City of Bloomington
2012 Public Tree Sample Inventory

Bloomington Urban Forestry Research Group at CIPEC

CIPEC

CITY OF BLOOMINGTON
parks and recreation

Conducted by the

Bloomington Urban Forestry Research Group at CIPEC

http://www.indiana.edu/~cipec/research/bufrg_about.php

Presented by Jess Vogt

Research Team

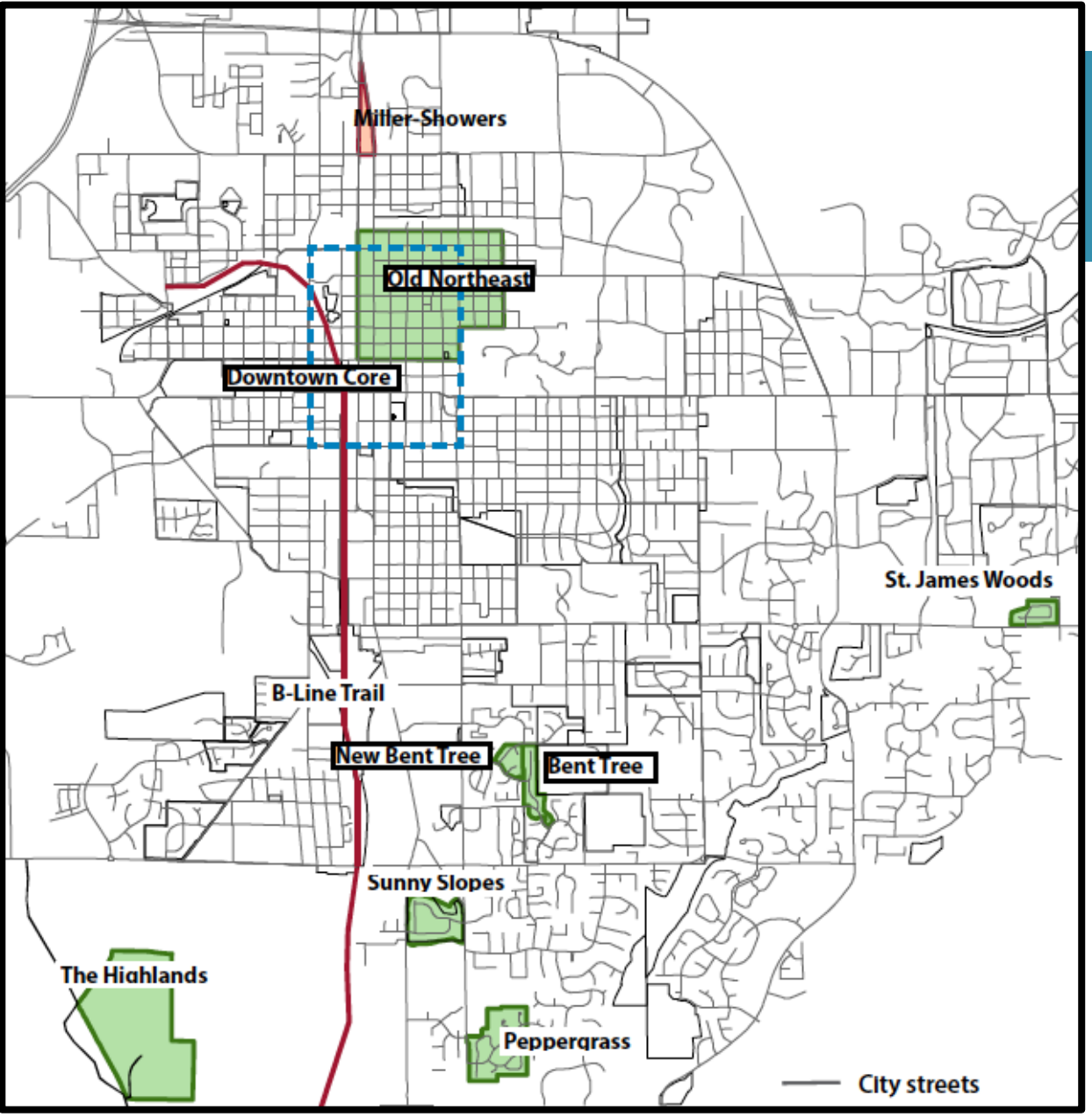
- Supervised by: **Dr. Burney Fischer**
- Data collection: **Nick Myers** & **Kaitlyn McClain** (SPEA Master's students)
- Data analysis: **Sarah Mincey** & **Jess Vogt** (SPEA PhD studets)

Methods

- Same as used in 2007 inventory of *all* City street trees
- **Street trees:** in public right-of-way, usually between street & sidewalk
- Data collected using Palm handheld electronic units running iTree Streets software
- Collected information on trees →

Variable	
Species	
Tree location	
Address	
DBH	(Diameter at breast height)
Overall condition	
Maintenance requirement	
Wire conflict	

Areas sampled

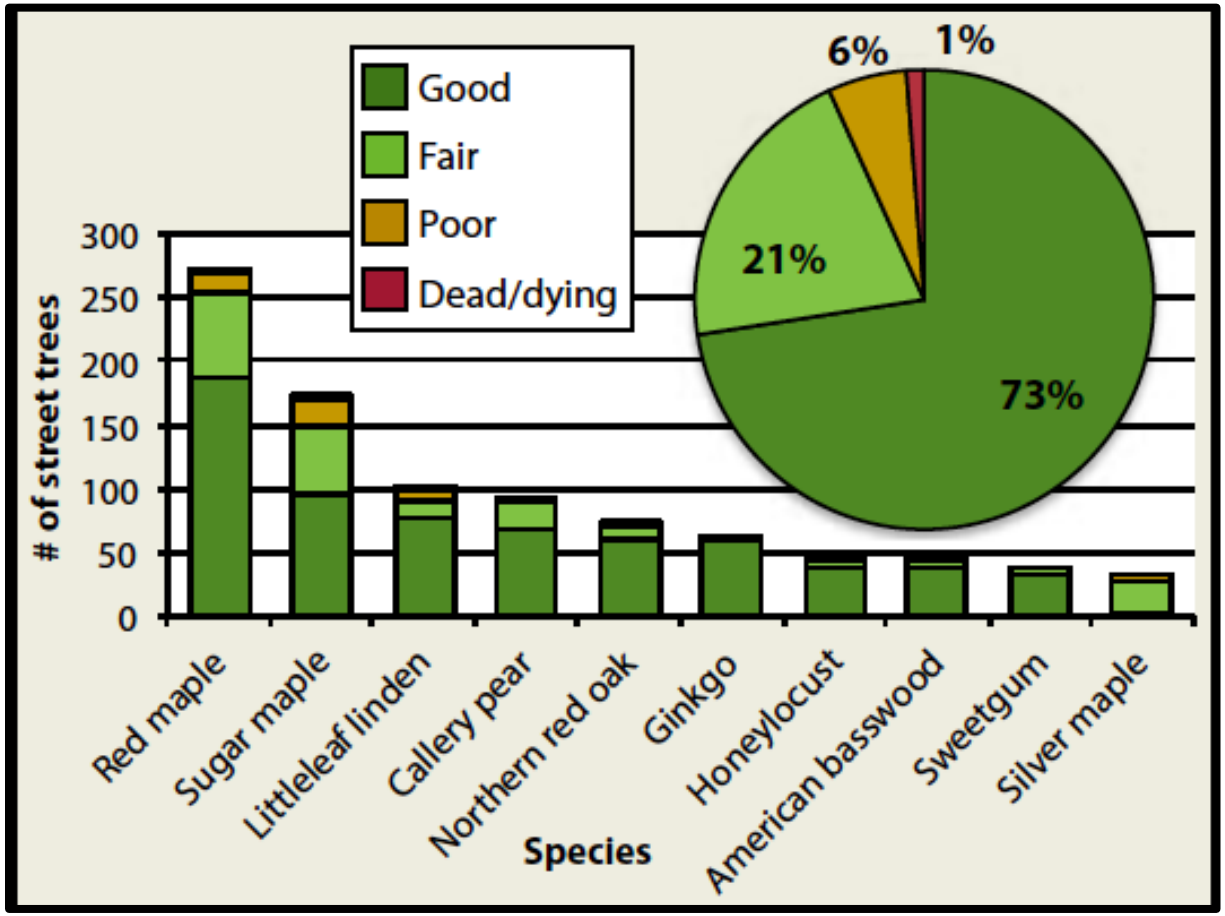


- Downtown Core
- Miller-Showers
- B-Line Trail
- 7 neighborhoods

City streets
Downtown Core
Parks
Neighborhoods

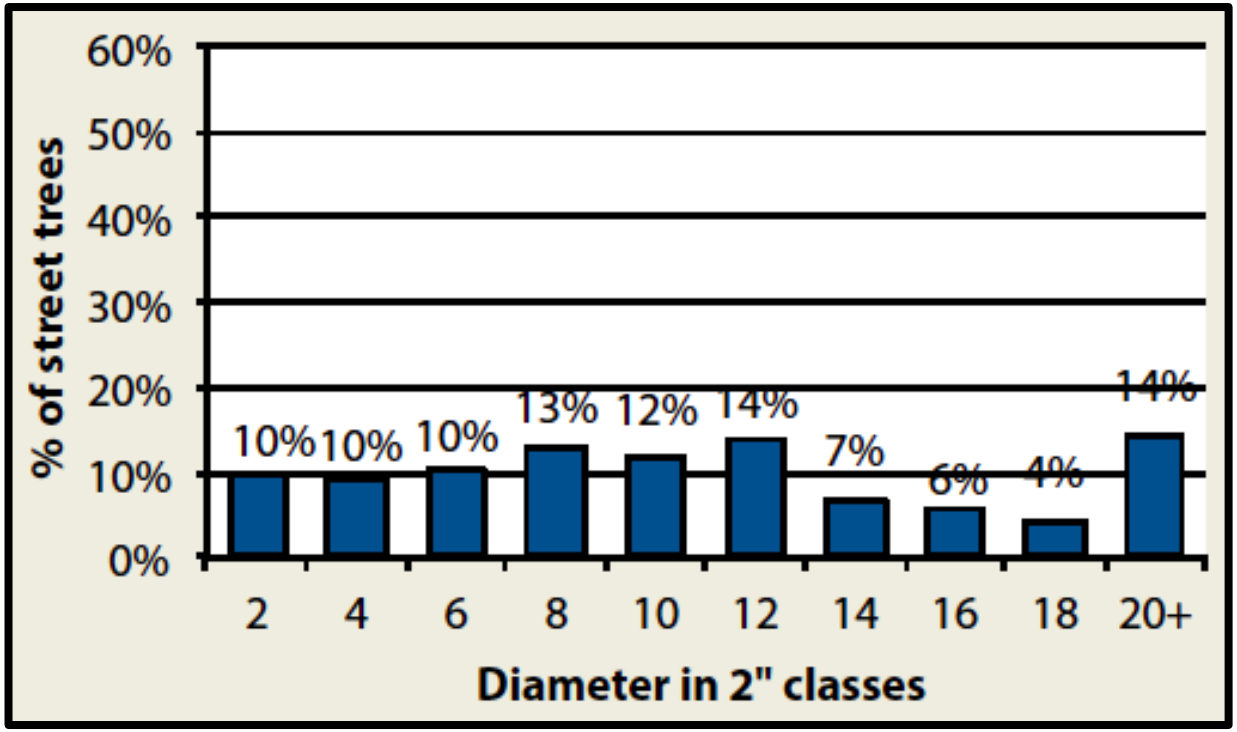
RESULTS: Downtown Core

- 1,301 trees
- LOTS of maples

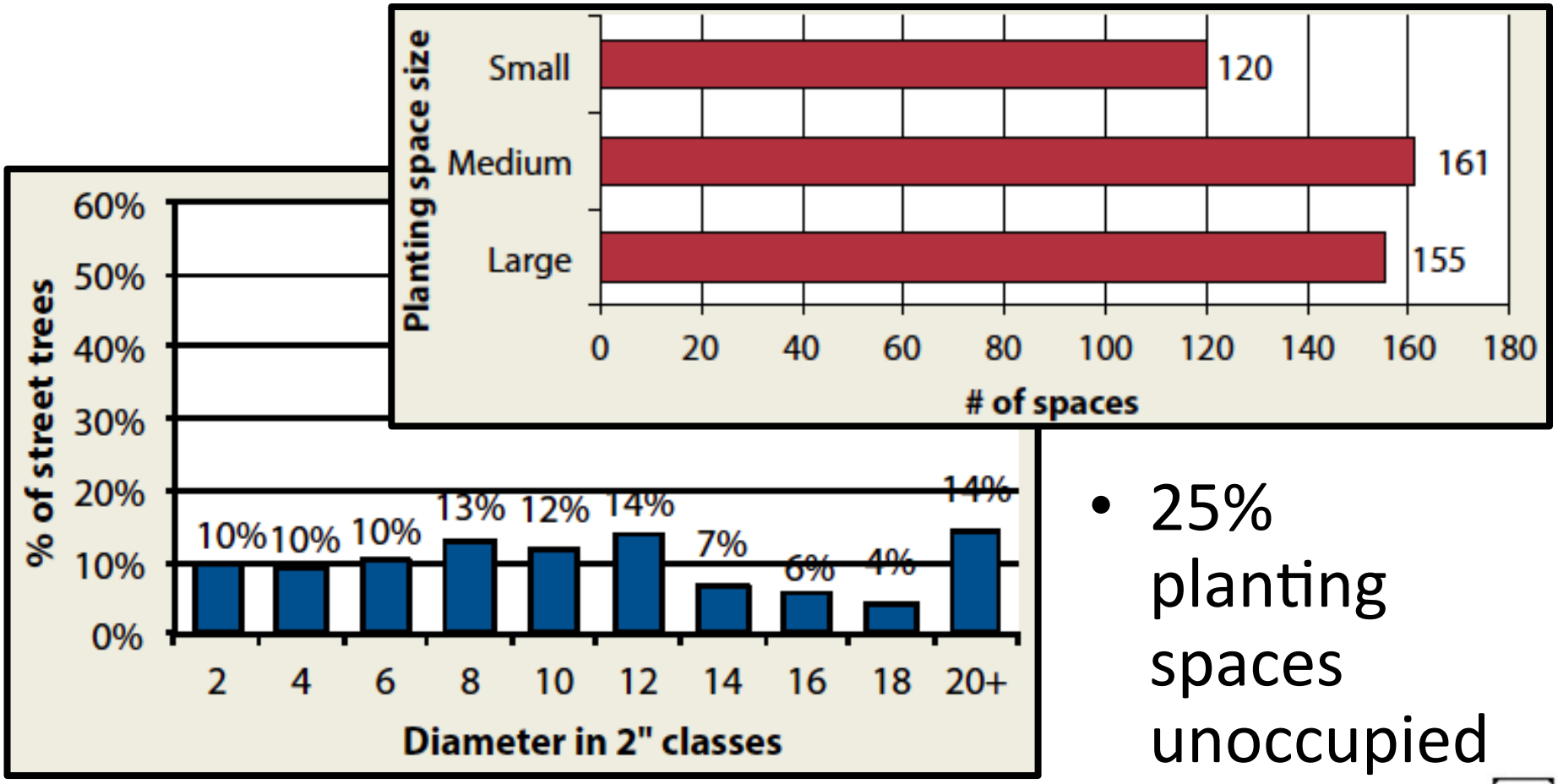


RESULTS: Downtown Core

- Even size distribution



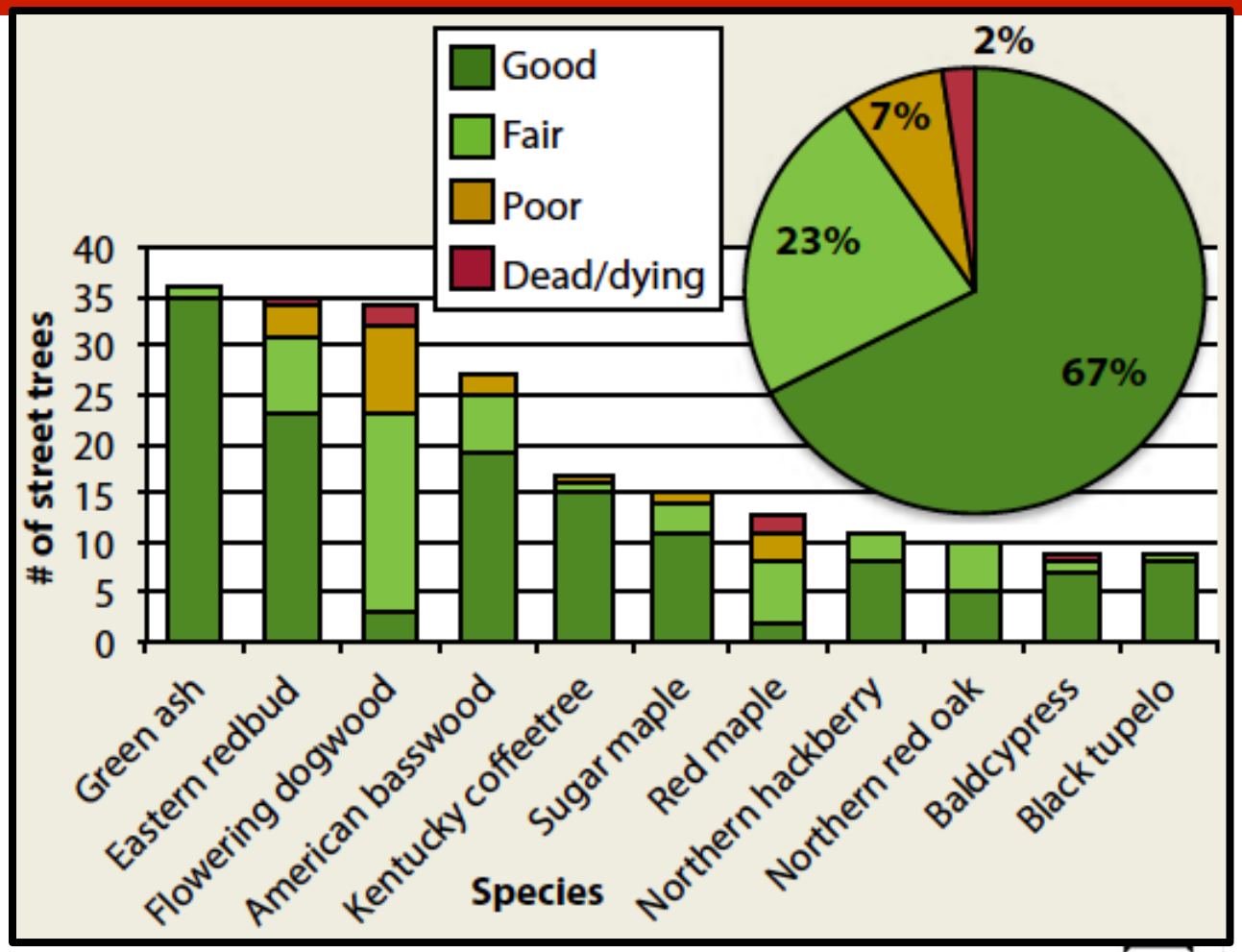
RESULTS: Downtown Core



- 25% planting spaces unoccupied

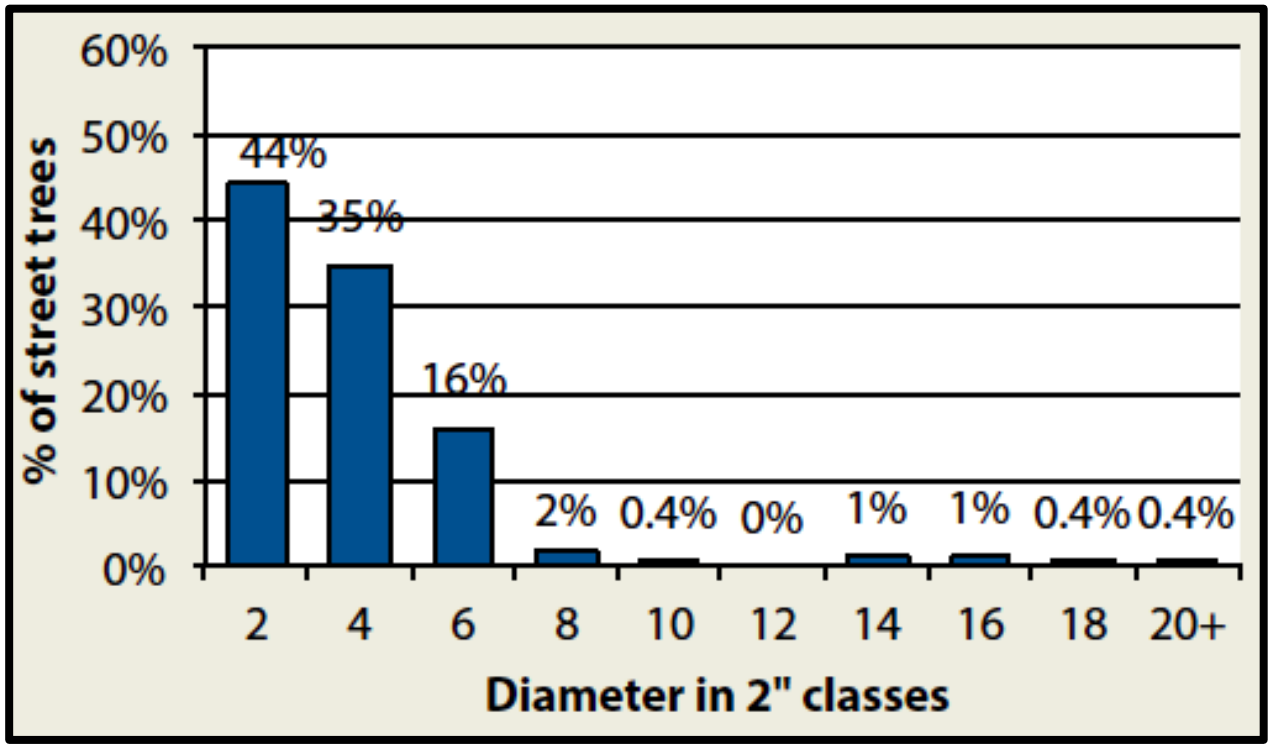
RESULTS: Miller-Showers Park

- 265 trees
- Diverse species mix



RESULTS: Miller-Showers Park

- Most trees recently planted



RESULTS: Miller-Showers Park

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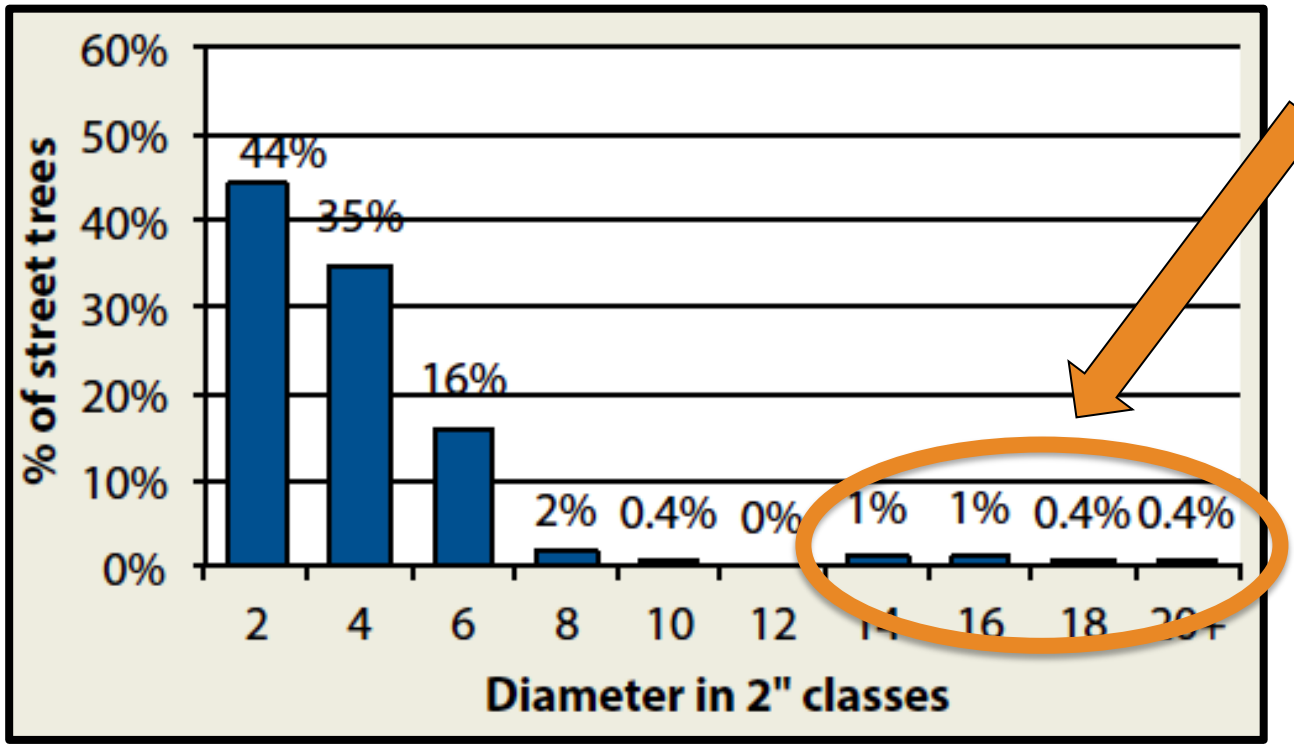
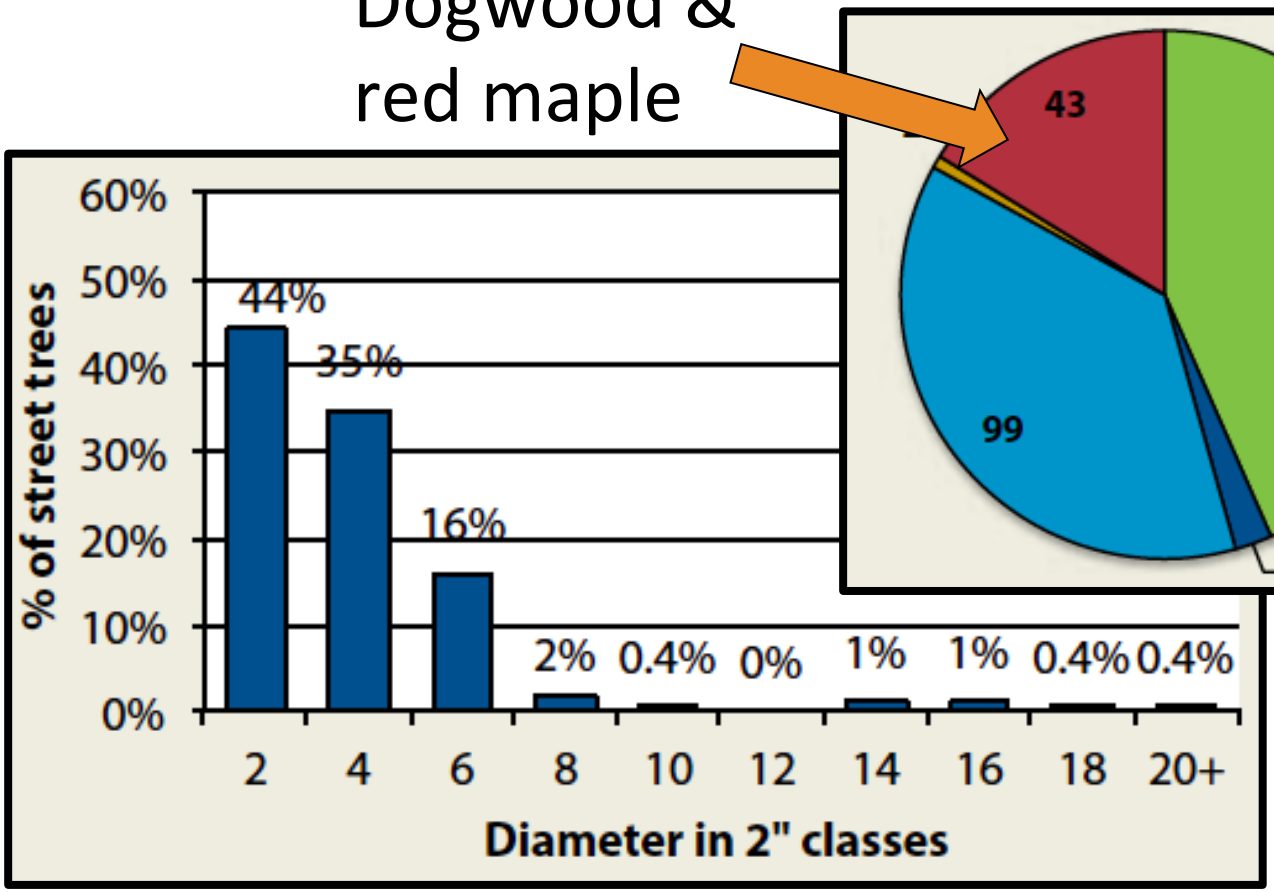
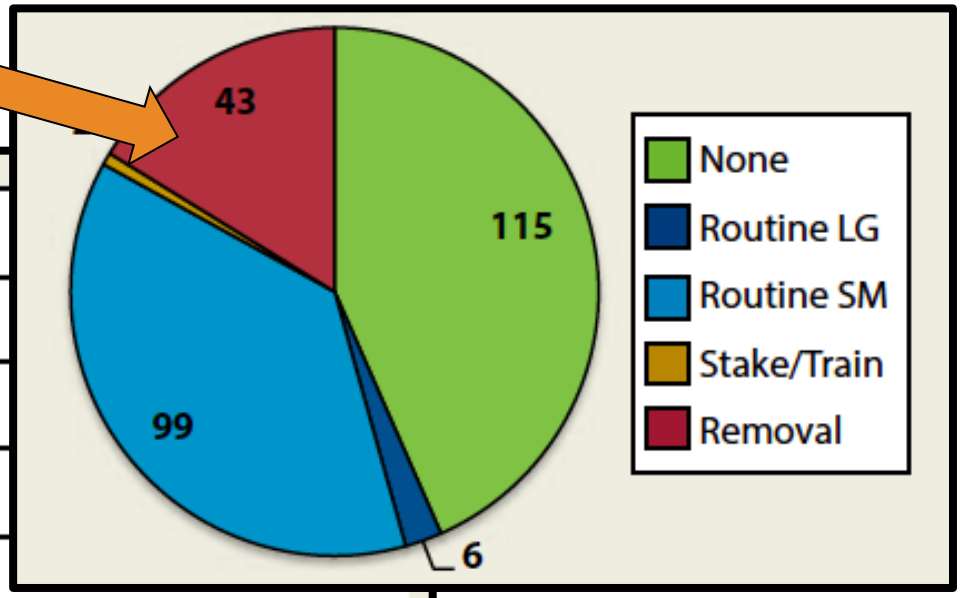


Large trees are callery pear

RESULTS: Miller-Showers Park

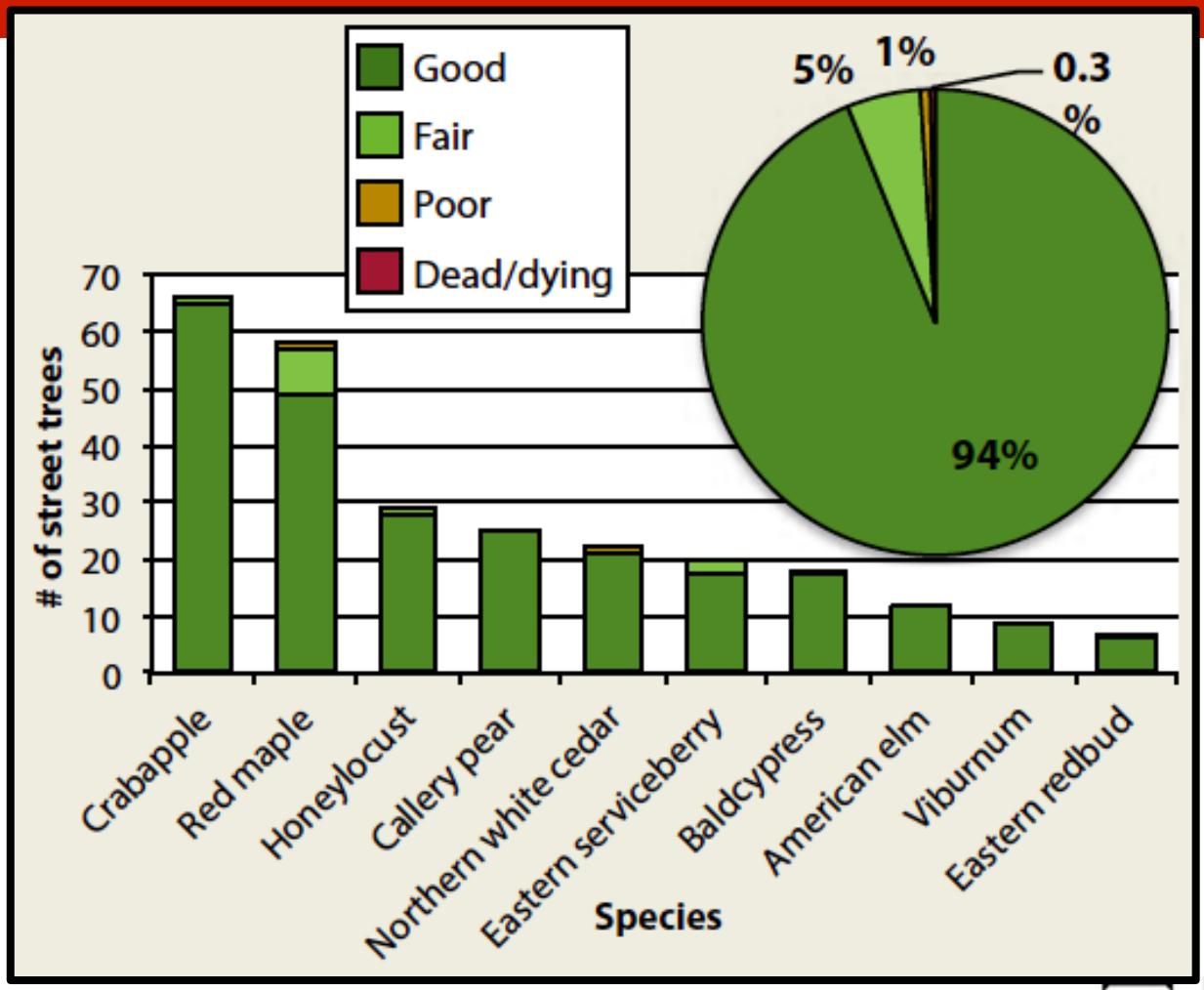
Dogwood & red maple





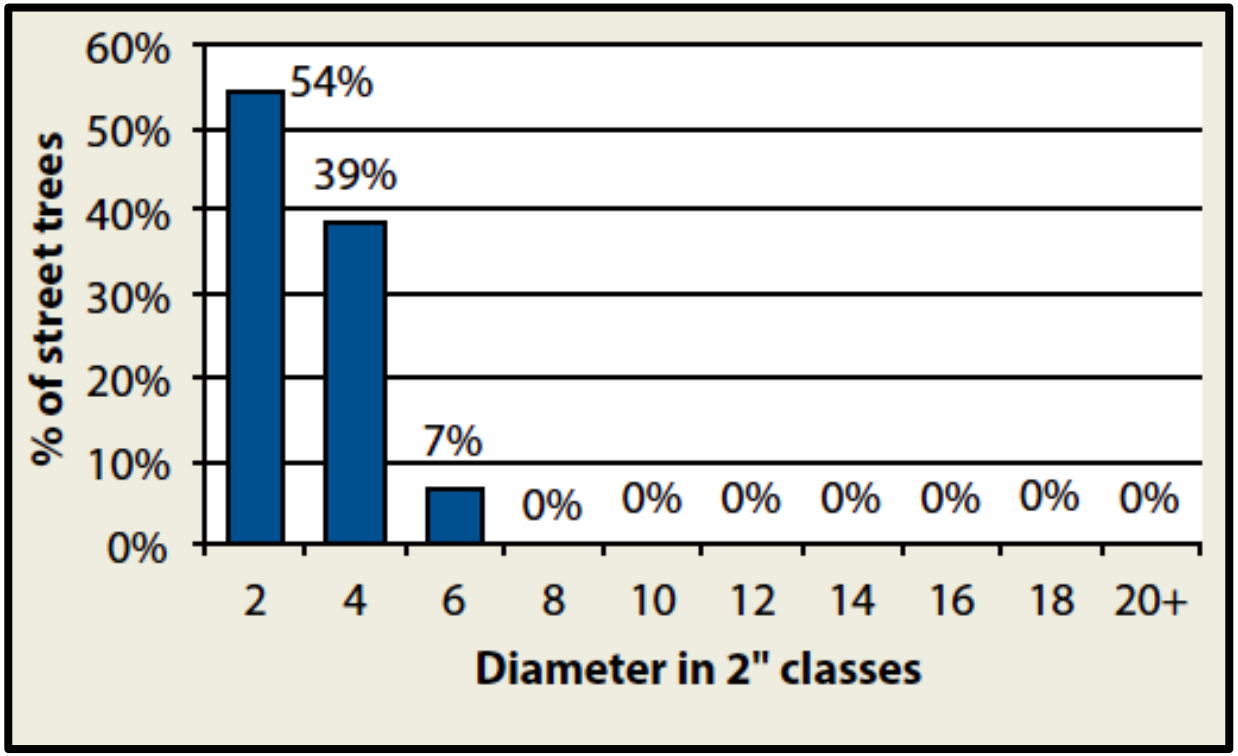
RESULTS: B-Line Trail

- 296 trees
- Different species from other parts of city

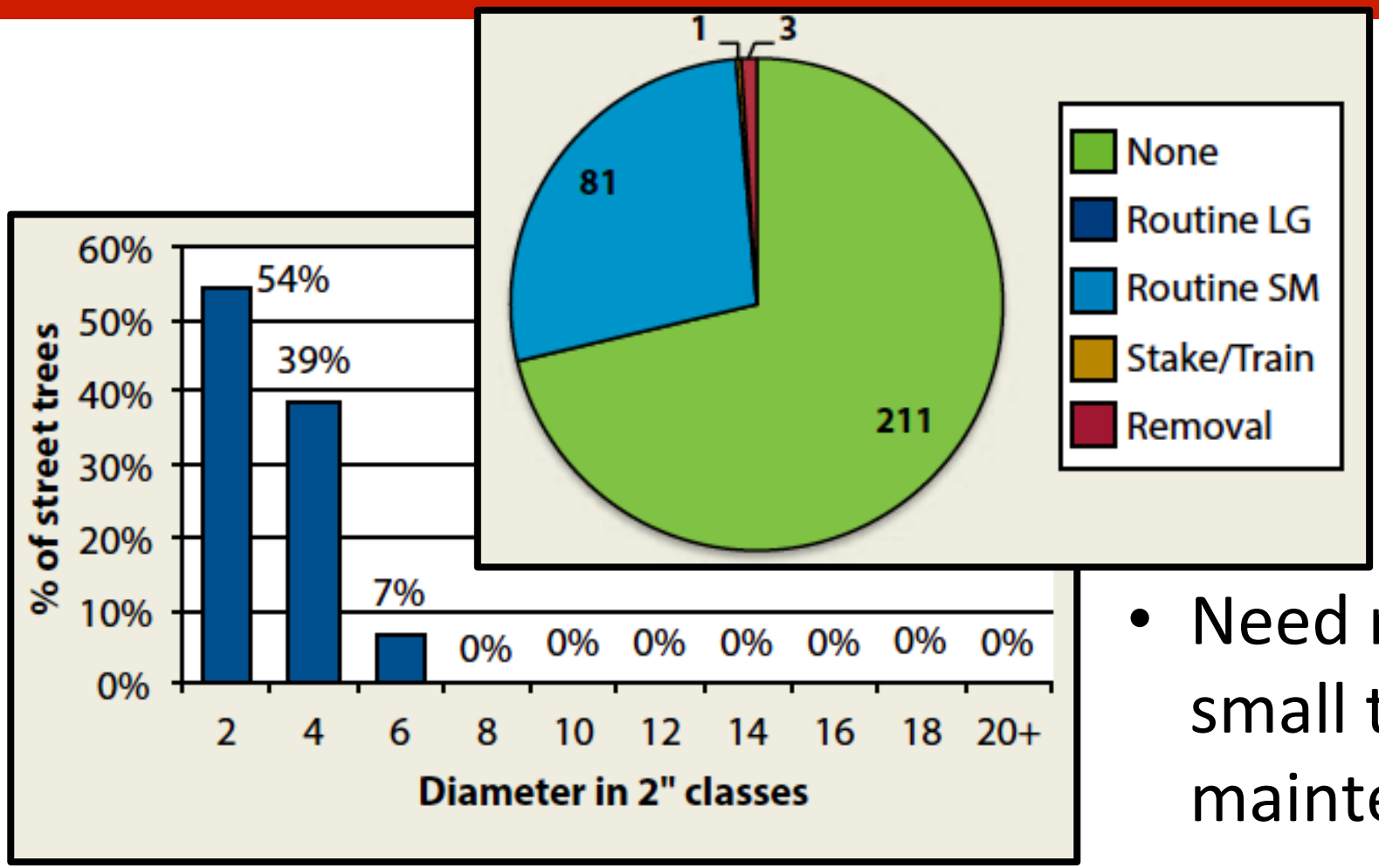


RESULTS: B-Line Trail

- All recently planted trees



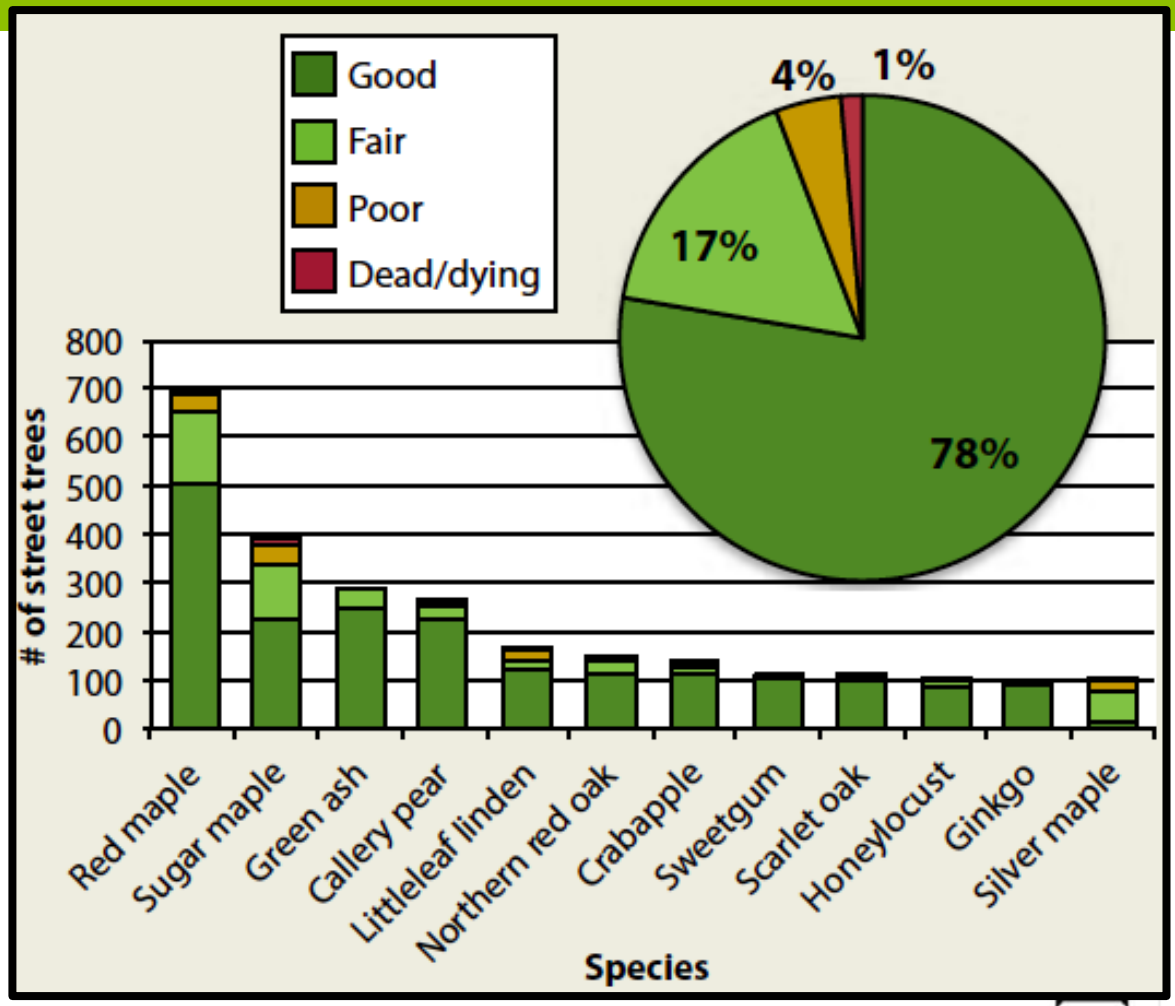
RESULTS: B-Line Trail



- Need routine small tree maintenance

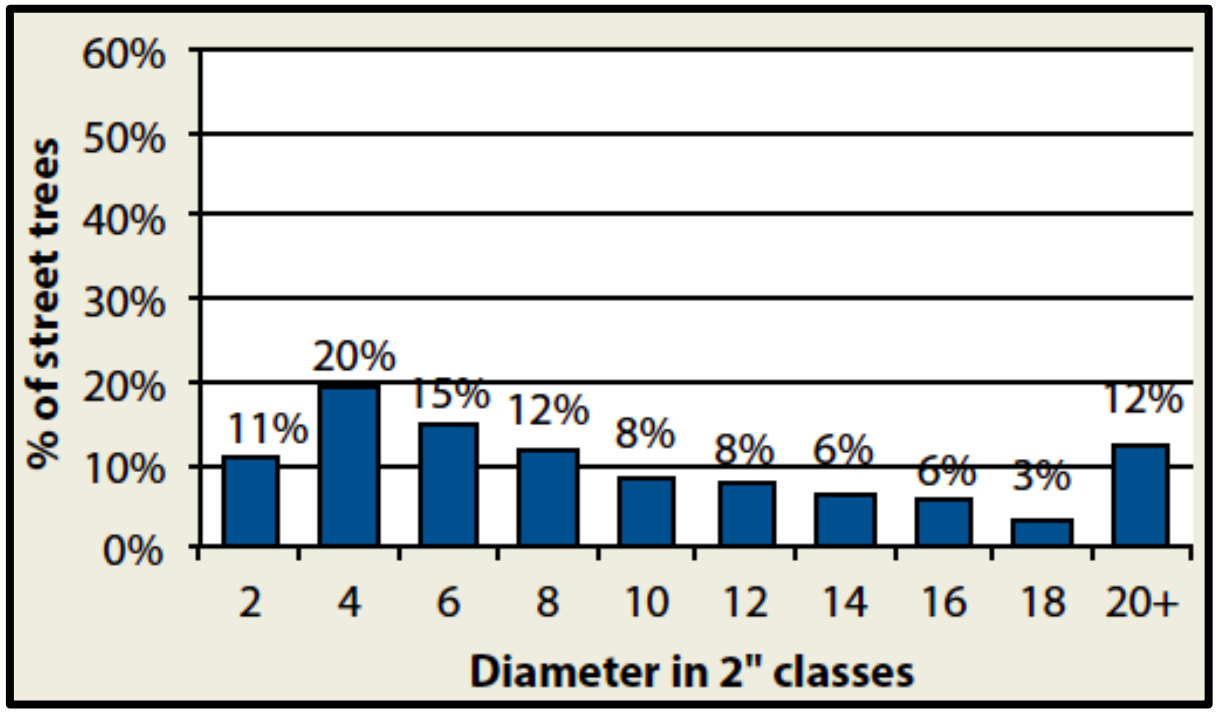
RESULTS: 7 Neighborhoods

- 1,713 trees in 7 different neighborhoods
- LOTS of maples

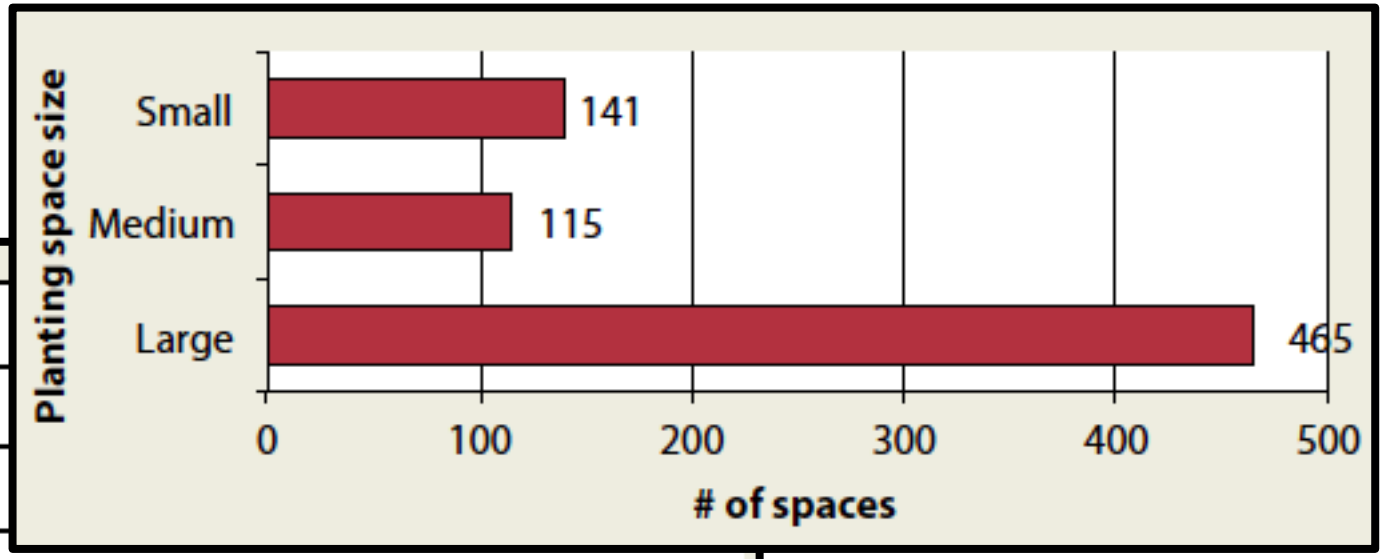


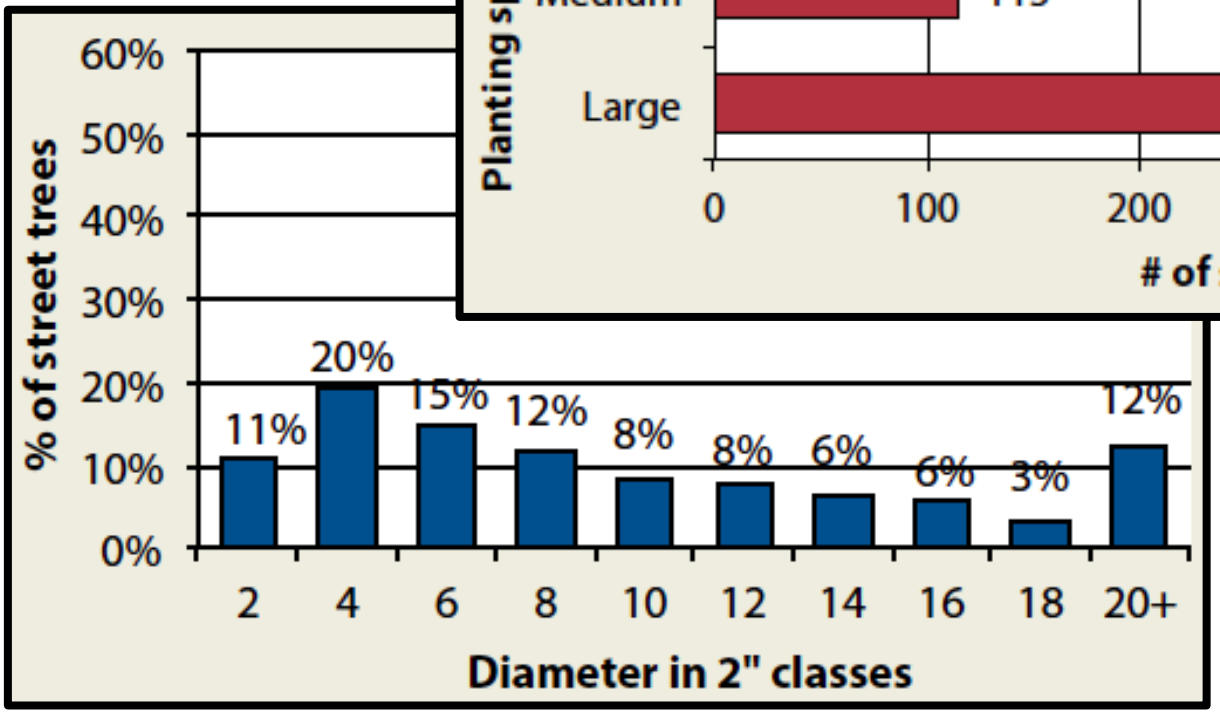
RESULTS: 7 Neighborhoods

- Sustainable size distribution (more small than large trees)



RESULTS: 7 Neighborhoods





- 30% planting spaces unoccupied

RESULTS: 7 Neighborhoods

- Individual neighborhoods:
  - **Old Northeast**
  - **Peppergrass**
  - **Bent Tree**
  - **New Bent Tree**
  - **Sunny Slopes**
  - **St. James Woods**
  - **The Highlands**

RESULTS: 7 Neighborhoods

- Individual neighborhoods:
  - **OLD NORTHEAST:**
    - 826 street trees
    - LOTS of large, old trees in fair condition (maples)
    - **Recommendation:**
      - ✓Plant non-maples to improve size & species distributions

RESULTS: 7 Neighborhoods

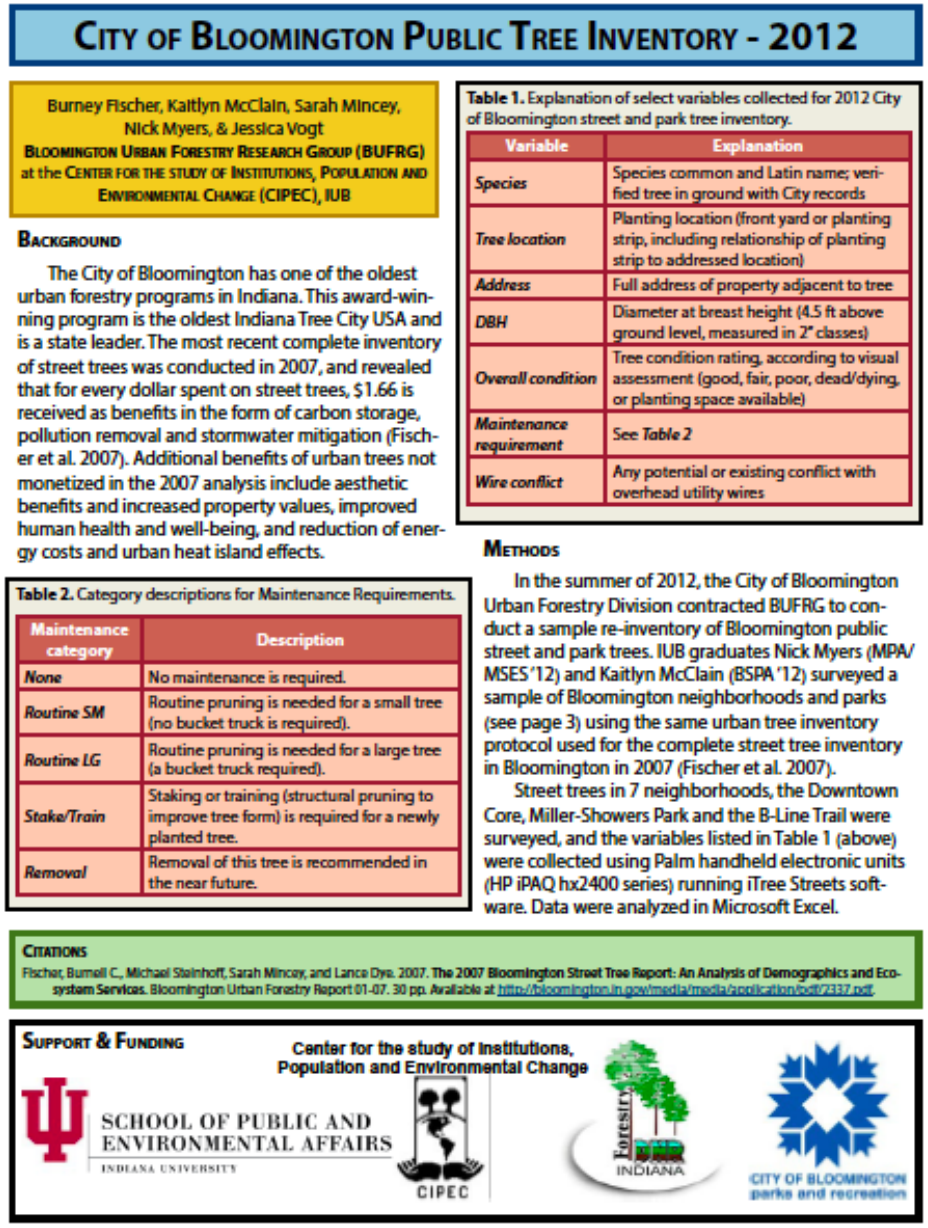
- Individual neighborhoods:
  - **PEPPERGRASS:**
    - 107 street trees
    - 59 ash, large & in good condition
    - 26% planting sites vacant
    - **Recommendation:**
      - ✓Plant non-ash to improve size & species distribution
      - ✓Treat ash (the neighborhood will this year)

Full Report

- Contains:
  - Summary page for each sample area
  - Complete recommendations

PDF available on BUFRG website:

http://www.indiana.edu/~cipec/research/bufrg_projects_01.php



City of Bloomington Public Tree Inventory - 2012

Burney Fischer, Kaitlyn McClain, Sarah Mincey, Nick Myers, & Jessica Vogt
Bloomington Urban Forestry Research Group (BUFRG) at the Center for the Study of Institutions, Population and Environmental Change (CIPEC), IUB

Background

The City of Bloomington has one of the oldest urban forestry programs in Indiana. This award-winning program is the oldest Indiana Tree City USA and is a state leader. The most recent complete inventory of street trees was conducted in 2007, and revealed that for every dollar spent on street trees, $1.66 is received as benefits in the form of carbon storage, pollution removal and stormwater mitigation (Fischer et al. 2007). Additional benefits of urban trees not monetized in the 2007 analysis include aesthetic benefits and increased property values, improved human health and well-being, and reduction of energy costs and urban heat island effects.

Table 1. Explanation of select variables collected for 2012 City of Bloomington street and park tree inventory.

Variable	Explanation
Species	Species common and Latin name; verified tree in ground with City records
Tree location	Planting location (front yard or planting strip, including relationship of planting strip to addressed location)
Address	Full address of property adjacent to tree
DBH	Diameter at breast height (4.5 ft above ground level, measured in 2" classes)
Overall condition	Tree condition rating, according to visual assessment (good, fair, poor, dead/dying, or planting space available)
Maintenance requirement	See *Table 2*
Wire conflict	Any potential or existing conflict with overhead utility wires

Table 2. Category descriptions for Maintenance Requirements.

Maintenance category	Description
None	No maintenance is required.
Routine SM	Routine pruning is needed for a small tree (no bucket truck is required).
Routine LG	Routine pruning is needed for a large tree (a bucket truck required).
Stake/Train	Staking or training (structural pruning to improve tree form) is required for a newly planted tree.
Removal	Removal of this tree is recommended in the near future.

Methods

In the summer of 2012, the City of Bloomington Urban Forestry Division contracted BUFRG to conduct a sample re-inventory of Bloomington public street and park trees. IUB graduates Nick Myers (MPA/MSES '12) and Kaitlyn McClain (BSPA '12) surveyed a sample of Bloomington neighborhoods and parks (see page 3) using the same urban tree inventory protocol used for the complete street tree inventory in Bloomington in 2007 (Fischer et al. 2007).

Street trees in 7 neighborhoods, the Downtown Core, Miller-Showers Park and the B-Line Trail were surveyed, and the variables listed in Table 1 (above) were collected using Palm handheld electronic units (HP iPAQ hx2400 series) running iTree Streets software. Data were analyzed in Microsoft Excel.

Citations

Fischer, Burnell C., Michael Steinhoff, Sarah Mincey, and Lance Dye. 2007. **The 2007 Bloomington Street Tree Report: An Analysis of Demographics and Ecosystem Services.** Bloomington Urban Forestry Report 01-07. 30 pp. Available at http://bloomington.in.gov/media/media/application/pdf/2337.pdf.

Support & Funding

Center for the study of Institutions, Population and Environmental Change

School of Public and Environmental Affairs, Indiana University

CIPEC

Forestry INDIANA

City of Bloomington parks and recreation

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Conclusion

- Street trees are *common-pool resources (CPR's)*:
  - Subtractable: *if I cut down a street tree, you can no longer benefit from it*
  - Difficult to exclude people from (*public property*)
- CPRs are vulnerable unless well managed
- City monitoring of public trees is *critical* for both public *and private* trees in Bloomington
  - EXAMPLE: Pest management benefits ALL trees in urban forest
- We recommend establishing an annual budget line for monitoring (inventorying) trees

BUFRG RESEARCH FUNDED BY:

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City of Bloomington
Parks & Recreation Department

Garden Club of America

International Society of Arboriculture

Indiana University (IU) Office of Sustainability

IU Center for Research in Environmental Science

IN PARTNERSHIP WITH:

Keep Indianapolis Beautiful, Inc.

Center for the Study of Institutions, Population, and Environmental Change (CIPEC), Indiana University, Bloomington

The Vincent and Elinor Ostrom Workshop in Political Theory and Policy Analysis

SCHOOL OF PUBLIC AND ENVIRONMENTAL AFFAIRS
INDIANA UNIVERSITY

RESULTS: 7 Neighborhoods

- Individual neighborhoods:
  - **BENT TREE:**
    - 51 street trees of only 2 species
    - LOTS of large, old trees
    - 30% of planting sites unoccupied
    - **Recommendation:**
      - ✓Plant non-Norway spruce, non-pin oak

RESULTS: 7 Neighborhoods

- Individual neighborhoods:
  - **NEW BENT TREE:**
    - VERY SMALL neighborhood: 6 street trees varying sizes and species
    - **Recommendation:**
      - ✓Plant! 19 planting spaces available

RESULTS: 7 Neighborhoods

- Individual neighborhoods:
  - **THE HIGHLANDS:**
    - 590 street trees, mostly small (<10”) & in very good condition
    - LOTS of Green ash
    - **Recommendation:**
      - ✓Follow Purdue Extension guidelines to treat Ash
      - ✓Plant! 26% of all spots unoccupied

RESULTS: 7 Neighborhoods

- Individual neighborhoods:
  - **ST. JAMES WOODS:**
    - 84 street trees – nearly ALL red maple
    - Sustainable size distribution
    - 10% planting sites vacant
    - **Recommendation:**
      - ✓Encourage homeowners to plant non-maple species to diversity neighb. tree pop.
      - ✓Monitor for pests of maples

RESULTS: 7 Neighborhoods

- Individual neighborhoods:
  - **SUNNY SLOPES:**
    - 48 street trees – many old silver maple in declining condition, recommended for removal
    - 40% of trees >20 in DBH
    - 47% planting sites vacant
    - **Recommendation:**
      - ✓Plant! In vacant spaces & after removing silver maples