Maximizing Social and Behavioral Benefit from Urban Trees

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Why you should care
Overview of benefits

Social Life Under Cover – Tree Canopy and Social Capital

Loose end about crime
Urban vegetation and crime
New research: Wildness
Maximize benefits, minimize costs
Social/Behavioral benefits

- Improve psychological and cognitive function
- Improve ability to cope with stress
- Improve social cohesiveness/capital
- Decrease violence and aggression
- Improve student performance
- Increase satisfaction with neighborhood and place attachment


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Environment provides (or doesn’t) *opportunities* for social interaction that facilitate strong neighborhood networks.

Trees increase these opportunities within the environment.

More trees, more social capital
Less trees, less social capital

*Hypothesis: Tree canopy cover at the census block group level will be positively correlated with an individual’s social capital, while controlling for possible confounding factors like individual age, neighborhood aggregates of socioeconomic status, and neighborhood urban form.*
What is it?

Shared knowledge, norms, rules and networks that facilitate collective experience within a neighborhood (Vemuri, Grove, Wilson, & Burch, 2011).

Trust
Mutual cooperation
Closeness of neighborhood ties (Leyden, 2003; Putnam, 2000; Rogers, Halstead, Gardner, & Carlson, 2010)
We used:

5 survey questions compiled into one index
Agree or disagree (rate 1-5):
• People in the neighborhood are willing to help one another
• This is a close knit neighborhood
• People in this neighborhood can be trusted
• There are many opportunities to meet neighbors and work on community problems
• There is an active neighborhood association
Not “green space”

New technology: LiDAR (remote sensing) data
Neighborhood level
Includes street trees – not just trees in parks

Computed percentage of tree canopy in neighborhood (using GIS)
Compared:
social capital for residents with
tree canopy for their neighborhoods

361 residents in 191 residential neighborhoods
City of Baltimore, Maryland

Why Baltimore?

Analysis at the Census block group level (small neighborhood) using GIS and statistical analysis.
More trees, more social capital?

Yes.

Social capital and tree canopy were correlated (Pearson’s $r = .241$, $p<.01$).
Tree canopy mattered as much as household income or education level when predicting an individual’s social capital.

- Age
- College degree
- Household income
- Housing units per acre
- Green yard
- Park presence
- Tree canopy

Adding tree canopy to the final model increased the model’s explanatory power by 22.72%, from explaining 6.6% to 8.1% of the variation in an individual’s social capital.
Neighborhood tree canopy is a small but significant contributor to the social capital of individuals.

But:
Trees are easier to add than increase in income or educational level.

Trees provide many other benefits - no downside
More impact from street trees than those in yards or parks.

Access to parks didn’t matter – really? Why?  
Less park use in disadvantaged urban areas?  
Parks perceived as dangerous?  
Less maintenance and upkeep?
Greater impact from tree canopy in neighborhoods where residents fear crime.

More impact from tree planting in neighborhoods with higher crime rates?
What about trees and crime?
Generally...
More vegetation, less crime


Except...
More trees, more crime

Some formerly industrial areas had opposite trend.
“Wasteland”?


*(and in some other studies)*
Understory

A place to hide?
Less legibility?
Less maintenance?

Invasive large shrubs?

What makes the difference?
Public perception of overgrown unmaintained land
“No one owns this.”


If the land looks abandoned, there are no rules about behavior.

What makes the difference?

Wildness

Increasing "wild" urban nature provides ecological benefit, but may have social and economic costs.

How to harness benefits and neutralize costs?

Initial study: vandalism (criminal mischief) and tree canopy in Syracuse, New York, in 2010.

What makes the difference?
To maximize social/behavioral benefits of urban trees:

• Plant in public space, especially outside parks
• Plant in more disadvantaged neighborhoods
• Keep understory clear
• Maintain for a cared-for appearance
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