

Developing Robust Spatial Measures of the Street Environment

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The scale and enclosure of space defined by buildings and trees along a street are important factors of urban livability. Urban design researchers and professionals recognize that human-scale streets akin with the principles of Smart Growth and New Urbanism help foster communities that are enjoyable for diverse users. This poster illustrates how GIS data may be used to measure physical dimensions that affect street scale and enclosure. Current urban design research uses observational audits, which are time consuming, expensive, and logistically complicated, to make such measurements. GIS techniques have the potential to make measurements much more efficiently and for large samples of streets. Increasing availability of high resolution built environment GIS data makes such techniques ripe for development.

The technique presented here uses building footprint, street centerline, and tree canopy data to measure major physical dimensions of street space. It algorithmically detects the street walls formed by buildings, and measures the height of their facades, the width across the street between them, and their continuity along a street's length. High resolution tree canopy data allows estimation of additional room-like enclosure provided by street trees.

Measurements derived from this technique will allow experimental investigation of the role urban design plays in fostering livable communities. Further, they will help elucidate how street trees contribute to the physical definition of street space, and promote quality of experience for street users.