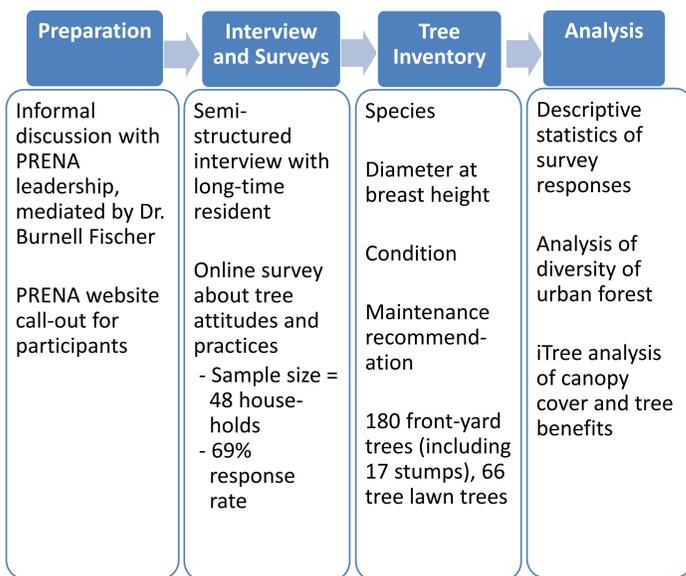


INTRODUCTION

Trees in the urban forest have many benefits, including reducing storm water volume, cleaning the air, reducing energy costs, storing carbon, and improving mental health. To manage this resource sustainably, it is important to understand the qualities of the urban forest and residents' attitudes and practices regarding trees.

The purpose of this research is to inventory the public and private trees in the Park Ridge East (PRE) neighborhood in Bloomington, Indiana; assess resident attitudes; and recommend necessary steps for future management of these trees.

METHODS



Study Area

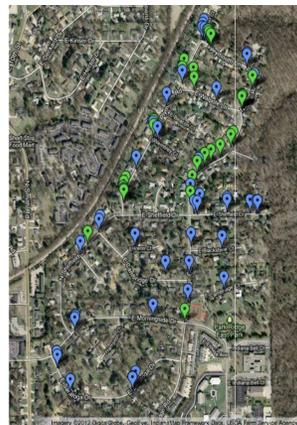


Figure 1 (left): Map of 48 front yards and all tree lawns in PRE that were sampled.



Figures 2 and 3 (right): Indiana University students doing tree inventory at PRE.

2012 Park Ridge East Tree Inventory



Adrienne Bryant, Charlotte Mason, Calley Mersmann, Sanchayan Nath, Mengzhao Shu
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FURTHER RECOMMENDATIONS

There are two components to sustaining the urban forest. First, maintaining existing trees will increase their lifespans and minimize the possibility of property damage. Second, planting new trees will regenerate the canopy and maintain or increase total benefits as old or damaged trees die. Proper pruning and maintenance is essential to the health and integrity of the tree. In PRE, the majority of trees require no maintenance or simply crown cleaning (removing dead branches, Figure 10). Always contact a professional for specific tree maintenance consultation.

Maintenance Recommendations

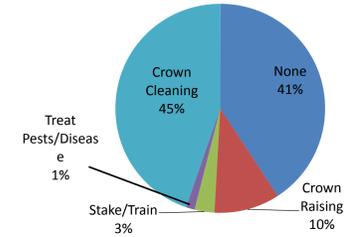


Figure 10: Breakdown of maintenance recommendations for front yards in PRE.

When planting a new tree, consider which species will thrive given spatial constraints. Springtime plantings are best. Remember – right tree, right place, right way. New or underused tree lawns (areas between the sidewalk and the street) are prime locations for tree plantings as sidewalks in PRE continue to be built. The total annual benefits of existing PRE trees in tree lawns is **\$2,711** and has significant potential to increase.

CONCLUSIONS

Through inventorying trees and surveying residents, we assessed key aspects of the social-ecological urban forest system in PRE and made recommendations for sustainable management. Overall, residents find tree benefits to be more important than disadvantages. Residents value aesthetics most, followed by public benefits. Potential property damage is the most significant disadvantage. Fifty-two percent of survey participants desire more trees in PRE, and a sustainable urban forest has a higher frequency of young trees (low DBH) than the PRE urban forest (Figures 4 and 5). Interestingly, the trees residents report planting the most are small, ornamental varieties, which provide the fewest benefits. To achieve canopy cover and diversity guidelines, we recommend that residents plant non-maples.

The urban forest offers significant and quantifiable benefits and has substantial potential for expansion. Each resident receives, on average, \$23.67 in total benefits, and \$18.41 in net benefits. Improving the forest as recommended above will add to this monetary value.

ACKNOWLEDGEMENTS

This research would not have been possible without the help of Dr. Burnell Fischer, Matt Patterson, David LeBeau, Kathleen Boggess, John Huffman, the Park Ridge East Neighborhood Association, and participating Park Ridge East residents.

RESULTS

Table 1: Comparison of results from PRE inventory of front yards and guidelines for tree canopy cover and diversity. The inventory recorded 163 trees representing 37 species.

	Tree Canopy Cover	% Single Species	% Single Genus
PRE	21.4%	9.7% (dogwood)	20.24% (maples)
Guidelines	50%	10%	20%

PRE Tree Distribution by DBH

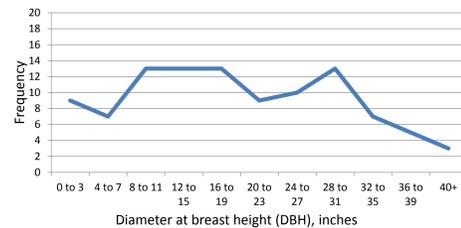


Figure 4: Age distribution of large tree species in front yards.

Sustainable Tree Distribution by DBH

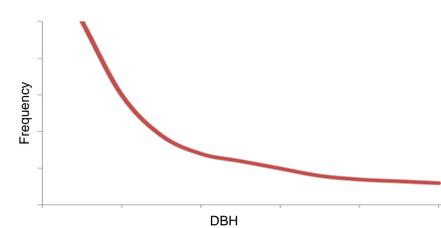


Figure 5: Conceptual age distribution of tree species required to maintain a sustainable urban forest

How PRE Residents Value Disadvantages of Trees

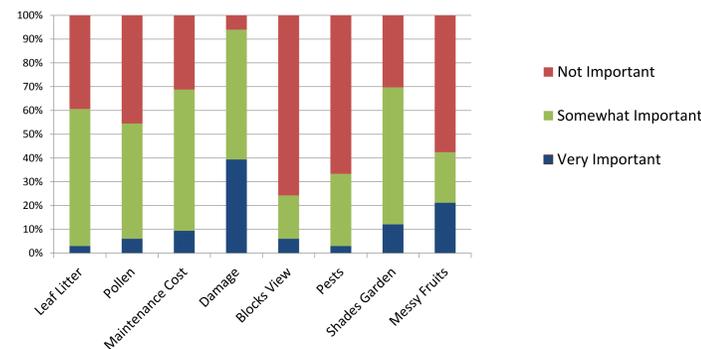


Figure 6: Frequency distribution of values of disadvantages of trees, which shows generally low importance of all categories.

How PRE Residents Value Benefits of Trees

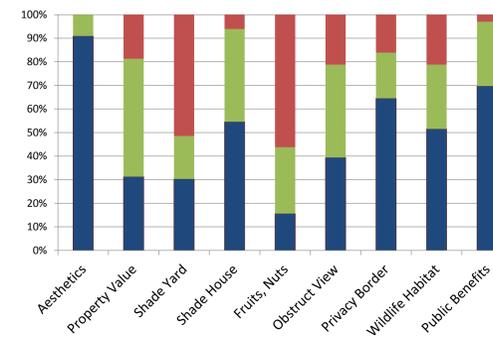


Figure 7: Frequency distribution of values of benefits of trees, which shows generally high importance of most categories.

Total Benefits (\$) by Species

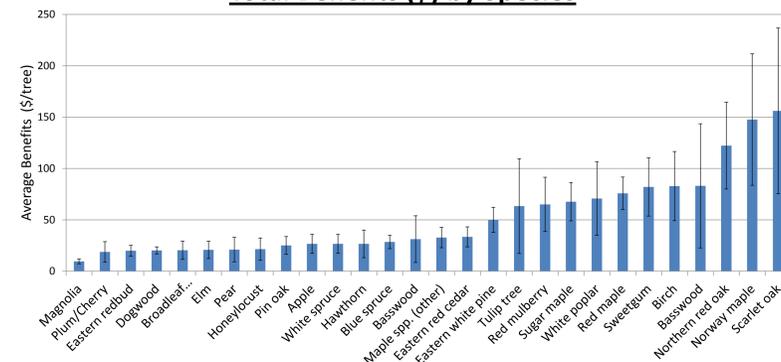


Figure 8: Total annual benefits of each tree species located in PRE. This should be considered when selecting a tree species to plant.

Total Annual Benefits of PRE Front Yard Trees: \$18,274

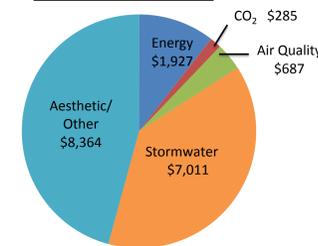


Figure 9: Breakdown of total benefits in front yards. "Other" includes increase in property value.