

We partnered with Groundwork Bridgeport, a local nonprofit, to support urban forestry using satellite imagery and geospatial analysis. Our work helps assess tree canopy coverage and guide planting efforts. The goal is to reduce environmental inequities by targeting underserved areas.

open-source model by Meta AI, which predicts canopy height from NAIP satellite

Utilizing Sentinel-2 satellite imagery and Google Earth Engine, we conducted a detailed analysis of Bridgeport's tree canopy at the census block level (Figure 1). Our findings revealed significant disparities in tree cover, with certain blocks exhibiting as low as 0-10% canopy located toward the center of the city, while others reached 30% and even over 50% in the suburban parts of Bridgeport.

Additionally, we analyzed canopy height changes using an



Figure 2: Hotspots and Coldspots Analysis

We analyzed how tree canopy relates to social indicators in Bridgeport. While racial makeup

showed no clear relationship, poverty and education did. Neighborhoods with higher poverty rates had less tree cover (correlation ≈ -0.50 ; Figure 3), while those with more high school graduates had more (correlation ≈ 0.55). Both findings were statistically significant. These results point to deep socioeconomic disparities in green space access — highlighting the need for equity-focused tree planting.

Our work uses satellite imagery and spatial analysis to reveal disparities in Bridgeport's urban canopy and advance environmental justice. By identifying areas with low tree cover and high vulnerability, we provide a data-driven basis for equitable tree planting.



Figure 1: Choropleth map of tree cover

imagery. Time series and spatial analyses across 2006, 2016, and 2023 revealed strong global spatial autocorrelation, with a Moran's I value of 0.626. Local Indicators of Spatial Association (LISA) results indicated that hotspots are concentrated in the northeastern suburban areas, while coldspots appear in the southwestern and central urban regions (Figure 2). These findings reveal meaningful spatial patterns of canopy height change in Bridgeport.



Figure 3: Choropleth map of poverty rate