

Annotated Bibliography

Management of Urban Forests: An Annotated Bibliography

Katherine Cendrowski
kcendro2@pdx.edu

Schwarz, Kirsten, et al. "Trees Grow on Money: Urban Tree Canopy Cover and Environmental Justice." PLoS ONE, vol. 10, no. 4, 2015, pp. 1–17, doi:10.1371/journal.pone.0122051.

This source analyzes the Urban Tree Canopy (UTC) cover in seven US cities in order to determine if there are socioeconomic factors behind why some census block groups have higher UTC cover. Specifically, the study focused on Baltimore, MD, Los Angeles, CA, New York, NY, Philadelphia, PA, Raleigh, NC, Sacramento, CA, and Washington, D.C. There were significant differences in racial and ethnic makeup, income, education, and population between the cities. They also had different climates. Using statistical methods such as Spearman's correlations, ordinary least squares (OLS) regressions, and spatial autoregressive (SAR) techniques, the authors found that there were correlations between socioeconomic demographics and UTC cover. Specifically, there was a strong positive relationship between income and UTC cover in all seven cities. There was also a link in the two California cities (arid climates) between race/ethnicity and UTC, but the link was not strong or significant in the other cities.

This is a useful source. The research was a project of a National Center for Ecological Analysis and Synthesis (NCEAS) working group, specifically focusing on urban ecology and environmental justice. The research was published in 2015, making it a relatively recent source. The statistical analyses may be too complex for my background at the moment.

Due to the recent research and the analysis of the socioeconomic data, this would be relevant in my research into distribution of tree cover and socioeconomic factors of that distribution.



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Raciti, Steve M., et al. "Mapping Carbon Storage in Urban Trees with Multi-Source Remote Sensing Data: Relationships between Biomass, Land Use, and Demographics in Boston Neighborhoods." *Science of The Total Environment*, vol. 500–501, Elsevier, Dec. 2014, pp. 72–83, doi:10.1016/J.SCITOTENV.2014.08.070.

This source analyzes the biomass of trees in Boston, MA using multi-source remote sensing data and creating a height-based model of urban tree biomass. The authors used the Priority Planning Index (PPI) to find demographics data, and they analyzed possible correlations between urban tree biomass and socioeconomic demographics such as income, race/ethnicity, and education levels. The authors found no significant link between the two except in the case of renters.

Perhaps this could be a useful source. It provides a different conclusion from the above and finds no correlation (except in the case of renters) between biomass of trees and socioeconomic data. It is also relatively recent as it was published in 2014. The language and much of the paper is incredibly technical, however. I am not sure how useful it would be as the authors used most of the paper to explain their calculations for the biomass and height of the canopy.

The research is recent enough, and it focuses somewhat on the socioeconomic side of the urban forest problem, but I am not sure if I could utilize this research as it is incredibly technical and the main focus of the paper was on calculating biomass.

Szantoi, Zoltan, et al. "Socioeconomic Factors and Urban Tree Cover Policies in a Subtropical Urban Forest." *GIScience & Remote Sensing*, vol. 49, no. 3, 2012, pp. 428–49, doi:10.2747/1548-1603.49.3.428.

This source analyzes changes in Miami-Dade county, Florida, urban forest cover from a number of years. The authors then compare the levels of urban forest cover (using NDVI to measure vegetation cover and condition) to the socioeconomic demographics in Miami-Dade county. The authors found that whites are generally positively correlated with urban forest cover while NVDI values were negatively correlated with African Americans and Hispanics. Higher



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education was also positively correlated (and at least primary school education negatively). Young people (>21) and those 40-64, along with homeowners, were also positively correlated.

This might be a useful source. The paper does focus a lot on the change in urban forest cover, and not so much on the present. The years of the satellite data analyzed are a bit dated (1996 and 1999 were the ones used for many of the socioeconomic comparisons).

The paper was published relatively recently (2012), and the methods may be useful, but the focus on change may make this a more difficult source to utilize.

Flocks, Joan, et al. "Environmental Justice Implications of Urban Tree Cover in Miami-Dade County, Florida." *Environmental Justice*, vol. 4, no. 2, 2011, pp. 125–34, doi:10.1089/env.2010.0018.

This source analyzes urban tree cover in Miami-Dade county, FL, to identify possible correlations between tree cover and socioeconomic demographics. Using random sampling and plots to determine tree cover (as opposed to remote sensing data) and US Census Block Group data to determine socioeconomic data, the authors found that white areas tend to have greater tree density, cover, diversity, and energy savings. Hispanic areas tended to have greater individual leaf area, better tree conditions, and air pollution removal. African American areas had the lowest density and leaf area, lowest coverage, and the lowest air pollution removal and energy savings, but they had more plantable spaces.

The two sources immediately above cite this paper in their research, which lends to the credibility of the authors and the paper. This paper seems as though it may be a staple in the research area. Unlike in many of the other sources, this research paper utilized a random sampling design to find plots (field research) in Miami-Dade county to find tree cover measurements instead of using remote sensing data.

This paper is still relatively recent (2011, so less than ten years), and it is cited by many other sources in this area. At the least, it is a good source to have as part of the backbone of this specific study area.



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Schüle, Steffen Andreas, et al. "Relationship between Neighbourhood Socioeconomic Position and Neighbourhood Public Green Space Availability: An Environmental Inequality Analysis in a Large German City Applying Generalized Linear Models." *International Journal of Hygiene and Environmental Health*, vol. 220, no. 4, Urban & Fischer, June 2017, pp. 711–18, doi:10.1016/J.IJHEH.2017.02.006.

Utilizing statistical modeling, this paper analyzes the available greenspace and the disparities in availability with respect to different socioeconomic factors in 108 neighborhoods in Munich, Germany. The authors used log-gamma regression to model this. The authors found that a lower socioeconomic position (SEP) was significantly related to lower access to public green spaces.

This paper was published more recently than any of the others (2017), but I am not sure if it would prove to be useful.

The recency of this paper is appealing, but the focus zone out of the United States, analysis of greenspace as opposed to tree cover, and the use of only statistical modeling as opposed to computational modeling leads me to believe that this would not be an incredibly useful paper in my research.

