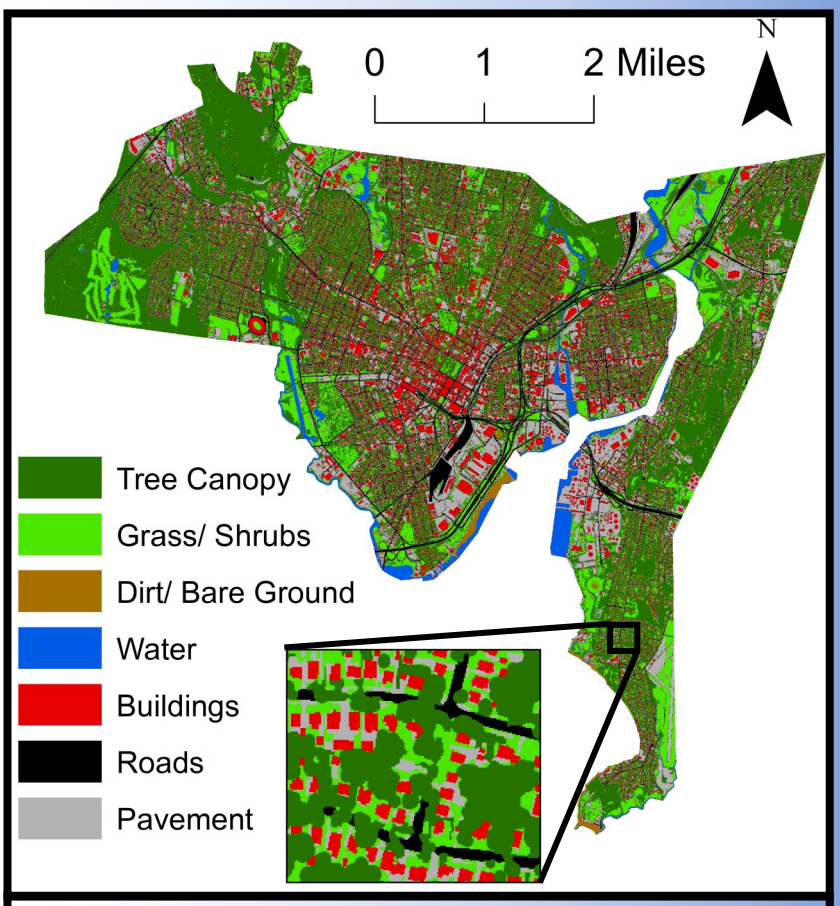
Urban Forest Inequity: A report for New Haven, CT

What is an urban forest?
An city's urban forest is composed of all publicly and privately owned trees across land uses within a developed area.

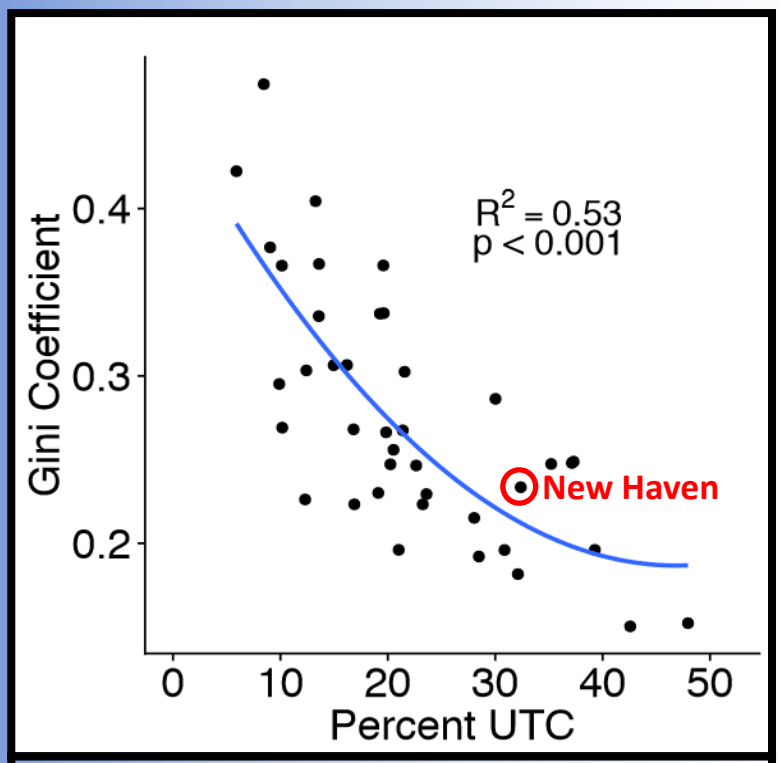
What is urban tree canopy?
Urban tree canopy (UTC) refers to the layer of leaves, branches, and stems of trees that cover the ground when viewed from above. In the land cover map of New Haven (right), the darker green represents the UTC.

What is meant by urban tree canopy inequity?
UTC inequity refers to the unequal spatial distribution of tree canopy within a city or urban area.

Why does UTC inequity matter?
Canopy cover is often not spread evenly across cities. This can reduce the benefits accruing to some residents from having tree canopy in their neighborhoods. Such patterns can exacerbate larger environmental justice issues.



A high spatial resolution UTC layer of New Haven. More accurate results are calculated with high resolution data.



Among US cities New Haven has relatively high UTC and low inequity, but also has higher inequity than expected based UTC level

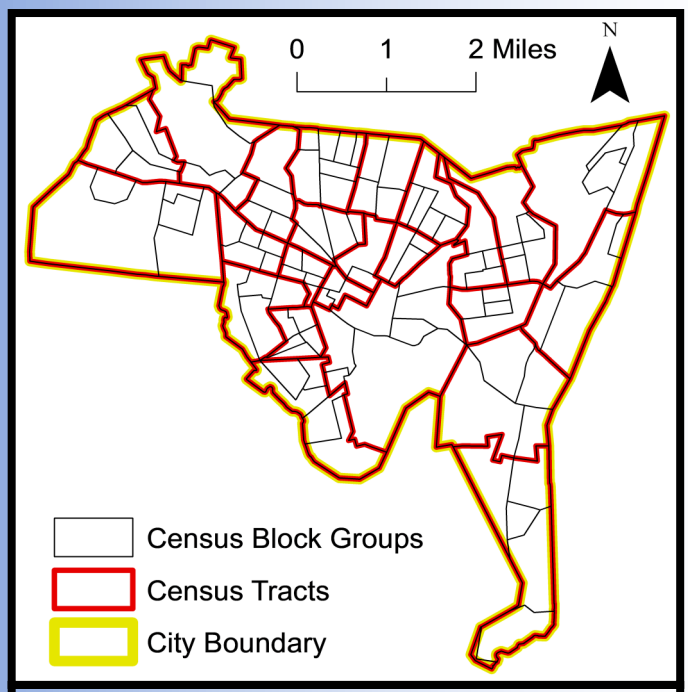
How is inequity measured?
The amount of inequity in UTC can be measured by the Gini Coefficient, which is a statistical metric of distribution often used in economic analysis. Cities with high Gini Coefficients comparing UTC among census block groups have less equal distribution of UTC across neighborhoods throughout the city.

What's happening across the country?
Across urban areas, a significant correlation is present between overall UTC level and UTC inequity. As overall UTC increases, the level of inequity decreases.

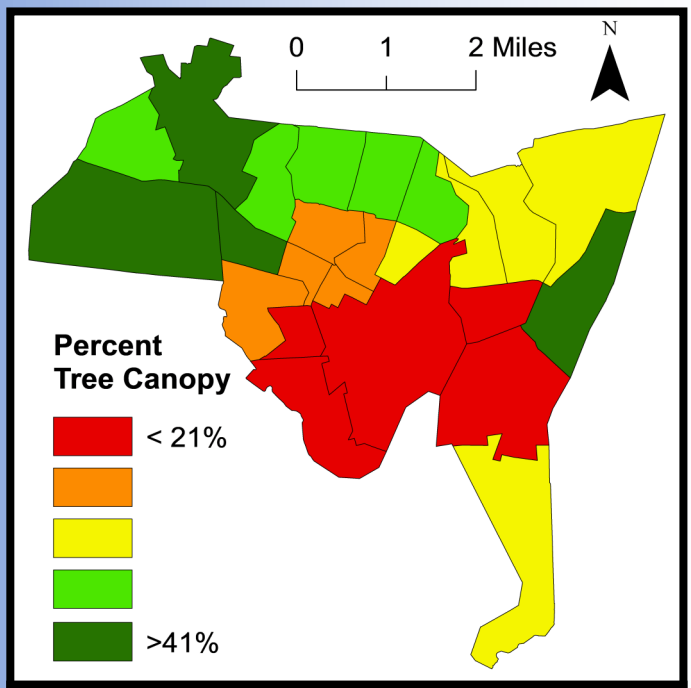
City	Percent UTC	Gini Coefficient
Providence, RI	36.1	0.196
Syracuse, NY	32.1	0.196
New Haven, CT	32.4	0.236
Hartford, CT	23.9	0.256
Bridgeport, CT	21.3	0.337

This table shows how cities of similar size and/ or geographic region, compare to New Haven.

Urban Forest Inequity: A report for New Haven, CT



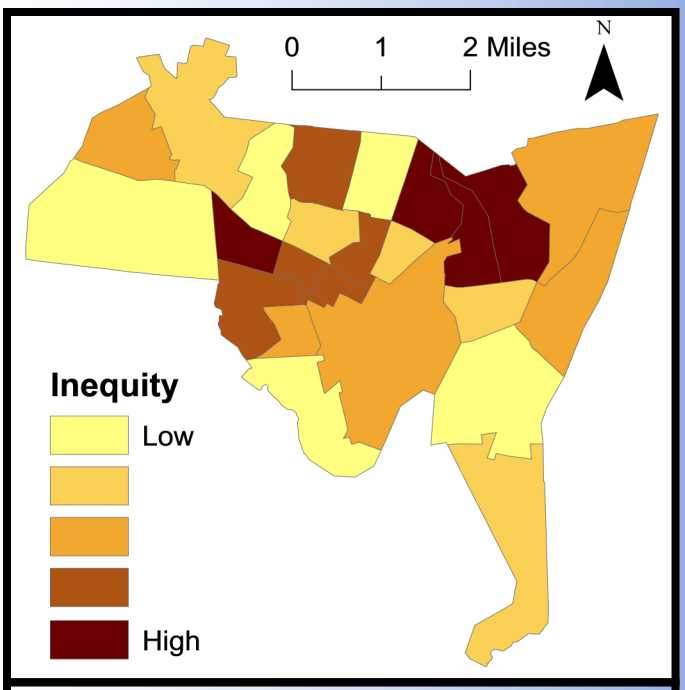
Census block groups (CBG) are used as nested units to calculate inequity at different levels. Census tracts were merged together if they contained two or fewer CBGs.



The percent of urban tree canopy was calculated for each census tract, helping to highlight the unequal distribution of tree canopy across New Haven.

How does the Gini Coefficient work?

The Gini Coefficient compares the amount tree canopy within nested areas of a larger whole and provides one measurement of inequity for the whole area. The Gini Coefficient ranges from 0 (no inequity) to 1 (total inequity).



The Gini Coefficient was calculated for each census tract. Some areas have low tree canopy and low inequity, because the few trees that are there, are evenly distributed.

What's the situation in New Haven?

When analyzed at the city scale, utilizing census block groups as the nested units within the city, New Haven as a whole has a relatively low Gini Coefficient of 0.236. When urban tree canopy spatial distribution is examined at the census tract scale, a clearer picture of where inequity lies within the city emerges. These data can influence urban tree planting and management strategies.

Prepared by Elliott Volin and Dr. Robert Fahey

University of Connecticut: Department of Natural Resources and the Environment and the Center for Environmental Sciences and Engineering

For more information, please contact the authors at: elliott.volin@uconn.edu or robert.fahey@uconn.edu

https://utcinequity.weebly.com/