

Assessing Public Response to Urban Highway Roadsides

Urban Forestry & Context-Sensitive Solutions

**Kathleen L. Wolf, Ph.D.
College of Forest Resources
University of Washington
kwolf@u.washington.edu**

Public Perceptions Research - Two Studies

Research Sponsors:

National Urban and Community
Forestry Advisory Council

U.S. Forest Service

Washington State Department of
Transportation

University of Washington (Seattle)
Center for Urban Horticulture

Research Goals

- Roadside preferences - urban forest options
- Drivers' attitudes and values - community landscapes
- Place perceptions
- Assess economic values and benefits

Research Phases

- **Interviews with roadside businesses**
 - Owner/managers, association staff, agencies
- **Business and driver survey**
 - Semi-urban roadside settings
 - Digital simulations of varied conditions
 - Pacific Northwest metro areas - Vancouver, Everett, Olympia, Bellingham
 - Other U.S. metro areas - Baltimore, Detroit, Minneapolis

Urban Forestry and CSS

**First Survey
Roadside Preferences**



Six semi-urban roadsides (motel, car lots, mall, RV, commercial)



6 base images
digitally edited,
36 images,
ratings 1-5



Scene Ratings

36 scenes - rated 1-5



**highest rated scene
mean 4.54**



**lowest rated scene
mean 1.43**

Five Preference Categories

descriptions & mean ratings



Category 1:
Harsh Edge
driver mean: 1.53
business mean: 1.67



Category 2:
Prominent Buildings
driver mean: 1.74
business mean: 1.80

principal axis
factor analysis

Five Preference Categories (cont.) descriptions & mean ratings



Category 3:
Ornamental Frame
driver mean: 2.78
business mean: 2.96

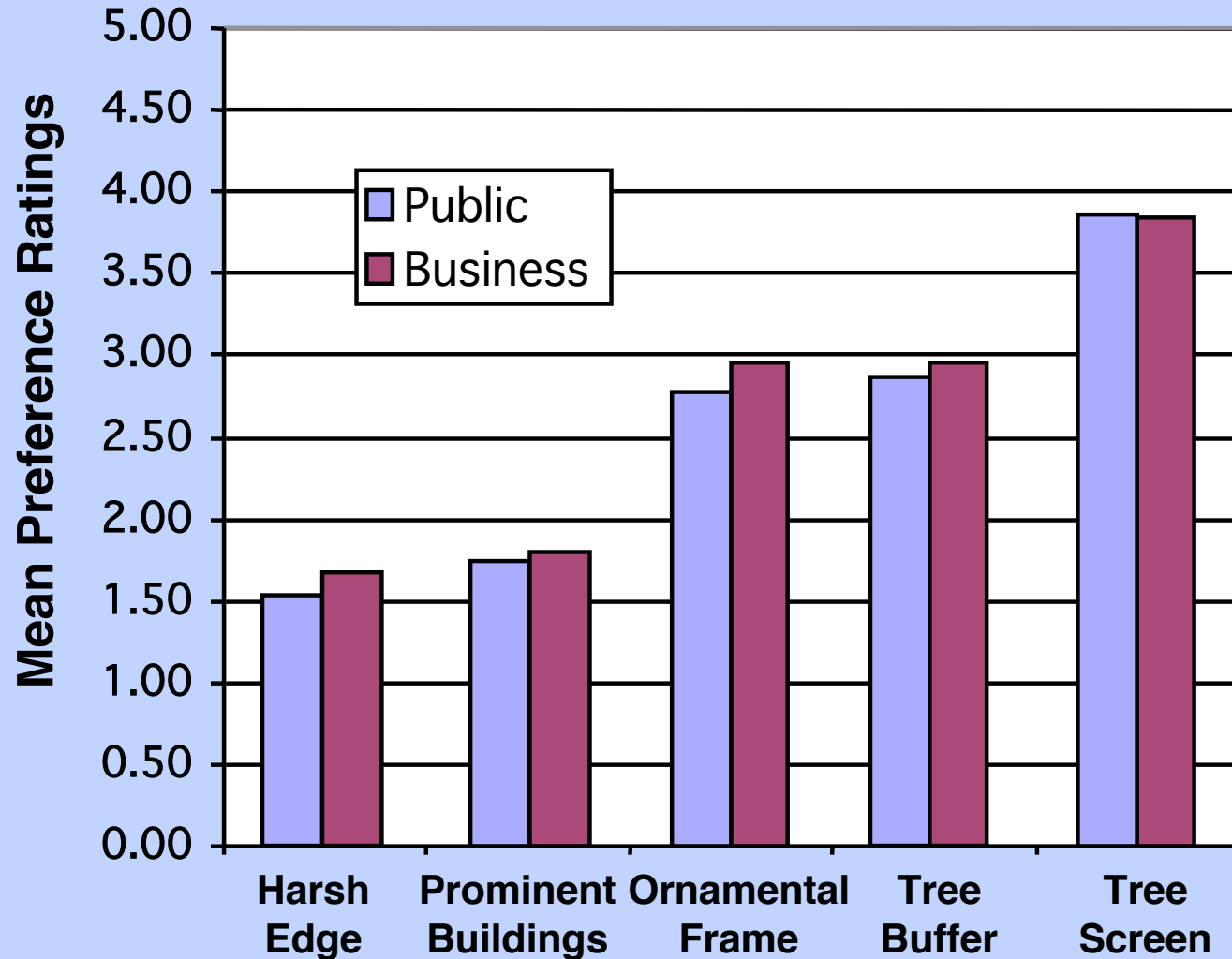


Category 5:
Tree Screen
driver mean: 3.87
business mean: 3.85



Category 4:
Tree Buffer
driver mean: 2.87
business mean: 2.95

Preferences



means
comparisons,
t-Test, $p < .05$

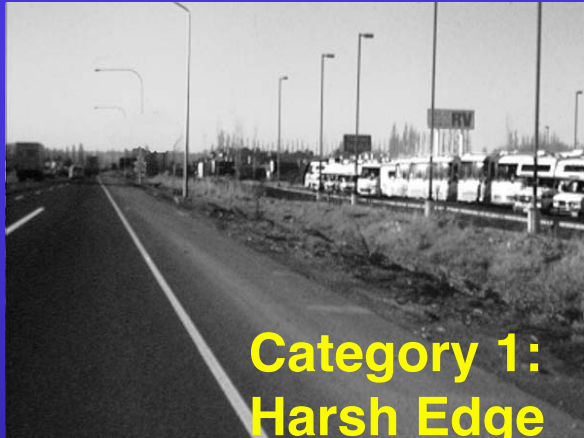
Image Preference Categories

Visual Preferences

- lower without trees, higher with trees
 - full vegetation screening preferred
 - compromise? use vegetation to frame views
 - complexity & sensory attention

roadside vegetation & visual quality

Comparing Preference Categories



**Category 1:
Harsh Edge
low preference**



**Category 2:
Prominent Buildings
low preference**



**Category 5:
Tree Screen
high preference**

Comparing Preference Categories



**Category 3:
Ornamental Frame
mid-level preference**



**Category 4:
Tree Buffer
mid-level preference**

Urban Forestry and CSS

Second Survey
Community Image

Two Community Scenarios



Community 1: little planning for landscape or green space

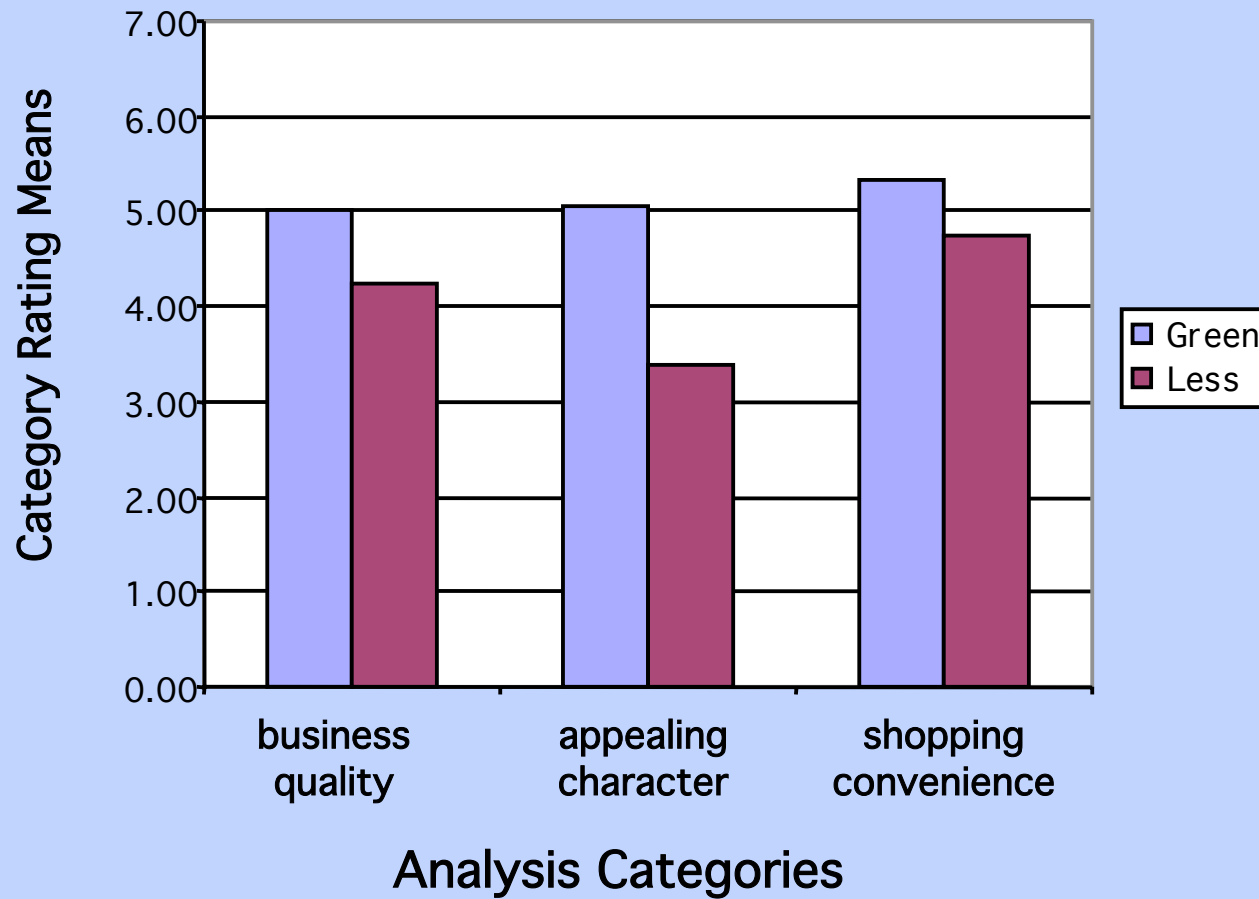


Community 2: has done planning for landscape and green space



Consumer Cues

Consumer Environment Attributes



Product Pricing

Two Community Scenarios - Pricing Patterns

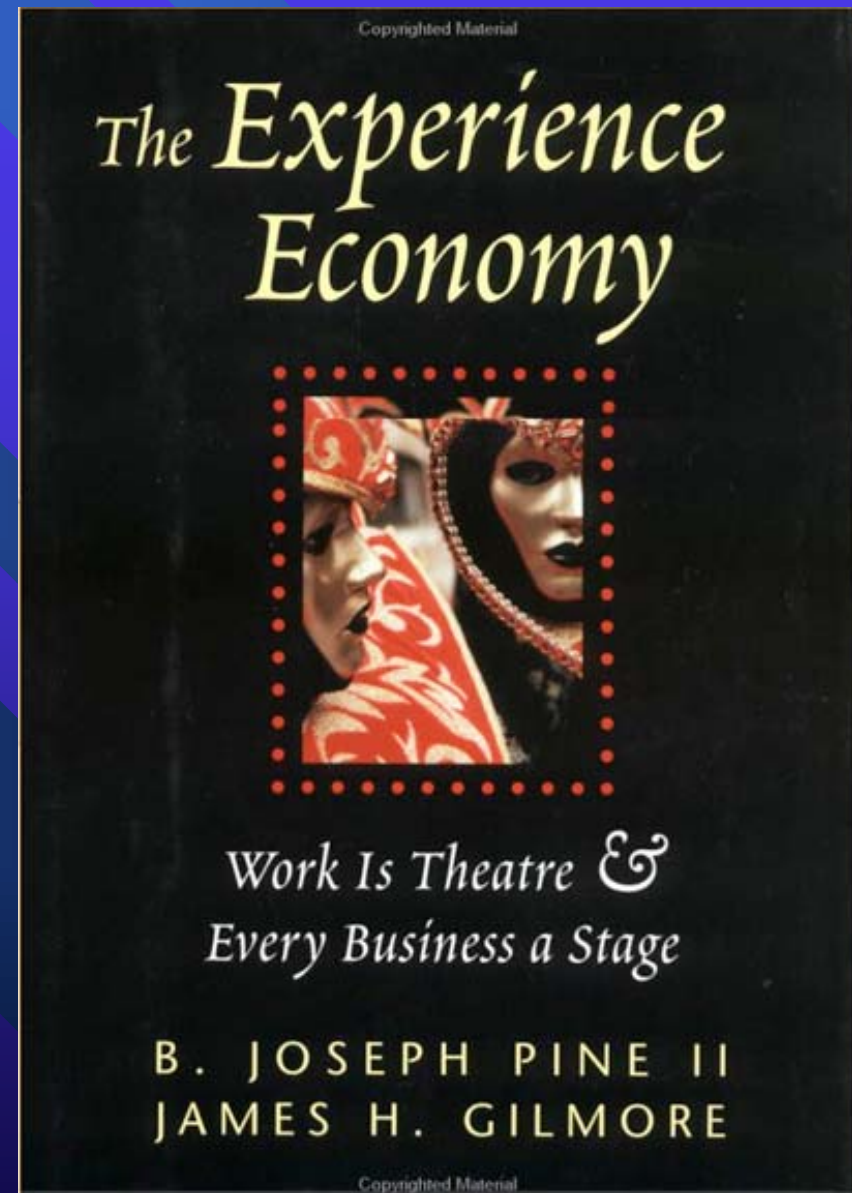
Product/Service	Green	No	% Diff	t-test*
	Mean	Mean		p <
flower bouquet	17.16	15.61	10%	0.005
pair of sunglasses	18.87	15.78	20%	0.01
take-out sandwich for lunch	4.93	4.49	10%	0.0005
pair of sports shoes	47.07	43.81	7%	0.005
lightweight jacket	38.04	34.82	9%	0.0005
sit-down dinner for two	34.08	30.69	11%	0.0005
motel room for two for one night	62.78	57.09	10%	0.0005
3 bedroom, 2 bath home	145,067	130,737	11%	0.0005

Place Perceptions

- **positive consumer cues with trees**
 - **positive judgments of business quality**
 - **appealing place character**
 - **next? benefit/cost analysis**

vegetation quality & cues to experience

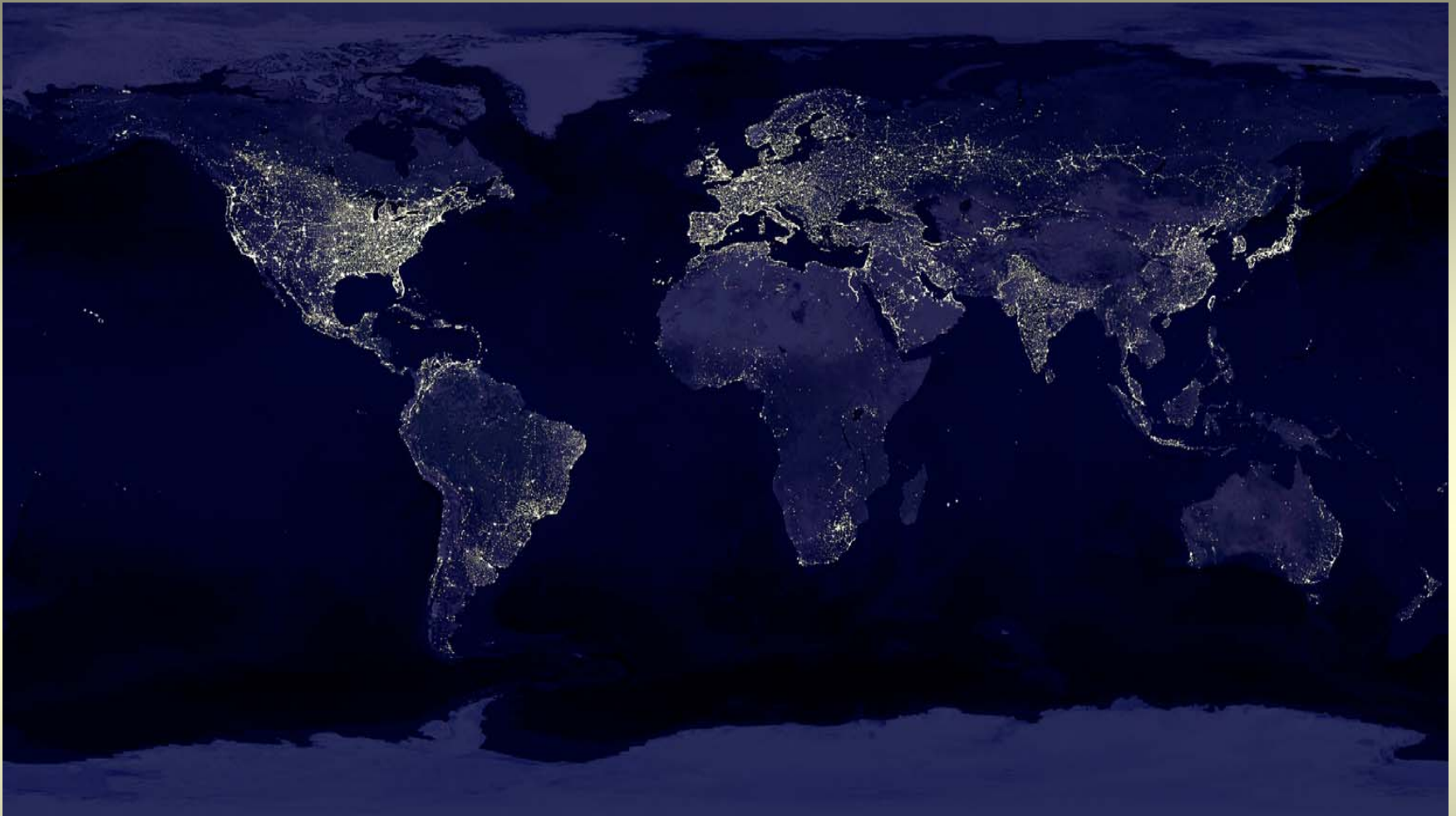
retail & place
marketing



Scientific Research

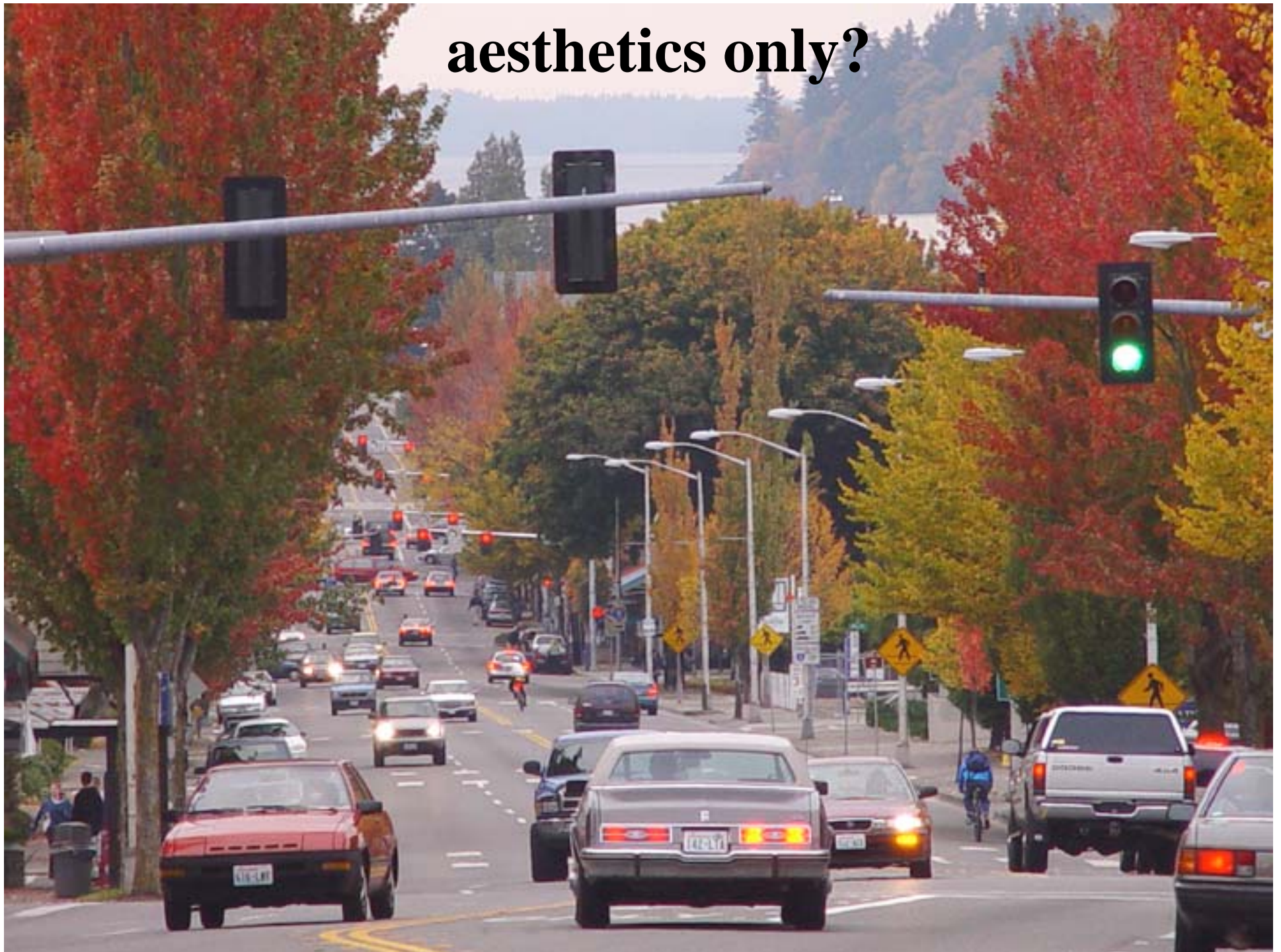
Benefits of Trees in Cities

elevate position in transportation policy?



Global Urbanization

aesthetics only?



Acceptable Risk?

✦ conditions of U.S. traffic accidents in 2002

	U.S. Total	Tree Accidents	Urban Accidents	Urban Tree Accidents
All Accidents	*6,316,000 (100%)	1.9% *141,000 (2.2%)	37%	0.7%
Incapacitating Injury and Fatality	13%	0.9%	4.1%	0.04%
Fatality	1.2% *43,005 (0.6%)	0.1% *3,258 (< 0.001%)	0.4%	< 0.001%

* NHTSA (2004) - %s may differ due to sampling and analysis procedures

Annual Fatality Risks:

M. Norris, Australia ISA, 2005

Table 2 Every Day Risks
Source ANSTO (Higson 1989)

Risk	Individual risk per person per year
Smoking (20 cigarettes a day)	1:200
Cancers from all causes	1:500
Drinking alcohol	1:2,500
Travelling by Motor vehicle	1:7,000
Travelling by Train	1:33,000
Travelling by Aeroplane	1:100,000
Fires and accidental burns	1:100,000
Cataclysmic storms and storm flood	1:5,000,000
Lightning strike	1:10,000,000
Meteorite	1:1,000,000,000

Urban tree
crash

1: 100,000

Urban Forests

Environmental Services

- Air pollutants reduction
- Nitrogen, phosphorus and sediment interception
- Carbon emissions reduction & sequestration
- Urban heat-island cooling
- Reduced “bad” ozone
- Stormwater runoff reduction
- Wildlife habitat

Urban Nature

Community Economics

- Improved consumer environments in business districts - 9-12% product spending
- Residential real estate values - 3-7% with trees in yard
- Residential real estate values - 5-20%, proximity to natural open space
- Commercial property rental rates - 7%
- Air pollution mitigation
- Heating and cooling costs reductions
- Less frequent pavement replacement

Urban Nature

Human Functioning Benefits

- Improved surgery and illness recovery
- Higher job satisfaction and reduced absenteeism
- Lower crime rates in well landscape areas
- Stress reduction in urban lifestyles
- Reduced violence and more constructive conflict resolution in domestic conflict
- Reduced ADHD symptoms



urban forest - “ambient” conditions

Scientific Research

Benefits of Trees in Cities

elevate position in transportation policy?

www.cfr.washington.edu/research.envm ind

Center for Urban Horticulture, College of Forest Resources, University of Washington

Human Dimensions of Urban Forestry and Urban Greening

*featuring research on peoples'
perceptions and behaviors
regarding nature in cities*

Nature and Consumer Environments

Research about how the urban forest influences business district visitors.

Trees and Transportation

Studies on the value of having quality landscapes in urban roadsides.

Civic Ecology

Studies of human behaviors and benefits when people are active in the environment.

International Urban Greening

Scientific explorations of people and urban nature in other nations.

Urban Forestry and Human Benefits

More resources, studies and links . . .

Research Director
Kathleen L. Wolf, Ph.D.

Sponsors

