Street Tree Inventory Findings 2014

Boise, Cully, Eliot, Foster-Powell, Kerns, Laurelhurst, South Tabor, Sullivan's Gulch, West Portland Park

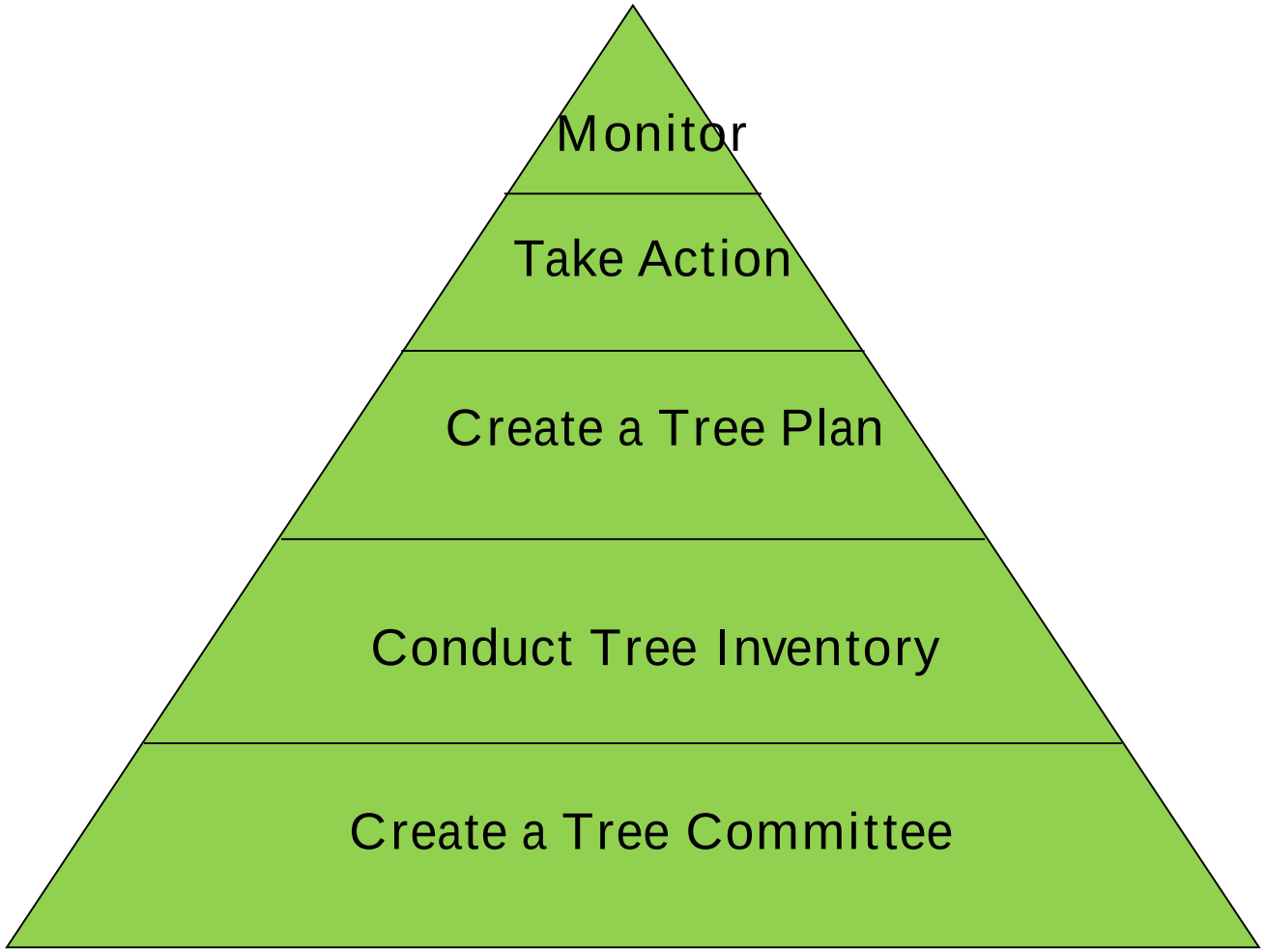
www.portlandoregon.gov/parks/treeinventory

Agenda

- 9:00am – 9:10am Intro
- 9:10am – 10:30am Inventory Results Revealed: Findings, Analysis, and Recommendations
  Angie DiSalvo, Jen Gorski, and Lele Kimball, PP&R Urban Forestry
- 10:30am – 10:45am Break
- 10:45am – 11:00am Species Diversity for Resilient Forests
  Jim Gersbach, PP&R Urban Forestry
- 11:00am – 11:25am Caring for Trees from Seedling to Replacement
  Rick Faber, PP&R Urban Forestry
- 11:25am – 11:45am Portland's Tree Canopy Present and Future
  Jeff Ramsey, PP&R Urban Forestry
- 11:45am – Noon From Stumptown to Tree Town: Interpreting neighborhood history through trees
  David-Paul Hedberg, Portland State University
- Noon – 1:00pm Lunch
- 1:00pm – 2:00pm Tree Plan Work Session I
- 2:00pm – 2:15 pm Workshop Options
  Elizabeth Specht and Danielle Voisin, PP&R Urban Forestry AmeriCorps members
- 2:15pm – 4:00pm Tree Plan Work Session II

Tree Stewardship Model

building capacity from the bottom up



Thank You!

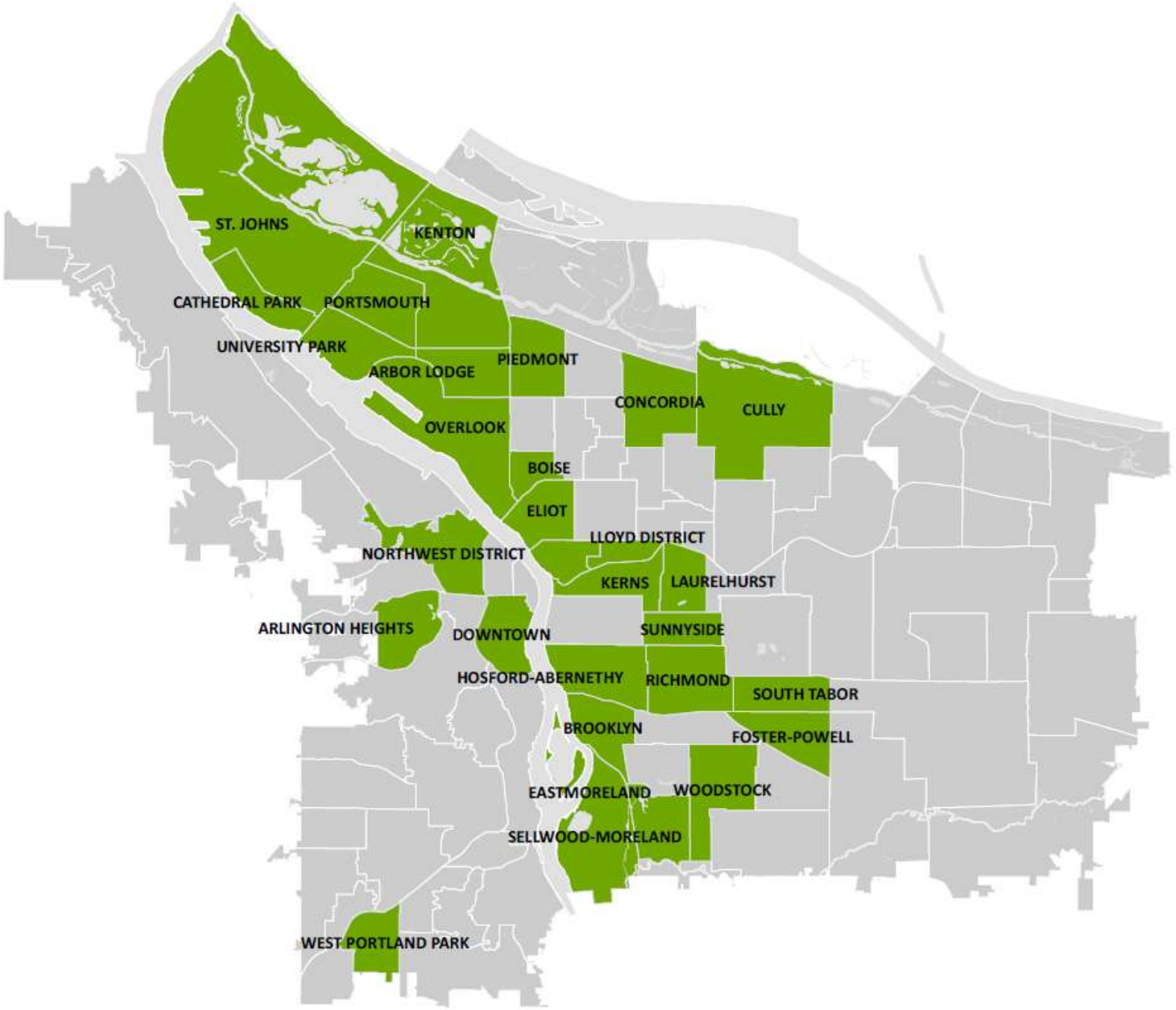
Thank You!

In 2014

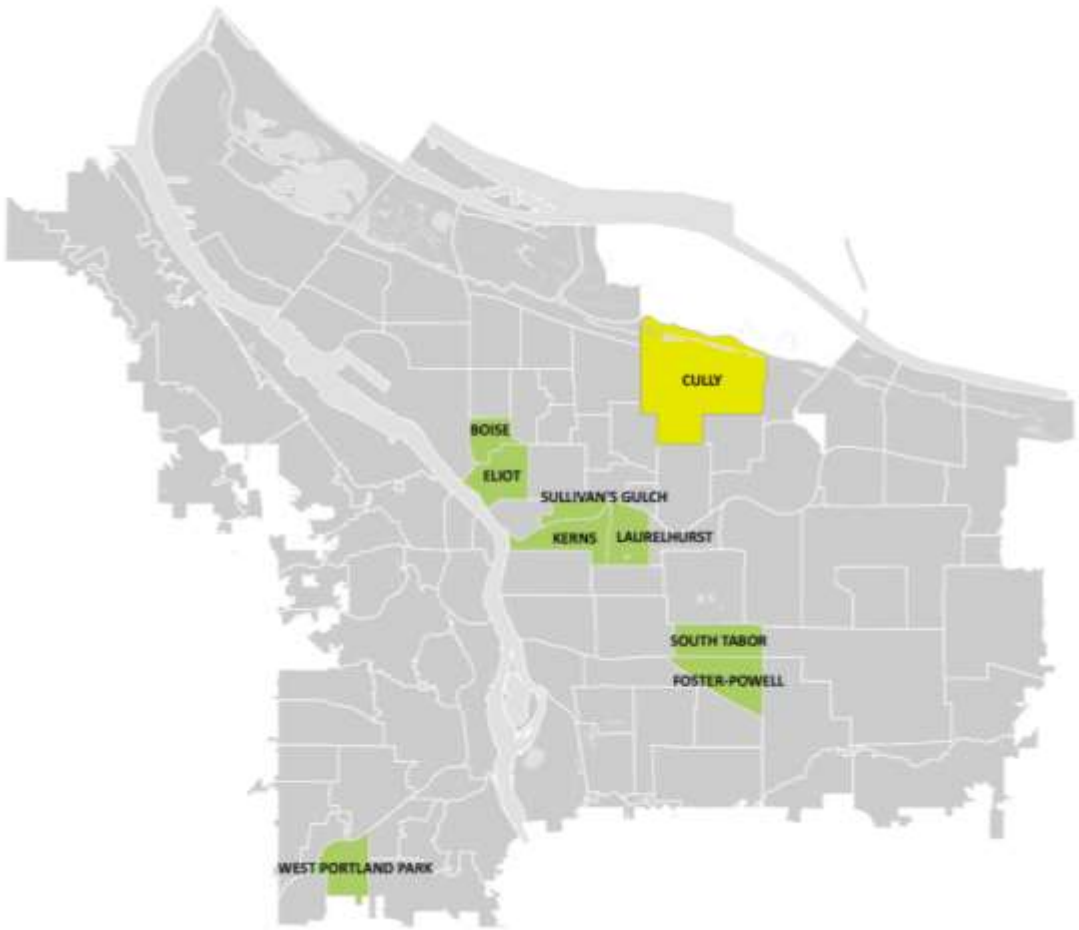
- More than 250 volunteers
- Over 4,200 hours volunteered
- Data entry on 30,000 trees

2010-2014

- More than 650 volunteers
- Over 12,500 hours volunteered
- Data entry on 100,000 trees


ST. JOHNS
KENTON
CATHEDRAL PARK
PORTSMOUTH
UNIVERSITY PARK
ARBOR LODGE
PIEDMONT
CONCORDIA
CULLY
OVERLOOK
BOISE
ELIOT
LLOYD DISTRICT
NORTHWEST DISTRICT
KERNS
LAURELHURST
ARLINGTON HEIGHTS
DOWNTOWN
SUNNYSIDE
HOSFORD-ABERNETHY
RICHMOND
SOUTH TABOR
BROOKLYN
FOSTER-POWELL
EASTMORELAND
WOODSTOCK
SELLWOOD-MORELAND
WEST PORTLAND PARK

CULLY
BOISE
ELIOT
SULLIVAN'S GULCH
KERNS
LAURELHURST
SOUTH TABOR
FOSTER-POWELL
WEST PORTLAND PARK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FOSTER-POWELL
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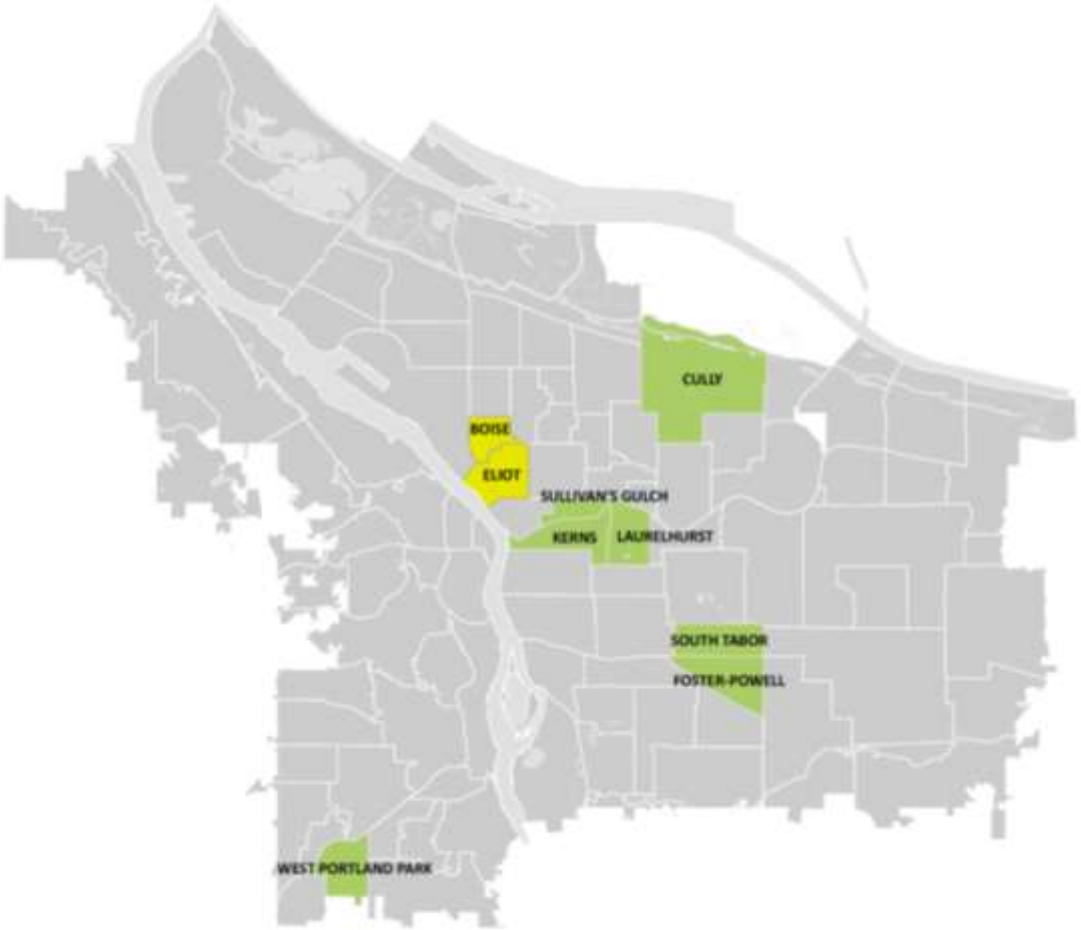
CULLY
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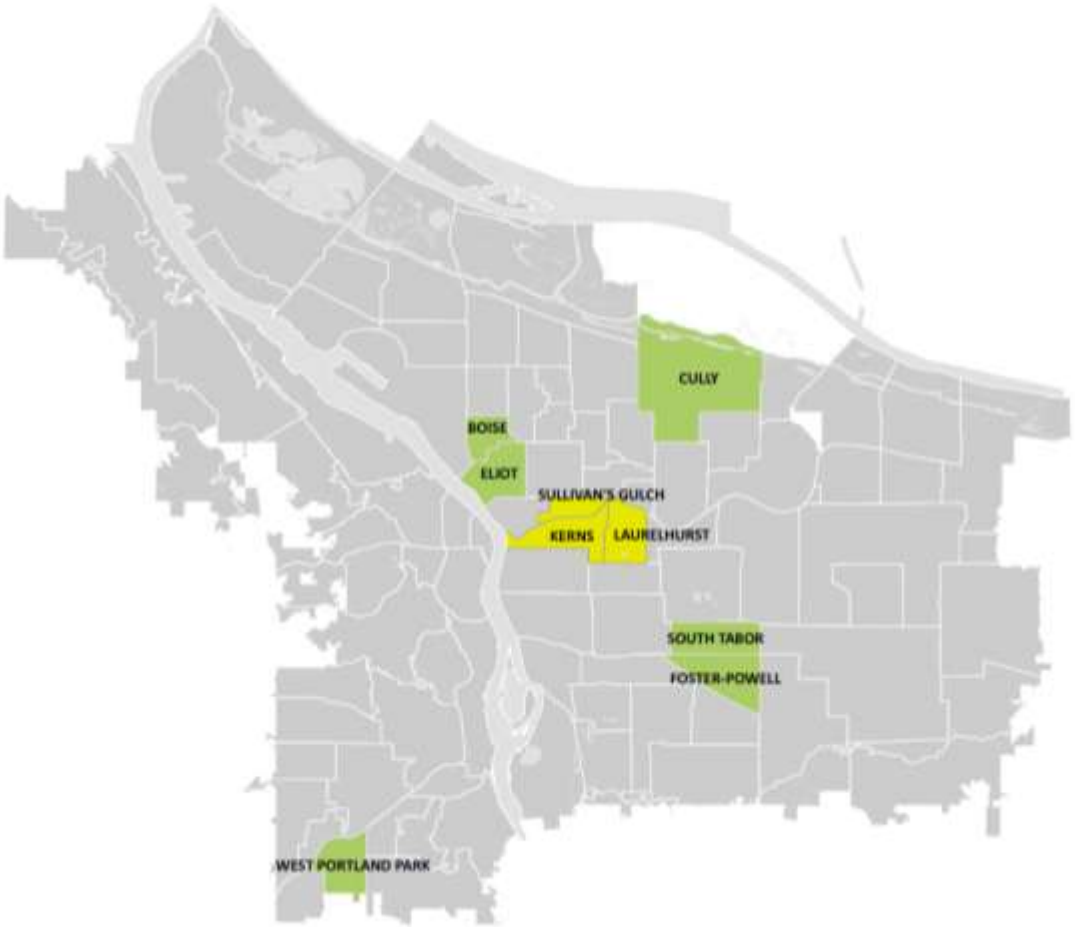
SOUTH TABOR
FOSTER-POWELL
WEST PORTLAND PARK

LINCOLN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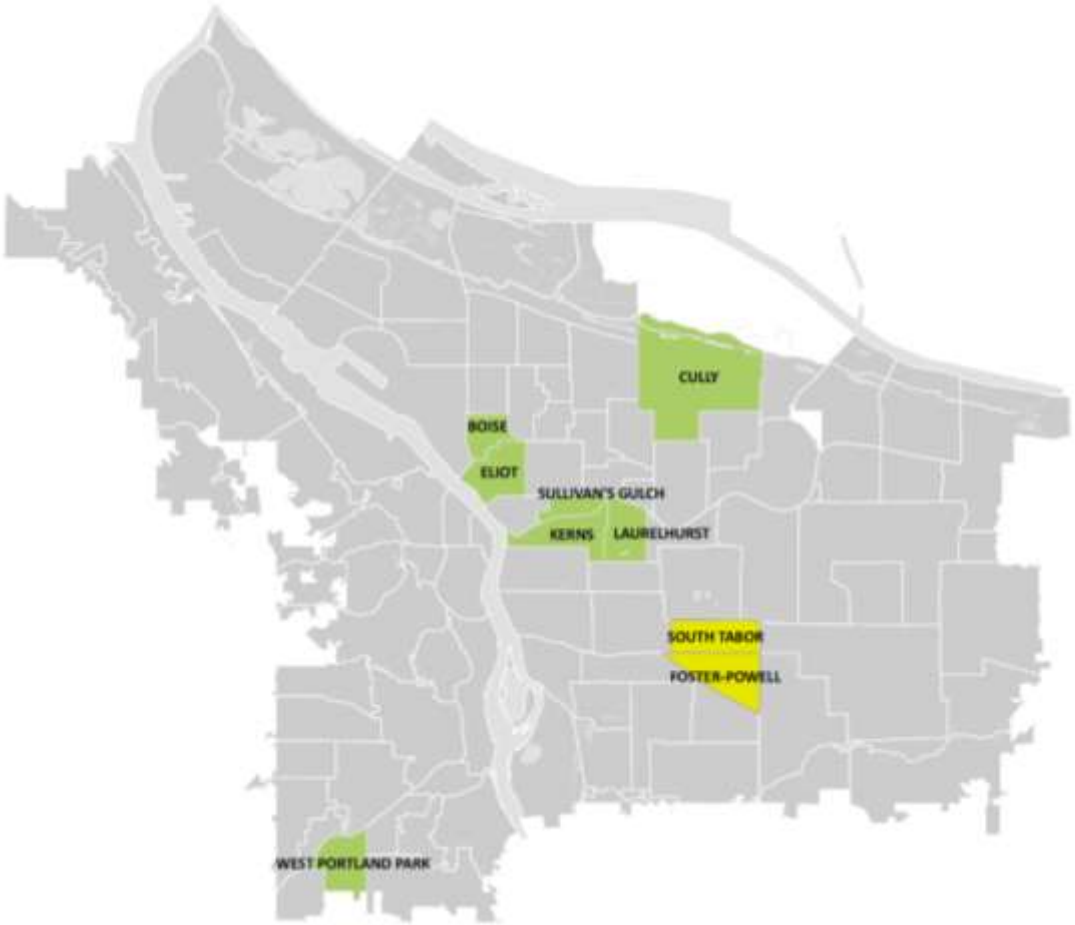
WEST PORTLAND PARK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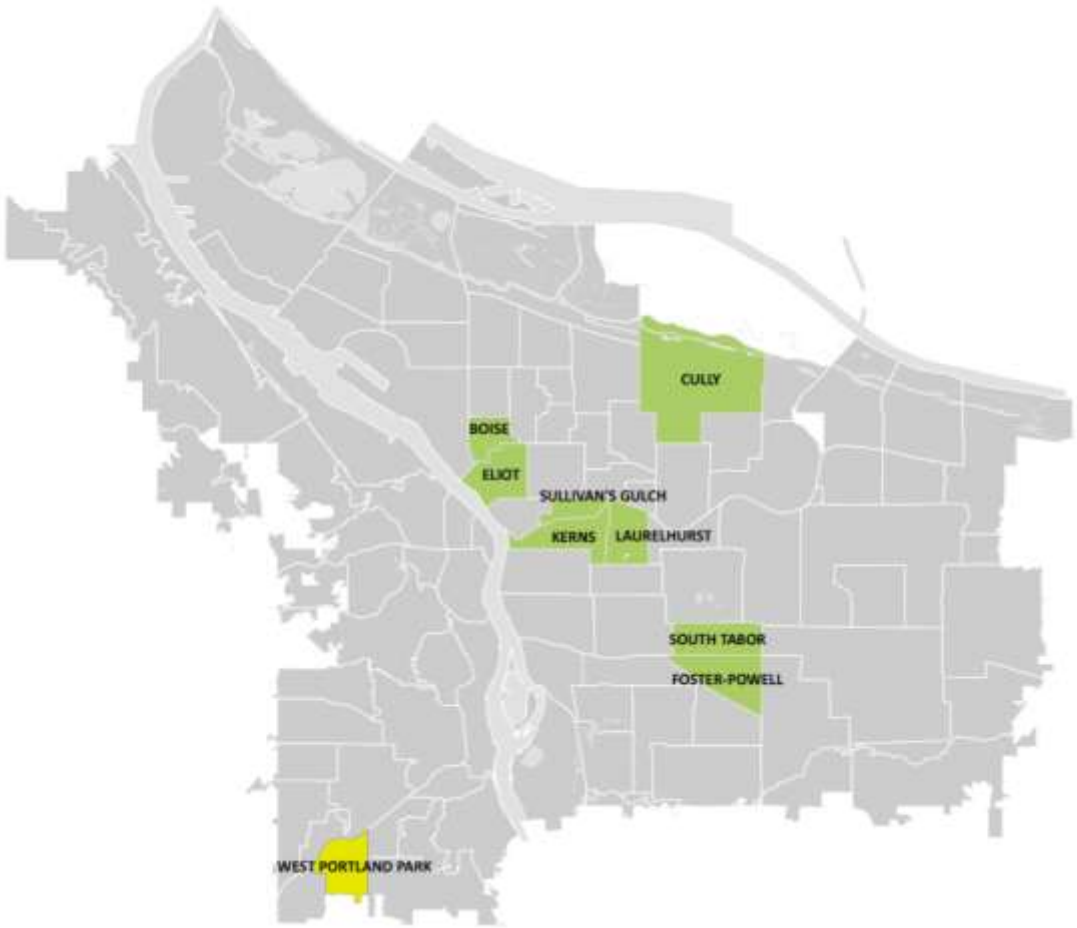
CULLY
BOISE
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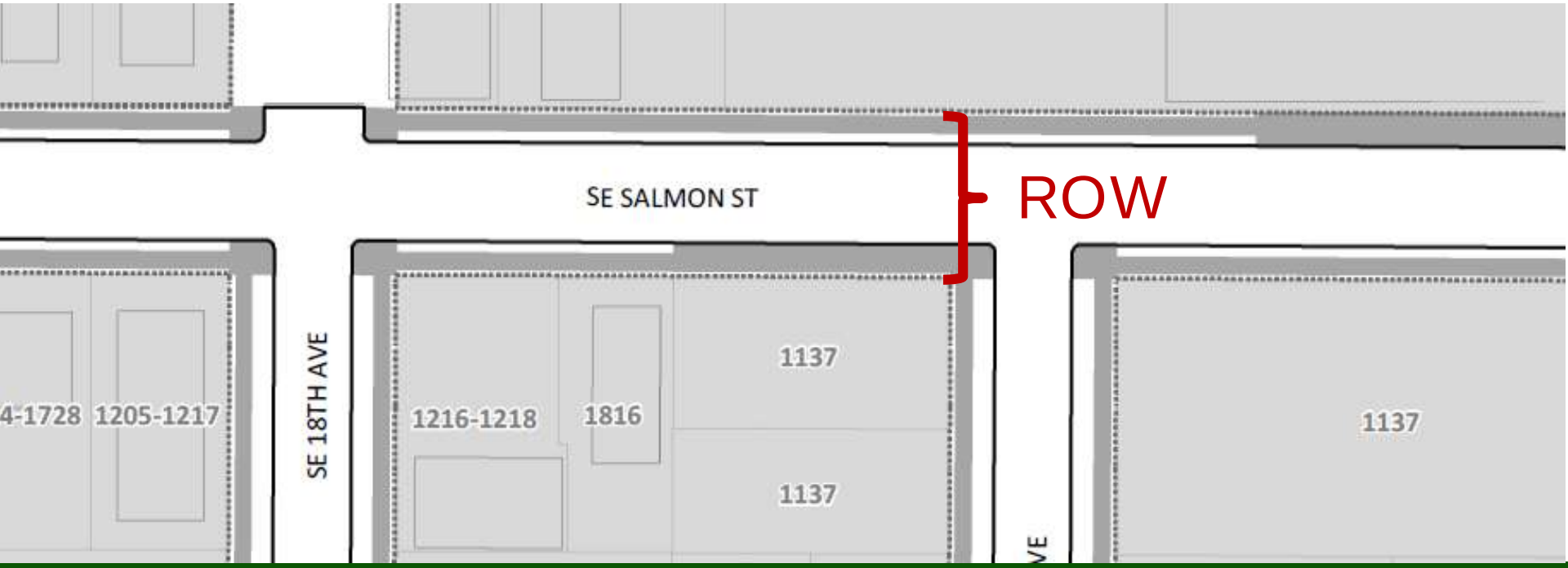
FOSTER-POWELL
WEST PORTLAND PARK

What is a street tree?

A tree that grows in the right-of-way between street and adjacent tax lot



What is a street tree?

Fragrant snowbell (*Styrax obassia*) in Boise

- Community Resource
- Responsibility for their care is assigned to the adjacent property owner
- Regulated by Urban Forestry
  - Permits for planting, pruning, and removal

Inventory Methods

Flowering plum (*Prunus* spp.) in South Tabor

- Inventory coordinators arranged 4-5 work days per neighborhood
- "Team Leaders" trained on techniques and tree identification
- Team leaders paired with novice volunteers to collect data
- "Arborist-on-Call" answers tree ID and site questions during work day
- Data collected on paper forms and later entered into ArcGIS
- Accuracy > 95%

Data Collection

Data collection in Foster-Powell

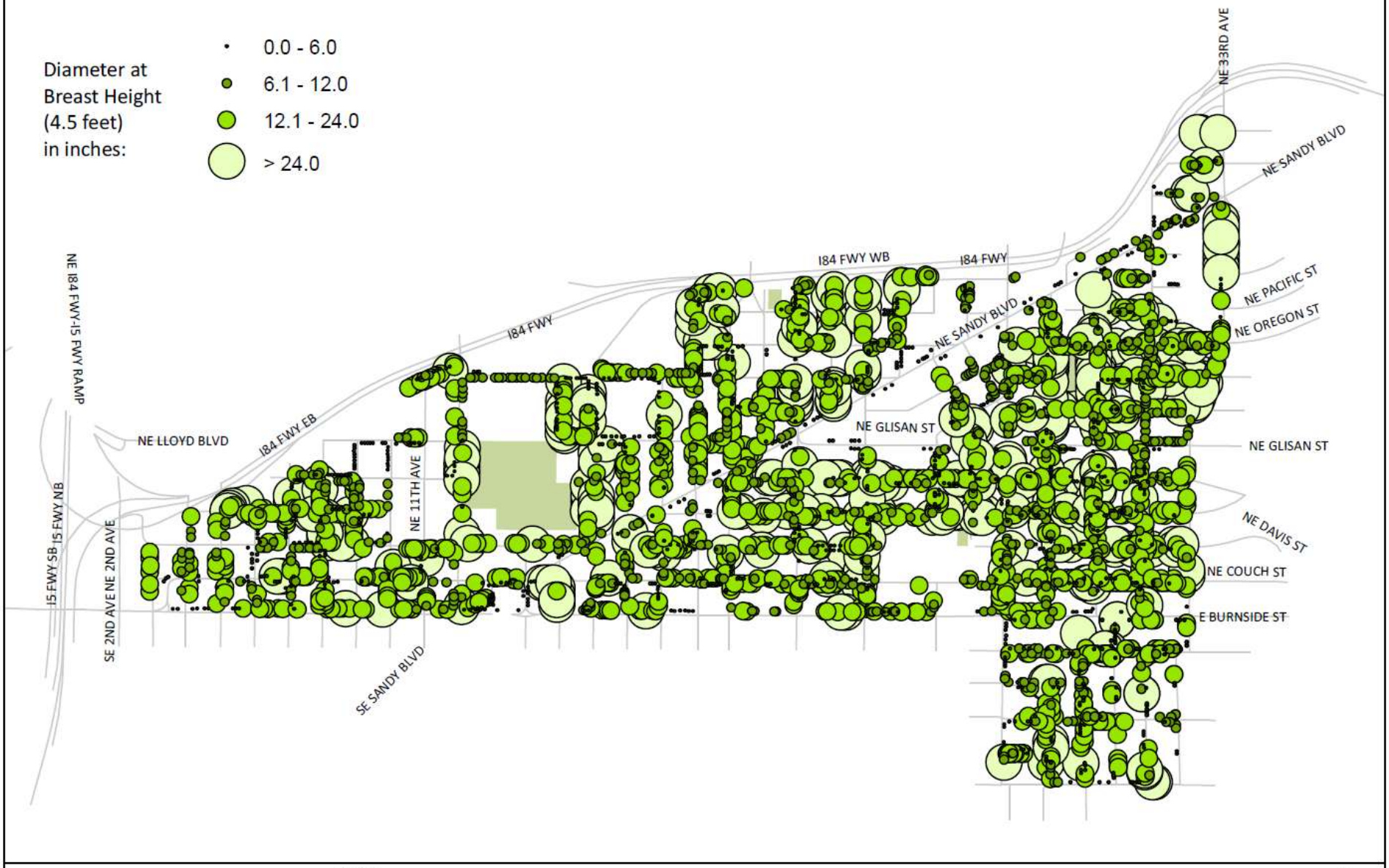
Data collected included:

- About the trees environment
  - Location
  - Planting site type
  - Planting site width
  - Presence of high voltage wires
- About the tree
  - Species
  - Size (DBH)
  - Condition rating

Supplemented with stocking data from BES

Kerns Street Tree Inventory 2014

Trees by Size



PORTLAND PARKS & RECREATION
Healthy Parks, Healthy Portland
http://.portlandoregon.gov/parks/treeinventory

1,000 Feet

Planting site type

Improved right-of-way

Unimproved right-of-way

cut outs

swales

medians

strip

Curb tight

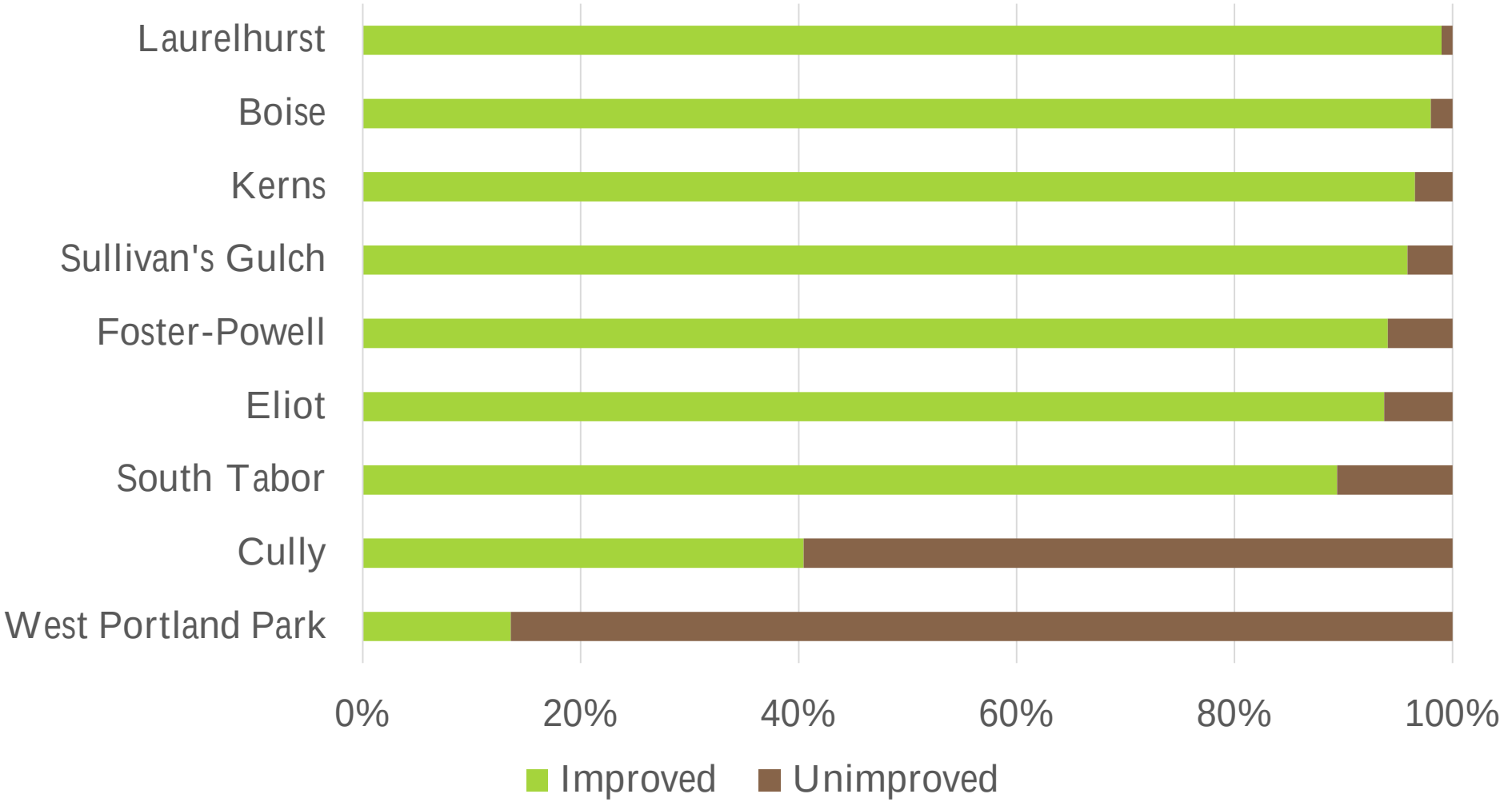
curb only

no curb, sidewalk, or paved road

no curb or sidewalk

not inventoried
01.09.2008

Site type of trees inventoried



Cully Street Tree Inventory 2014

Planting Site Type

PORTLAND PARKS & RECREATION

Healthy Parks, Healthy Portland

http://portlandoregon.gov/parks/treeinventory

1,000 Feet

Planting Site Sizes

Small

- improved sites 2.5-3.9’ wide with or without wires

Medium

- improved sites 4.0-5.9’ wide with or without wires
- improved sites > 5.9’ with wires
- unimproved sites with wires

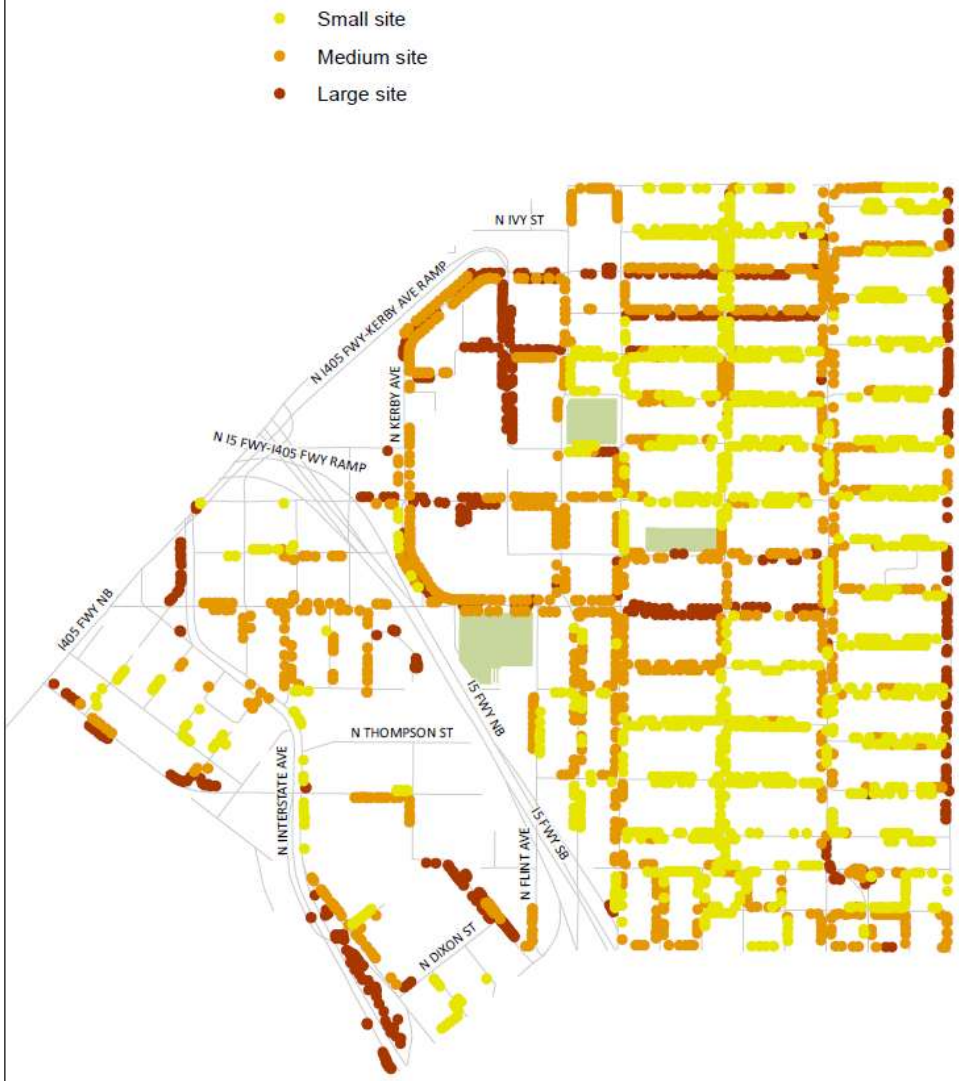
Large

- improved sites >5.9’ wide without wires
- unimproved sites without wires

PUMP

Eliot Street Tree Inventory 2014

Planting Site Size



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Healthy Parks, Healthy Portland
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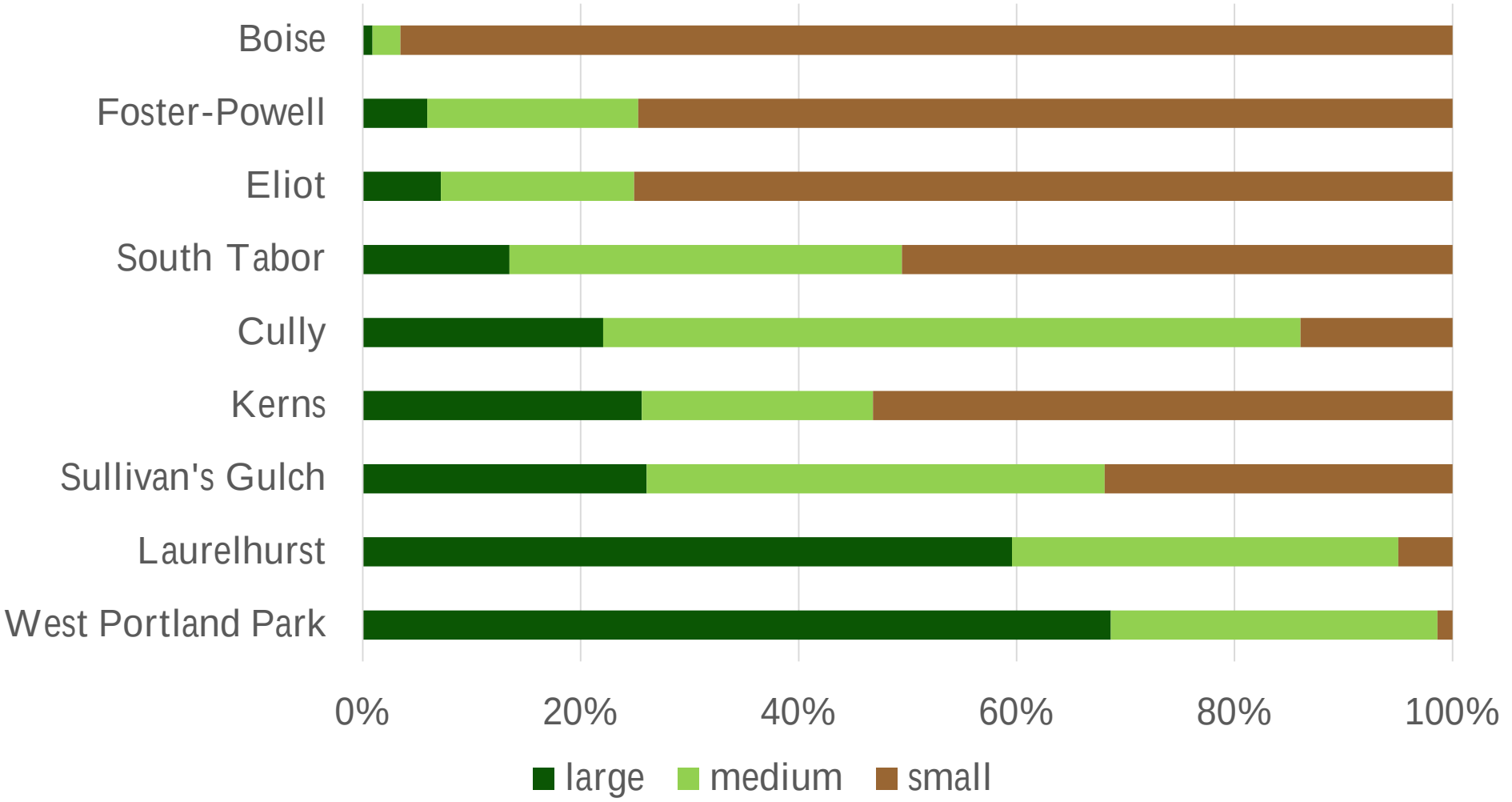
1,000
Feet

Distribution of site sizes



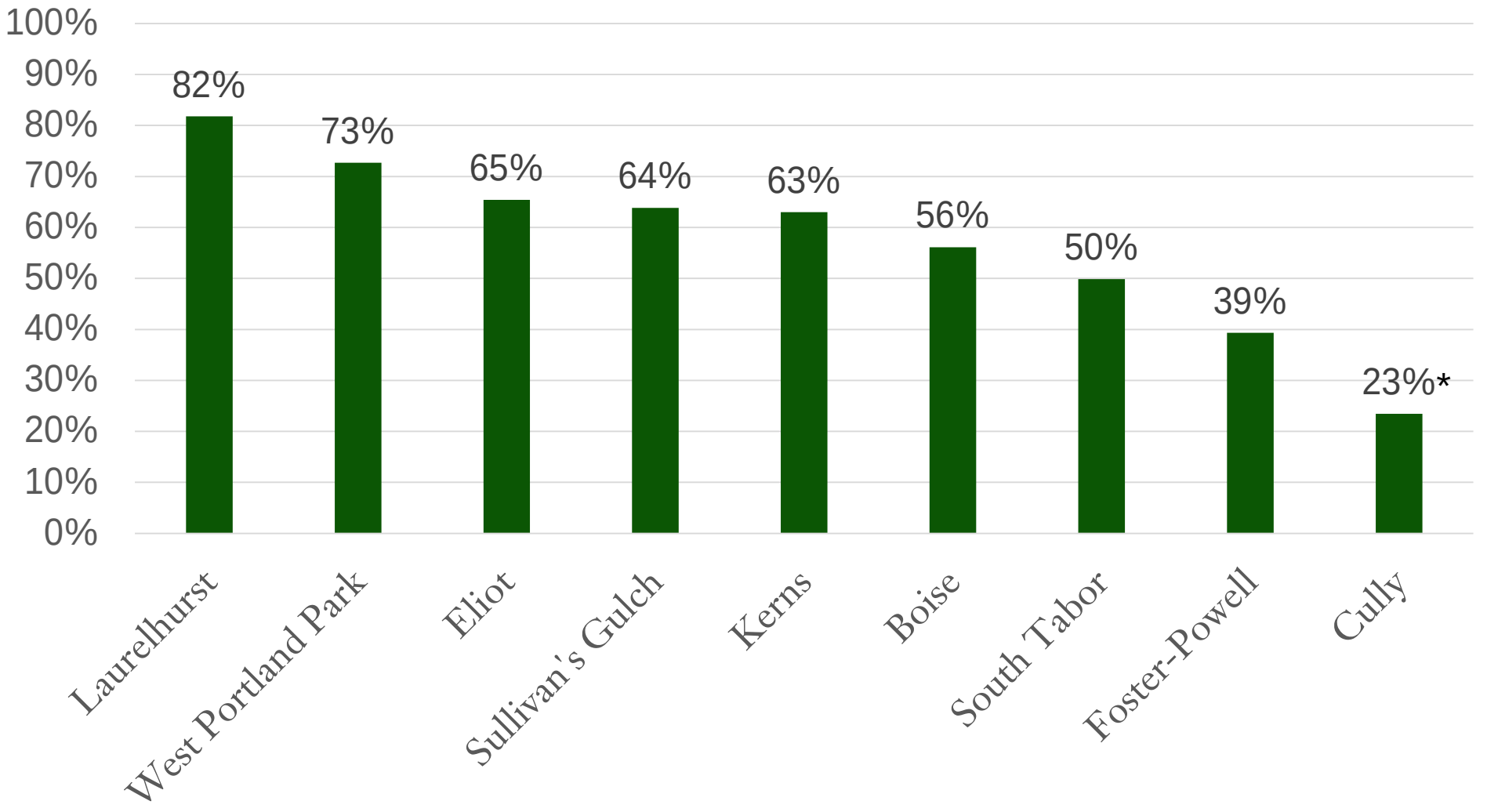
Stocking Level

$$\frac{\text{\# of planted sites}}{\text{Total \# of sites (planted and available)}} = \text{Stocking Level}$$

0% stocked

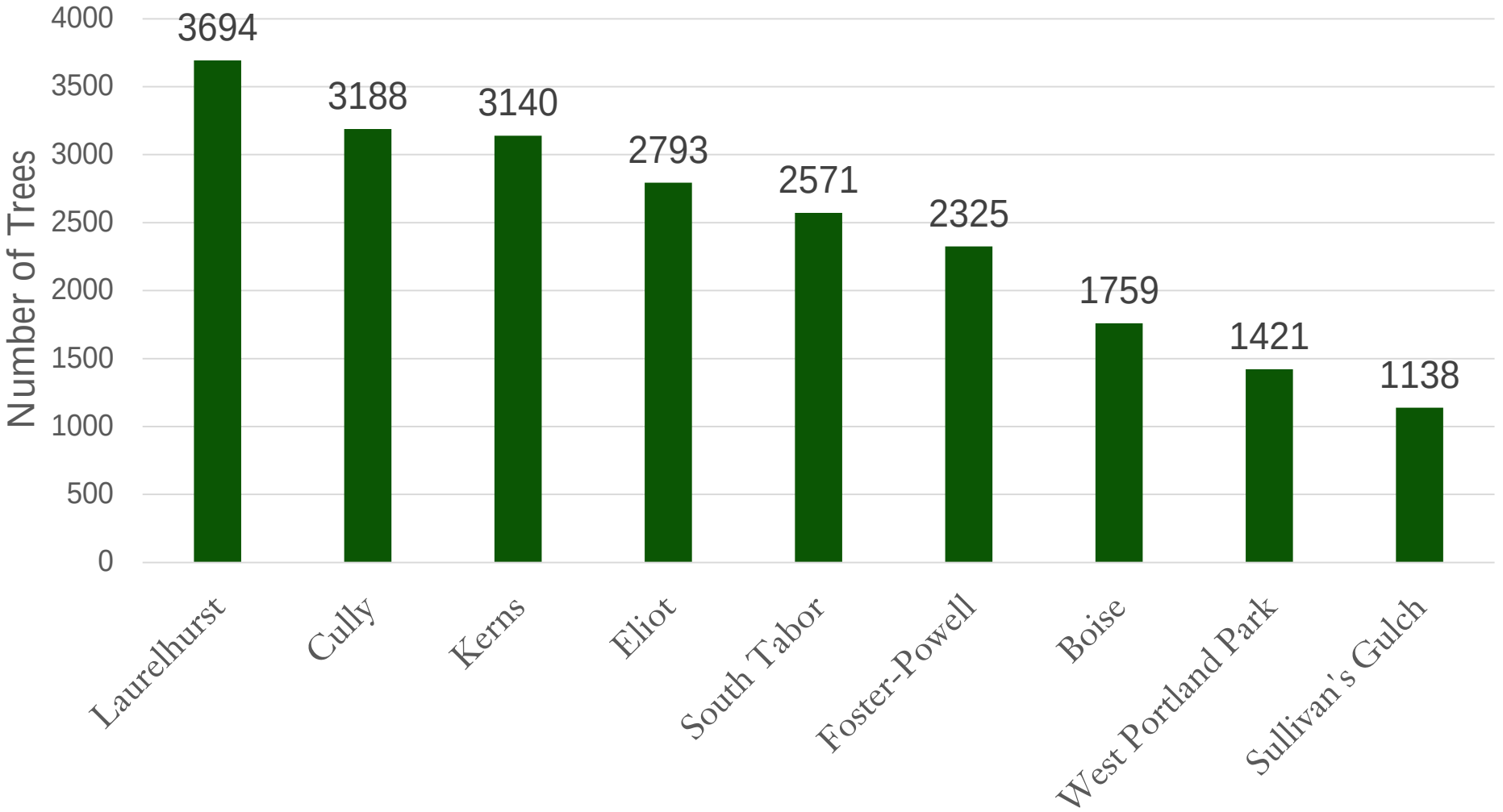
100% stocked

Stocking level



Enough about sites…what about the trees?

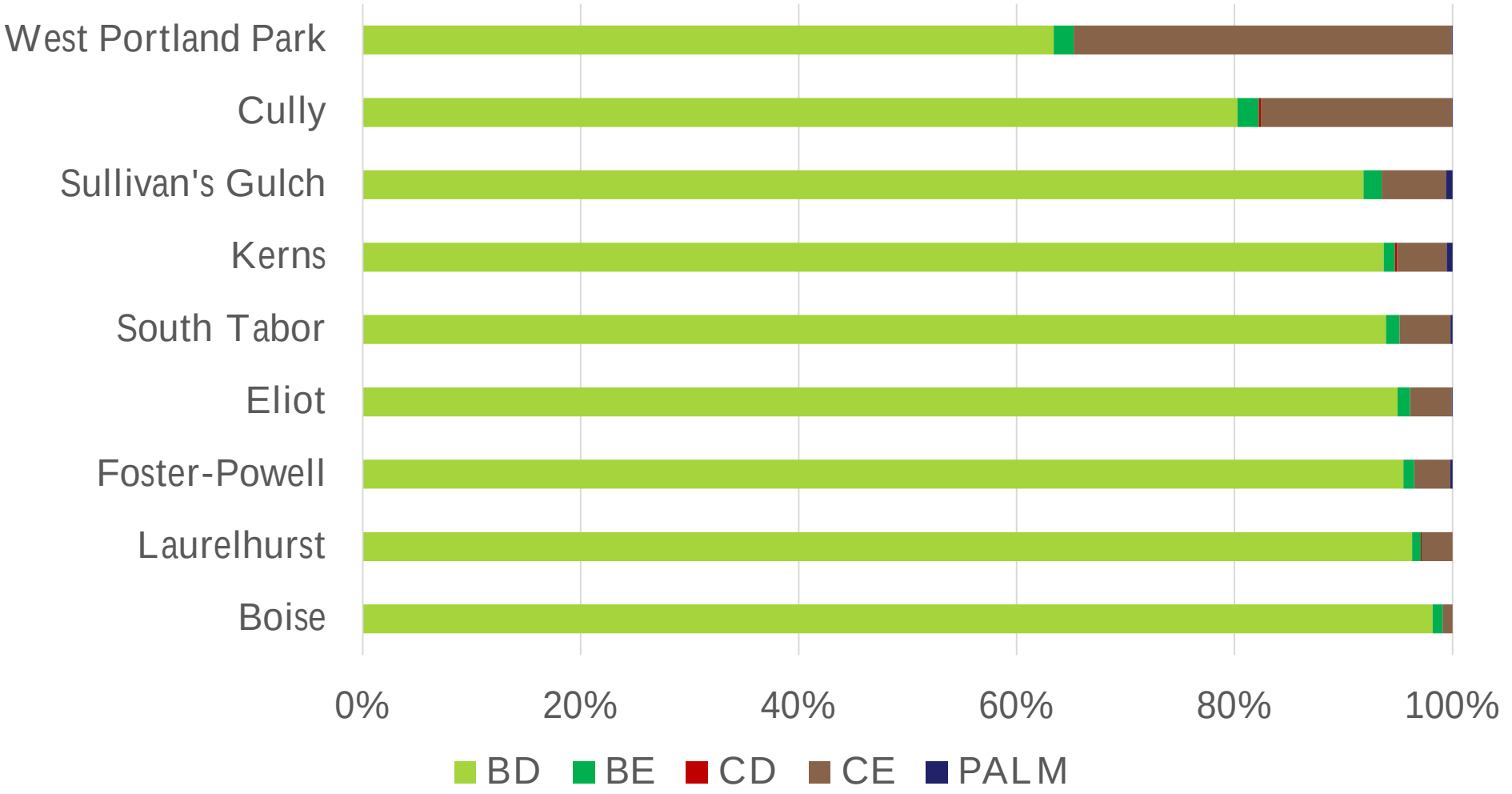
Total number of street trees



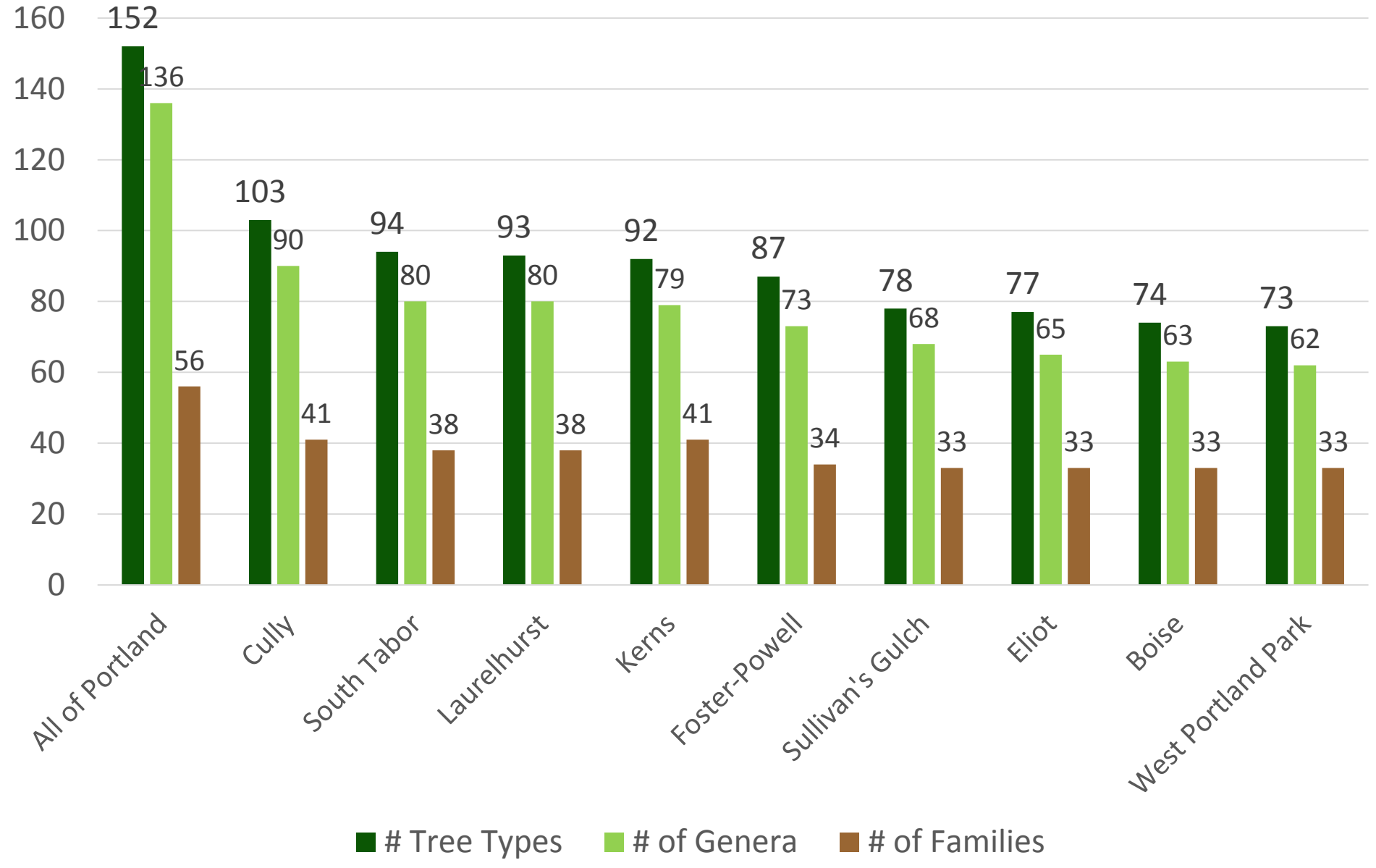
Functional Types

	Broadleaf	Conifer
Deciduous		
Evergreen		

Functional Type



of Tree Types, Genera, and Families



Top 10 Most Common Tree Types

Tree Type	% of Tree Population 2010-2014
Norway maple	9%
Red maple	7%
Cherry	6%
Other maple	6%
Pear	5%
Plum	5%
Ash	5%
Crabapple	4%
Linden	4%
Dogwood	3%

Norway Maple (*Acer platanoides)* in Cully

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Ash	5%
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Linden	4%
Dogwood	3%

Red Maple (*Acer rubrum)*

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Norway maple	9%
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Other maple	6%
Pear	5%
Plum	5%
Ash	5%
Crabapple	4%
Linden	4%
Dogwood	3%

Cherry (*Prunus* spp.) in Boise

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Pear	5%
Plum	5%
Ash	5%
Crabapple	4%
Linden	4%
Dogwood	3%

Snakebark maple (*Acer* spp.) in South Tabor

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Norway maple	9%
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Other maple	6%
Pear	5%
Plum	5%
Ash	5%
Crabapple	4%
Linden	4%
Dogwood	3%

Pear (*Pyrus* spp.) in Laurelhurst

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Ash	5%
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Linden	4%
Dogwood	3%

Flowering plum (*Prunus* spp.) in South Tabor

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Linden	4%
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Heritage American ash (*Fraxinus americana)* in Laurelhurst

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Plum	5%
Ash	5%
Crabapple	4%
Linden	4%
Dogwood	3%

Crabapple (*Malus* spp.)

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Other maple	6%
Pear	5%
Plum	5%
Ash	5%
Crabapple	4%
Linden	4%
Dogwood	3%

Linden (*Tilia* spp.) in Foster-Powell

Top 10 Most Common Tree Types

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Norway maple	9%
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Cherry	6%
Other maple	6%
Pear	5%
Plum	5%
Ash	5%
Crabapple	4%
Linden	4%
Dogwood	3%

Dogwood
Cornus spp.

Most common Genus and Family

Genus	% for all 100,000 2010-2014
Acer	27%
Prunus	12%
Pyrus	6%
Fraxinus	5%
Malus	5%

Family	% of all 100,000 2010-2014
Sapindaceae	28%
Rosaceae	25%
Oleaceae	5%
Betulaceae	5%

Species Diversity

- 10-20-30 guideline:

Norway maple
Acer platanoides

- No species > 10 % of the total
- No genus > 20% of the total
- No family > 30% of the total

Persian Oak
Quercus macranthera

Species Diversity

- 5-10-20 guideline:

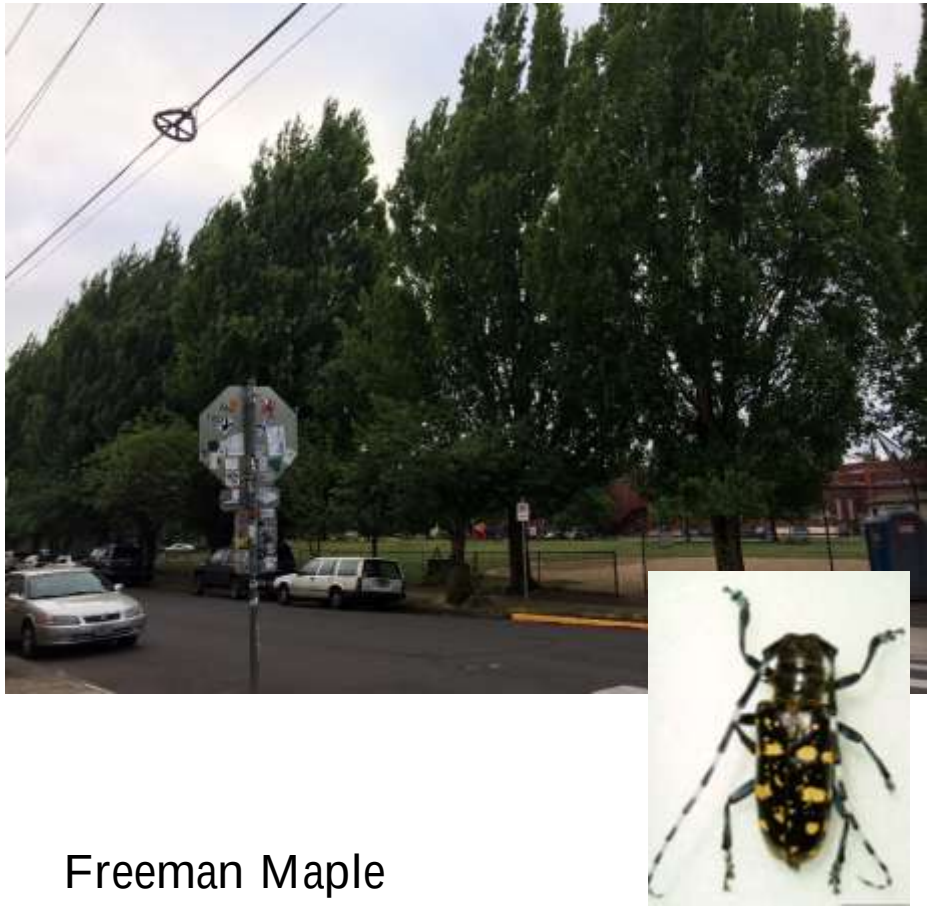
Norway maple
Acer platanoides

- No species > 5% of the total
- No genus > 10% of the total
- No family > 20% of the total

Persian Oak
Quercus macranthera

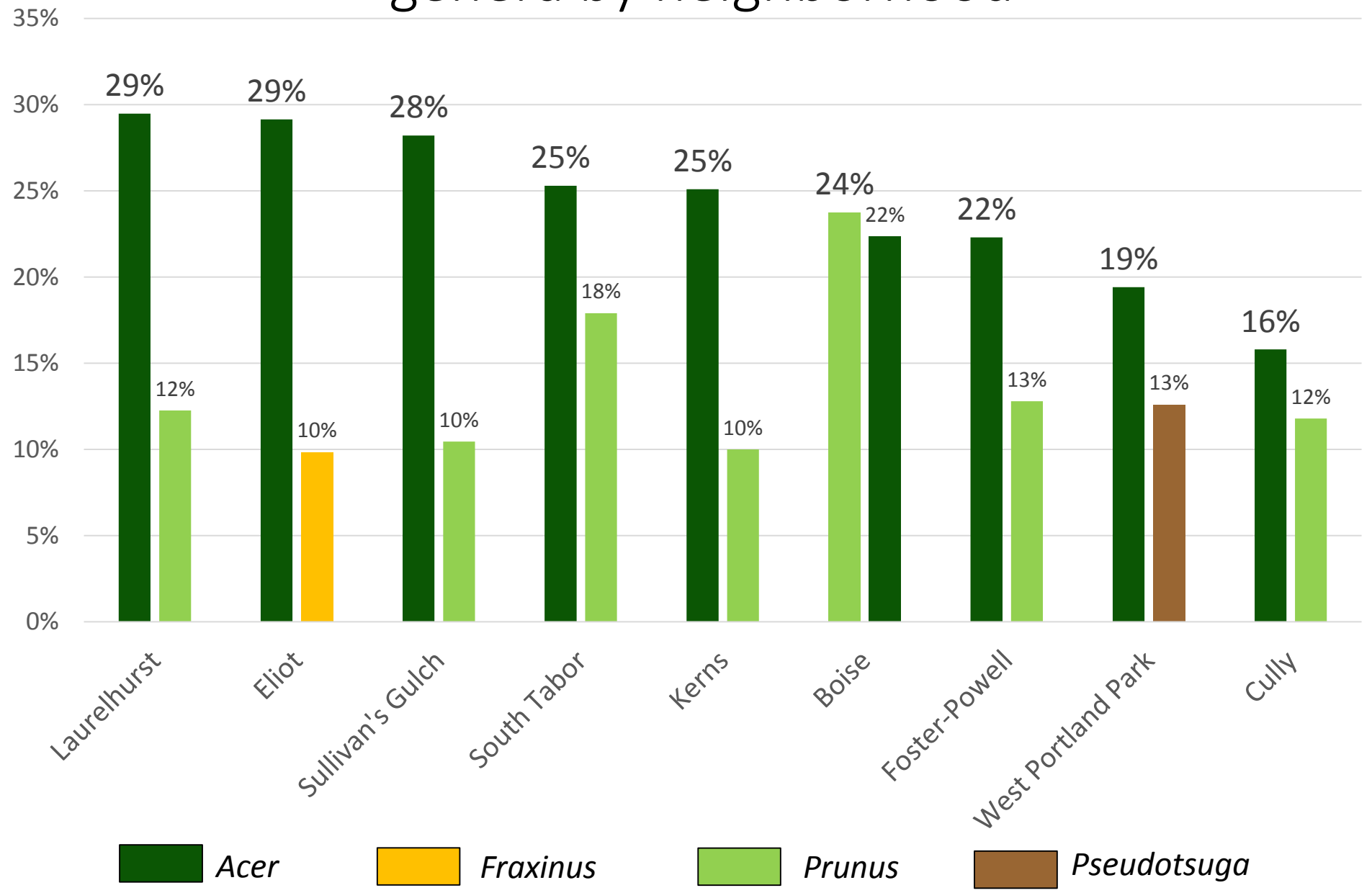
Why do want diversity?

Ash
Fraxinus spp.



Freeman Maple
Acer x freemanii

% of most common and 2nd most common genera by neighborhood



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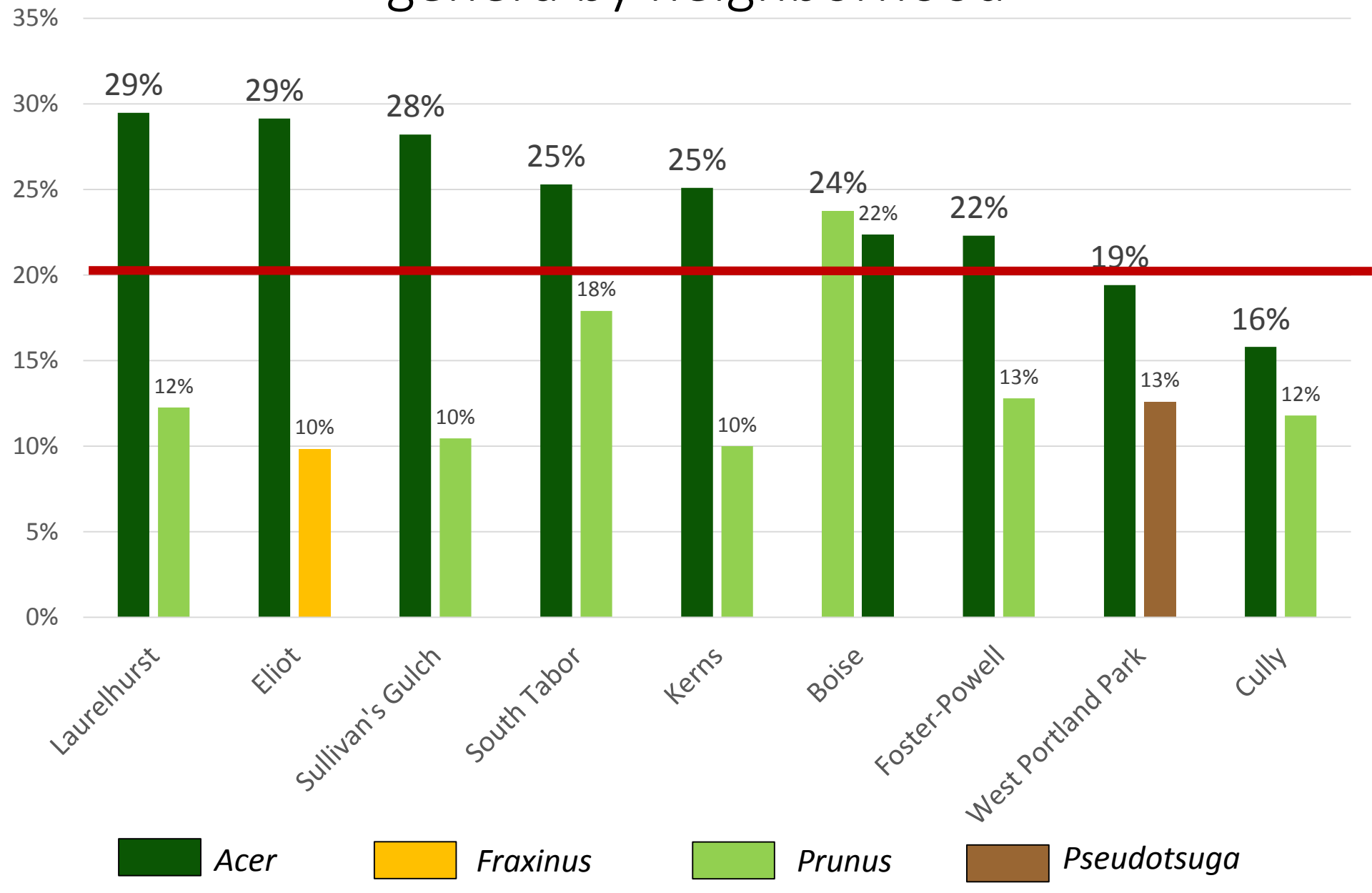

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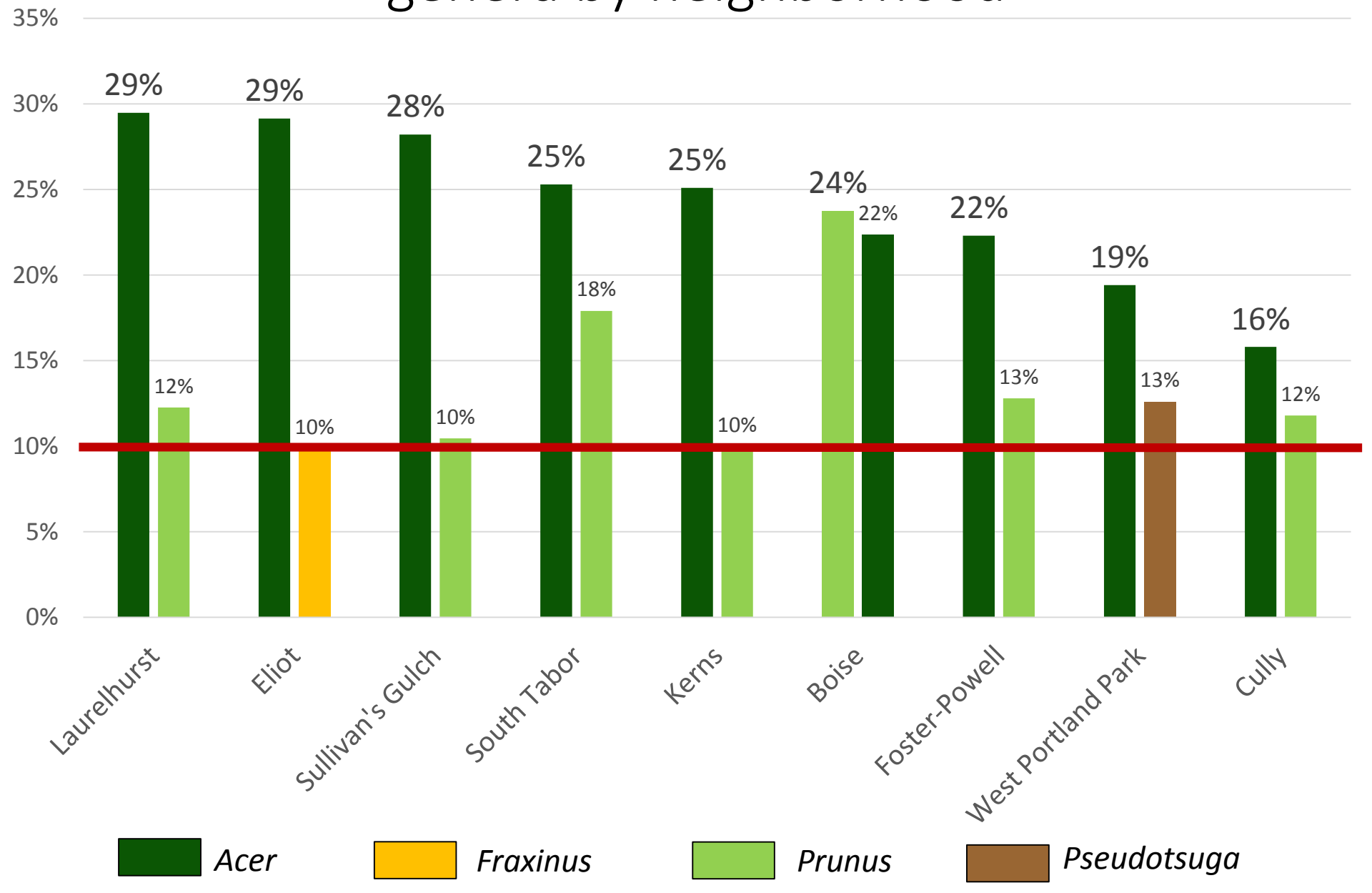


Eliot:

All Trees

Eliot:

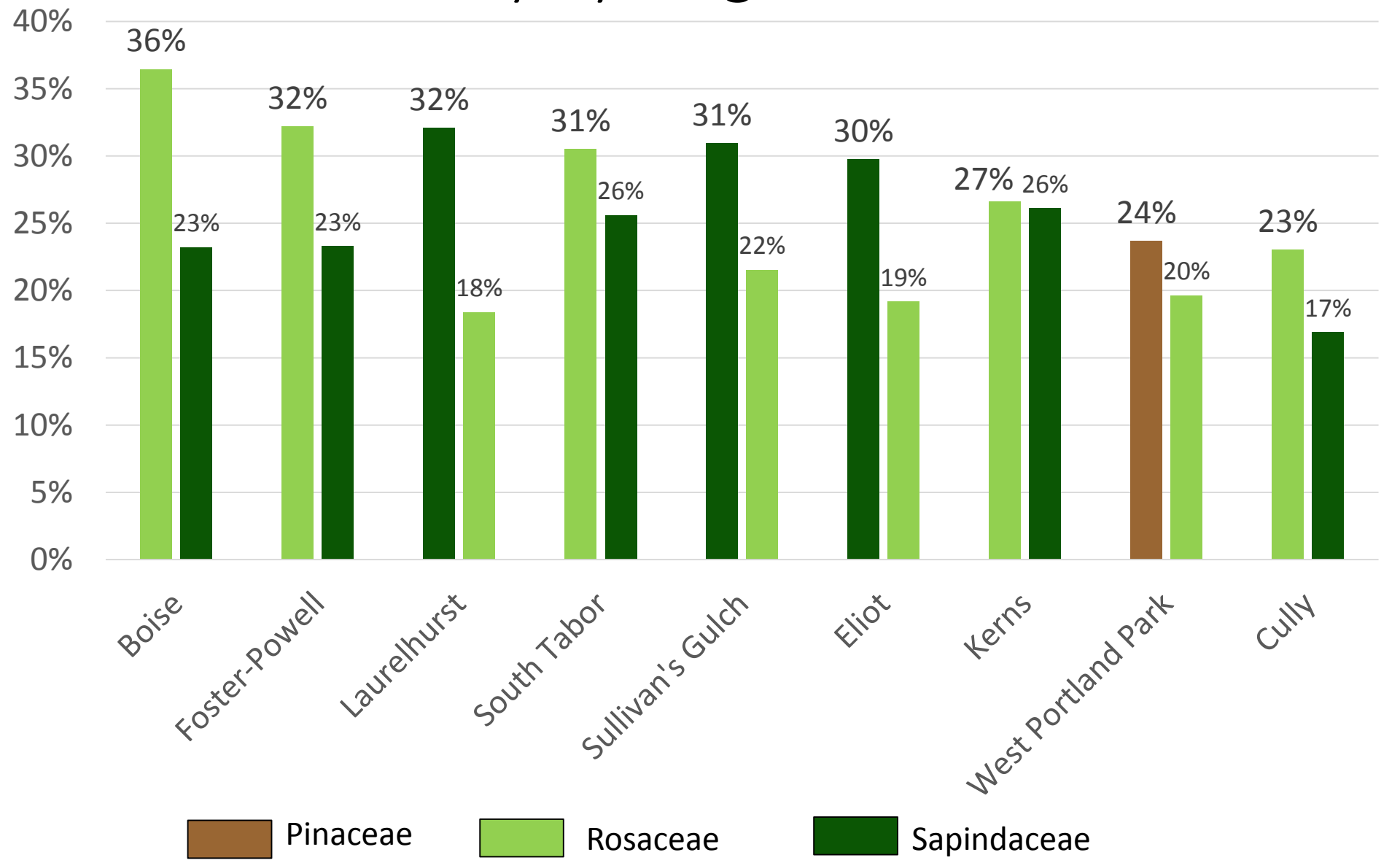
Maples Red

Eliot:

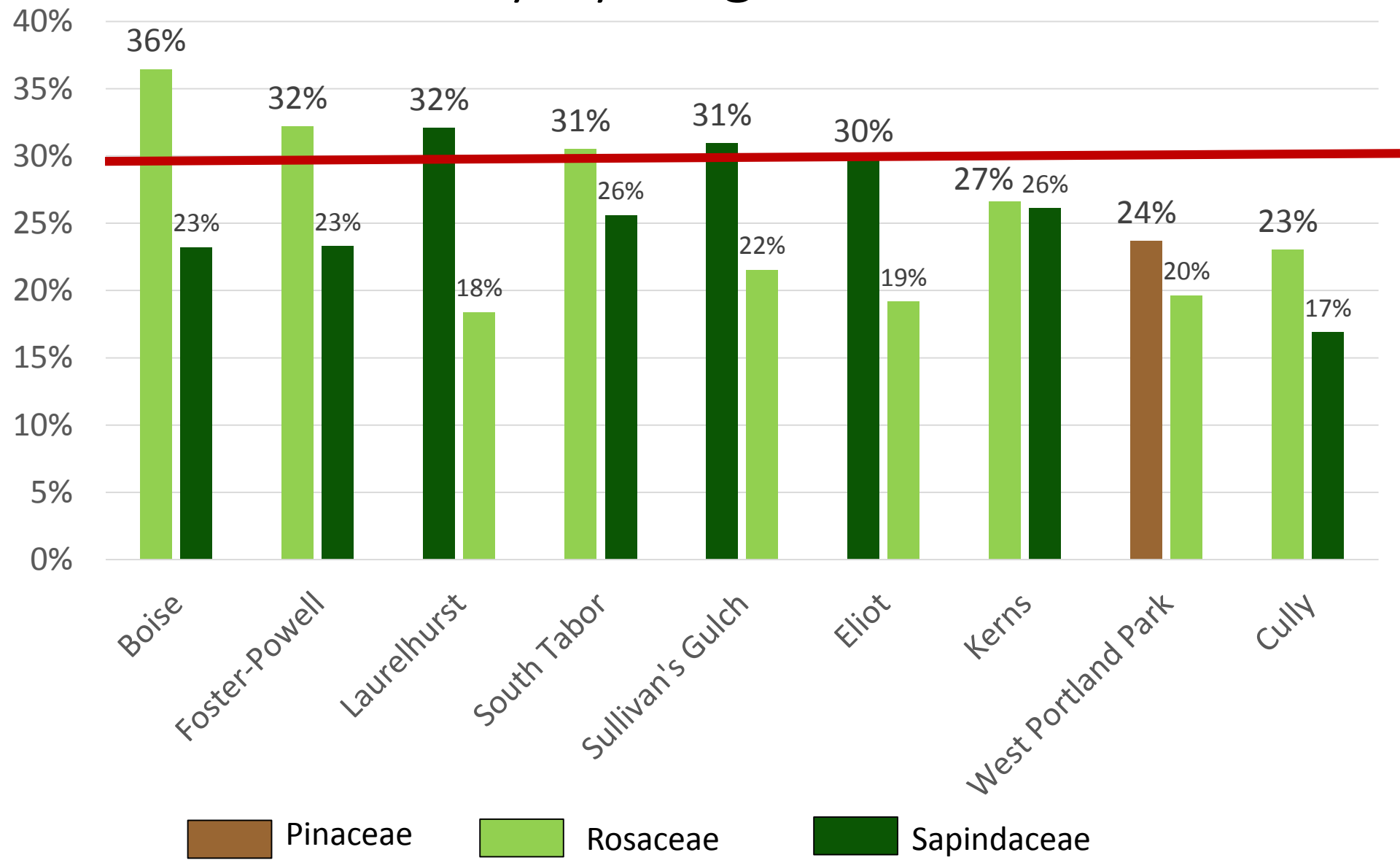
Maples Red

Ash Orange

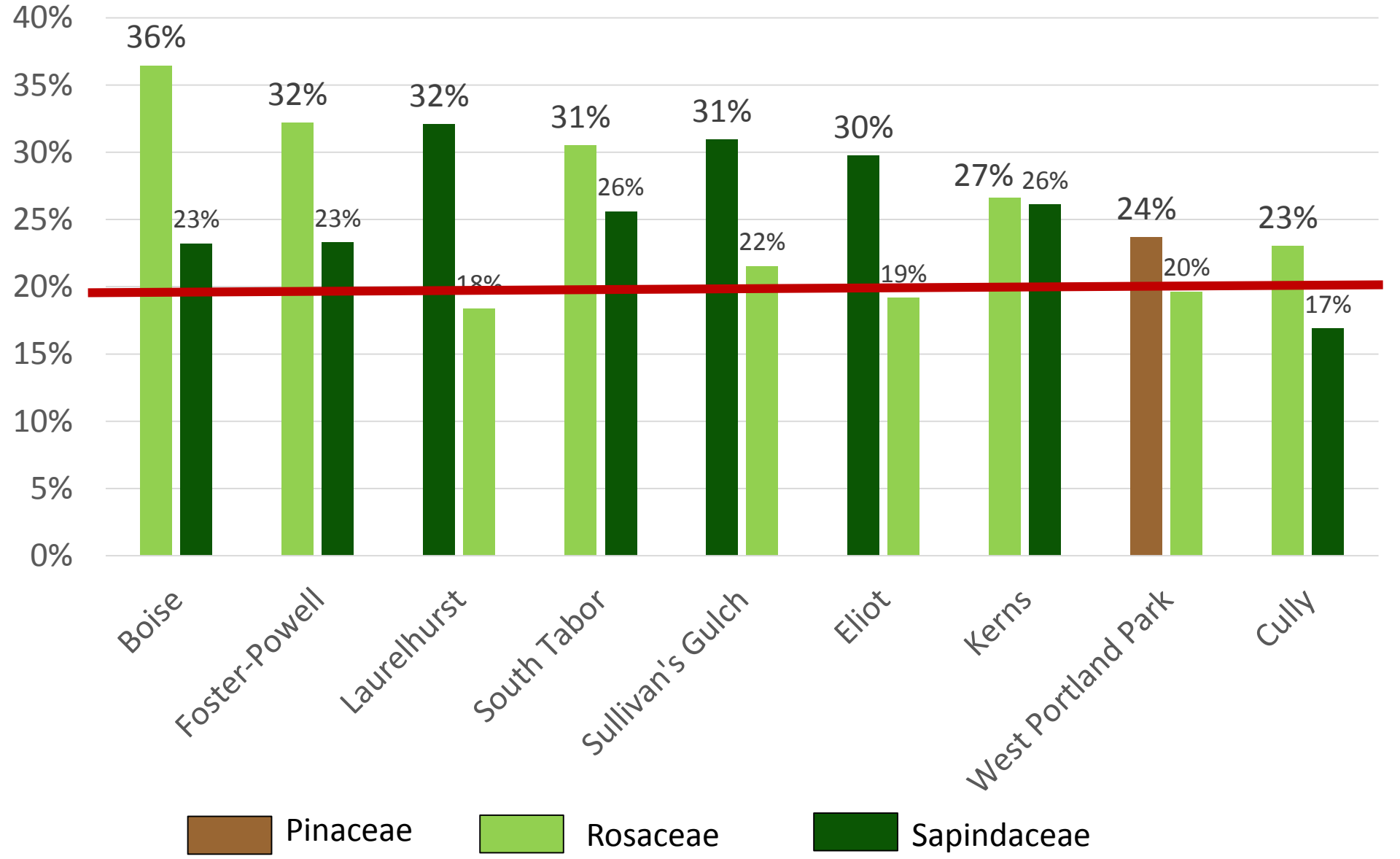
% of most common and 2nd most common family by neighborhood



% of most common and 2nd most common family by neighborhood



% of most common and 2nd most common family by neighborhood



Dove Tree

Davidia involucrata

Chitalpa

x Chitalpa tashkentensis

Umbrella Pine

Sciadopitys verticillata

Jujube

Ziziphus jujuba

Euptelea pleiosperma

How much has changed in 40 years?

1976 Inventory	% of trees
cherry	12%
maple, Norway	10%
birch	9%
plum	9%
hawthorn	7%
walnut	5%
sweetgum	5%
elm	5%
maple, other	3%
oak	3%

Trees that were more common then:

- Walnut
- Horsechestnut
- Silver maple
- Birch
- Sweetgum
- Big leaf maple
- Plane tree

Silver maple in Laurelhurst

Newcomers

- Snowbell
- 1 tree to 2% of the population

- Paperbark Maple
- 0 trees to 2% of the population

Trees that are more common now by leaps and bounds

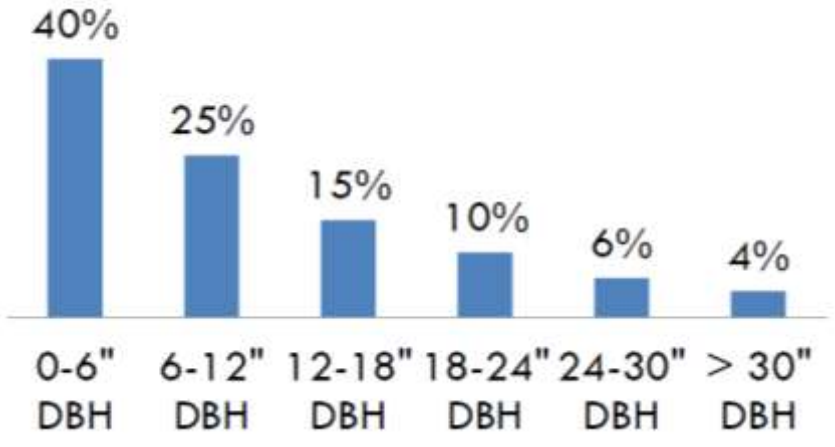
- Pear 0.4% to top 10 at 5.5%
- Japanese maple 0.2% to 1.8%
- Red maple 2.1% to 6.6% (# 2 most common tree)
- Crabapple 1.6% to 3.6%

Japanese maples in Foster-Powell

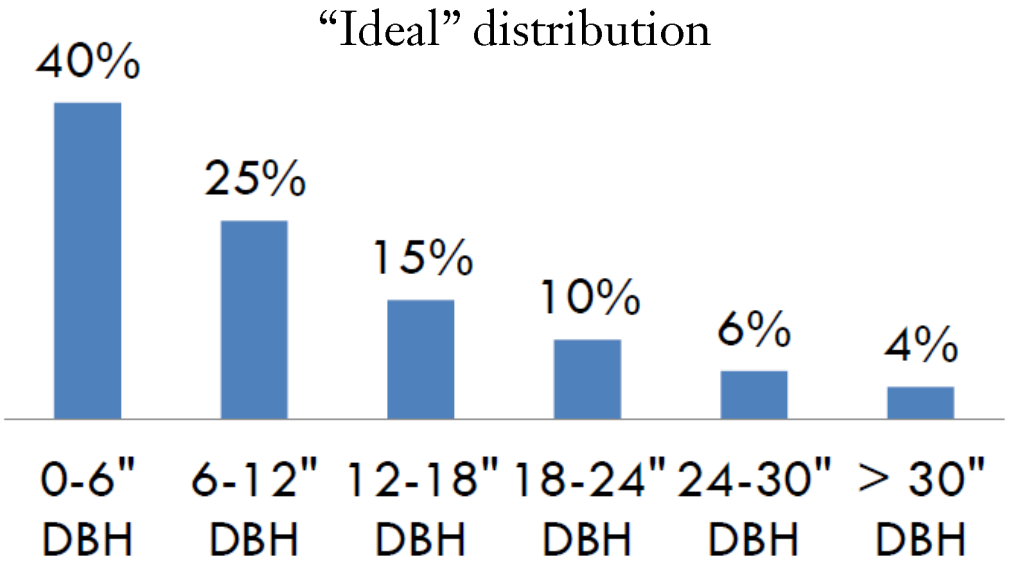
Size Class Distribution

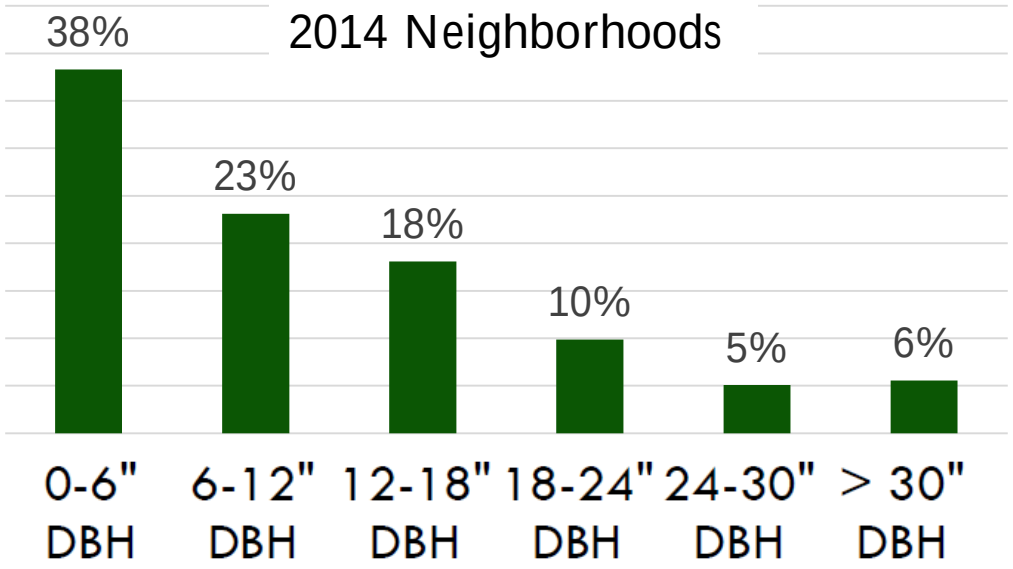
- Tree size (DBH) is a rough approximation of tree age

- An uneven aged tree distribution is most desirable for managing street trees over time, with slightly more in younger age classes

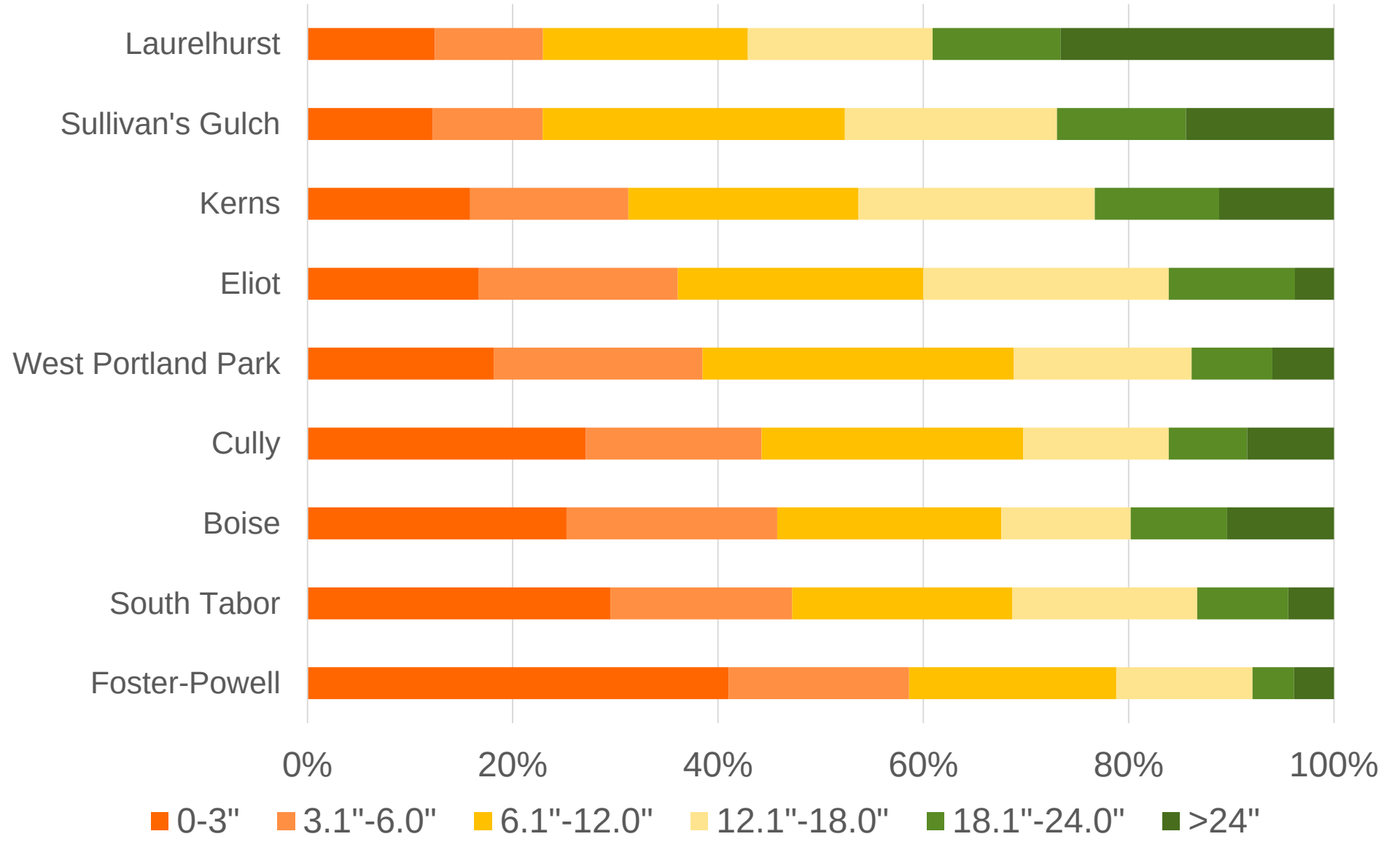


Bigleaf maple in Cully

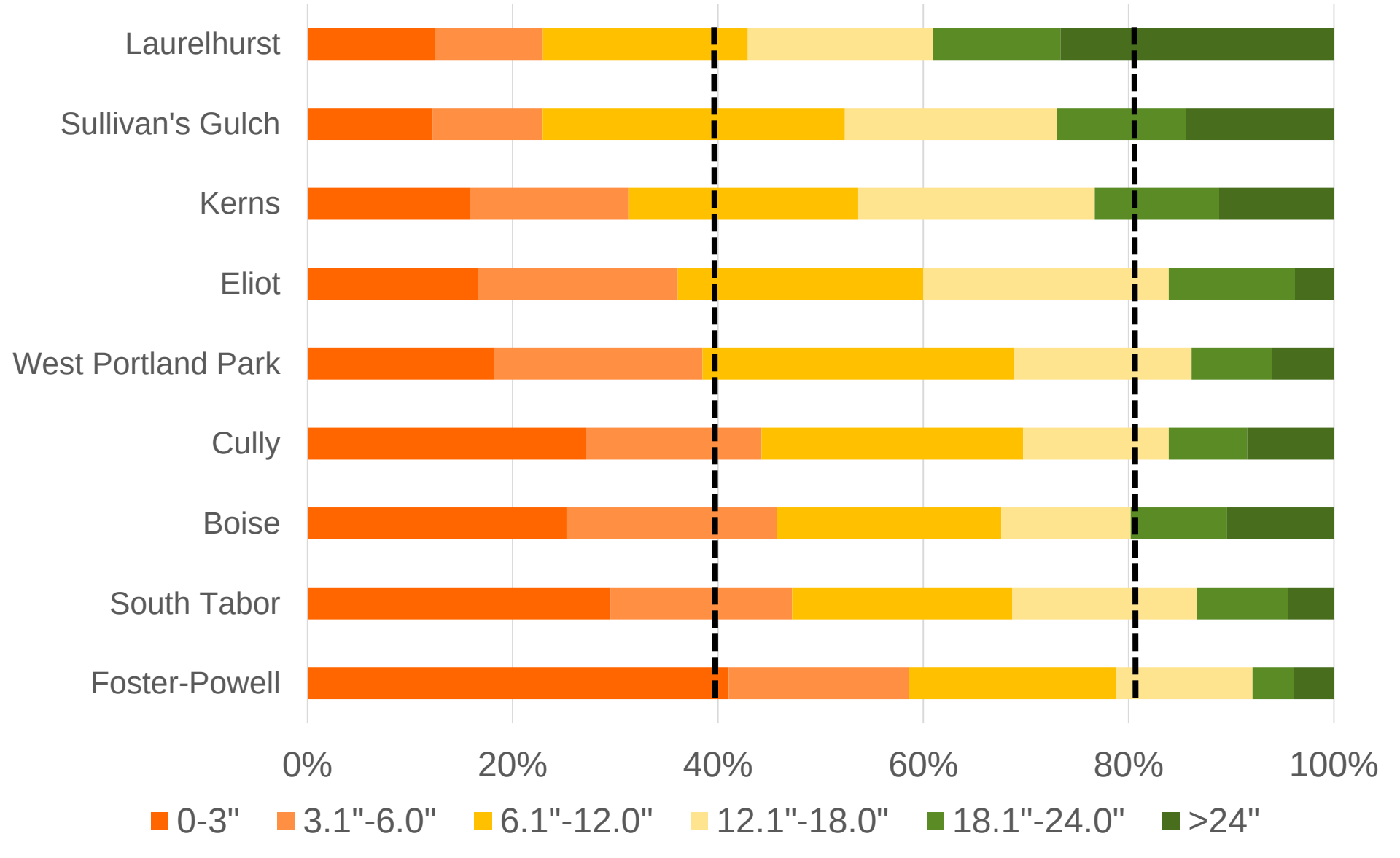

"Ideal" distribution
40%
25%
15%
10%
6%
4%
0-6" DBH
6-12" DBH
12-18" DBH
18-24" DBH
24-30" DBH
> 30" DBH


2014 Neighborhoods
38%
23%
18%
10%
5%
6%
0-6" DBH
6-12" DBH
12-18" DBH
18-24" DBH
24-30" DBH
> 30" DBH

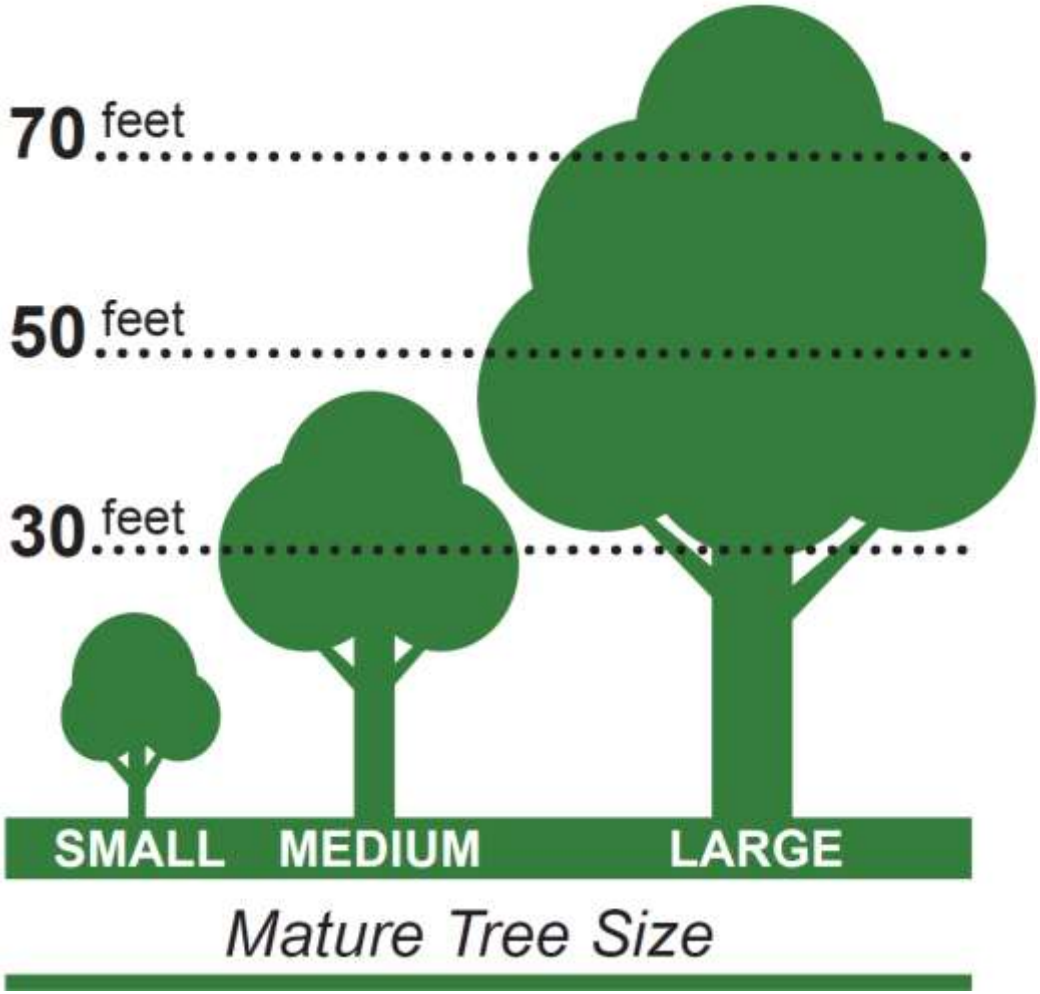
Size class distribution



Size class distribution

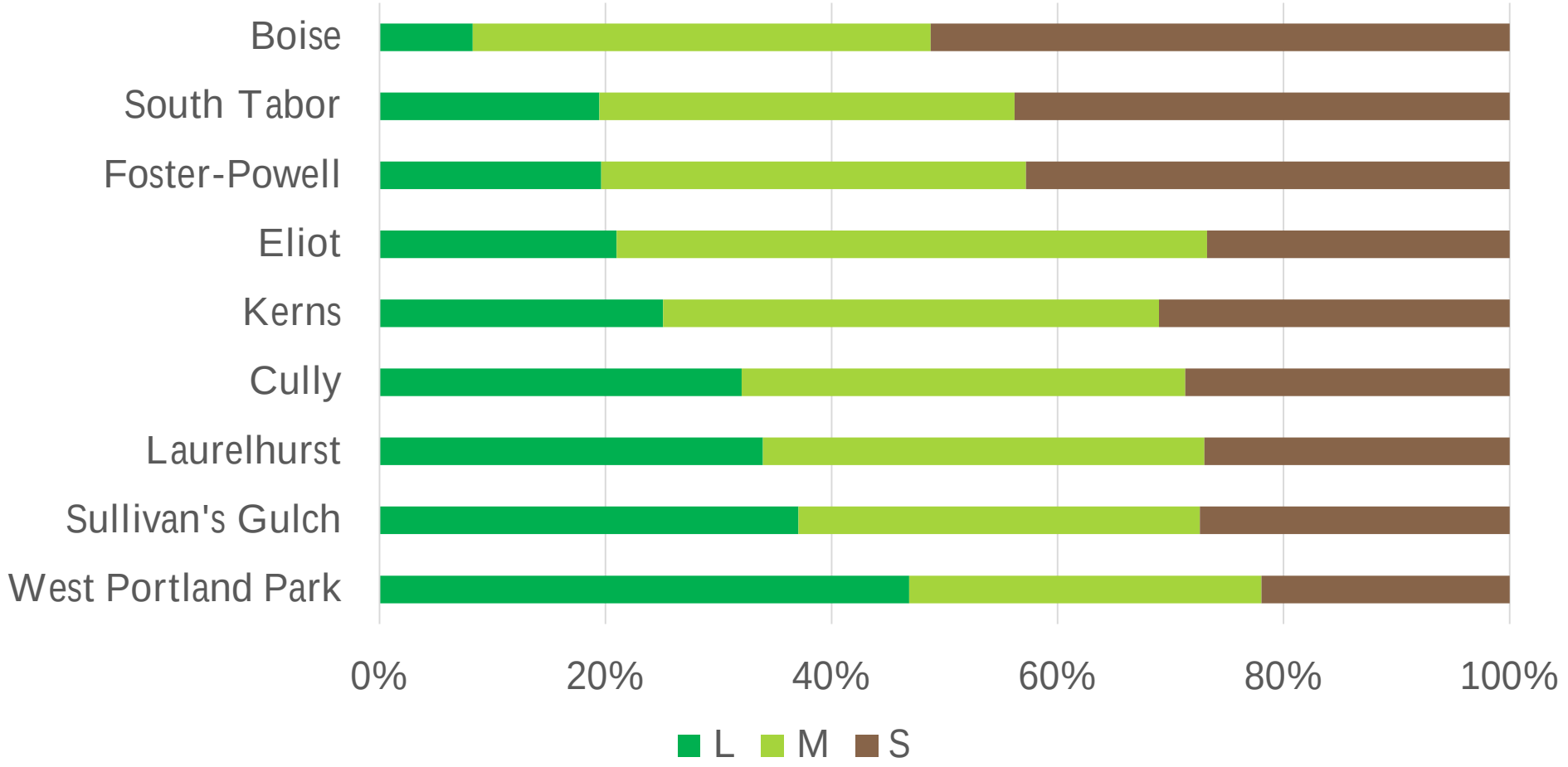


Mature Tree Size

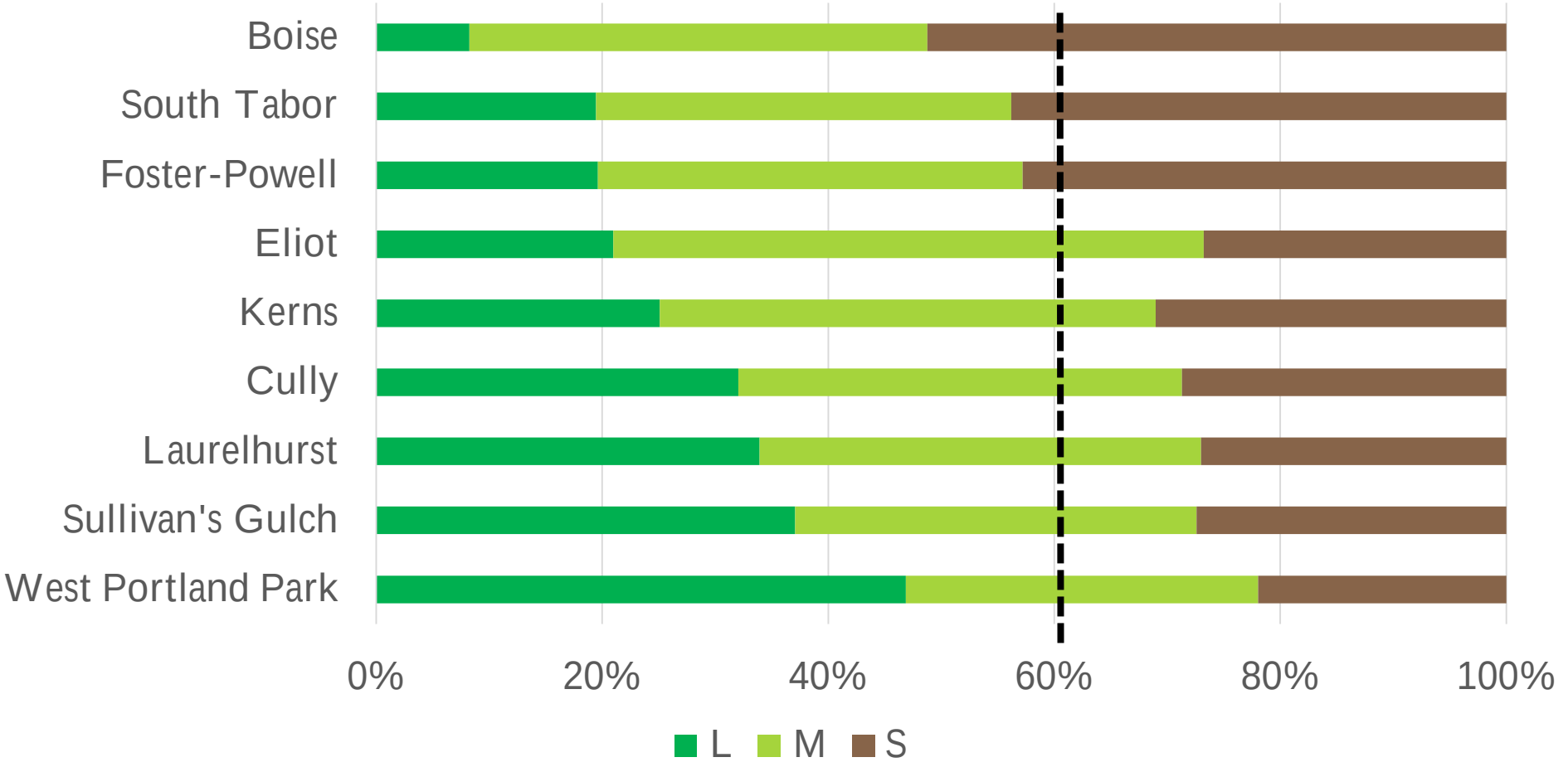


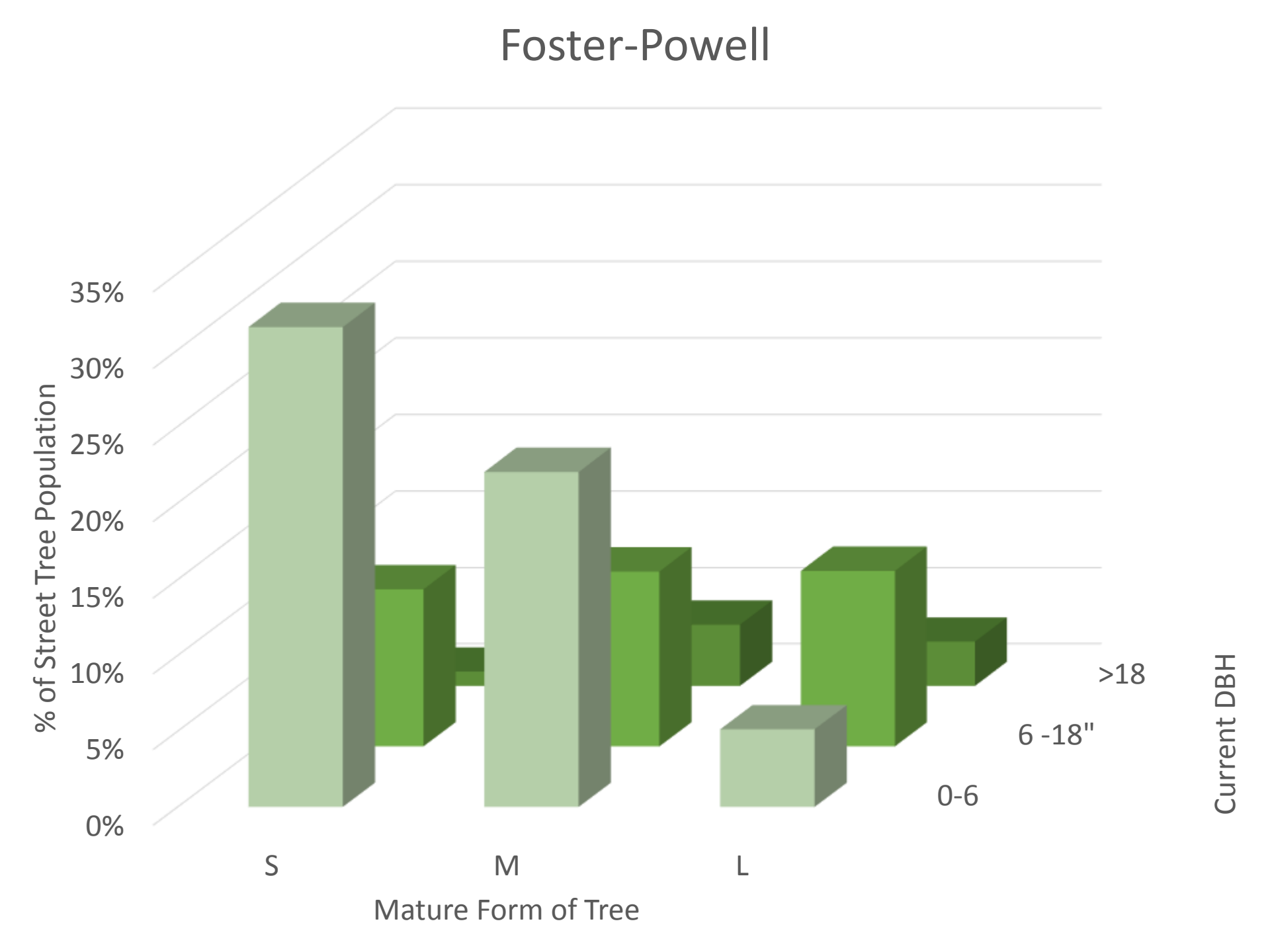
- Corresponds with planting site size
- Examples:
  - Small: dogwood, crabapple, plum
  - Medium: ash, birch, pear
  - Large: oak, elm, Douglas-fir

Mature Tree Form



Mature Tree Form




Foster-Powell
35%
30%
25%
20%
15%
10%
5%
0%
% of Street Tree Population
S
M
L
Mature Form of Tree
0-6
6 -18"
>18
Current DBH

Tree Condition

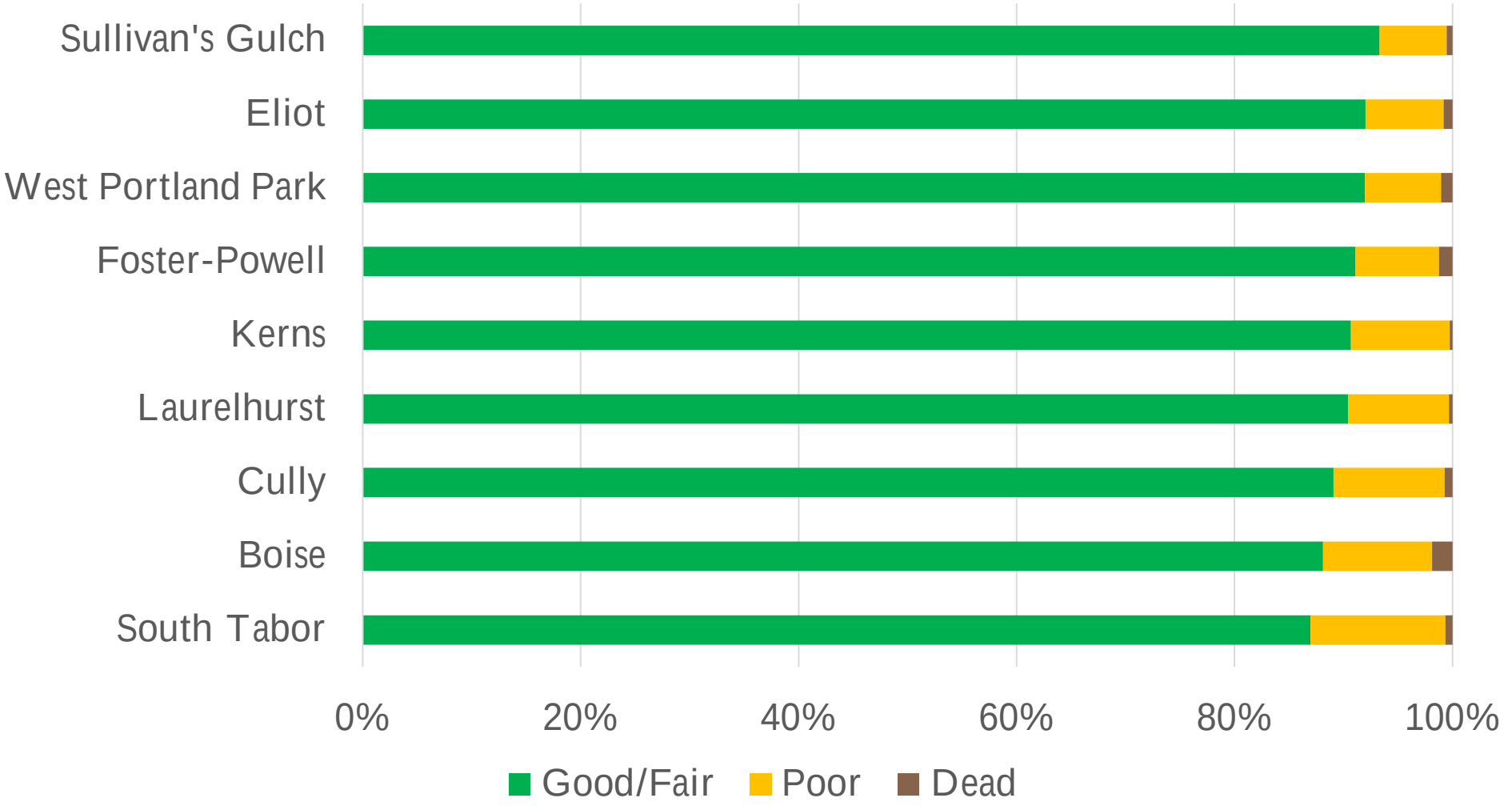
Good

Fair

Poor

Dead

Condition


Sullivan's Gulch
Eliot
West Portland Park
Foster-Powell
Kerns
Laurelhurst
Cully
Boise
South Tabor
0%
20%
40%
60%
80%
100%
Good/Fair
Poor
Dead

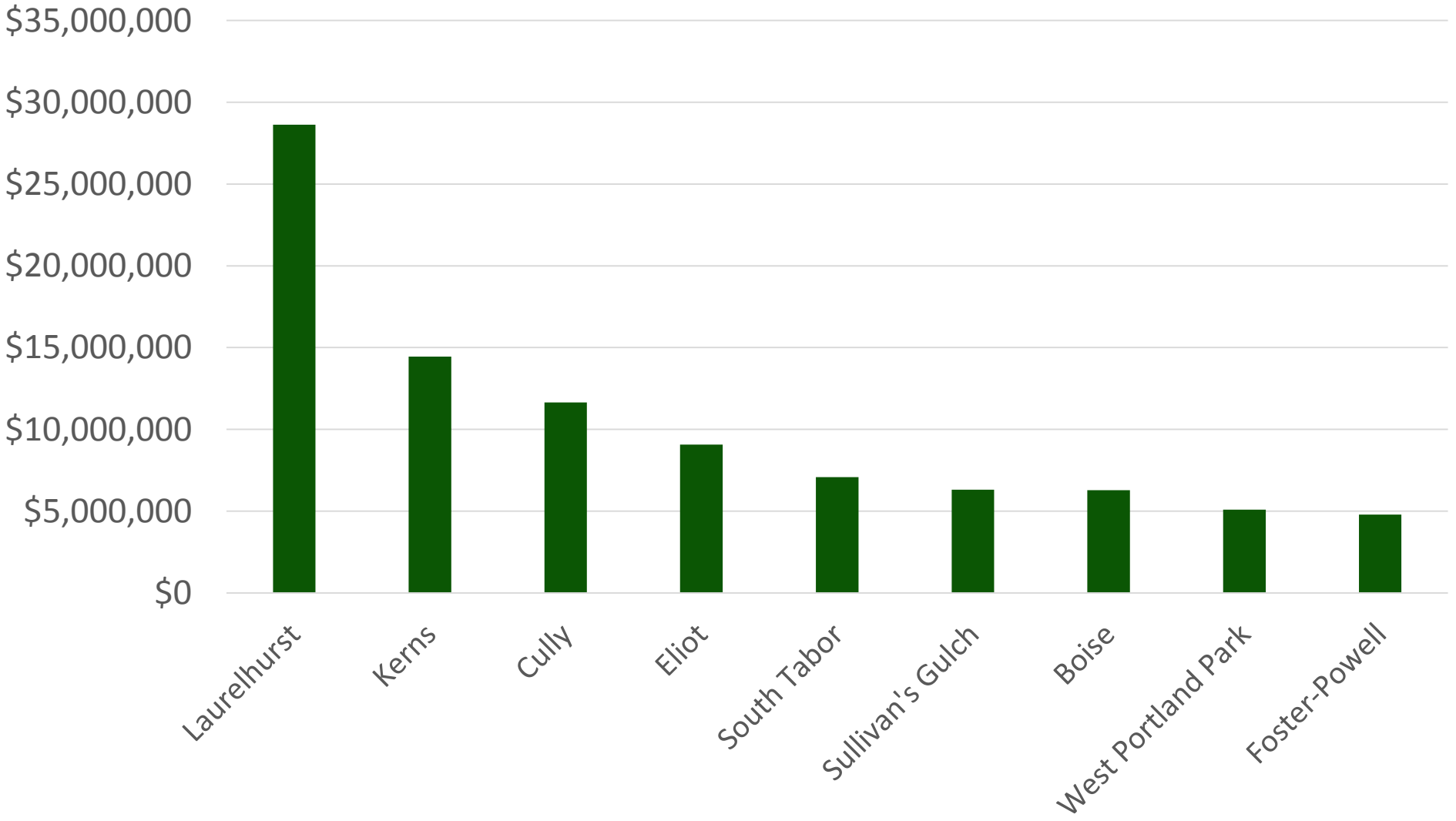
Determining Benefits of Street Trees

- iTree Streets software
  - Developed by USDA Forest Service
- What you give:
  - Current city costs for home values, energy costs, storm water management
  - Street tree inventory data
- What you get:
  - Replacement value
  - Annual aesthetic and environmental benefits

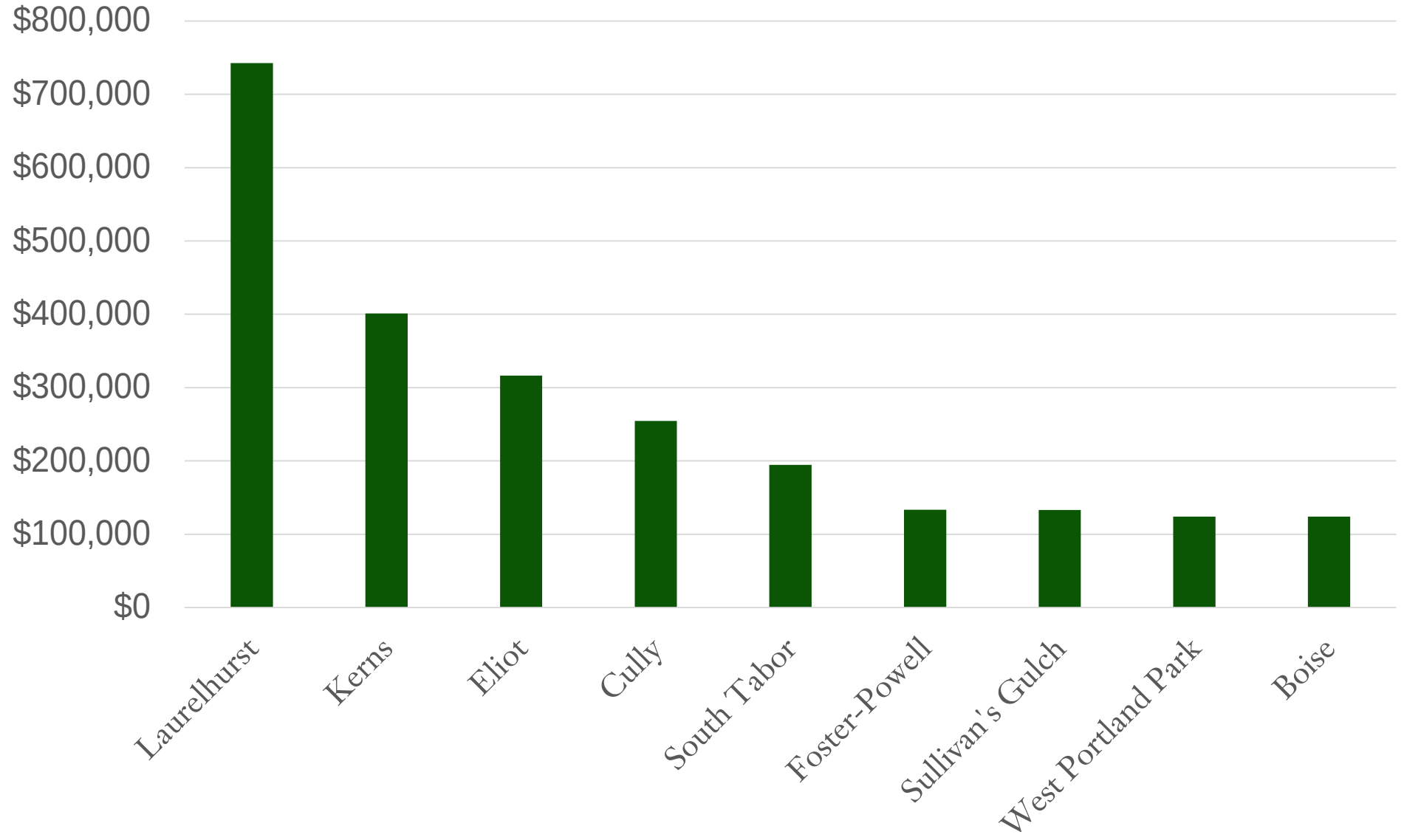
i-Tree

$

Total Replacement Value



Annual benefits

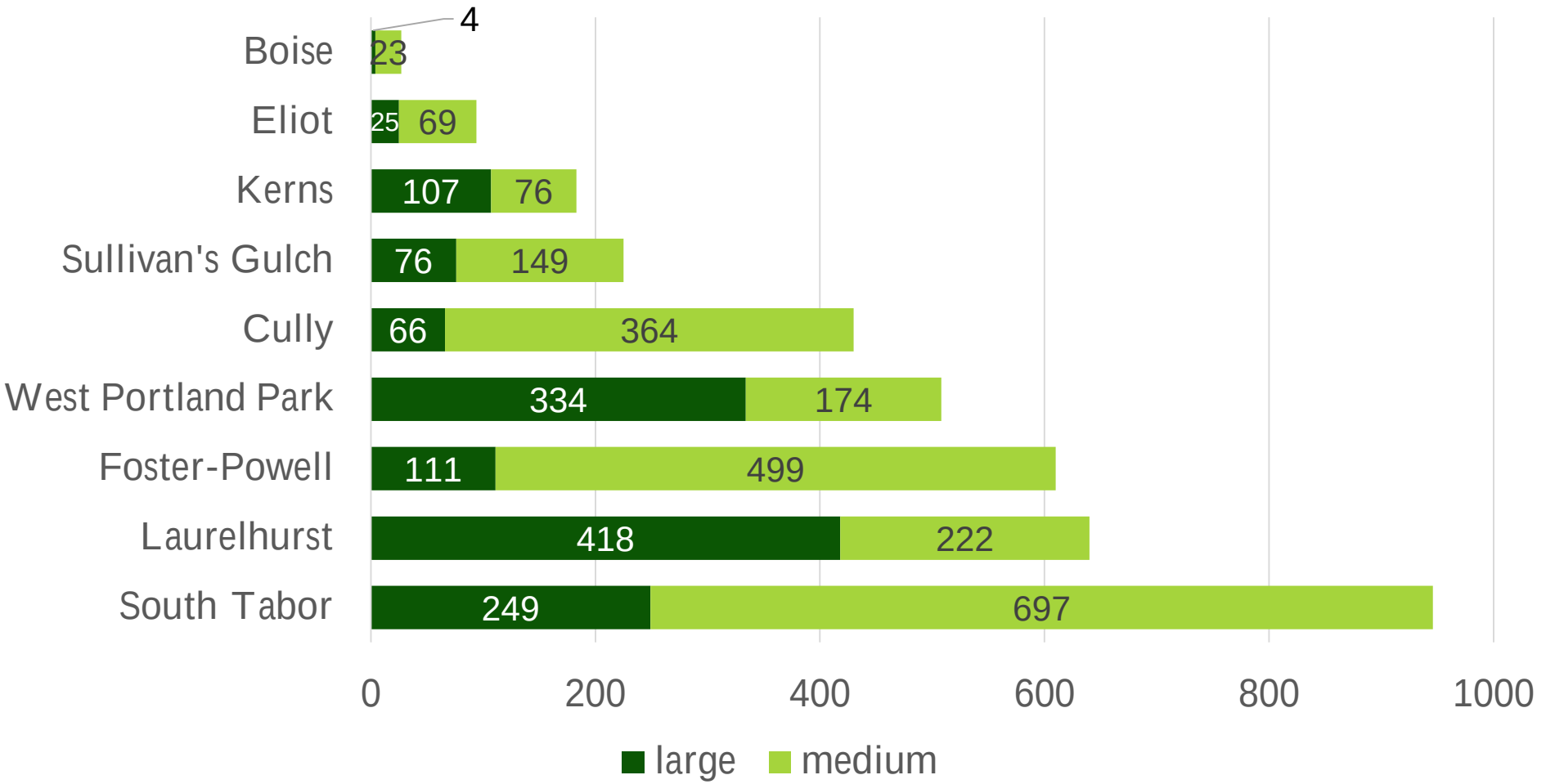


What do we do with all of this information?

Planting: Prioritization

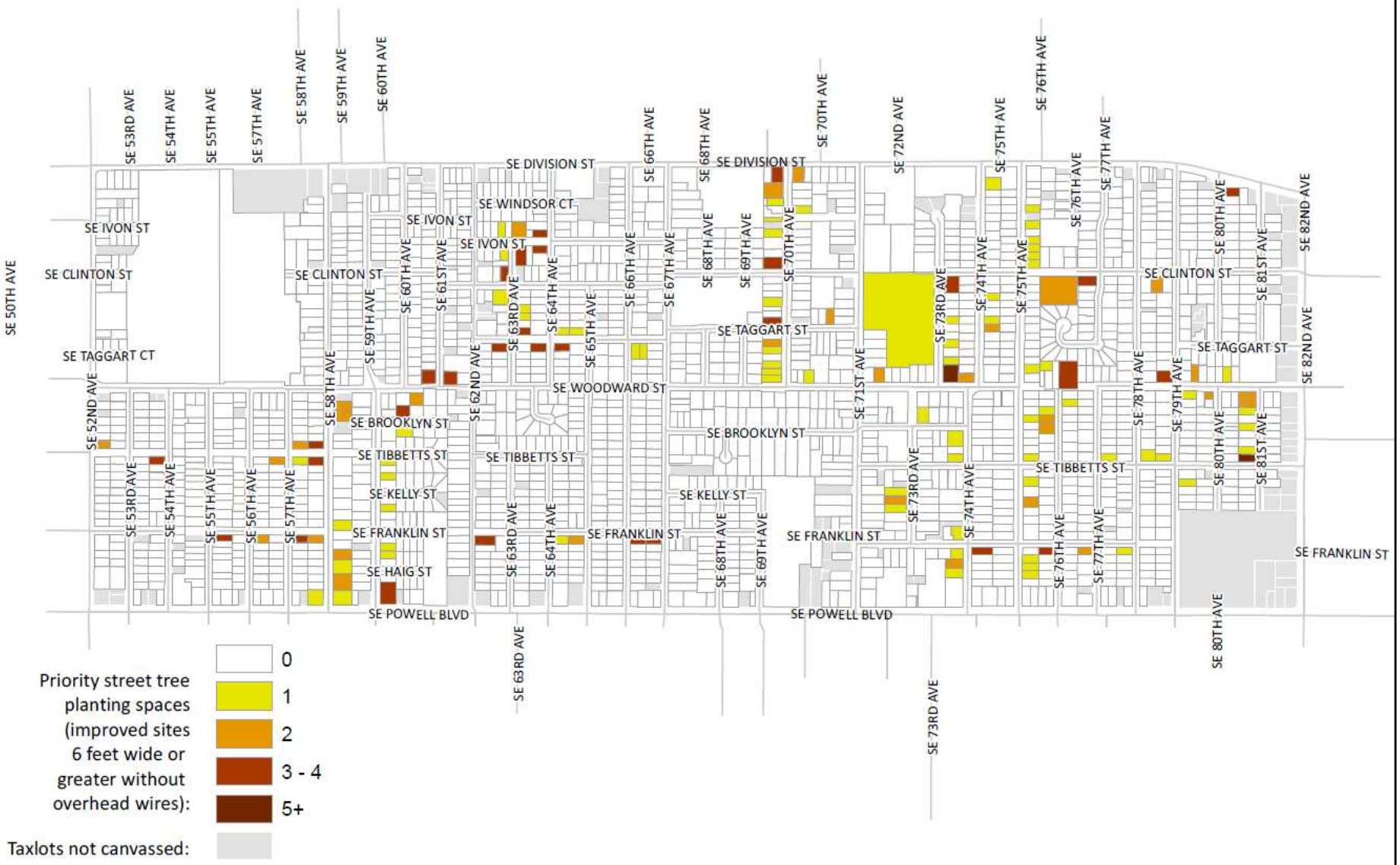
- Planting permit
- Plant the biggest spaces first
- May also choose to prioritize based on equity of benefits
  - Plant in areas that don't have many trees first

Available Large and Medium Planting Sites



South Tabor Street Tree Inventory 2014

Priority street tree planting spaces



PORTLAND PARKS & RECREATION

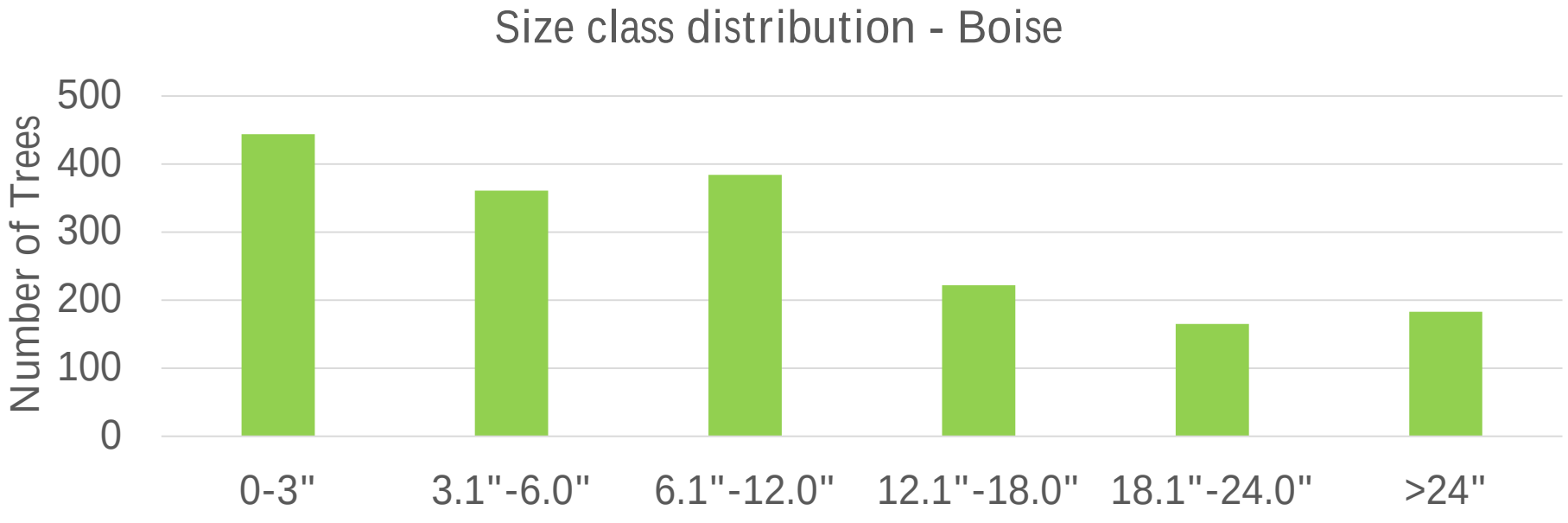
Healthy Parks, Healthy Portland

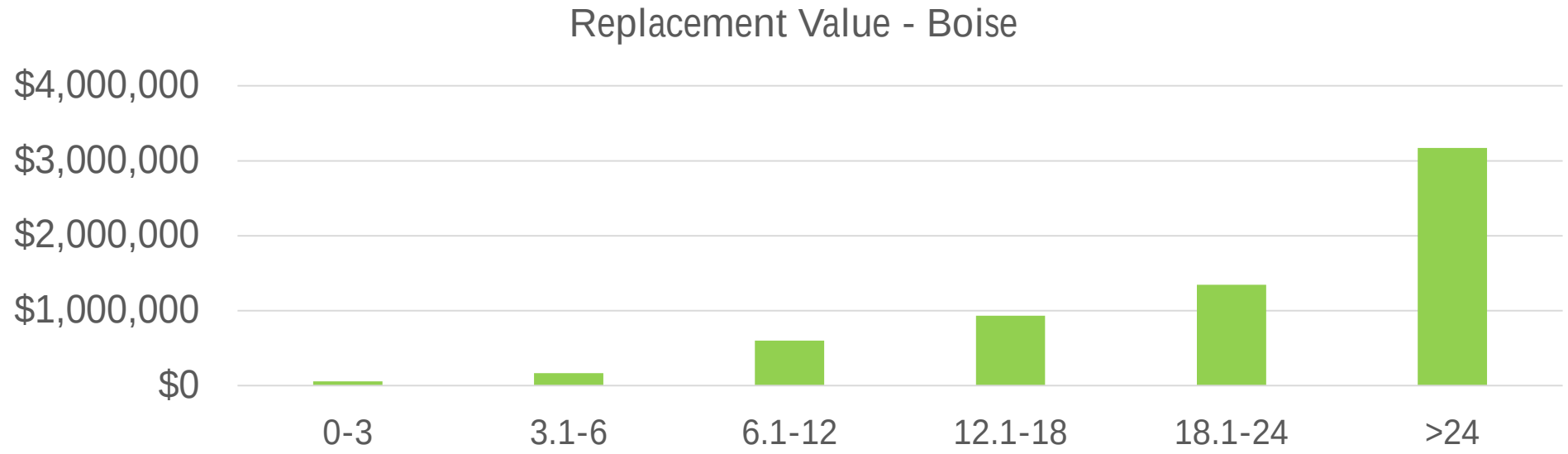
http://.portlandoregon.gov/parks/treeinventory

1,000 Feet

Planting: Right Tree Right Place

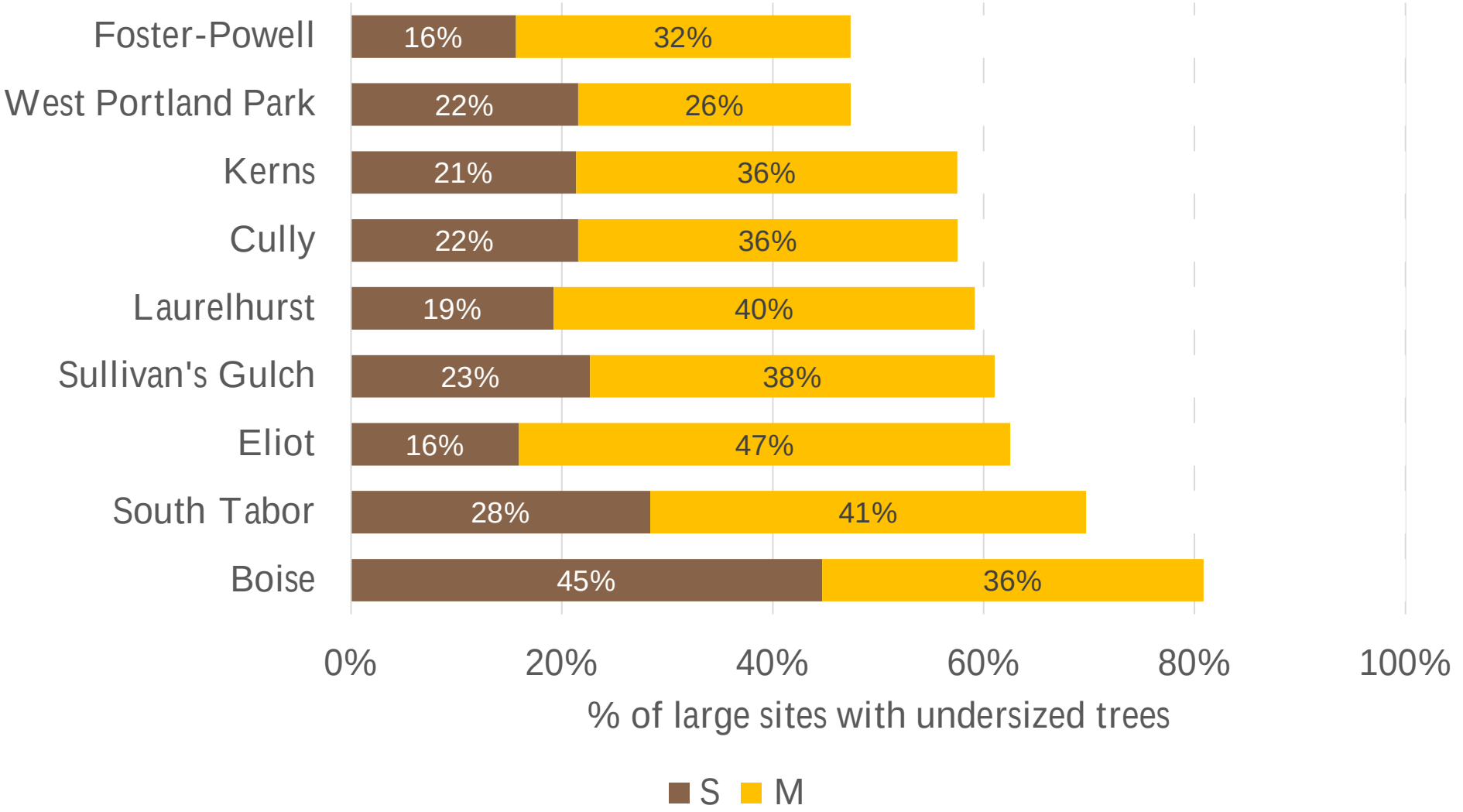
Undersized trees in large sites in Foster-Powell and Kerns


Size class distribution - Boise
Number of Trees
500
400
300
200
100
0
0-3"
3.1"-6.0"
6.1"-12.0"
12.1"-18.0"
18.1"-24.0"
>24"

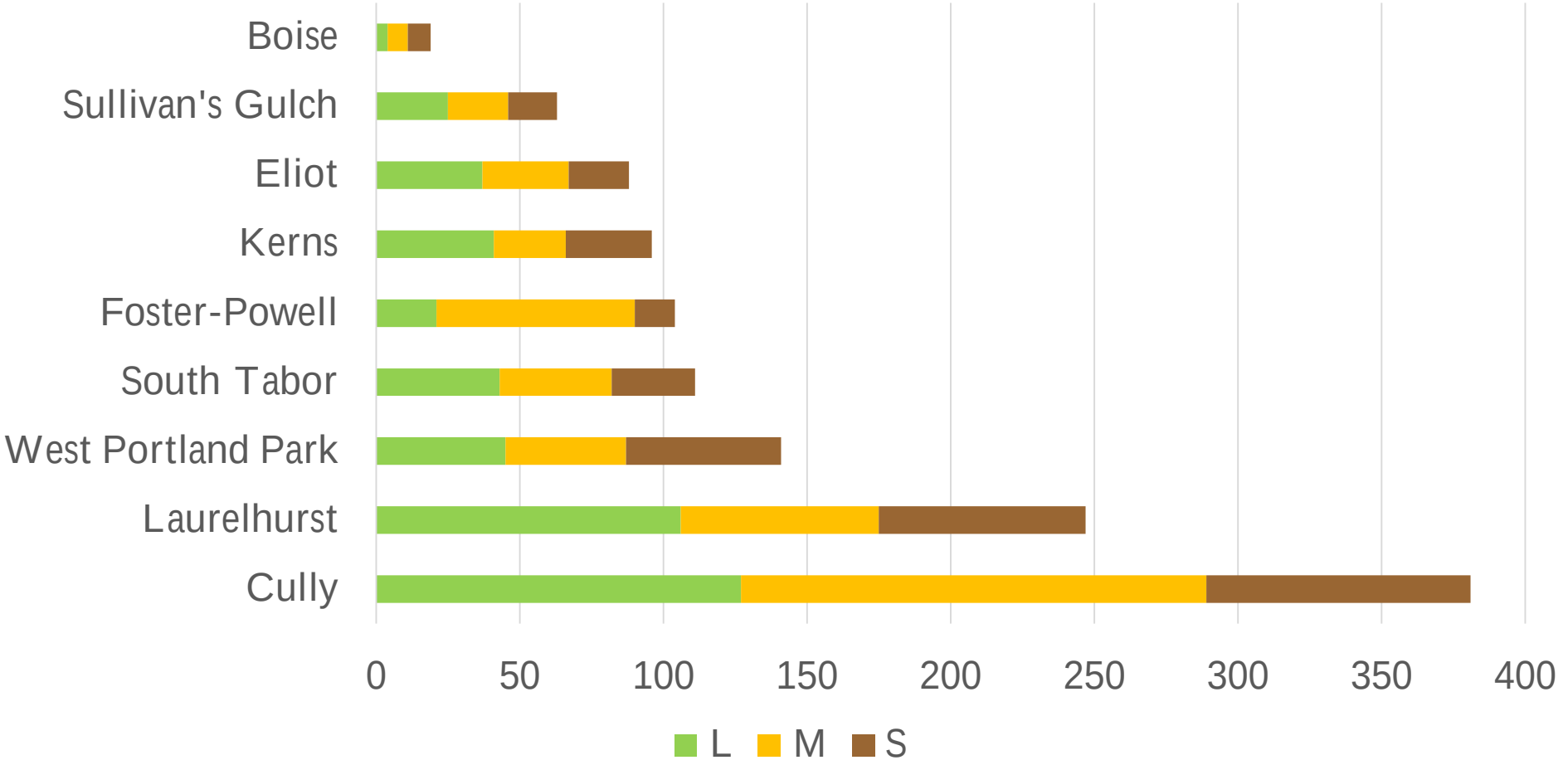

Replacement Value - Boise
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
0-3
3.1-6
6.1-12
12.1-18
18.1-24
>24

Undersized Trees:

Small and medium form trees in large sites

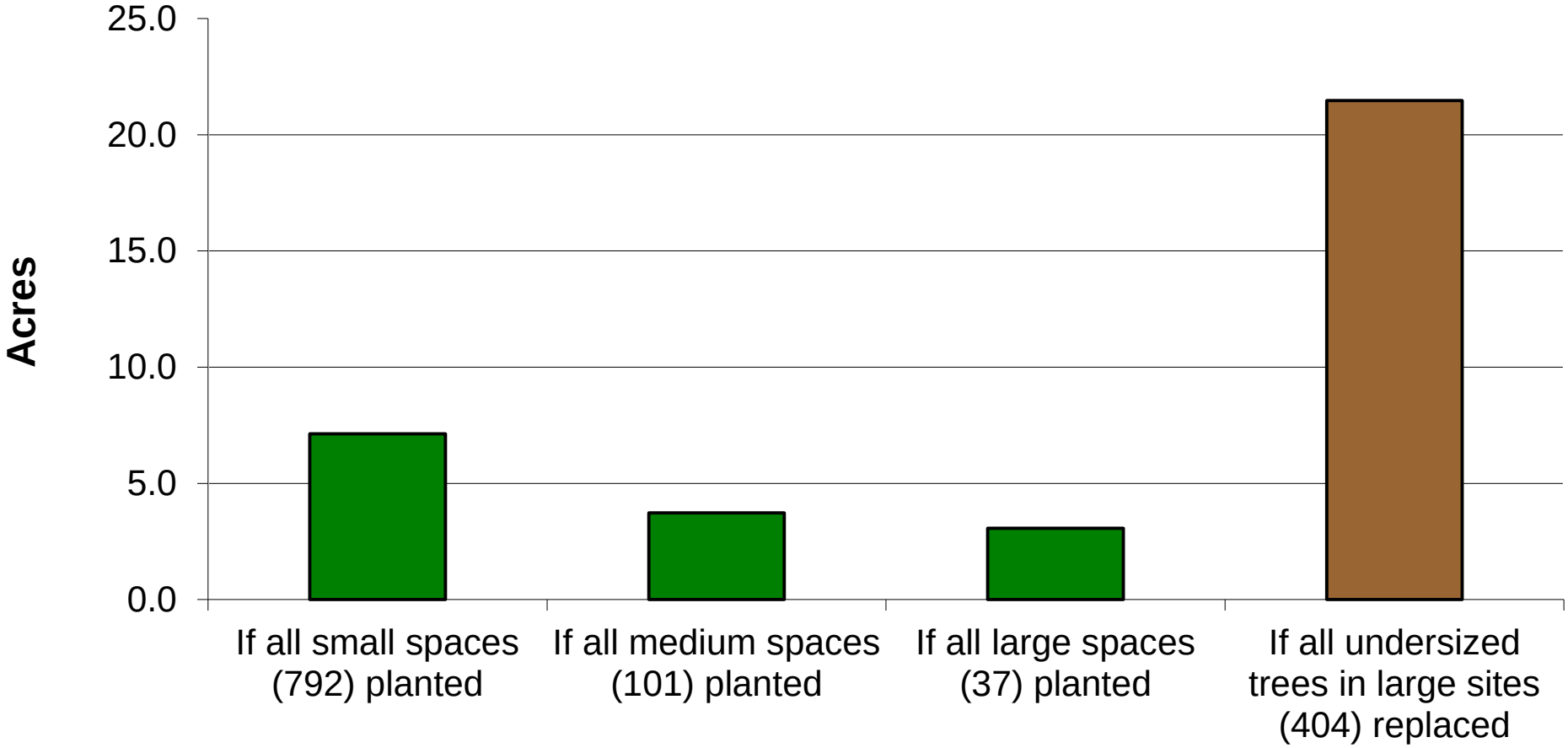


Form of recently planted trees (0-3”) in large spaces



Opportunity cost of planting trees too small for their site:

Eliot 63% of large sites planted with a tree that is too small



Species Selection
What's already there?

- Diversity of functional types
- Diversity at genus and family level
- Laurelhurst 400 + large sites

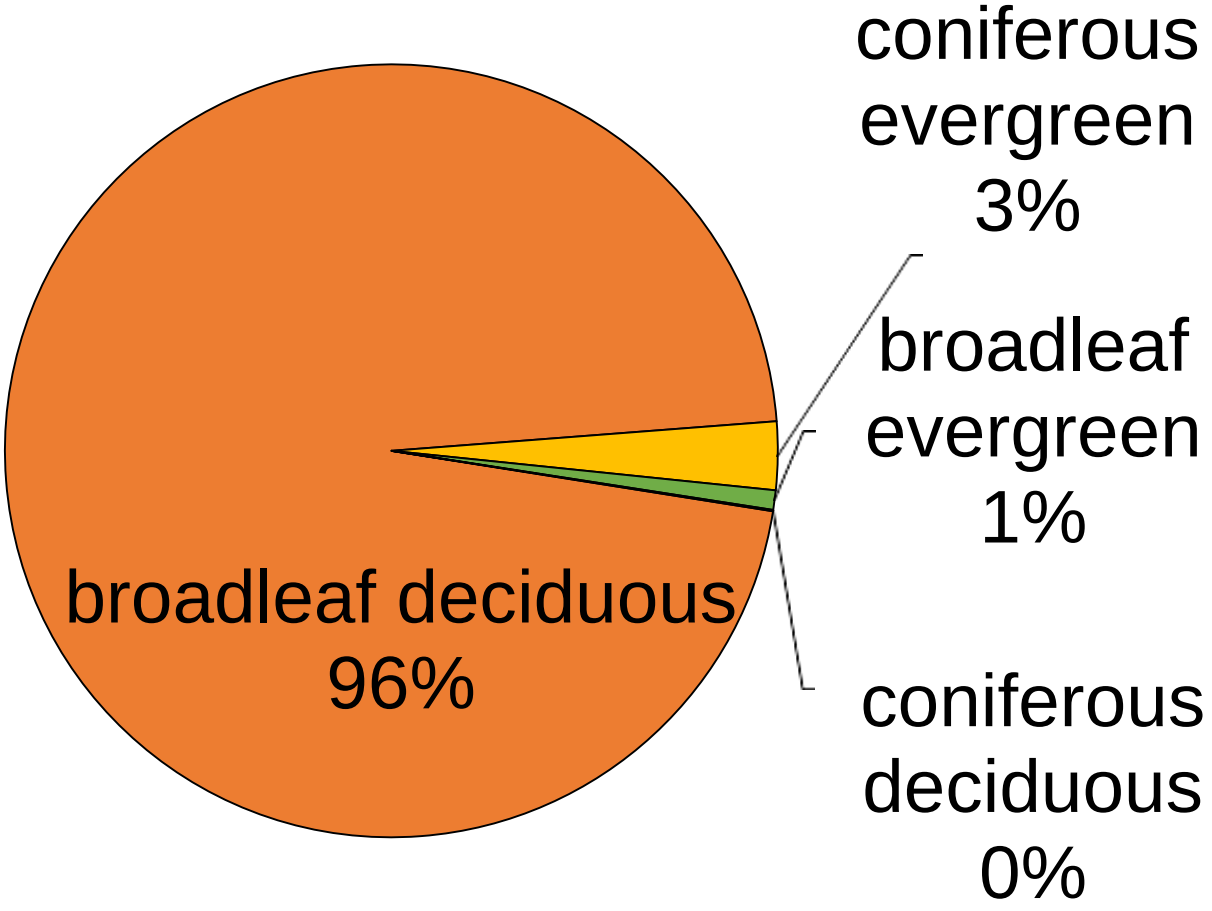
Tupelo (*Nyssa* spp.) in Laurelhurst

Laurelhurst
400 + Large Spaces

- 58% of the importance value is maple, elm and ash

Common Name	Scientific Name	Average DBH	% of Tree Population	Importance Value
Maple	**Acer spp.**	**18.2”**	**29%**	**32.8**
Elm	**Ulmus spp.**	**31.8”**	**7%**	**15.8**
Ash	**Fraxinus spp.**	**21.1”**	**8%**	**9.5**
all other trees		14.0”	56%	41.9
Total			*100%*	100

Laurelhurst – Functional Diversity



Deodar Cedar
Cedrus deodara

Ponderosa Pine
Pinus ponderosa

Incense Cedar
Calocedrus decurens

Pagoda Tree
Styphnolobium japonicum

Beech
Fagus spp.

Cork Oak
Quercus suber

Oregon Myrtle
Umbellularia californica

What about small and medium spaces?

Boise	% of all Trees
Cherry	19.5%
Prunus (cherry, plum)	24.2%
Rosaceae (cherry, crabapple, hawthorn, plum)	37.1%

Trees for small and medium spaces

Chinese Oak
Quercus myrsinifolia

Fragrant Snowbell
Styrax obassia

Crepe myrtle
Lagerstroemia indica

Butterflies Magnolia
Magnolia ‘Butterflies’

Bay Laurel
Laurus nobilis

City Sprite Zelkova
Zelkova ‘City Sprite’

Tree Lilac
Syringa reticulata

What about habitat and native species?

- West Portland Park

Preserving Trees during Development

- In Cully 60% of planting sites are unimproved

Zoning differences

- Outreach and education to the business and development community
- Advocate for shade trees during re-development

Innovative ways to include trees in re-development

Silva Cells

Structural Soil

Advocate for bigger sites for trees during development.

Tree Maintenance

Sullivan's Gulch Street Tree Inventory 2014

Young Trees

PORTLAND PARKS & RECREATION
Healthy Parks, Healthy Portland
http://.portlandoregon.gov/parks/treeinventory

1,000 Feet

Mature Tree Maintenance

- Care for large, mature trees to prolong lifespan
- Retain big trees in fair and good condition
- Promote the importance of big and old trees
- Seek funding for low income property owners

Sycamore maple (*Acer pseudoplatanus*) in Sullivan's Gulch

Remove and Replace

Next Steps

- Neighborhoods receive report, maps, data
- Tree Teams established
- Neighborhoods create "Tree Plan" to guide activities around street trees (afternoon session)
- UF assists teams with stewardship activities and organization

Applications for 2015 inventory due January 15!