Standardizing Data Collection: Making the Case via Michigan-Based Study

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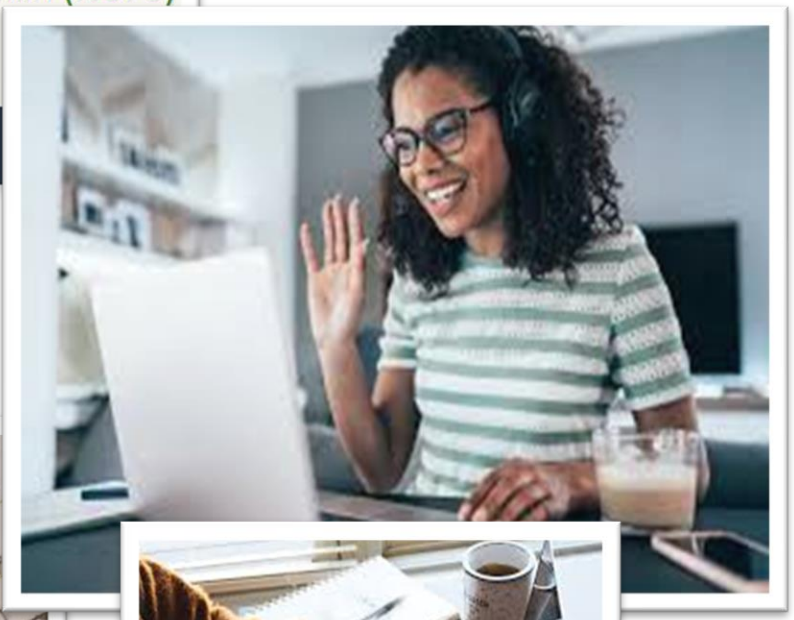
Michigan State University

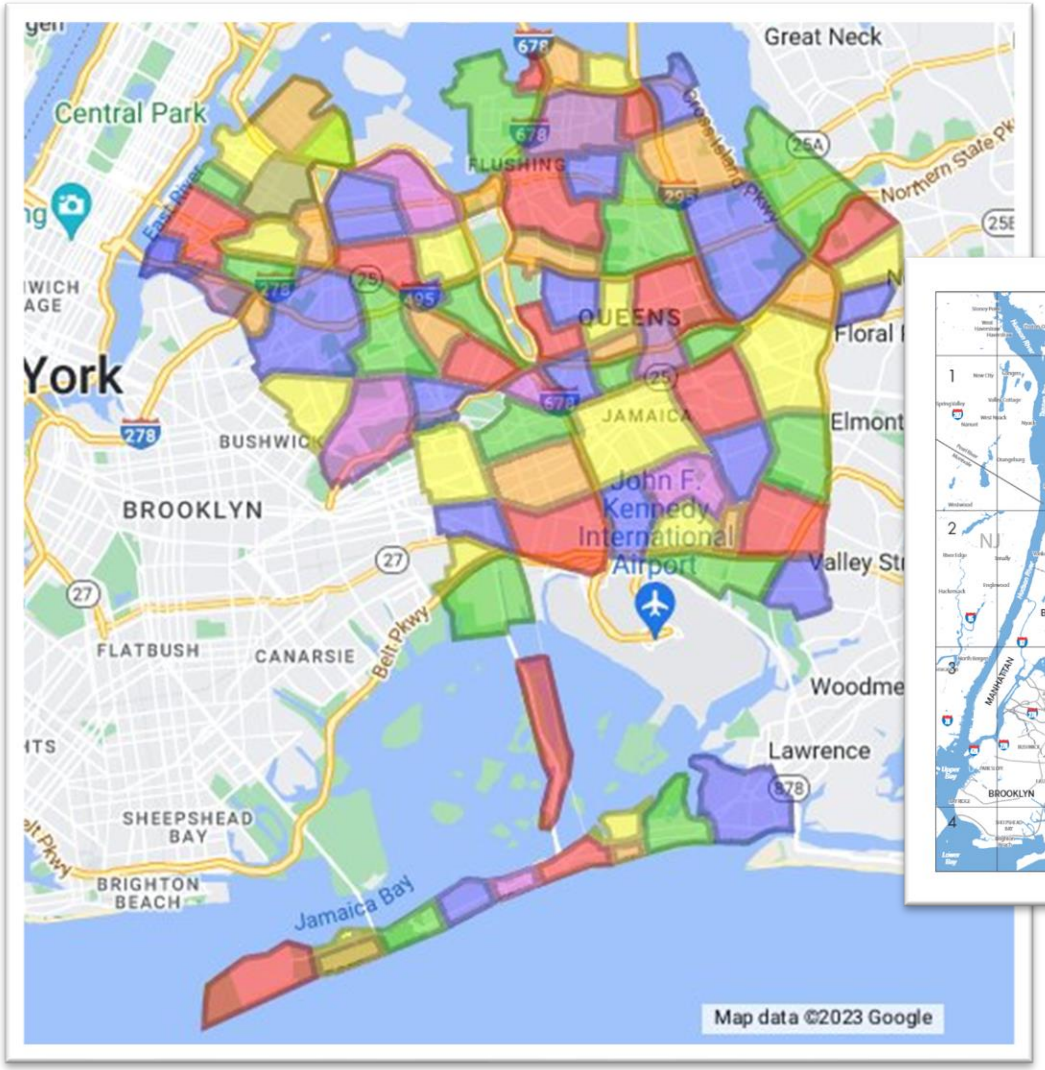
June 2023

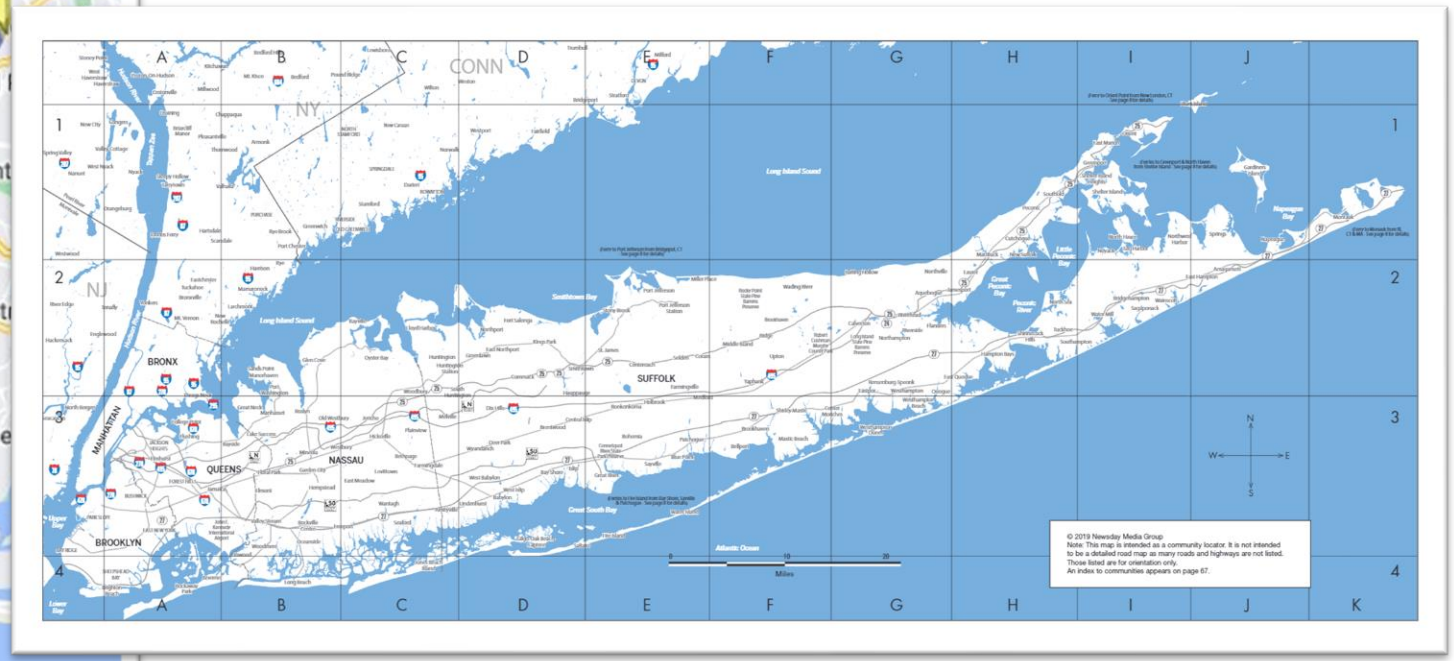
Week in Review



Week in Review

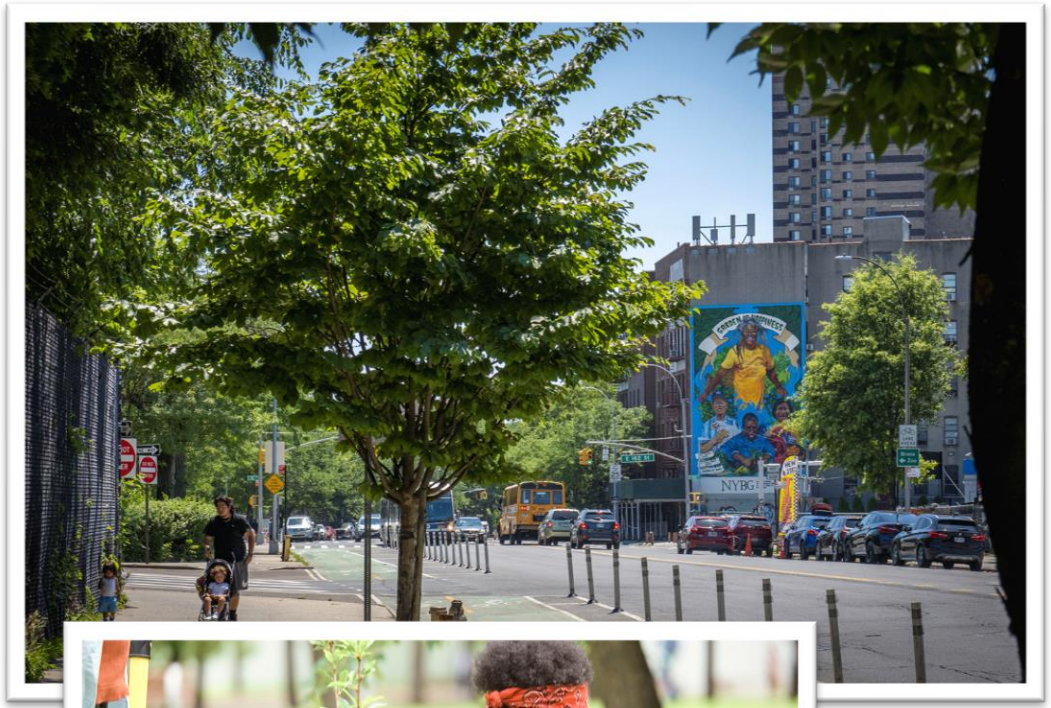
Week in Review





Moment of Reflection

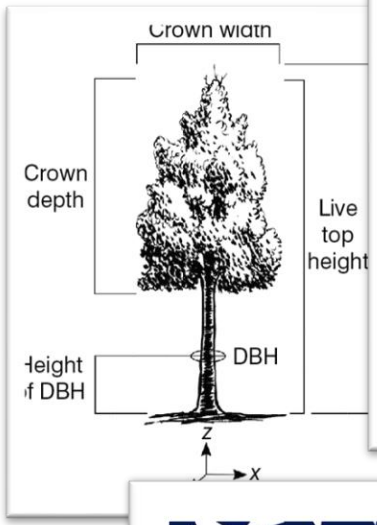
- Where and how do we begin to bridge the divide between these two sets of communities, ultimately leading to increased capacity and access to urban forest benefits?
- What information should we be sharing with, and open to receiving from community?
- **How can we get to common ground in terms of data collection, reporting, and sharing?**
- **How do we train up the next generation of urban foresters and urban forestry advocates?**
- **What kind of work do we prioritize in the process?**

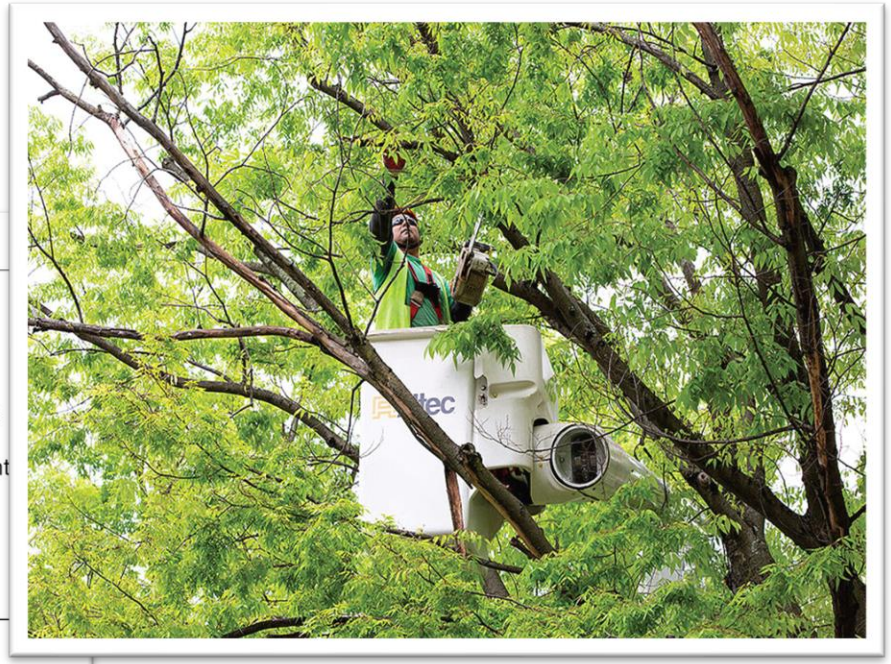


Overview

- Standardizing practices for collection of urban forest inventory data: making the case through a Michigan case study

- Implications for inclusive urban forestry in the IRA era





ACT OF 2022
INFLATION REDUCTION
UNITED STATES OF AMERIC

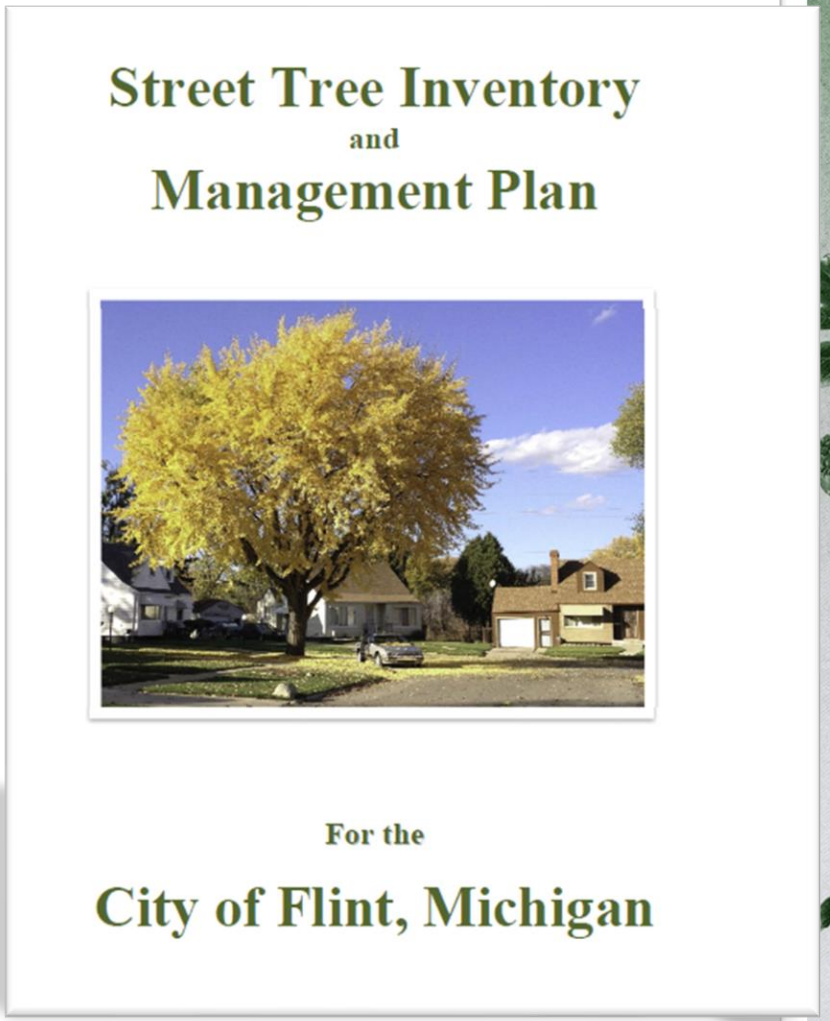
Justice40

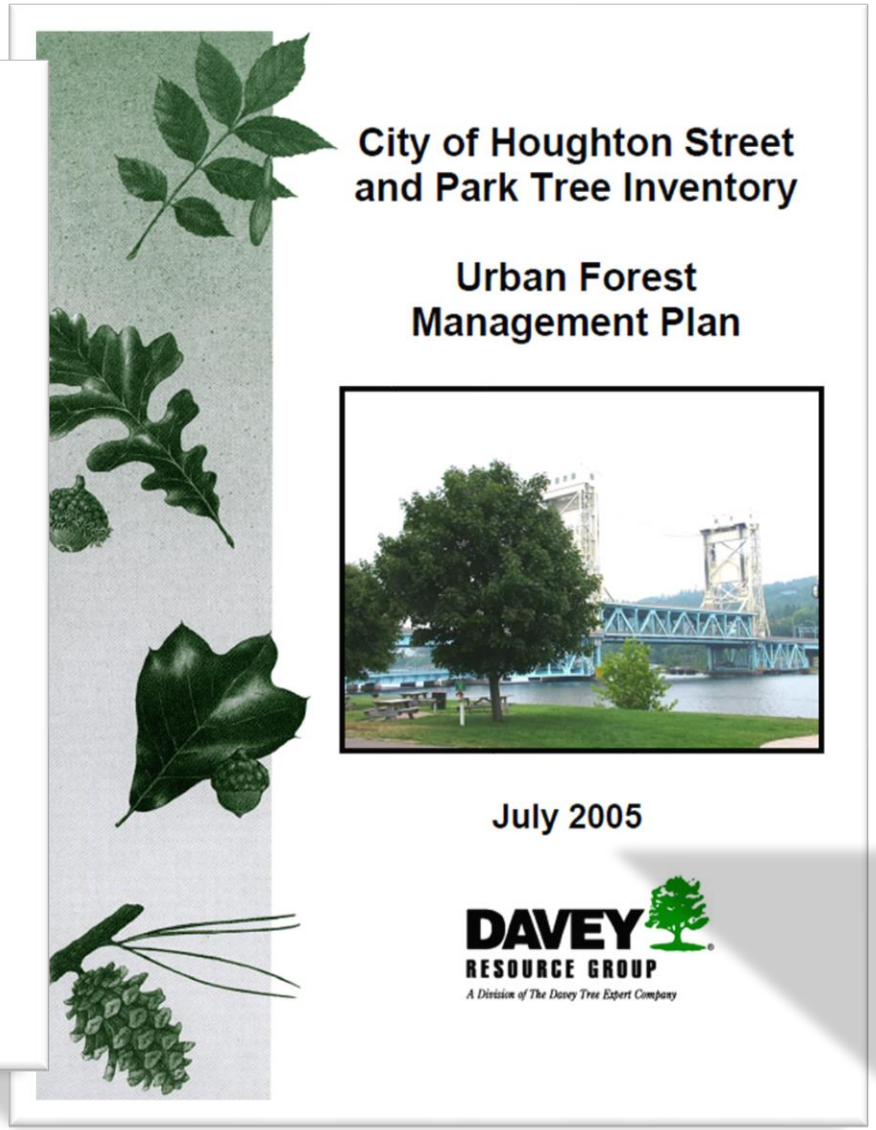
Standardizing Data Collection: Making the Case via Michigan-Based Study

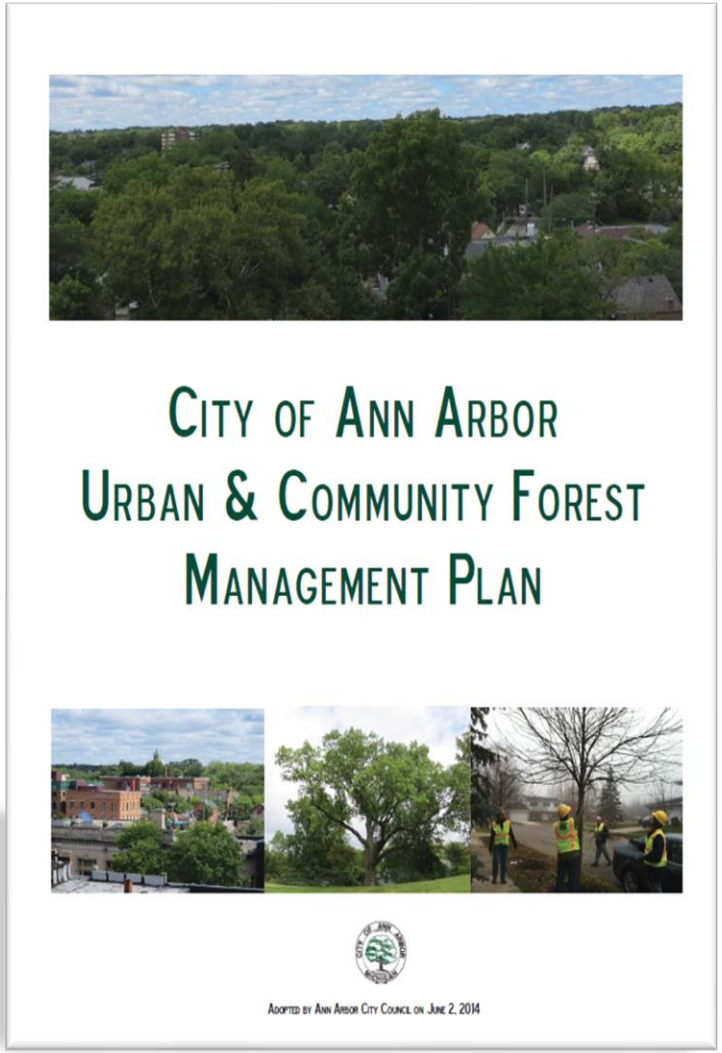
Motivation

- Assess comprehensiveness of tree diversity data in urban forest management plans
- Assess tree diversity in urban forests across the state

Methods: Plan Assessment





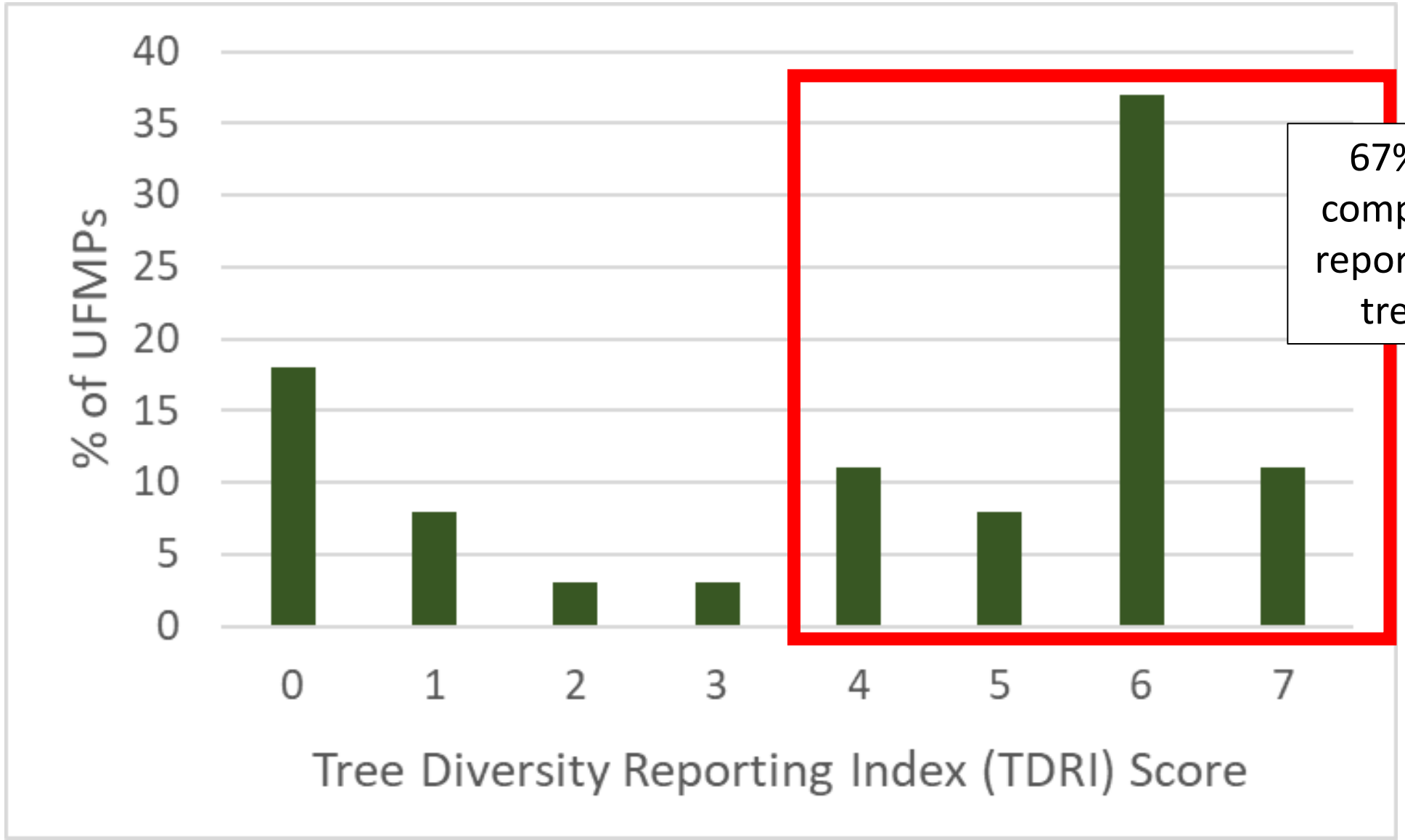


Methods:
Tree Diversity Reporting Index

$$TDRI = \sum_{1}^{7} Cs$$

Criteria
Species composition
Species richness
Genus composition
Genus richness
Condition rating
Size/age class distribution
Condition rating by size/age class
Minimum Score: 0 **Maximum Score: 7**

Results: Tree Diversity Reporting Index



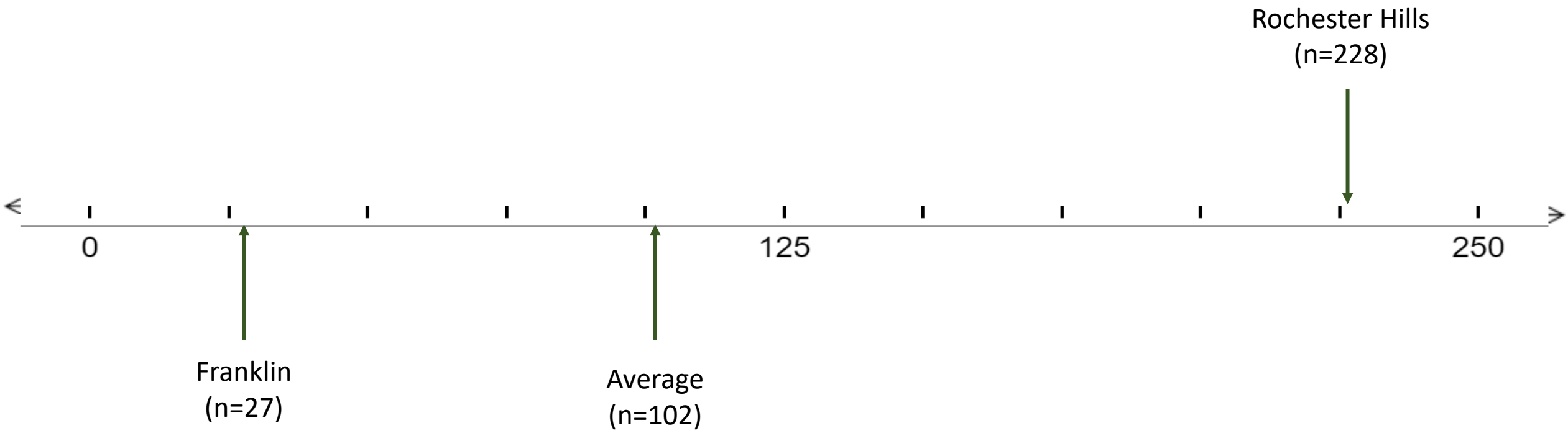
Results: Component(s) of Urban Forest Inventoried

Urban Forest Component(s) Inventoried	% of Municipalities
Street rights-of-way (ROWs)	39
Street ROWs and all public parks	21
All publicly managed trees	11
Street ROWs, all public parks, and all public facilities and spaces	14
Street ROWs and specified public parks and facilities	7
Street ROWs and specified other green spaces	4
Street ROWs, public parks, and specified other green spaces	3

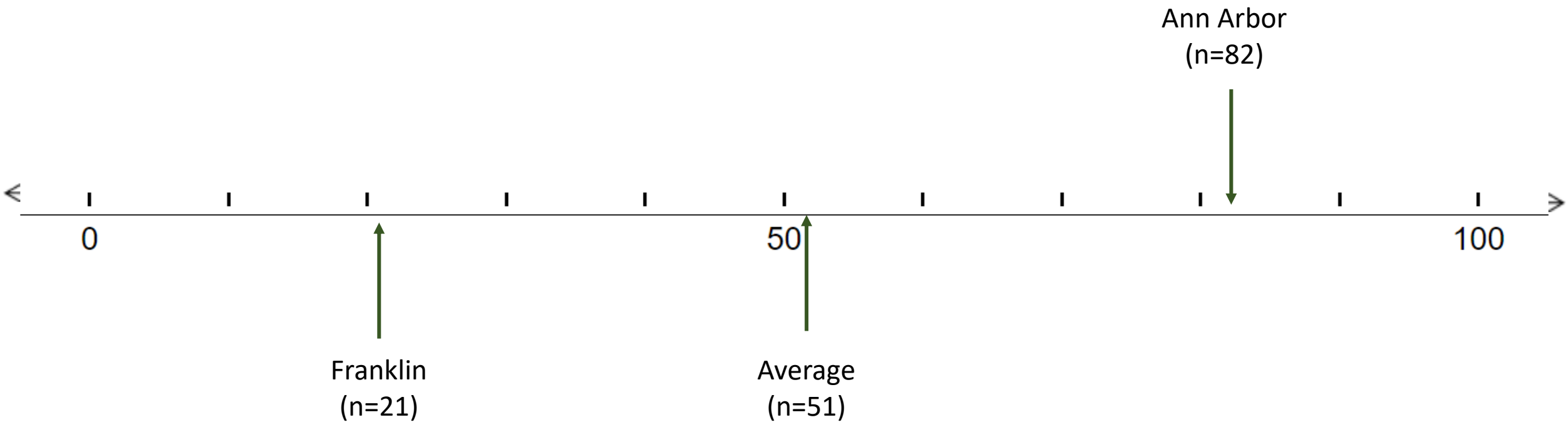
Consistent inventory data: ROWs

Less consistent inventory data: all other components of urban tree cover

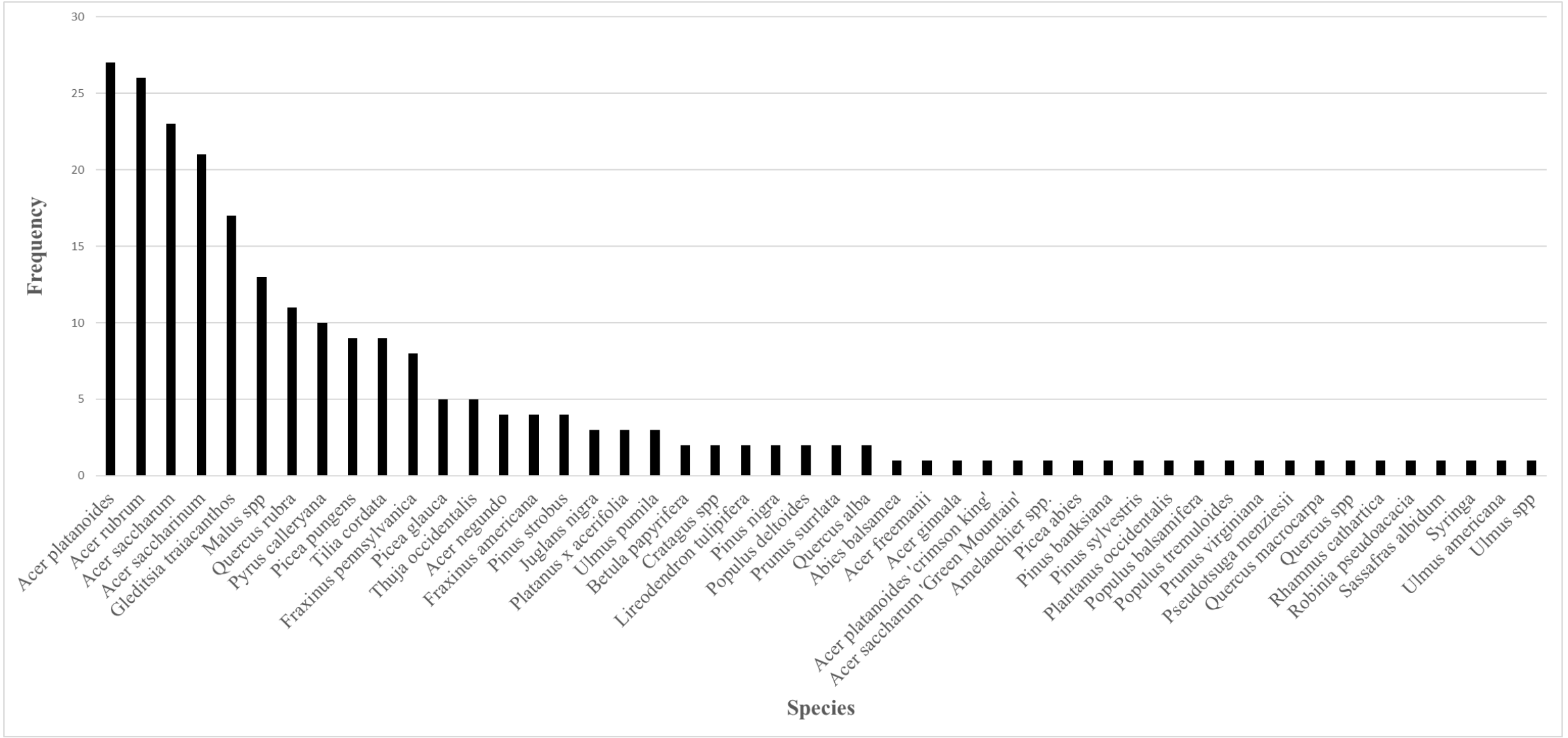
Species Richness – Michigan Municipalities



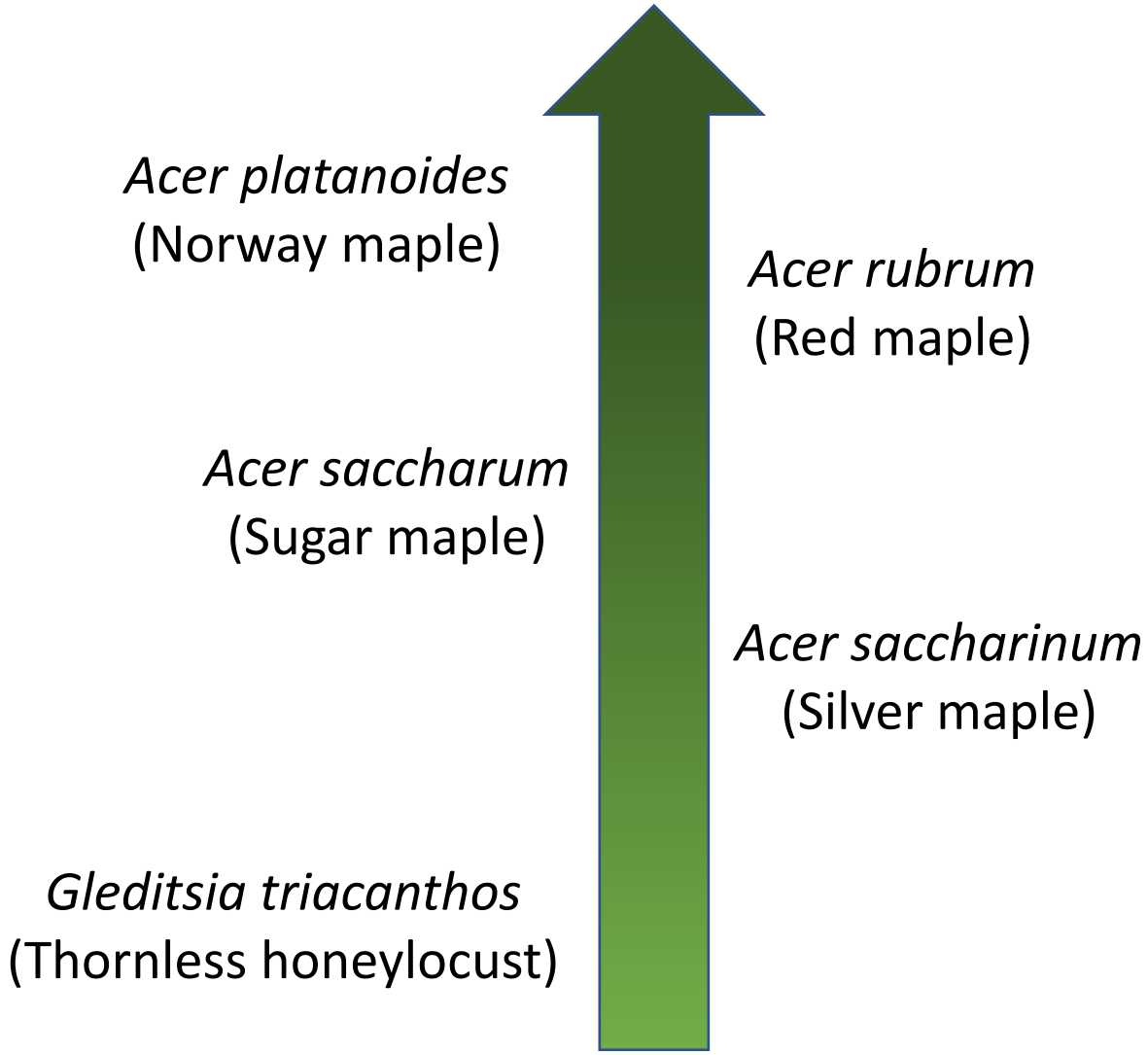
Genera Count – Michigan Municipalities



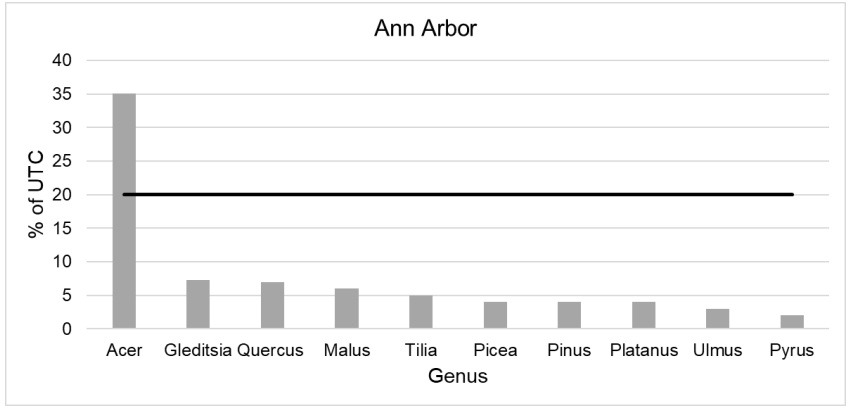
Common Species across Municipalities

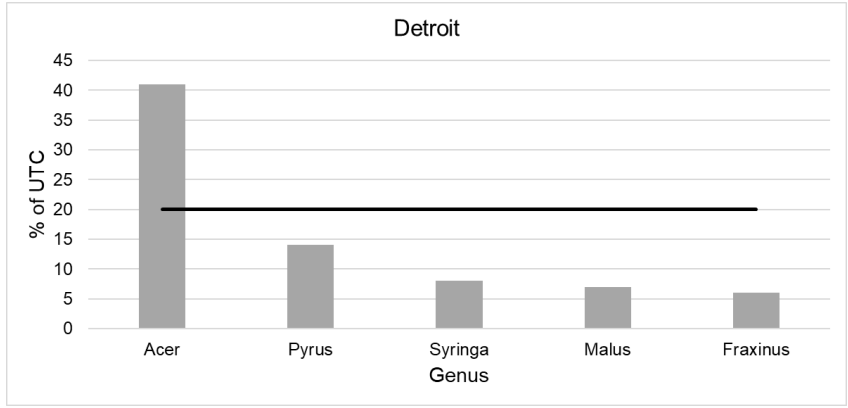


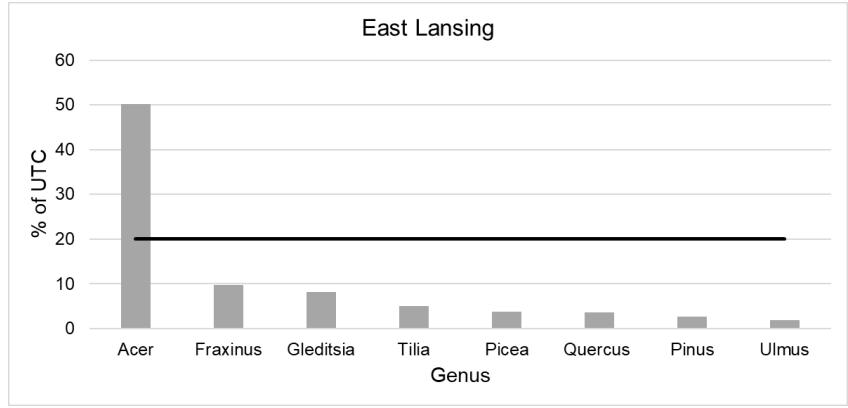
Most Abundant Species

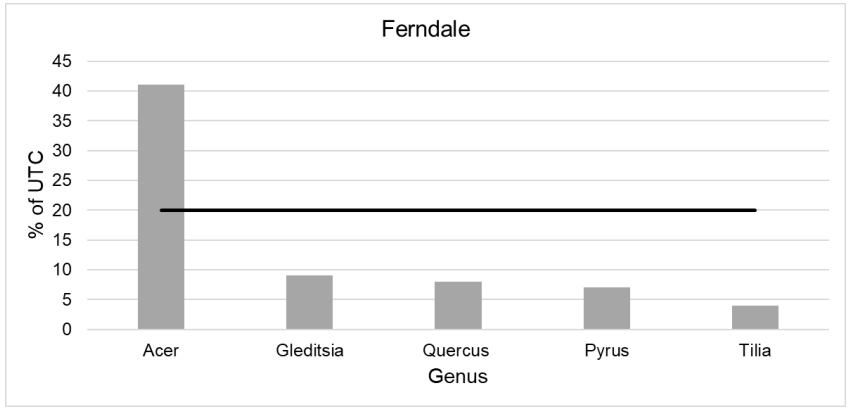


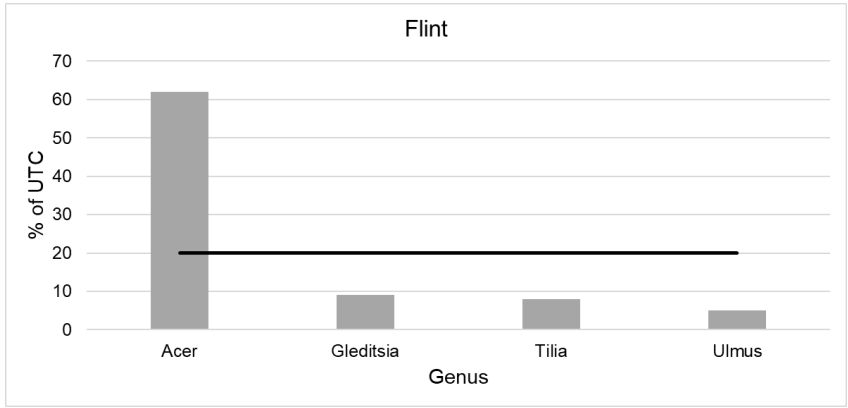
Most Abundant Genera

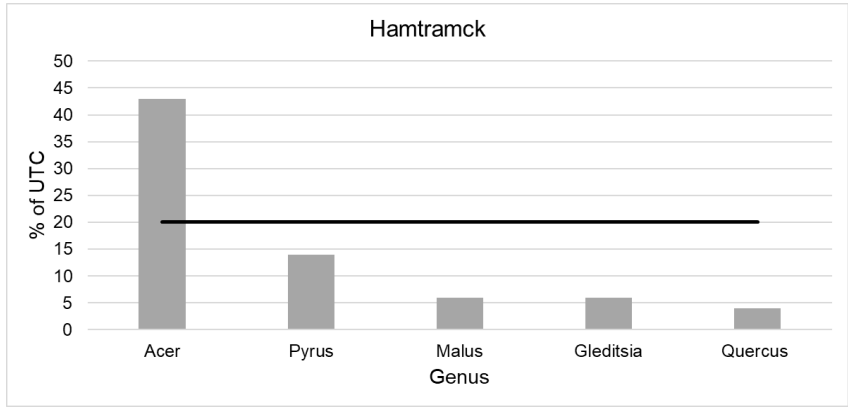

Ann Arbor
% of UTC
Acer
Gleditsia
Quercus
Malus
Tilia
Picea
Pinus
Platanus
Ulmus
Pyrus
Genus

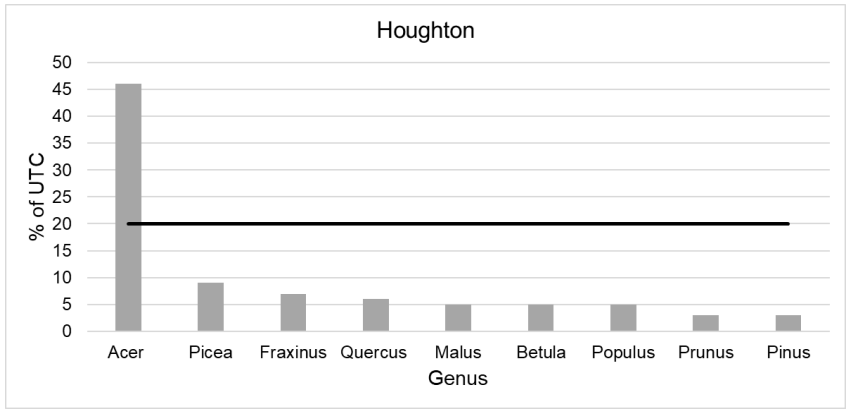

Detroit
% of UTC
Acer
Pyrus
Syringa
Malus
Fraxinus
Genus


East Lansing
% of UTC
Acer
Fraxinus
Gleditsia
Tilia
Picea
Quercus
Pinus
Ulmus
Genus


Ferndale
% of UTC
Acer
Gleditsia
Quercus
Pyrus
Tilia
Genus


Flint
% of UTC
Acer
Gleditsia
Tilia
Ulmus
Genus


Hamtramck
% of UTC
Acer
Pyrus
Malus
Gleditsia
Quercus
Genus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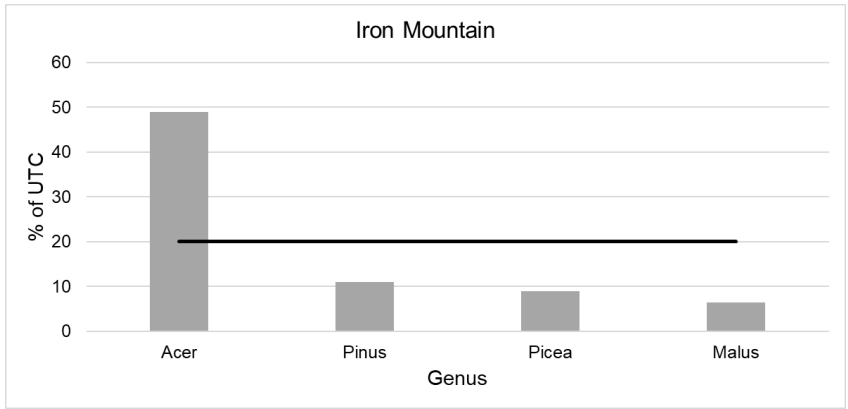
Picea
Fraxinus
Quercus
Malus
Betula
Populus
Prunus
Pinus
Genus


Iron Mountain
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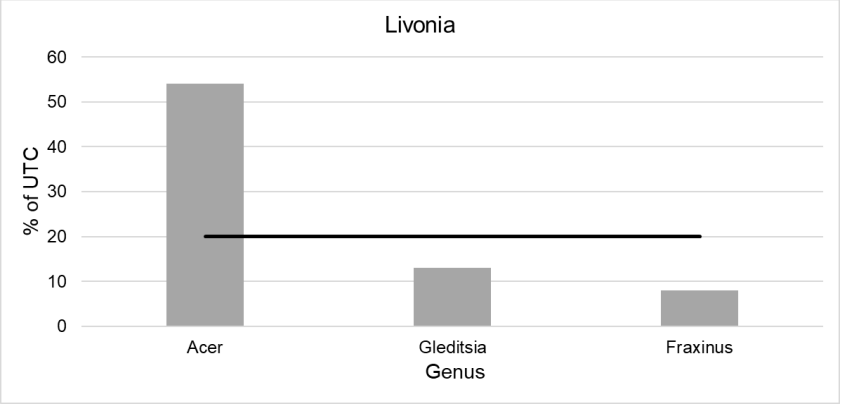
Pinus
Picea
Malus
Genus

Ironwood
% of UTC
Acer
Thuja
Fraxinus
Picea
Malus
Genus


Livonia
% of UTC
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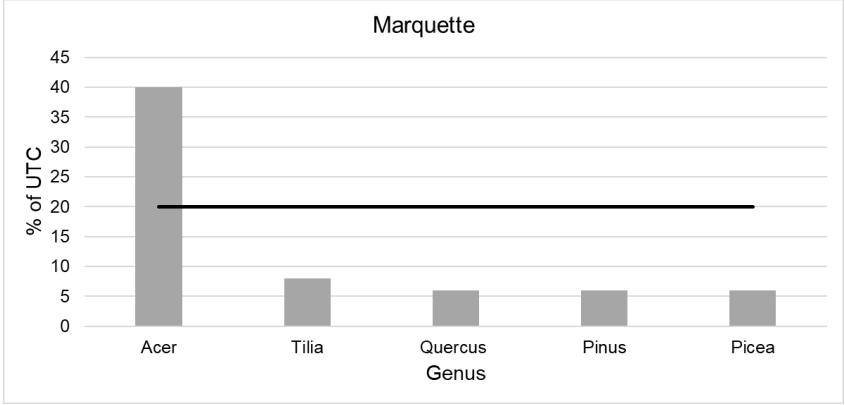
Gleditsia
Fraxinus
Genus


Marquette
% of UTC
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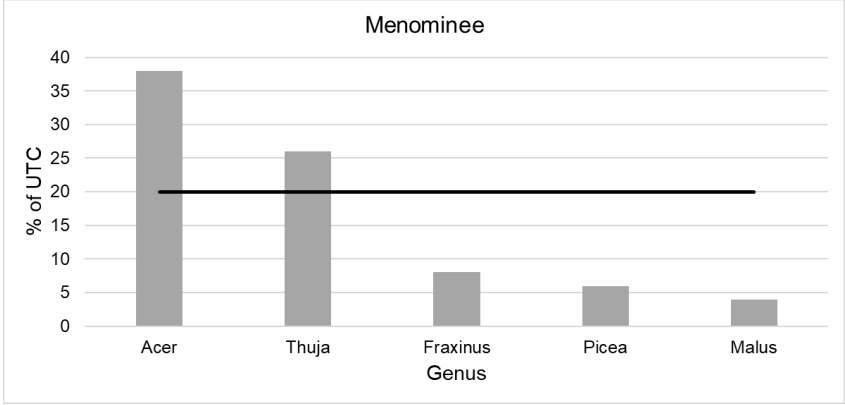
Tilia
Quercus
Pinus
Picea
Genus


Menominee
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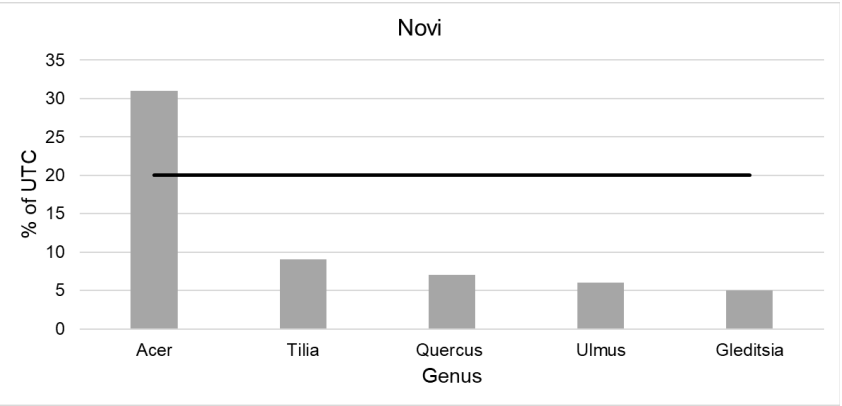
Acer
Thuja
Fraxinus
Picea
Malus
Genus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% of UTC
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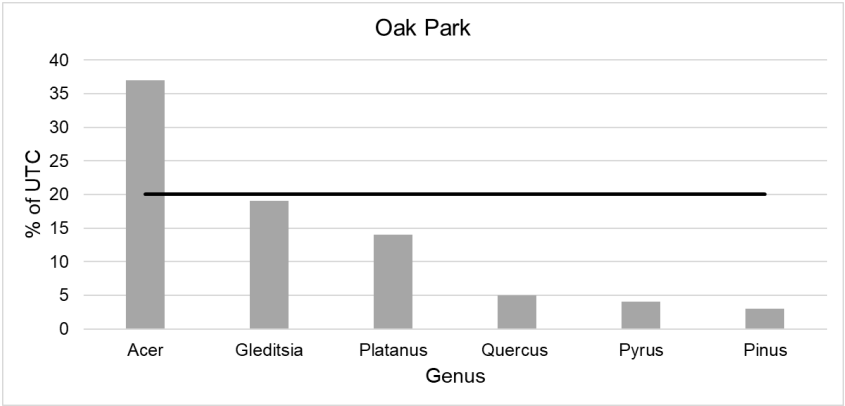
Tilia
Quercus
Ulmus
Gleditsia
Genus


Oak Park
% of UTC
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35
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20
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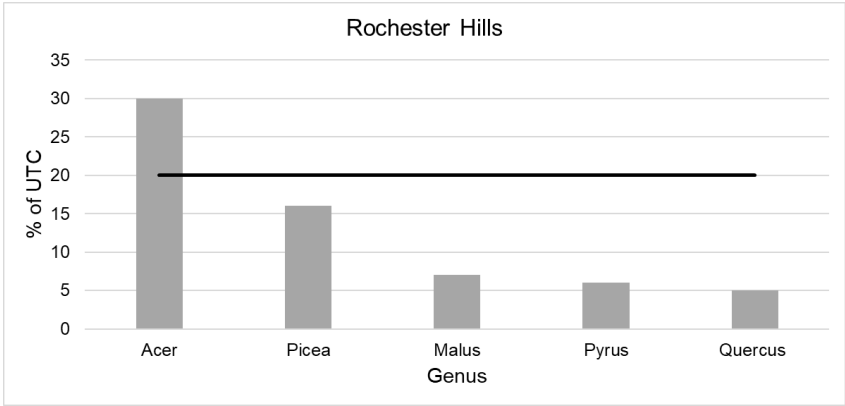
0
Acer
Gleditsia
Platanus
Quercus
Pyrus
Pinus
Genus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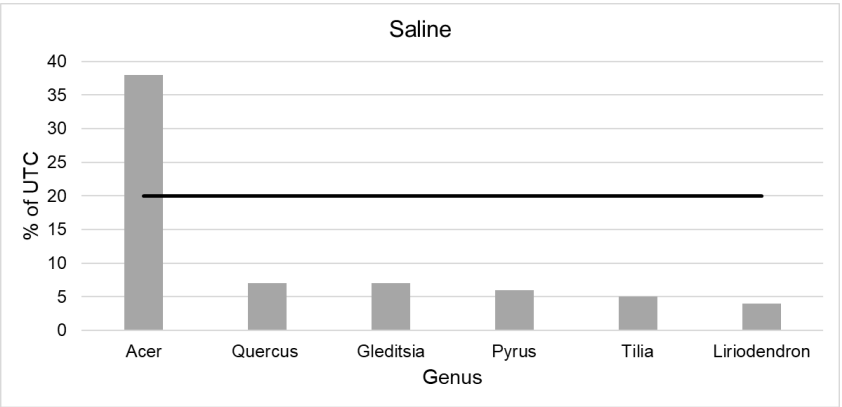
Acer
Picea
Malus
Pyrus
Quercus
Genus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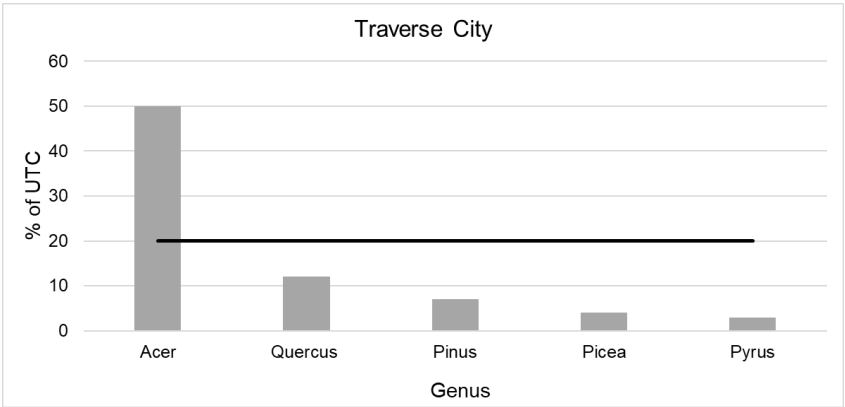
Quercus
Gleditsia
Pyrus
Tilia
Liriodendron
Genus


Traverse City
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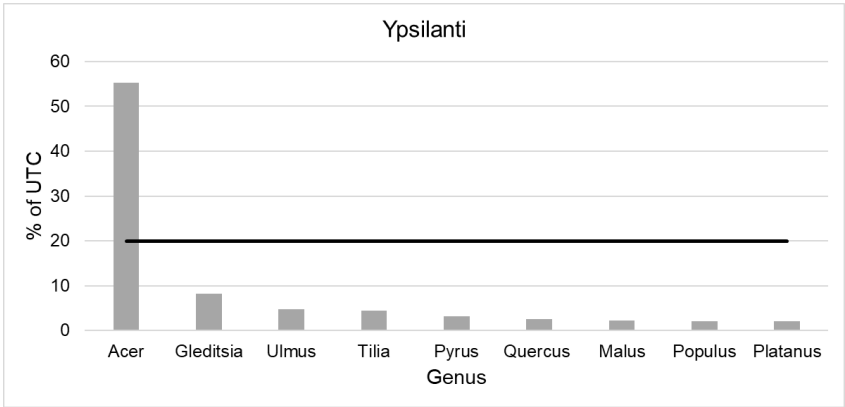
10
0
Acer
Quercus
Pinus
Picea
Pyrus
Genus


Ypsilanti
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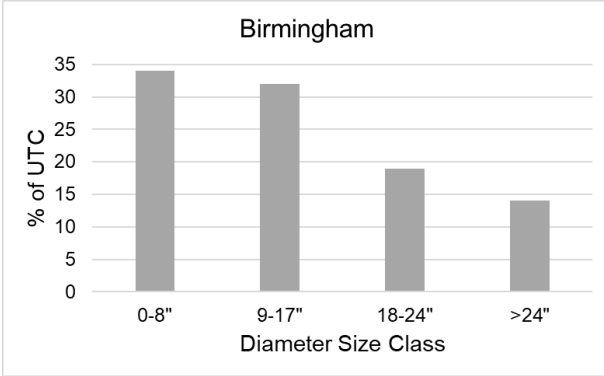
50
40
30
20
10
0
Acer
Gleditsia
Ulmus
Tilia
Pyrus
Quercus
Malus
Populus
Platanus
Genus

Diameter Size Class Distribution

Ann Arbor
% of UTC
50
40
30
20
10
0
0-5"
6-20"
>21"
Diameter Size Class


Birmingham
% of UTC
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30
25
20
15
10
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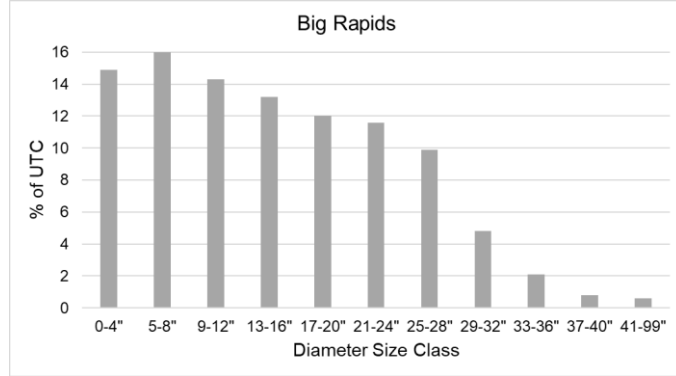
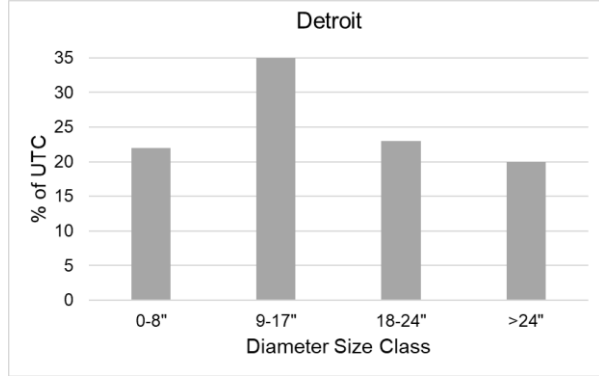
0
0-8"
9-17"
18-24"
>24"
Diameter Size Class


Big Rapids
% of UTC
16
14
12
10
8
6
4
2
0
0-4"
5-8"
9-12"
13-16"
17-20"
21-24"
25-28"
29-32"
33-36"
37-40"
41-99"
Diameter Size Class


Detroit
% of UTC
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30
25
20
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10
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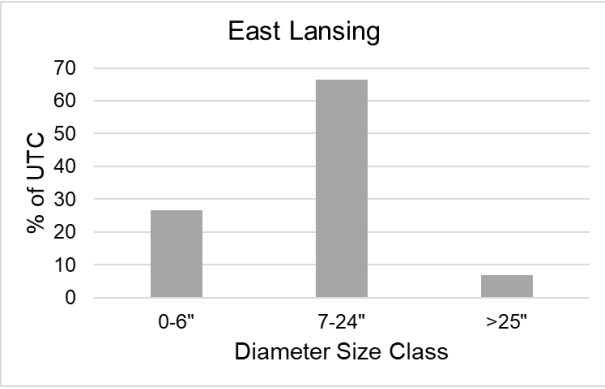
0-8"
9-17"
18-24"
>24"
Diameter Size Class


East Lansing
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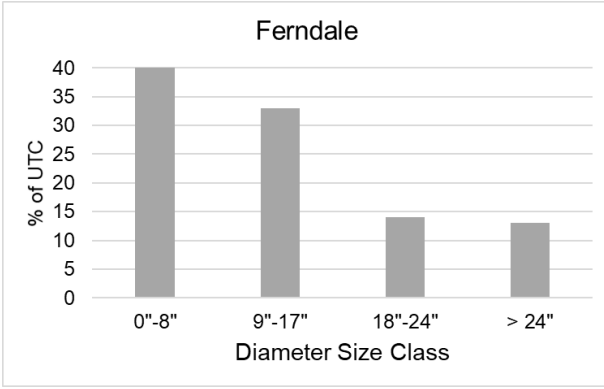
0
0-6"
7-24"
>25"
Diameter Size Class


Ferndale
% of UTC
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20
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10
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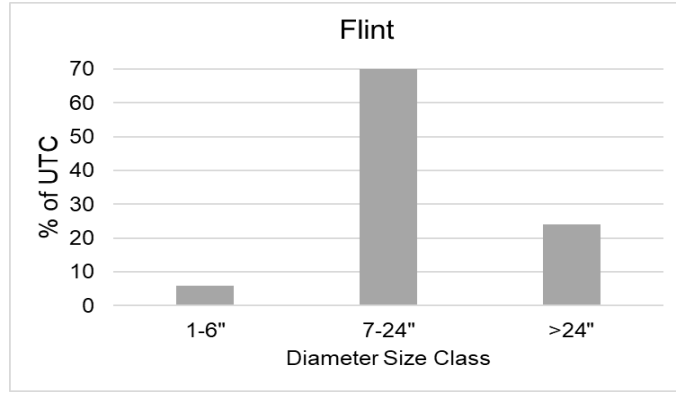
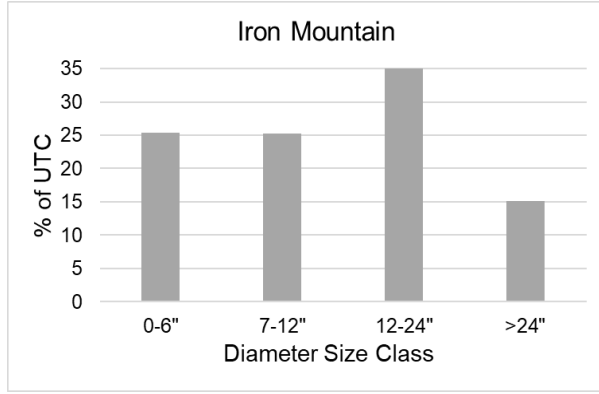
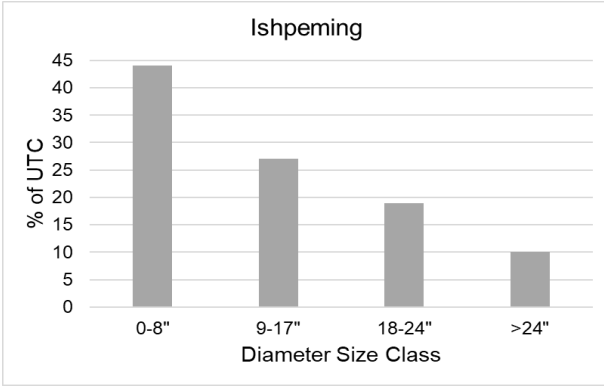
0
0"-8"
9"-17"
18"-24"
> 24"
Diameter Size Class


Flint
% of UTC
70
60
50
40
30
20
10
0
1-6"
7-24"
>24"
Diameter Size Class


Iron Mountain
% of UTC
35
30
25
20
15
10
5
0
0-6"
7-12"
12-24"
>24"
Diameter Size Class

Ironwood
% of UTC
50
40
30
20
10
0
1-6"
7-12"
12-24"
>24"
Diameter Size Class


Ishpeming
% of UTC
45
40
35
30
25
20
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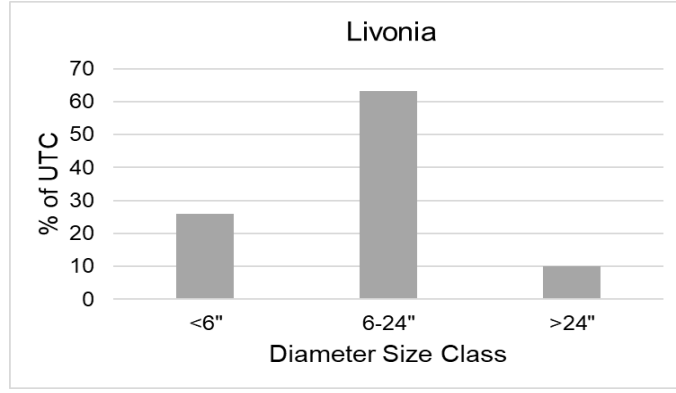
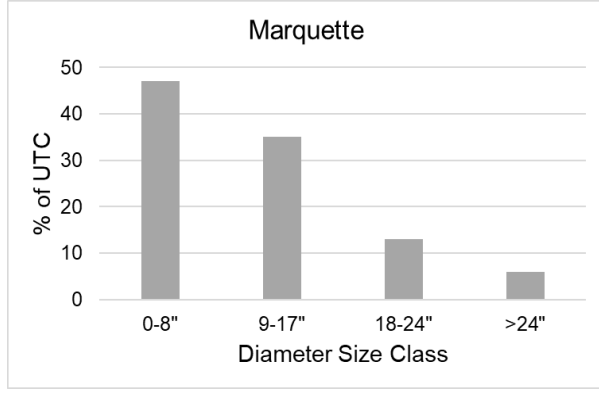
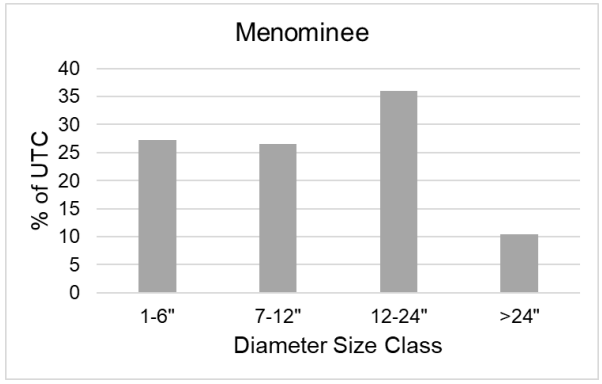
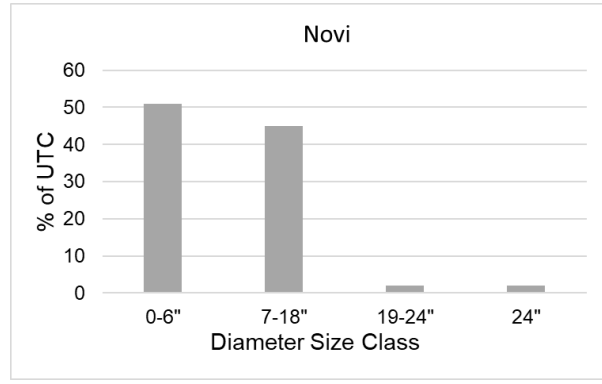
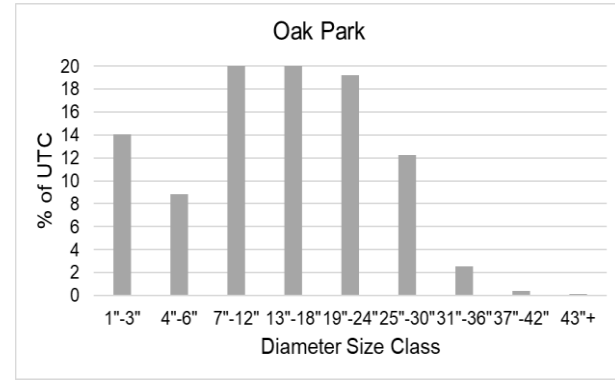
10
5
0
0-8"
9-17"
18-24"
>24"
Diameter Size Class

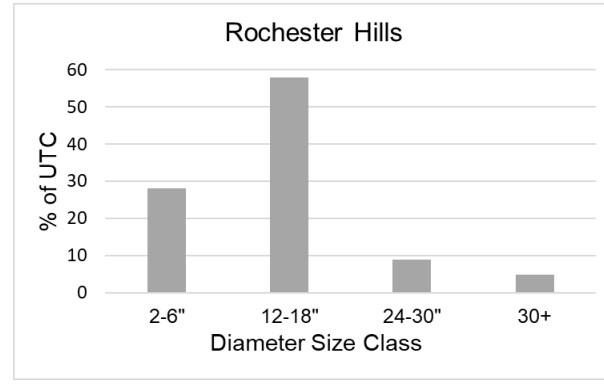

Livonia
% of UTC
70
60
50
40
30
20
10
0
<6"
6-24"
>24"
Diameter Size Class

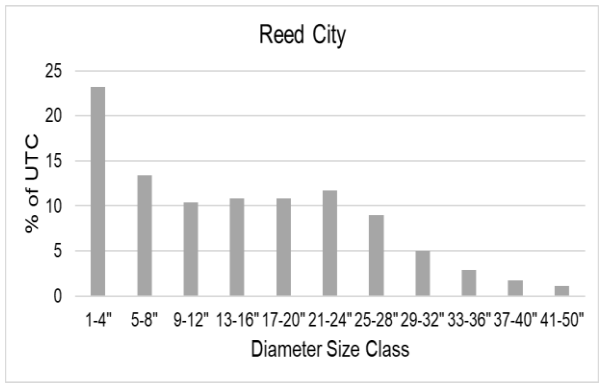

Marquette
% of UTC
50
40
30
20
10
0
0-8"
9-17"
18-24"
>24"
Diameter Size Class


Menominee
% of UTC
0
5
10
15
20
25
30
35
40
1-6"
7-12"
12-24"
>24"
Diameter Size Class

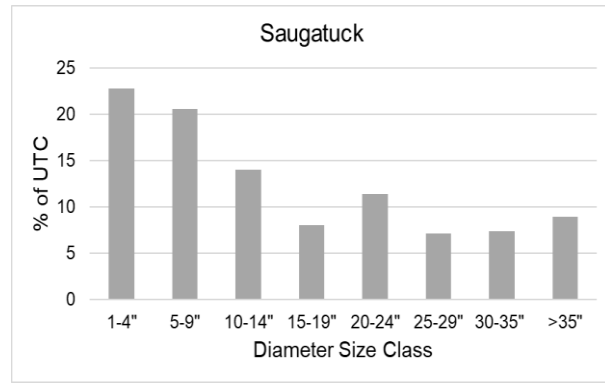

Novi
% of UTC
0
10
20
30
40
50
60
0-6"
7-18"
19-24"
24"
Diameter Size Class

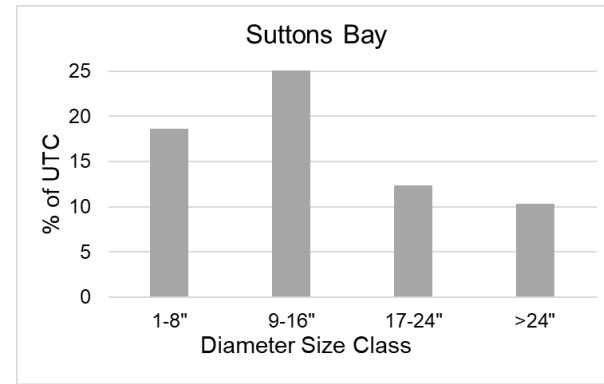

Oak Park
% of UTC
0
2
4
6
8
10
12
14
16
18
20
1"-3"
4"-6"
7"-12"
13"-18"
19"-24"
25"-30"
31"-36"
37"-42"
43"+
Diameter Size Class

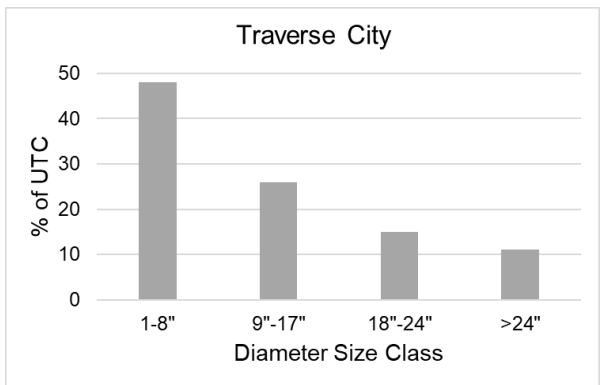

Rochester Hills
% of UTC
0
10
20
30
40
50
60
2-6"
12-18"
24-30"
30+
Diameter Size Class

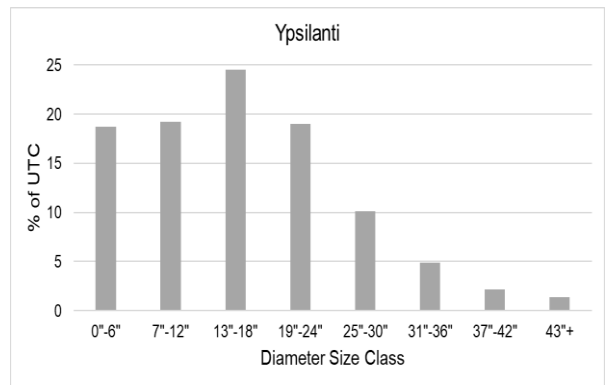

Reed City
% of UTC
0
5
10
15
20
25
1-4"
5-8"
9-12"
13-16"
17-20"
21-24"
25-28"
29-32"
33-36"
37-40"
41-50"
Diameter Size Class

Saline
% of UTC
0
5
10
15
20
25
30
35
1"-3"
4"-6"
7"-12"
13"-18"
19"-24"
25"-30"
31"-36"
37"-42"
43"+
Diameter Size Class


Saugatuck
% of UTC
0
5
10
15
20
25
1-4"
5-9"
10-14"
15-19"
20-24"
25-29"
30-35"
>35"
Diameter Size Class


Suttons Bay
% of UTC
0
5
10
15
20
25
1-8"
9-16"
17-24"
>24"
Diameter Size Class


Traverse City
% of UTC
0
10
20
30
40
50
1-8"
9"-17"
18"-24"
>24"
Diameter Size Class


Ypsilanti
% of UTC
0
5
10
15
20
25
0"-6"
7"-12"
13"-18"
19"-24"
25"-30"
31"-36"
37"-42"
43"+
Diameter Size Class

Condition Rating

- Reported in 93% of plans
- Trees in fair to good condition: >75% in most municipalities
- High variability in condition rating systems used
  - Descriptions not consistently provided
  - Varying classifications for dead and dying trees

Summary of Findings

- **Overall, comprehensive collection of tree inventory data**

- **Room for improvement**
  - Comprehensive consistency of components of urban forest that are inventoried
  - Clarification and consistency around size class data
  - Clarification and consistency around condition rating data

- Application
  - Strategic tree selection for increased diversity
  - Strategic tree selection, care, and management for tree equity

Applications for Advancing Urban Forestry in the IRA Era

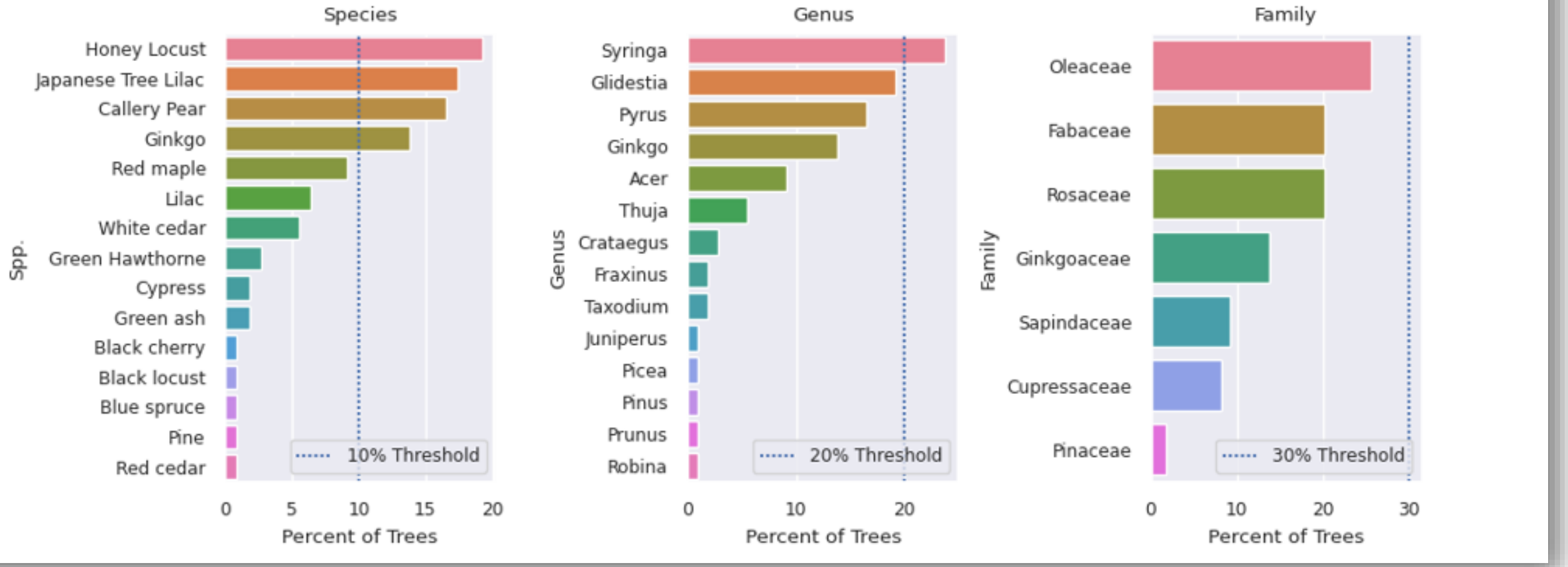
Goals

Prioritize collecting and analyzing good, high-quality data now so that we are universally equipped to assess the impacts of this funding over the next 5 – 10 years.

Goals

Be as comprehensive as possible in collection of urban forest inventory data

Use high quality inventory data to guide decisions around tree selection & management (Be strategic)



Engage the Community in the Work

- Community inventory: equally important as urban forest inventory
- Community inventory: must be equally comprehensive and inclusive
- Take the time to do it right
- Include community inventory data in tree selection, management

Provide Inclusive & Comprehensive Workforce Development Opportunities

Conclusions

- Unprecedented opportunity to advance the field
- Opportune time to increase trategy/standardization in urban forest inventory data collection
- Collection of inventory data should be comprehensive and inclusive – **remember**, this includes inventory of community as well

Thank You & Questions

- **Collaborators and support:**
  - Michigan DNR (PERM)
  - Indya Hunt (USFS)
  - Dapha Gadoth (MSU FCCP)

- **Contact:** dowtinas@msu.edu