

Market Evaluation of Wood-Plastic Playground & Building Components

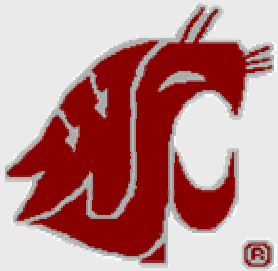
Vikram Yadama

Wood Materials & Engineering Laboratory
Washington State Univ.

Steve Shook

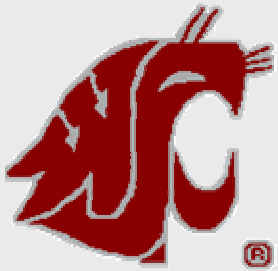
Forest Product Dept., Univ. of Idaho





Outline

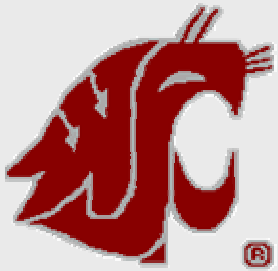
- Current & Potential WPC Markets
- Surveys Conducted
 - ✓ Parks & Rec. Officials - Playground Equipment
 - ✓ Roofing Contractors - Roofing Materials
- Survey Findings



WPC Market

- 2002 - ~\$775 million market
- Average growth of 25% per year since 1998
- Penetrated less than 5% of the potential market

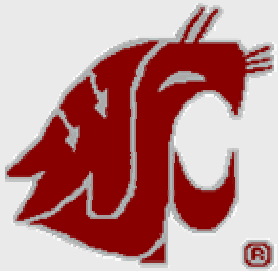
Source: Morton, Quarmley, and Rossi. 2003. The 7th Intl. Conf. on Woodfiber-Plastic Composites, Madison, WI



North American WPC Market

- Building products accounted for over 80% of the WPC market
 - ✓ Decking (53% of the total volume)
 - ✓ Railing Systems
 - ✓ Window & Door Profiles

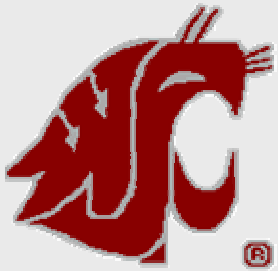
- Short term growth - 20% per yr.



Projected Growth

- Demand is projected to increase 290% by 2010
- Annual growth rate of 14% for next 8 years
- Banning of CCA treated wood for use in
 - ✓ Decks
 - ✓ Picnic tables, Benches
 - ✓ Residential fencing
 - ✓ Landscape timber
 - ✓ Patios
 - ✓ Gazebos & walkways
 - ✓ Playground Equipment

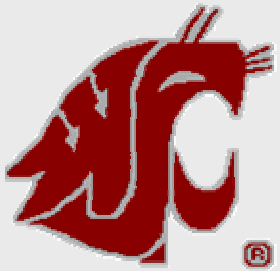




James Morton - Principia Partners, WPC Conference, Madison, WI, 2003

- Look beyond decking/railing for growth
 - ✓ Market share in decking is projected to reach 25%+
 - ✓ New applications must be developed/commercialized to sustain growth

- New composite formulations needed
 - ✓ To expand range of applications
 - ✓ Additives to enhance composite performance

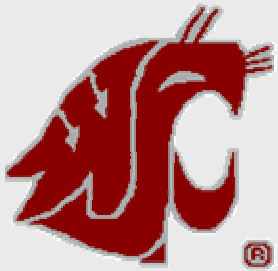


Playground Equipment

- Plastic Lumber
(Recycled - Post
Consumer HDPE &
LDPE)



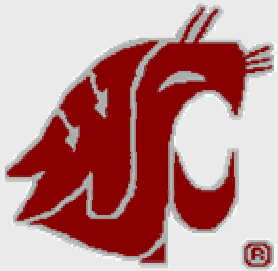
Source: <http://www.state.ma.us/osd/enviro/products/lumber.htm>



Roofing Market

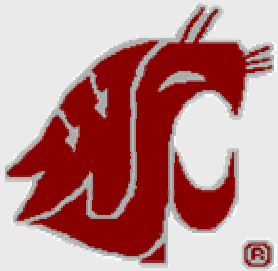
- 235 million squares US roofing industry
- Projected to expand by 1.8% per year through 2007
- Expected to reach \$11 billion in 2007

Source: Freedonia Group, Cleveland, OH



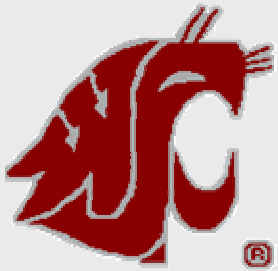
Surveys Conducted

- Parks & Recreation Officials
- Roofing Contractors
- Pacific Northwest Region
 - ✓ WA
 - ✓ OR
 - ✓ CA
- By mail



Survey Objectives

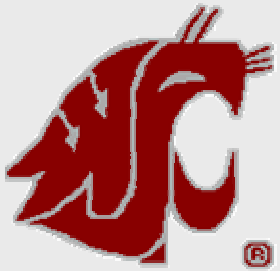
- Understand
 - ✓ market characteristics
 - ✓ consumer acceptance of new & existing products
 - ✓ buyer perceptions & preferences
 - ✓ required product attributes
 - ✓ channels of distribution



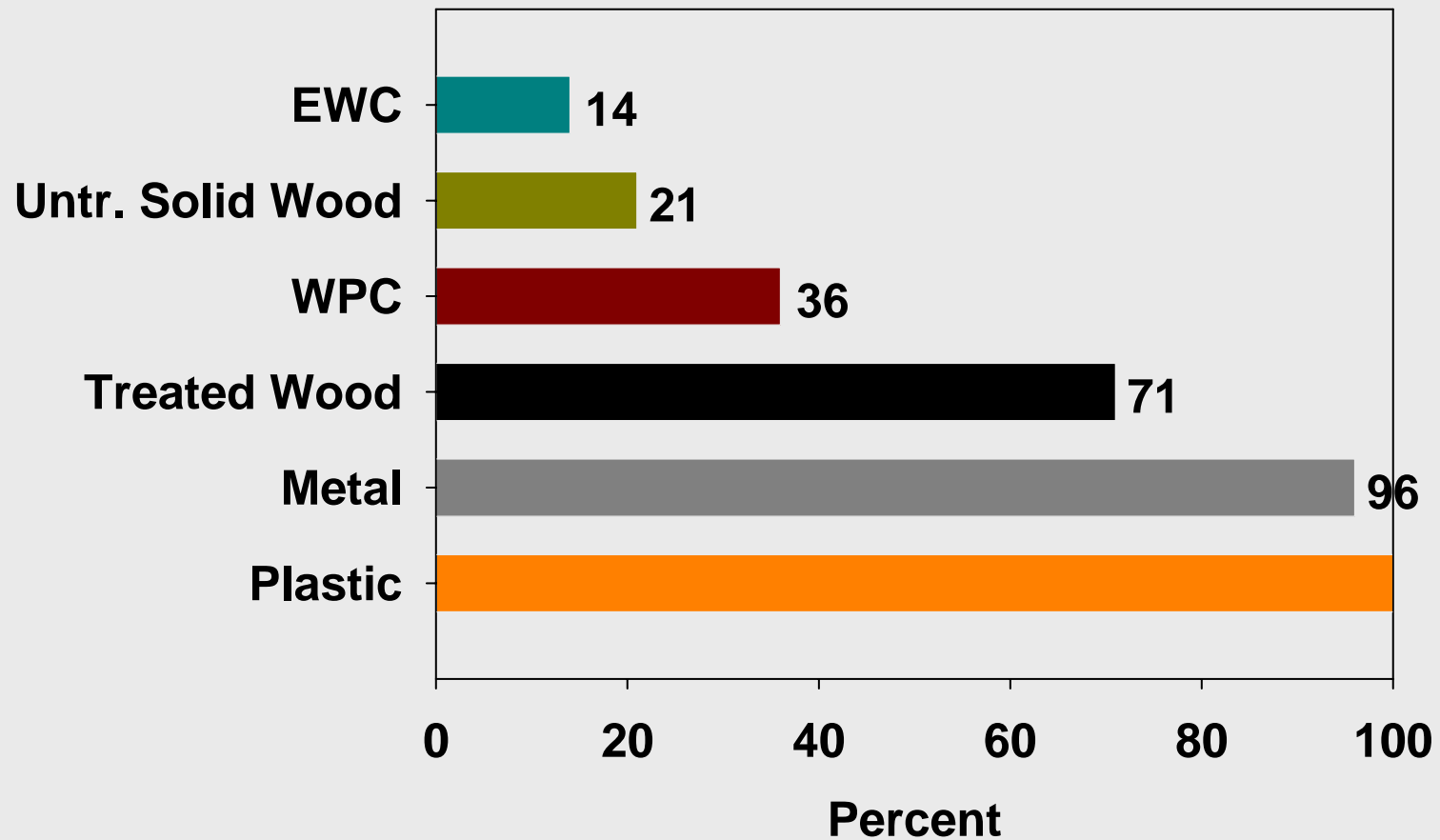
Playground Equipment

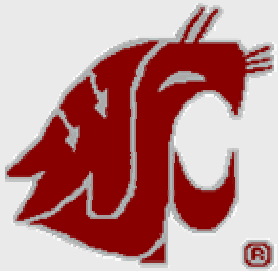
- Parks & Recreation Officials
 - ✓ 75 surveys sent out
 - ✓ 37% Returns Rate

- Sample Characteristics
 - ✓ City and County level
 - ✓ 68% managed 10 or more parks
 - ✓ All have purchasing authority

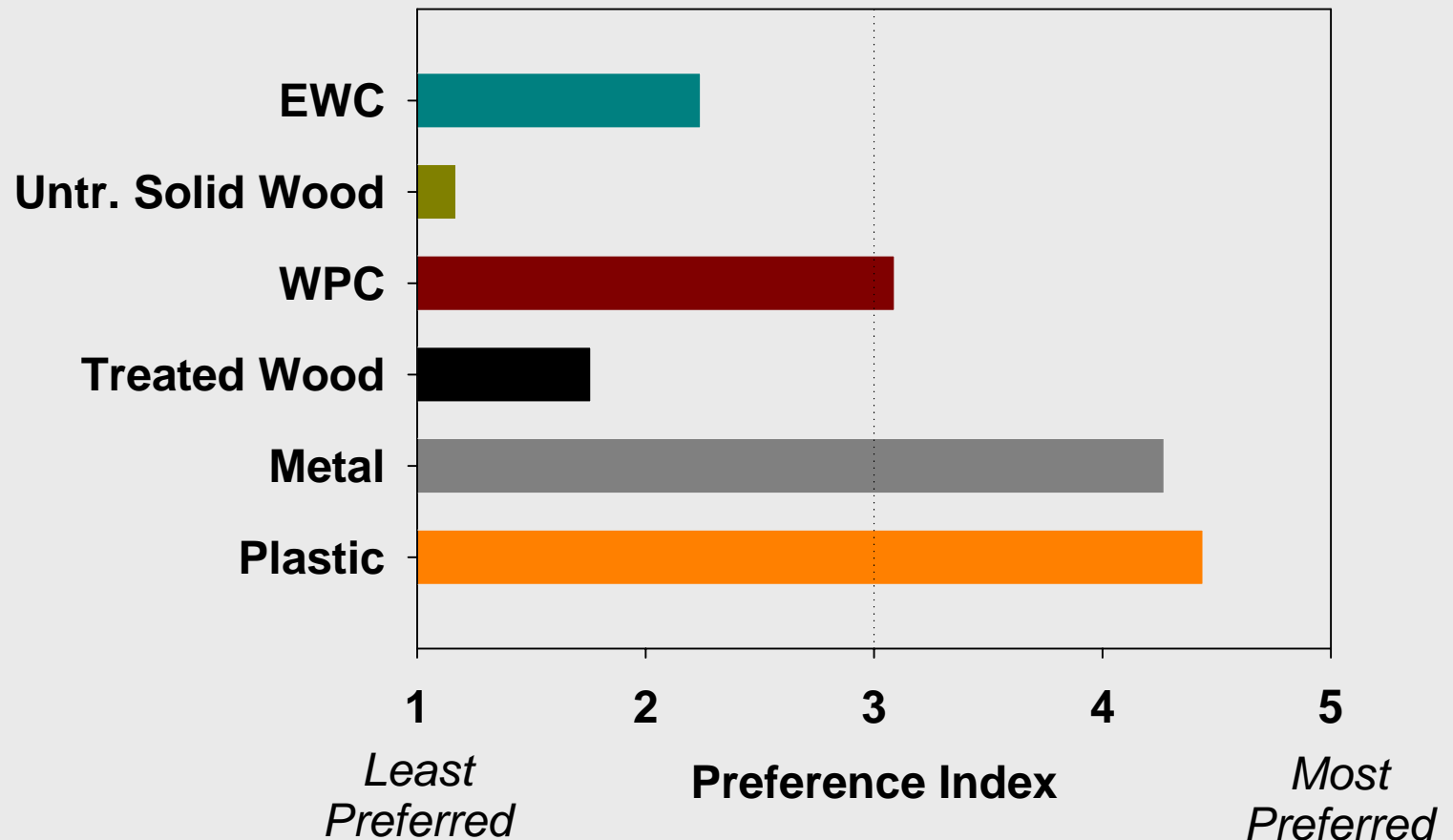


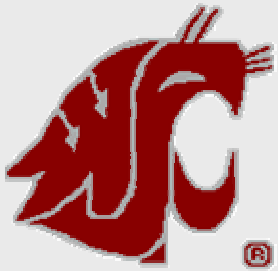
Currently Used Materials



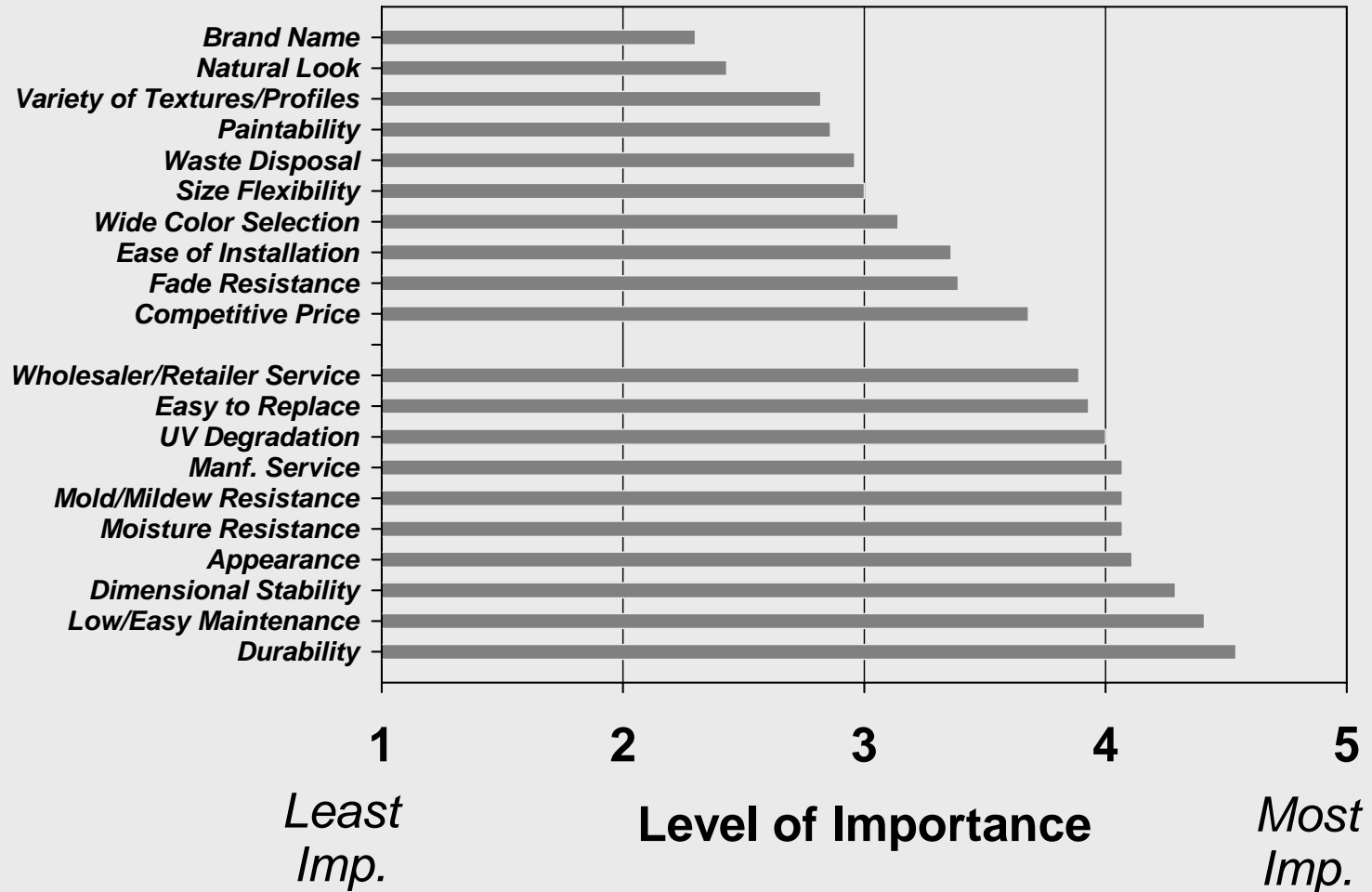


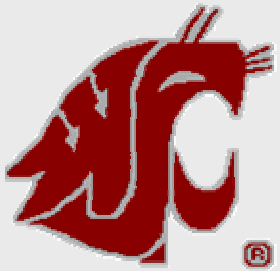
Preference of Material



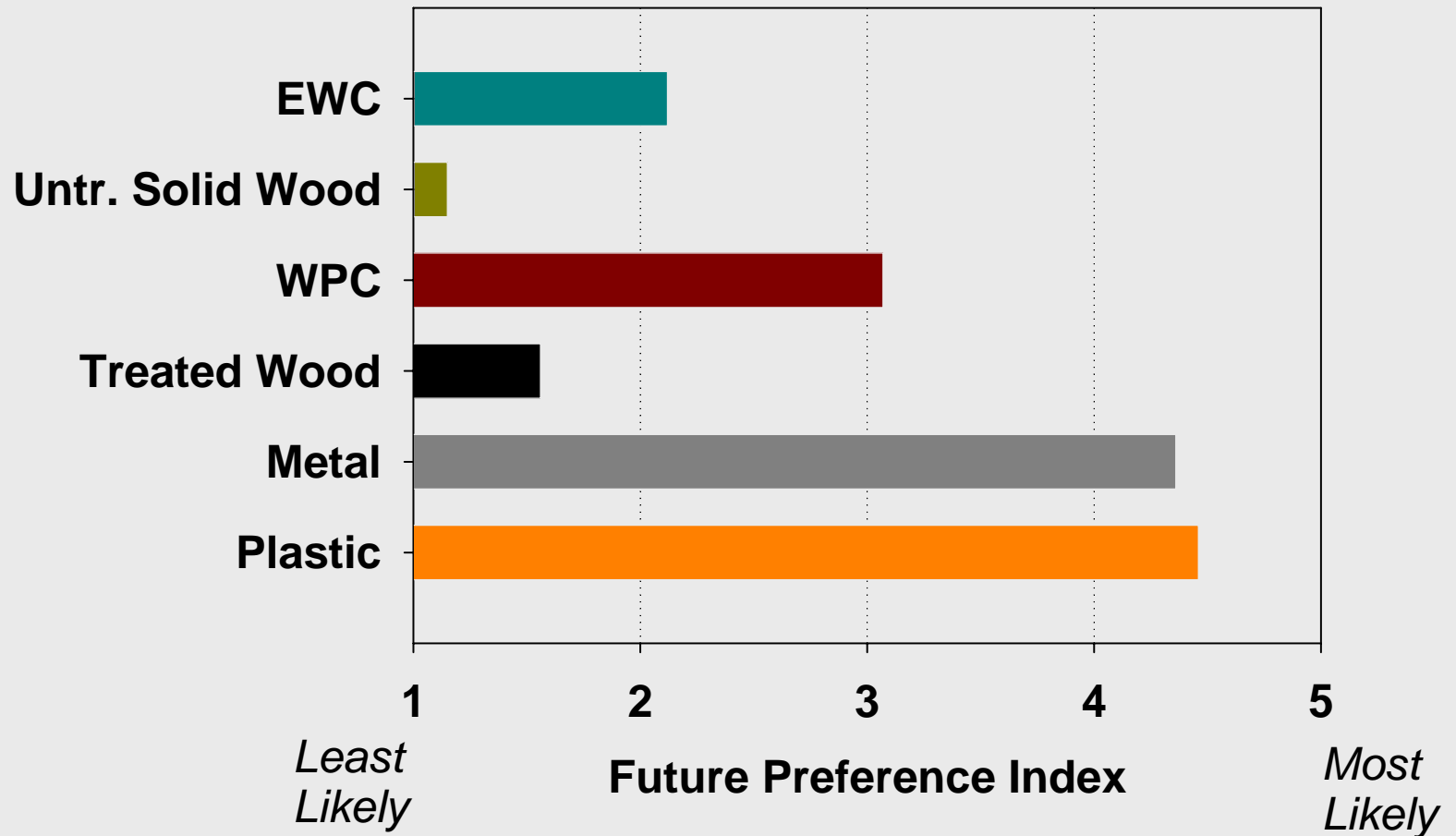


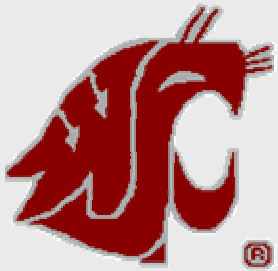
Importance of Attributes



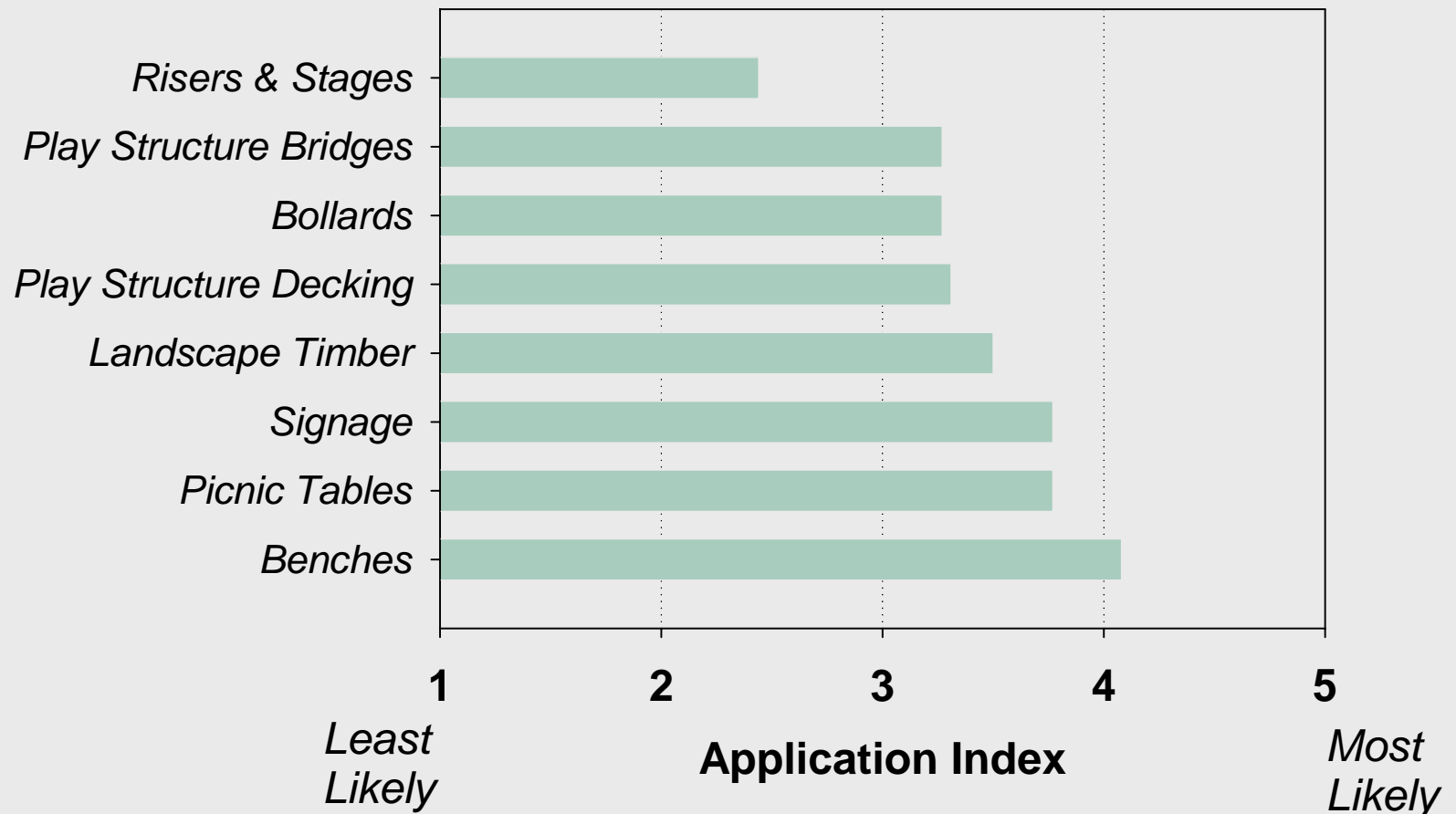


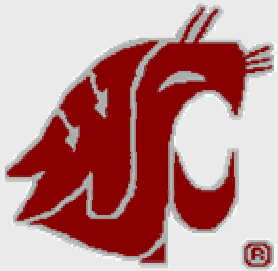
Future Material Choice



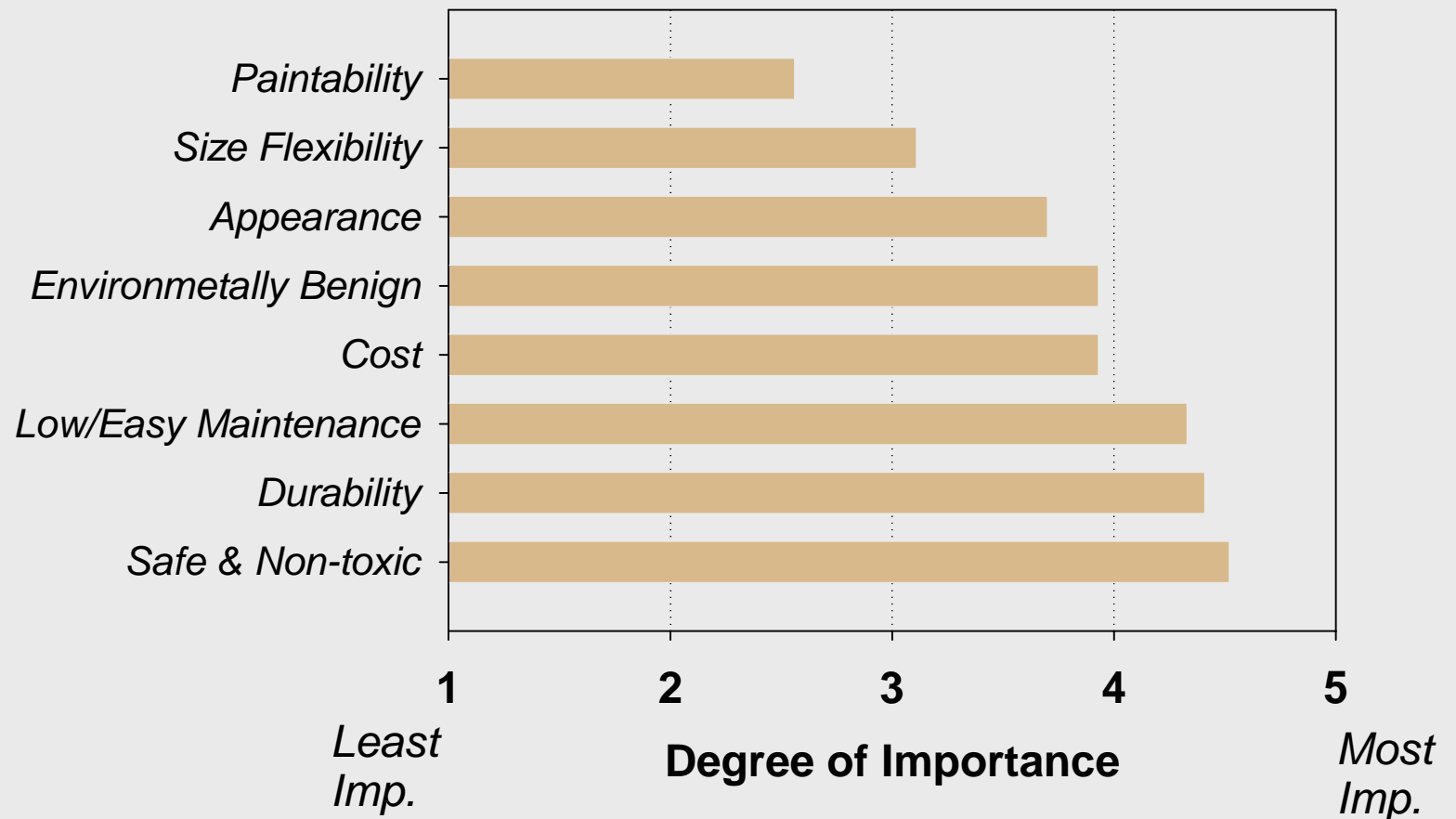


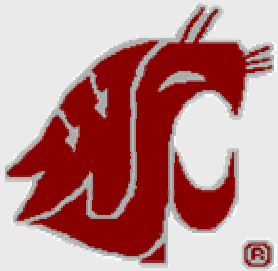
WPC Application Preference





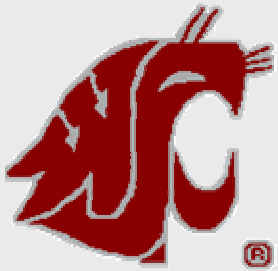
Attributes Influencing Purchase Decisions for WPCs





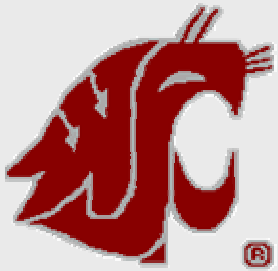
Maintenance & Costs

- Annual maintenance costs
 - ✓ <\$2,500: 68%
 - ✓ \$2,500-\$5,000: 21%
- Frequency of material replacement
 - ✓ Less than a year: 12%
 - ✓ 1-2 years: 24%
 - ✓ 5 years or more: 56%
- Annual new material costs
 - ✓ Less than \$2,500: 78%
 - ✓ \$2,500-\$5,000: 7%
 - ✓ More than \$50,000: 11%



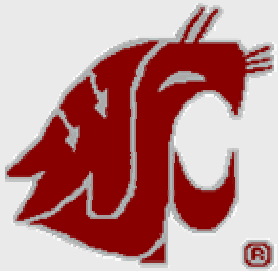
Assembly & Standards

- In what form are playground structures purchased?
 - ✓ Pre-built/assembled: 11%
 - ✓ Partially pre-built/assembled: 48%
 - ✓ Constructed on site: 41%
- Standards (89% follow standards)
 - ✓ ASTM
 - ✓ ADA (Americans with Disabilities Act)
 - ✓ CPSC (Consumer Product Safety Commission)



Roofing Contractors

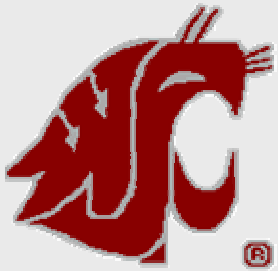
- 400 Surveys - PNW region
 - ✓ In business 3-15 years
 - ✓ Return Rate ~ 7%
 - ✓ Will be following up by mail



Sample Pop. Characteristics

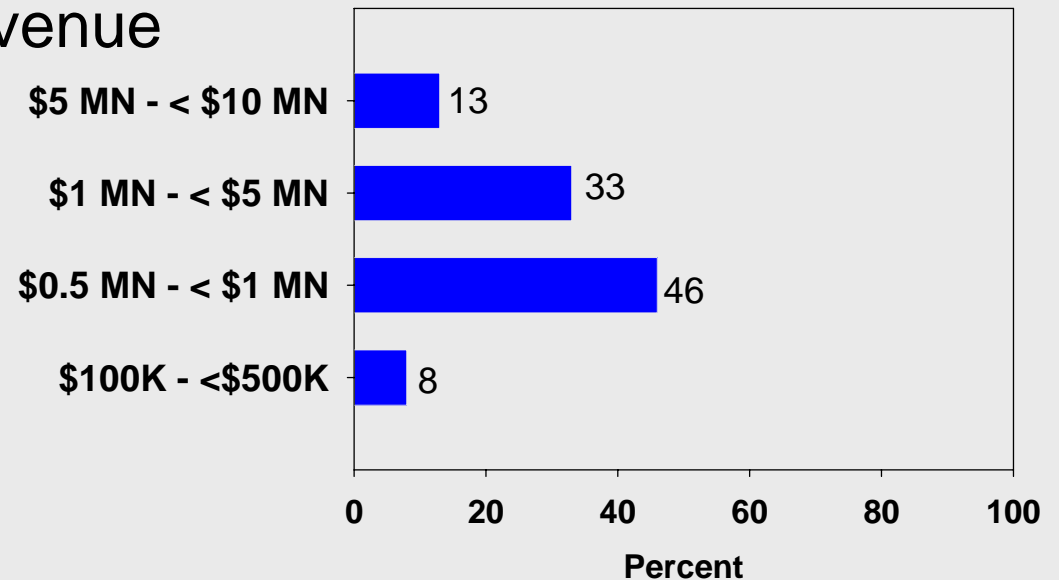
- Mean total squares installed in past 12 months = 24,138 squares
 - ✓ min. = 9 squares
 - ✓ max. = 500,000 squares
 - ✓ 1 square = 100 sq. ft.
- Avg. price of home typically roofed

\$150,000 to \$199,999	13%
\$200,000 to \$249,999	8%
\$250,000 to \$499,999	46%
\$500,000 to \$1,000,000	29%
Over \$1 million	4%



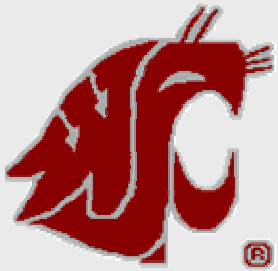
Sample Pop. Characteristics

➤ 2003 Total Revenue

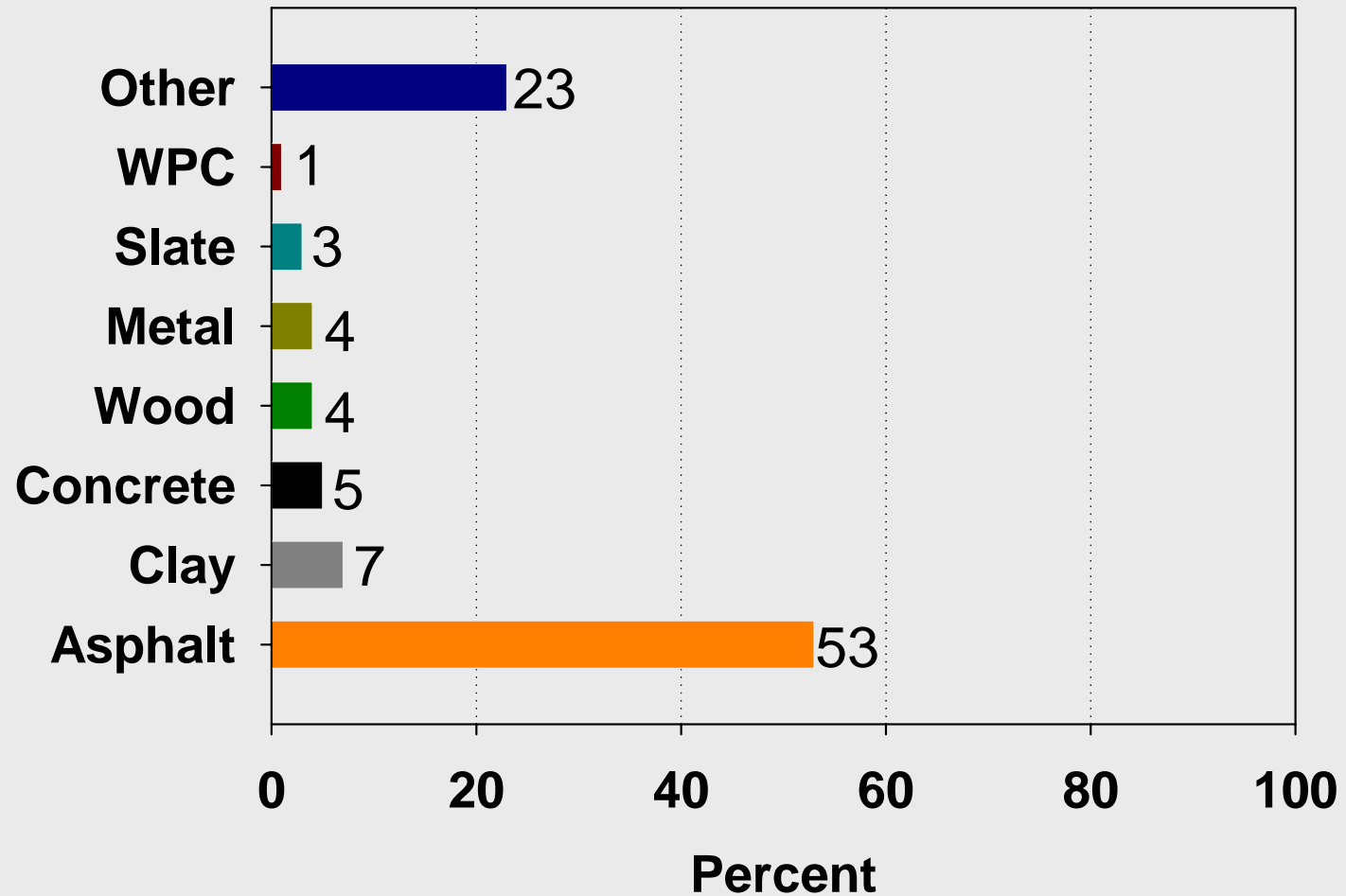


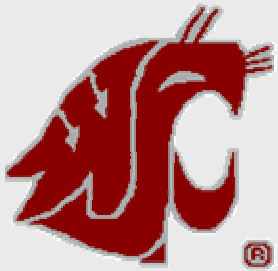
➤ Who do they purchase material from?

- ✓ Retailer: 20%
- ✓ Wholesaler: 72%
- ✓ Other: 8%

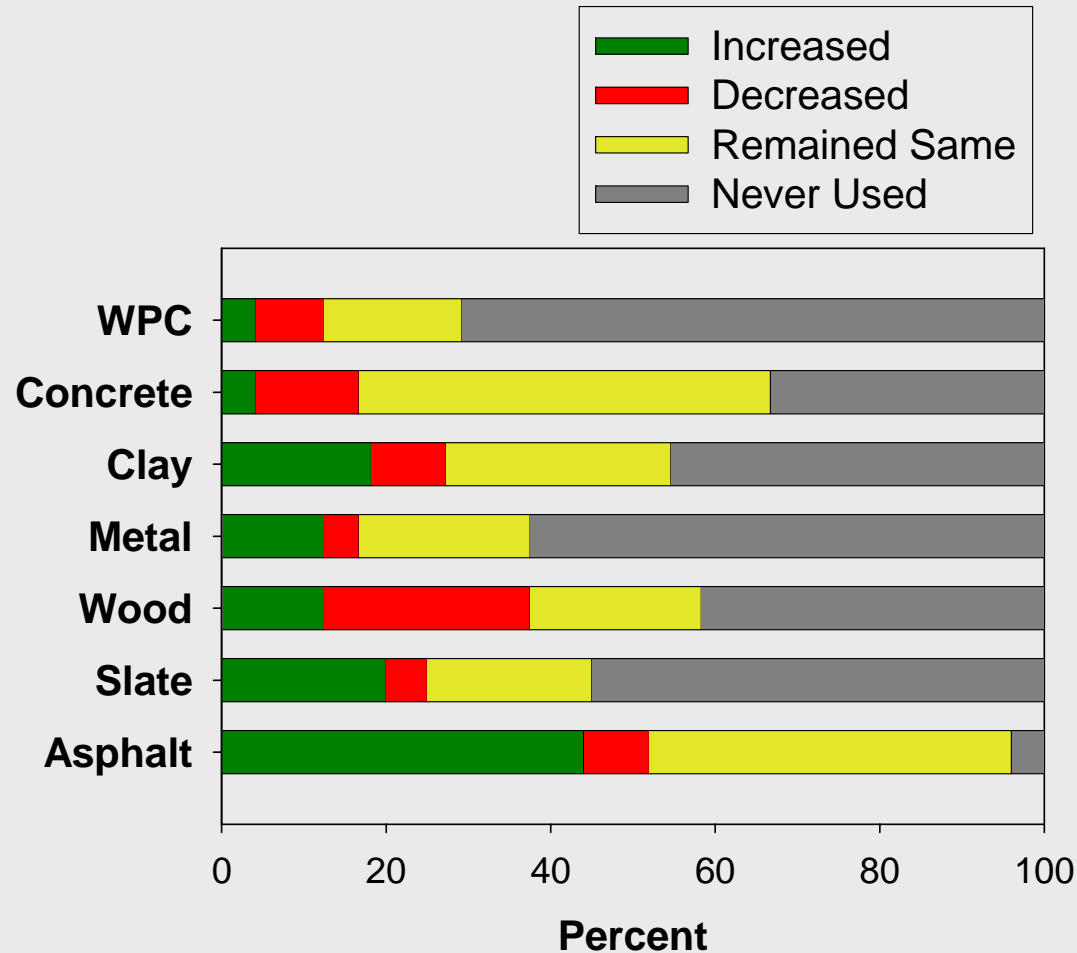


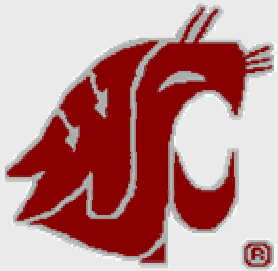
Usage by Material Type





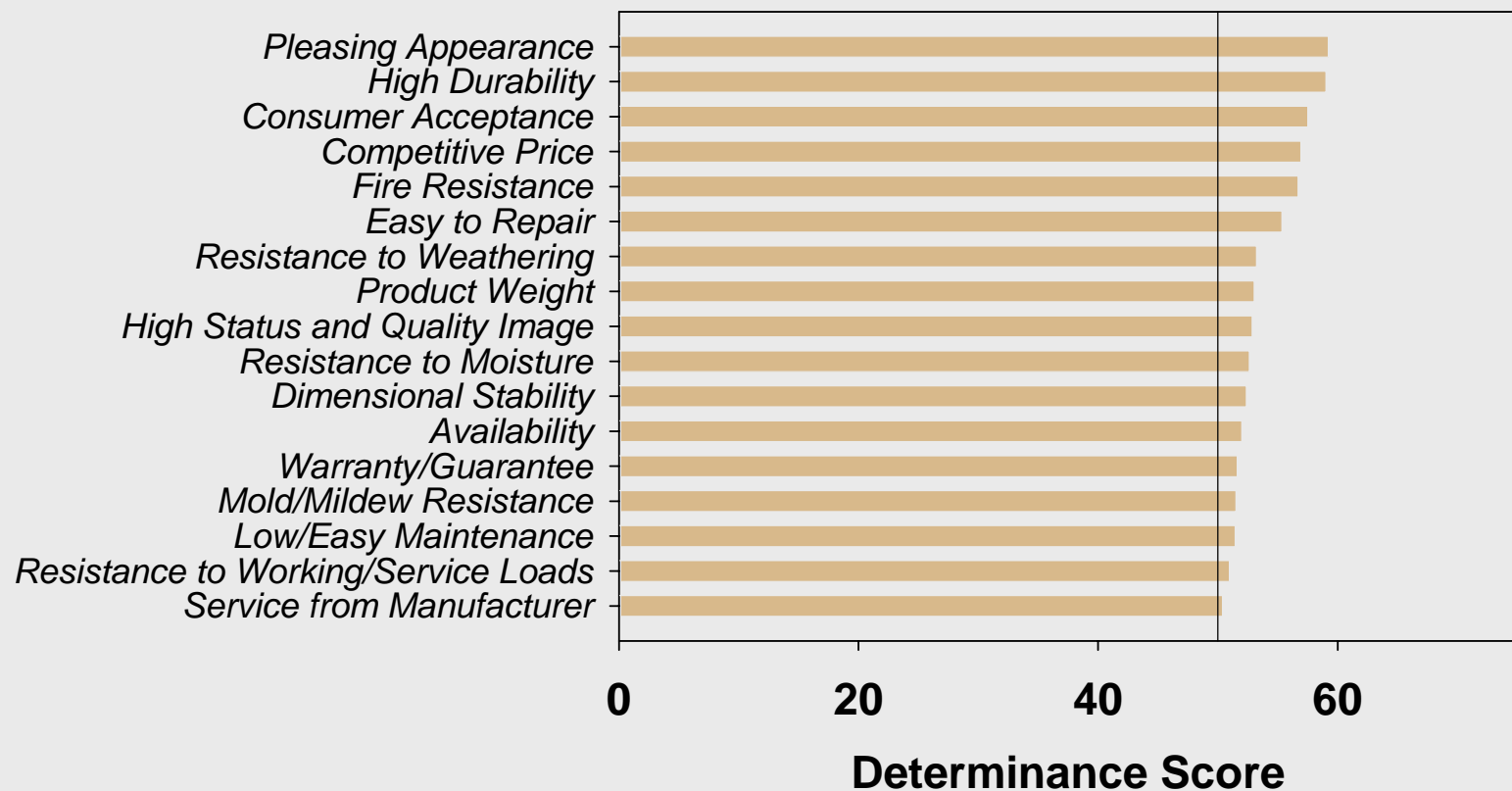
Usage of materials in past 1 year

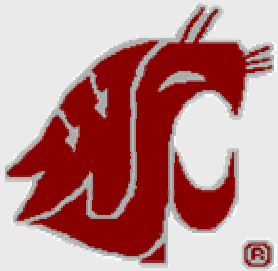




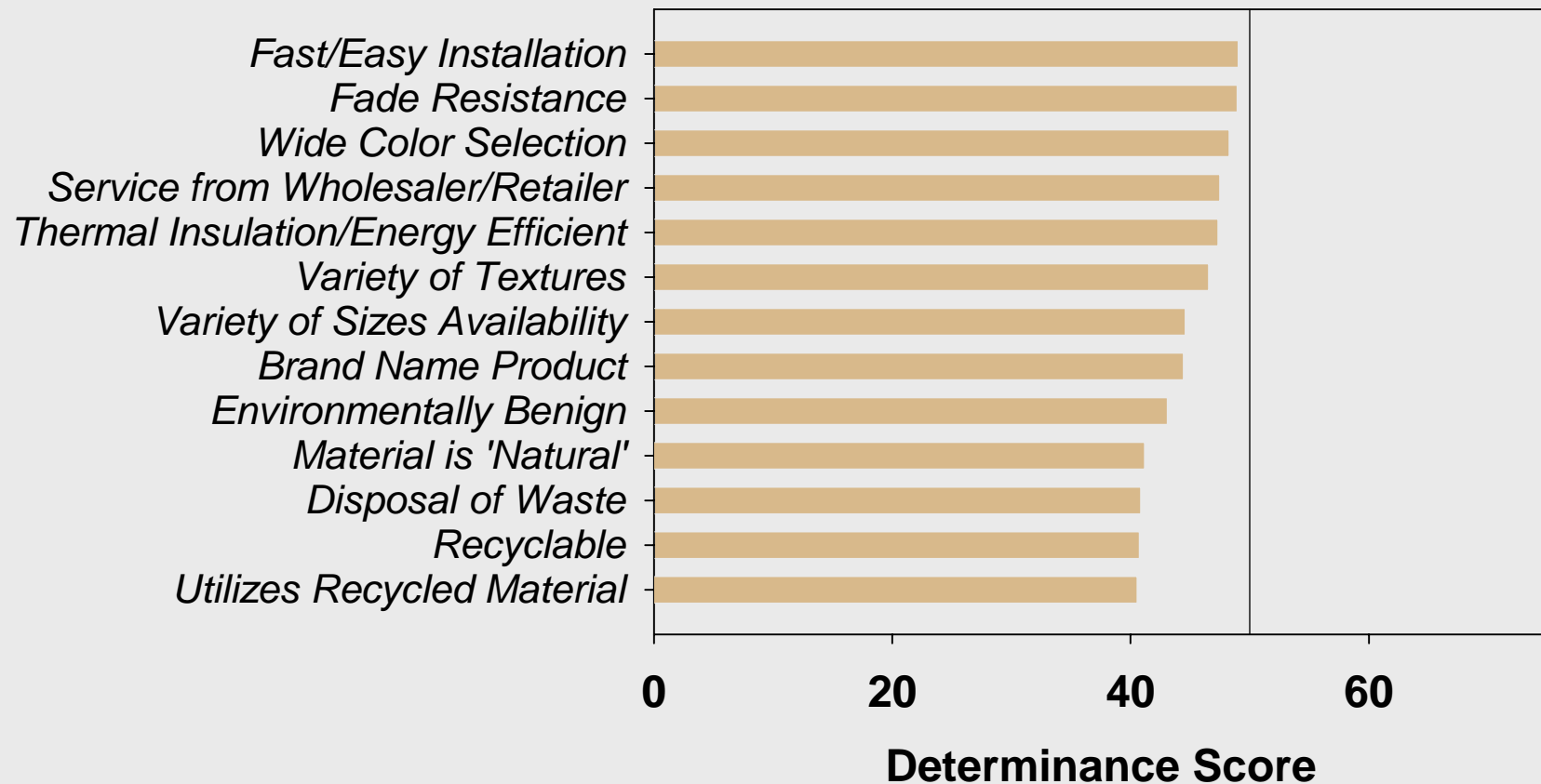
Determinant Attribute Analysis

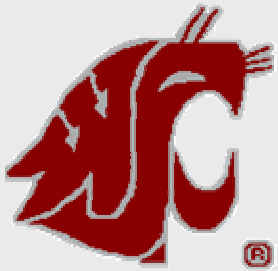
- Top differentiating attributes in consumer's view



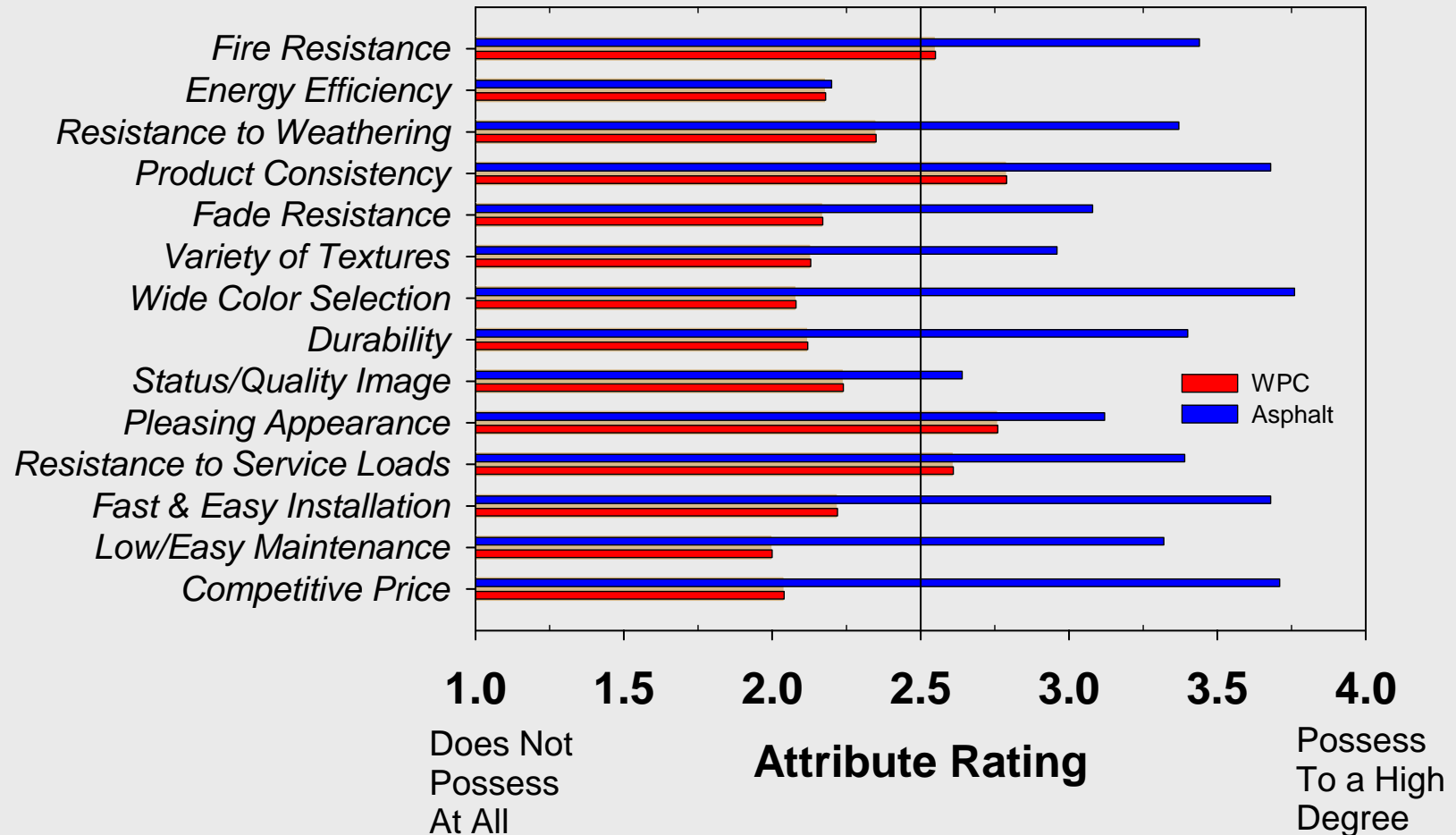


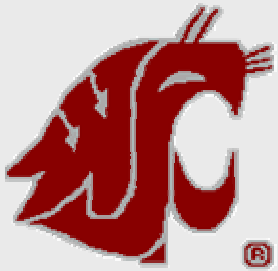
Determinant Attribute Analysis Continued



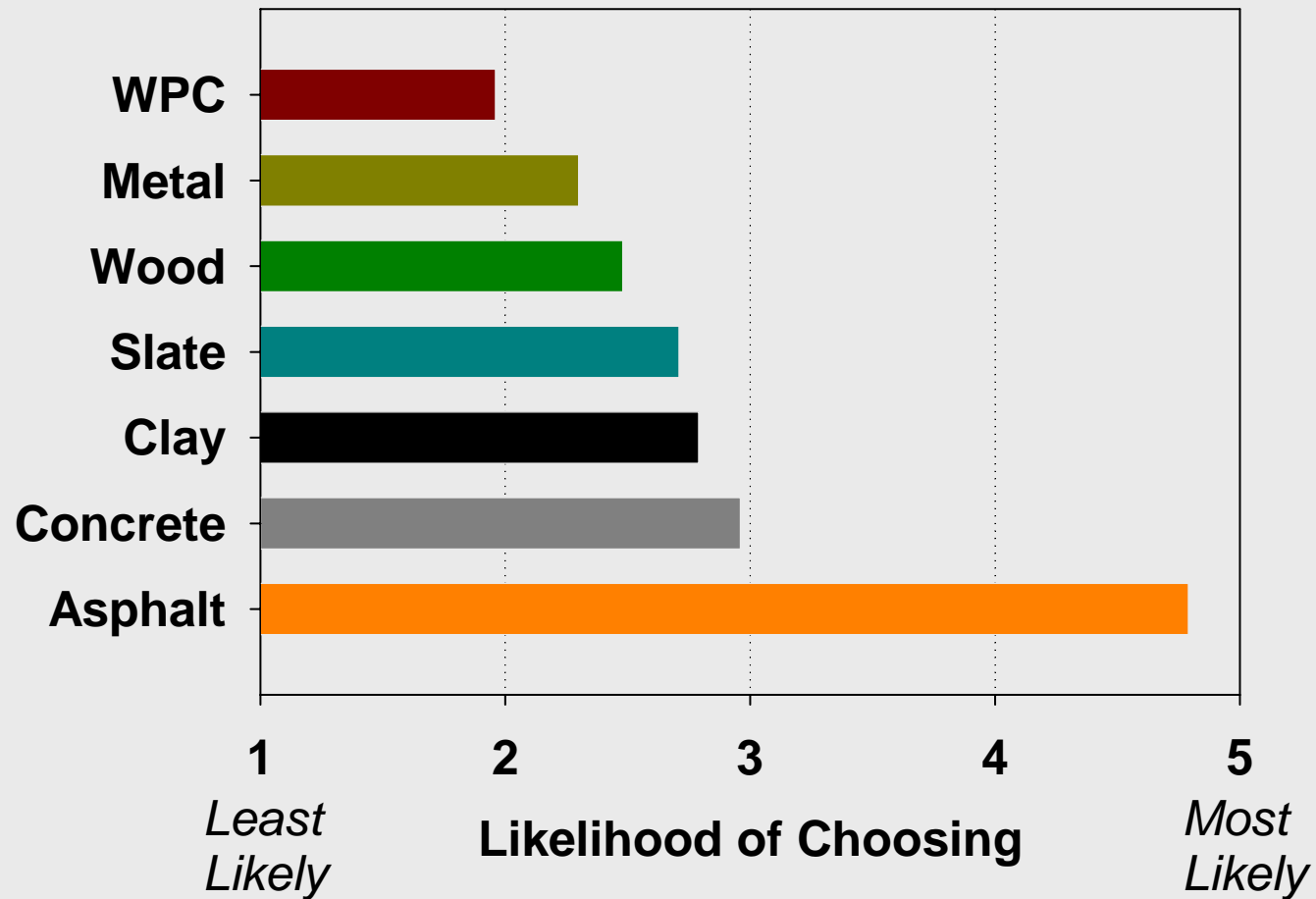


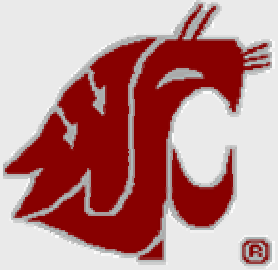
How do roofing materials rate for each of the following attributes?





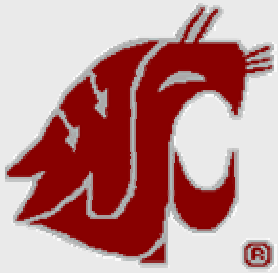
Future Preference of Material





WPC Awareness

- 52% indicated that they are not aware of any WPC roofing material
- 50% of the ones indicating WPC awareness, indicated that they considered WPC for roofing applications
- Plastic & WPC are confused with each other



Acknowledgements

- Funded by USDA Forest Service,
PNW Research Station, Portland,
OR