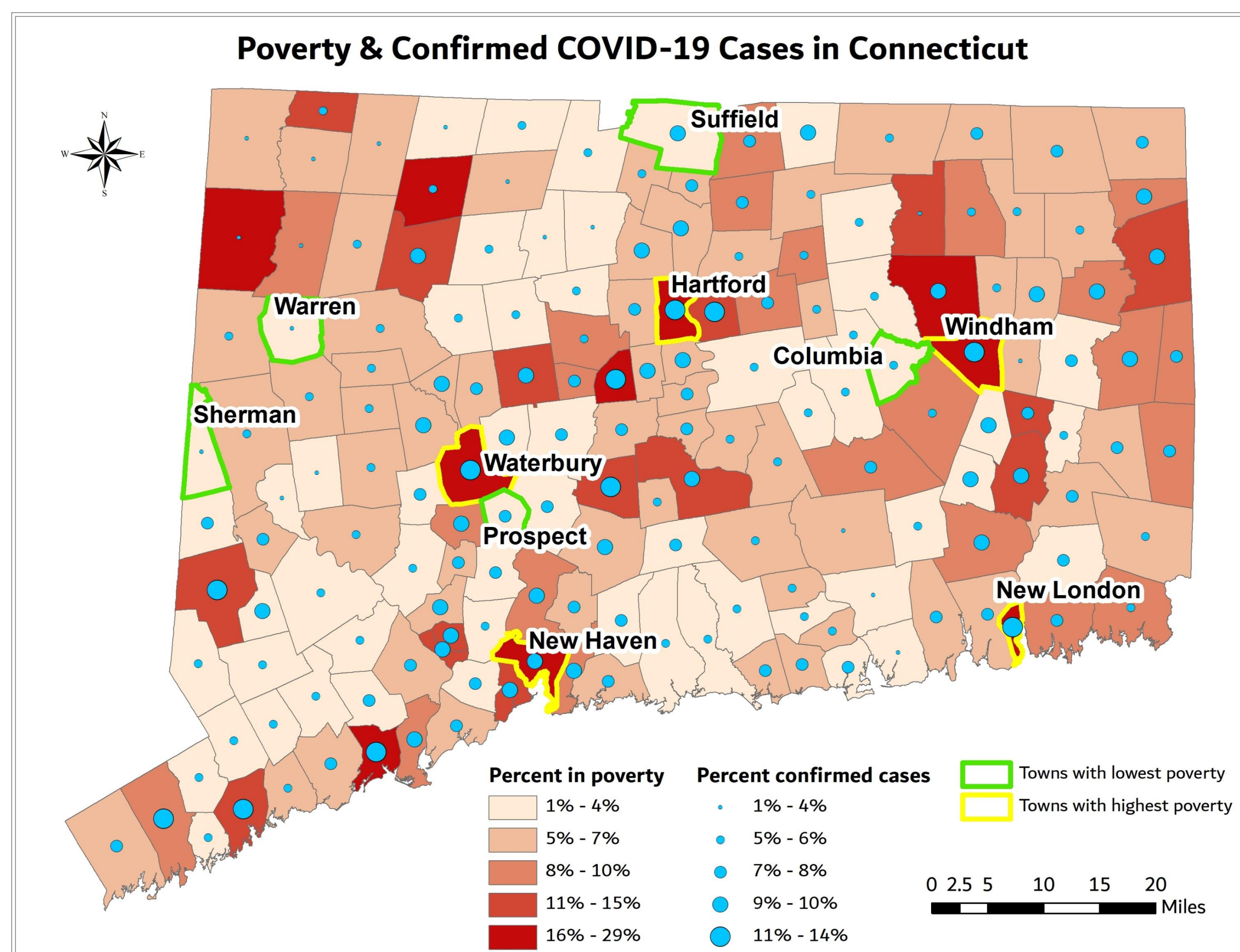
Austin, Matt. "First COVID-19 Vaccine Given in Conn. Shortly After Arrival at Hartford Hospital." *NBC Connecticut*, <https://www.nbcconnecticut.com/news/coronavirus/connecticut-hospitals-ready-for-covid-19-vaccine-arrival/2383095/>. Accessed 18 Apr. 2021.

"Governor Lamont Announces First Positive Case of Novel Coronavirus Involving a Connecticut Resident." *CT.Gov - Connecticut's Official State Website*, <https://portal.ct.gov/Office-of-the-Governor/News/Press-Releases/2020/03-2020/Governor-Lamont-Announces-First-Positive-Case-of-Novel-Coronavirus-Involving-a-Connecticut-Resident>. Accessed 18 Apr. 2021.

3. Overall Confirmed Cases and Vaccinations



2. Poverty and Confirmed Cases



4. Overall Population and Vaccinations

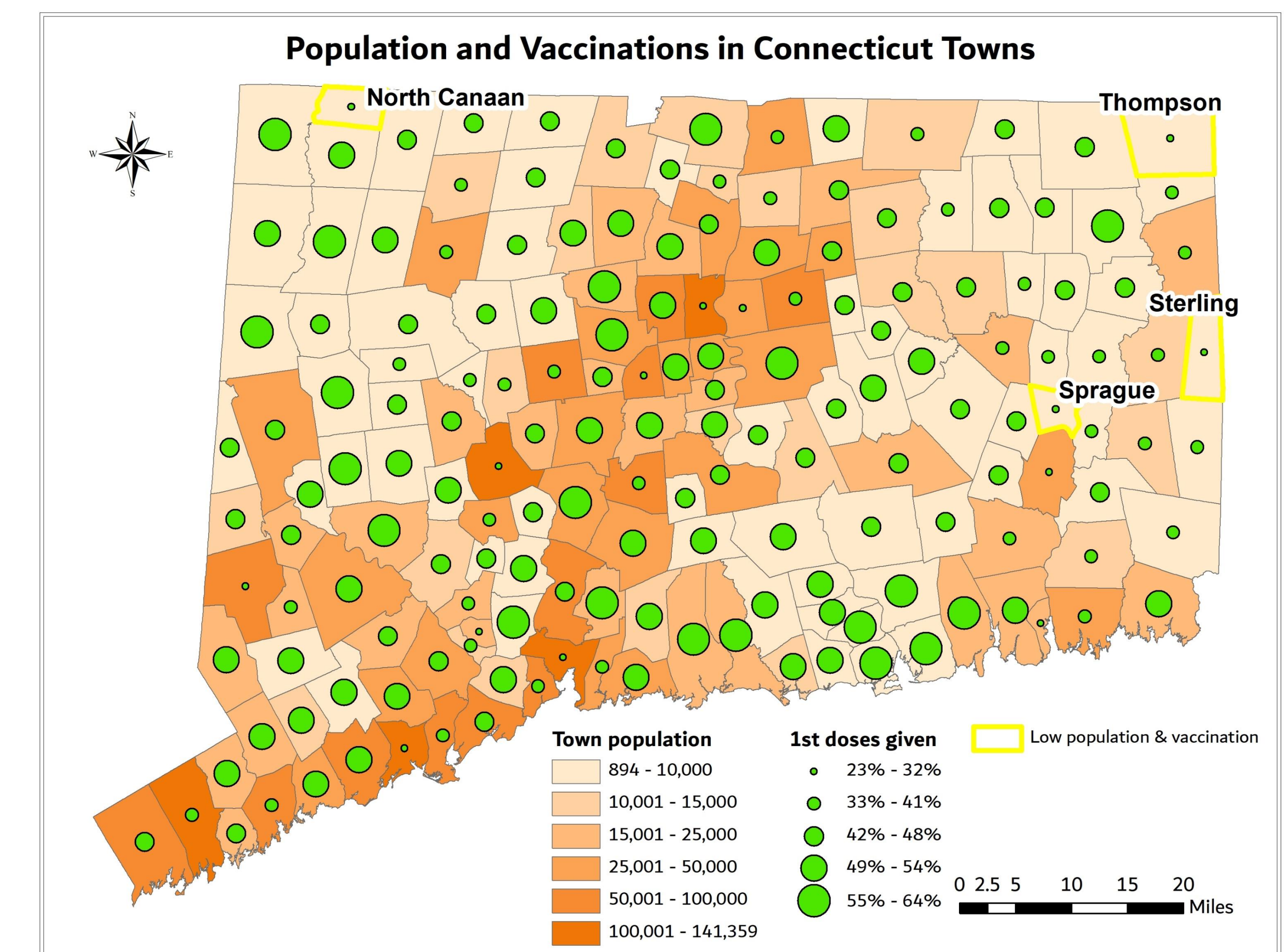


Table 1. The vaccination percentage of towns with higher percentages of residents living in poverty is well below the state average for vaccinations.

Percentage of Connecticut Population Vaccinated (at least 1 dose)		
Population	1st doses administered	Percent w/at least 1 dose
3,470,087	1,425,433	41%

Vaccination Percentage in 5 Towns with the Highest Poverty Rates		
Town	% Poverty	% of pop. w/at least 1 dose
Hartford	28%	23%
New Haven	26%	29%
Windham	24%	34%
New London	24%	32%
Waterbury	23%	26%
Average		29%

Vaccination Percentage in 5 Towns with the Lowest Poverty Rates		
Town	% Poverty	% of pop. w/at least 1 dose
Prospect	1.0%	47%
Sherman	1.2%	43%
Suffield	1.4%	55%
Columbia	1.4%	48%
Warren	1.7%	48%
Average		48%