DESIGNING NON-MONETARY BENEFIT INDICATORS THAT REFLECT USE AND PREFERENCES

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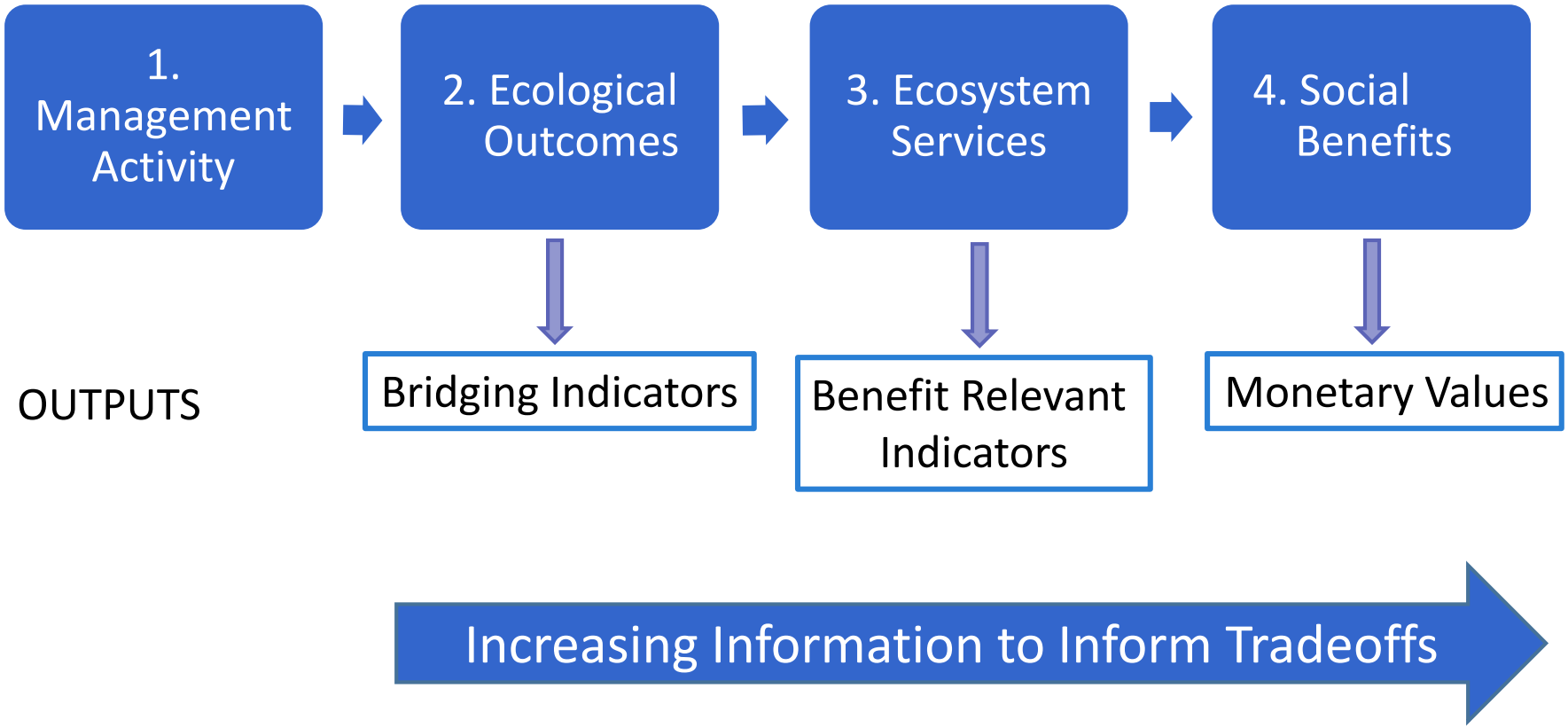
Alternative Ecosystem Service Metrics



Benefit Relevant Categories

1. Quality is sufficient
   - Beach is wide enough for recreation
2. Complements - Capital and labor available
   - Boat ramps make boating possible
3. Demand - Users or beneficiaries present / possible
   - # Houses protected (not already protected by seawall)
4. Reliability of the future stream of services
   - Adjacent land is protected
5. Scarcity and substitutability
   - Conservation Priority / no alternative restoration sites

Property Protection Service Indicator Example

Change in wave height at bridge

↓

Reduced days of bridge closure (? days / yr)

↓

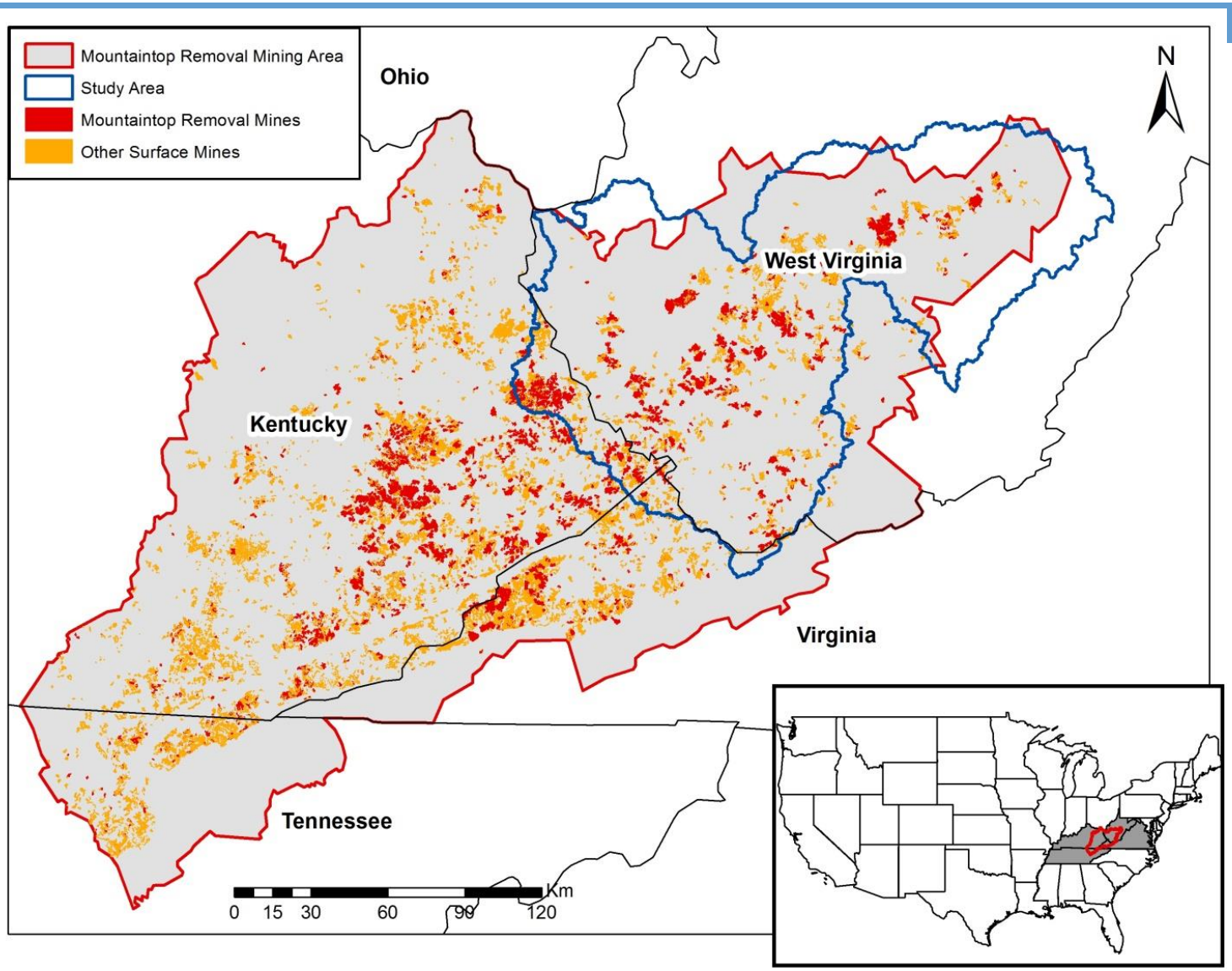
Commuting time saved (4,000 hr/day)

↓

Value of time saved (?)

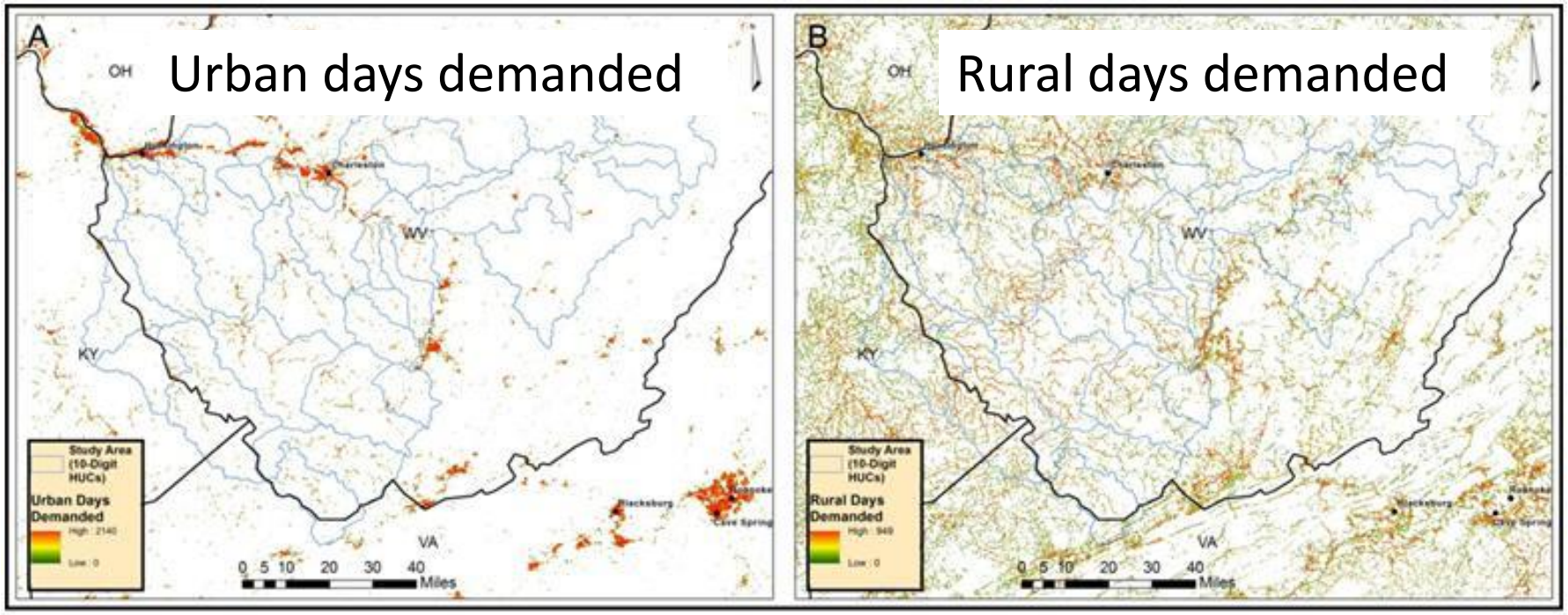
Case Study - Mining Effects on Angling

Estimating Demand in the Absence of Use Data



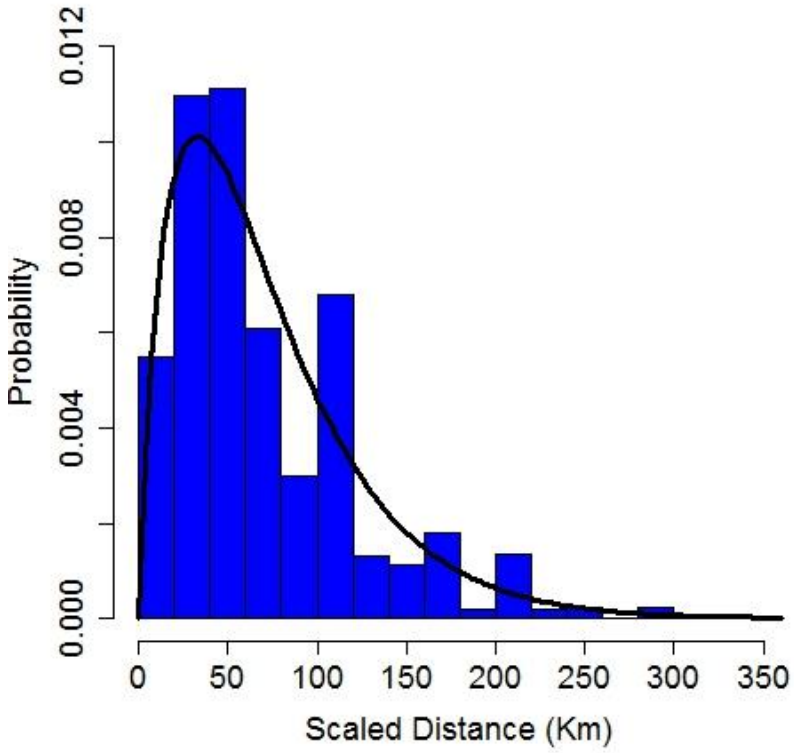
Fishing Days Demanded by Origin (DDO)

= Population · Participation Rates (by demographic segment) · Days per Participant (by urban/rural)

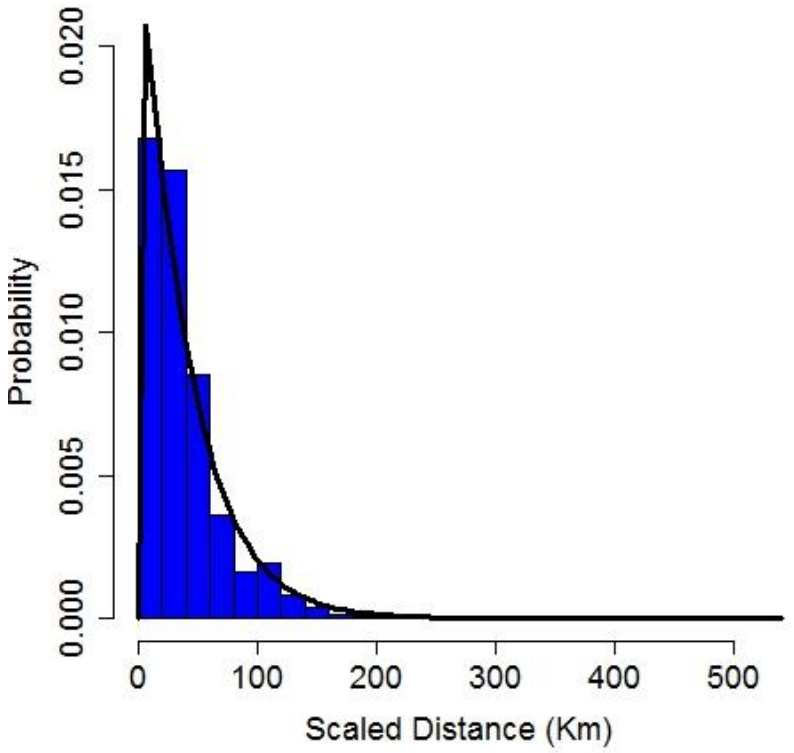


Case Study – Estimate Spatial Distribution Angler Willingness to Travel

Urban

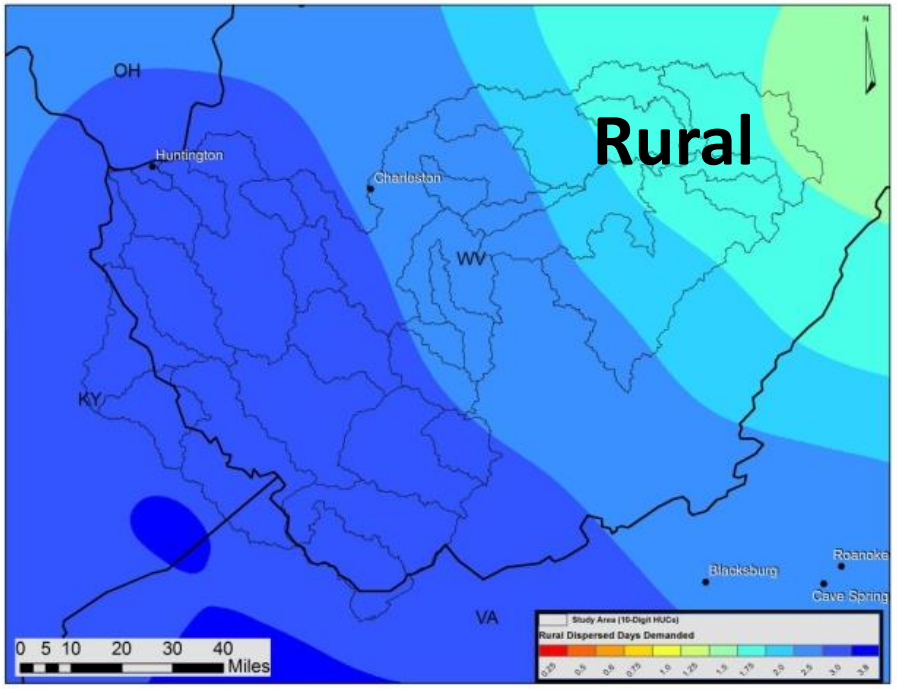


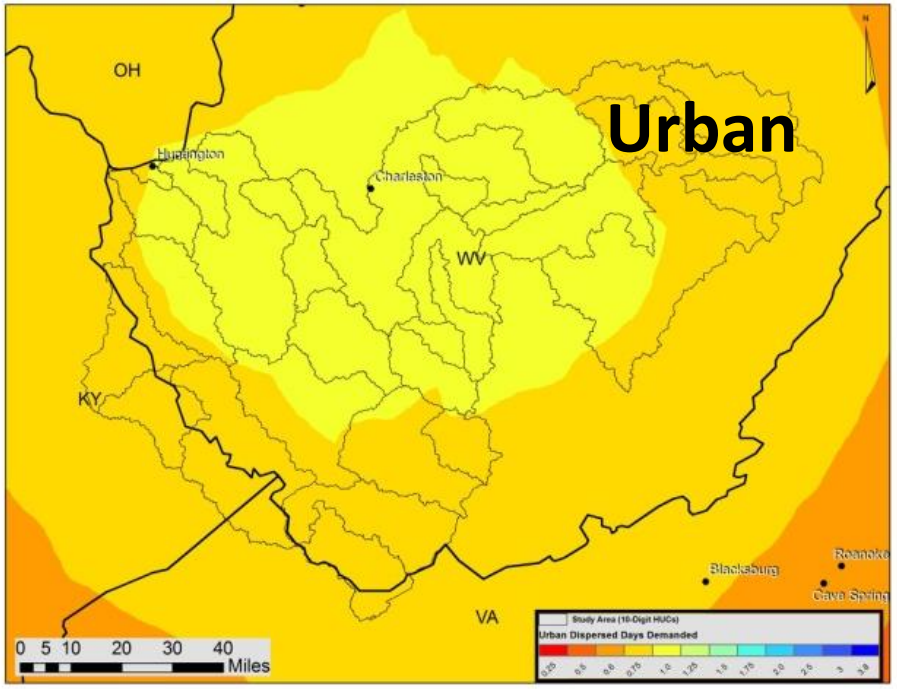
Rural



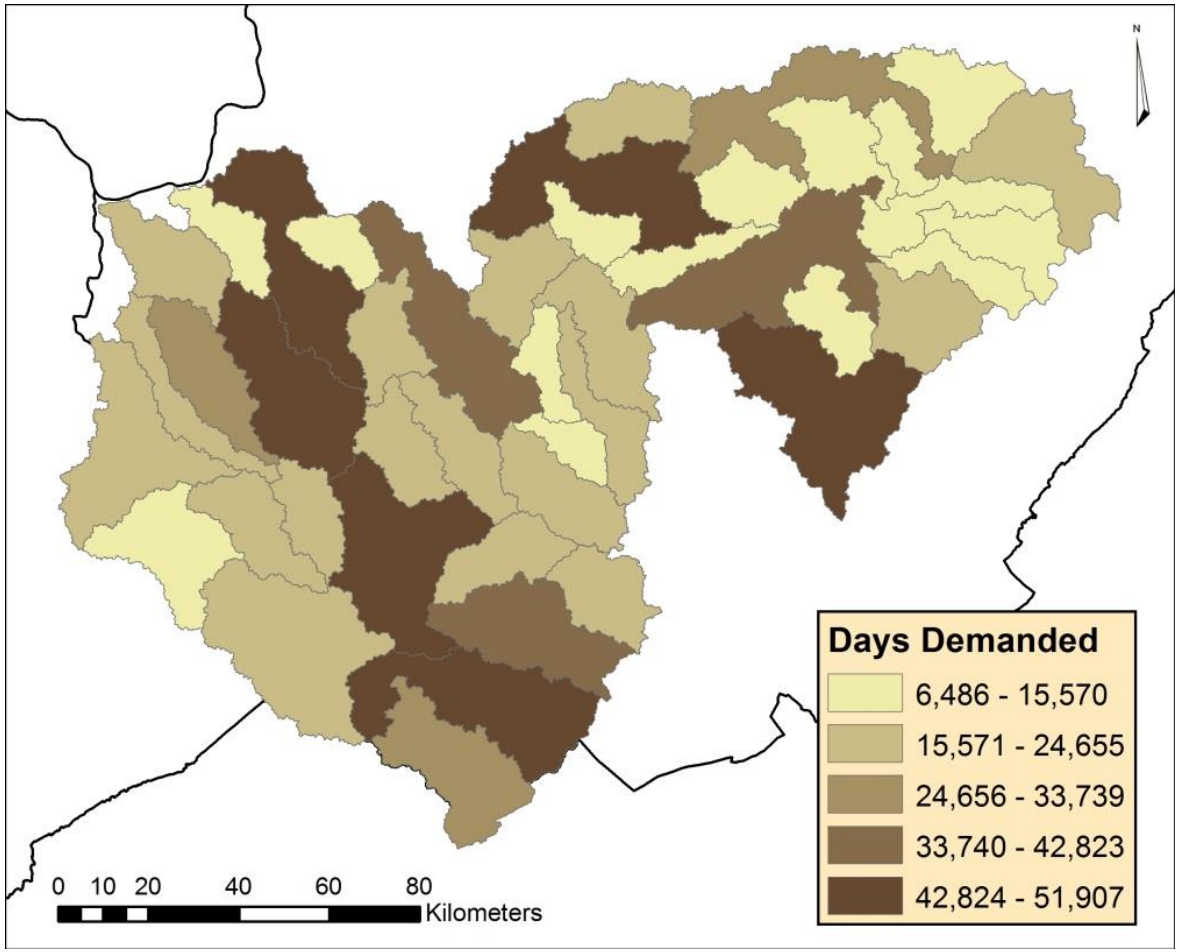
USFS National Visitor Use Monitoring data

Spatial Distribution of Freshwater Fishing Days Demanded (DD) for Rural and Urban Anglers



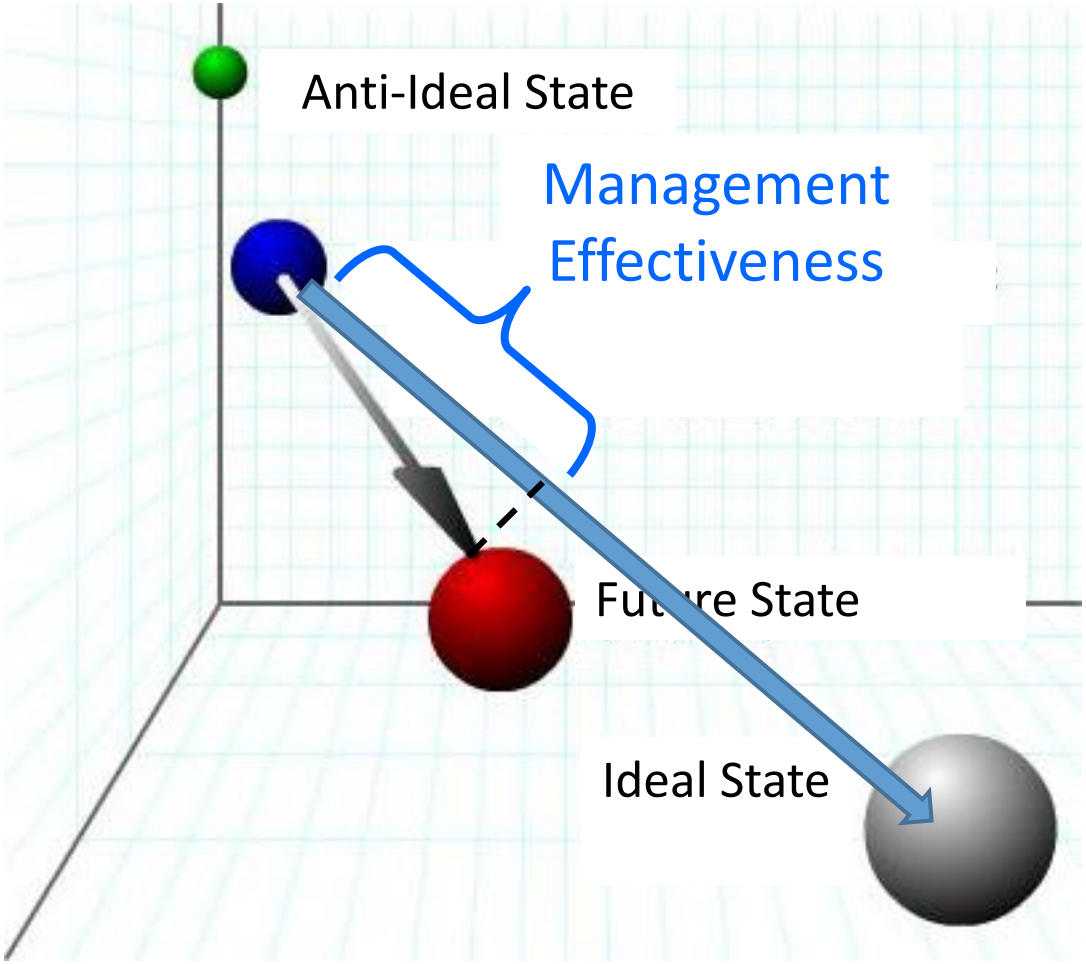


Estimated Days Demanded by Study Area Watershed



Combining Indicators

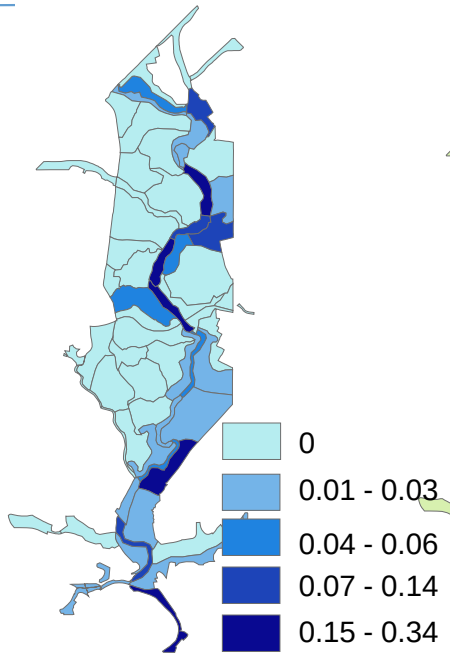
Multivariate Statistics to Combine Indicators
Distance Metrics



Quality Mapping
Wildlife Viewing Service

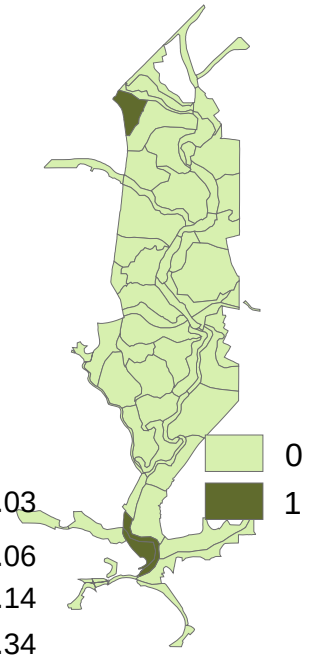
Attractiveness

-Vegetation Diversity
-Miles of Stream Adjacent to Trail



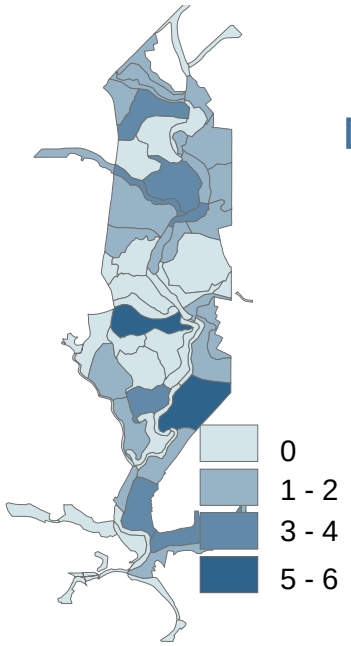
Connectivity

-Green Infrastructure Corridor



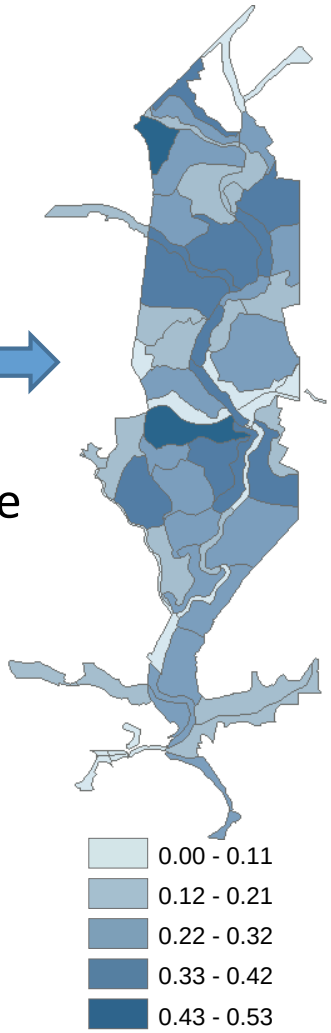
Rarity

- # Rare Plants;
- Only park occurrence



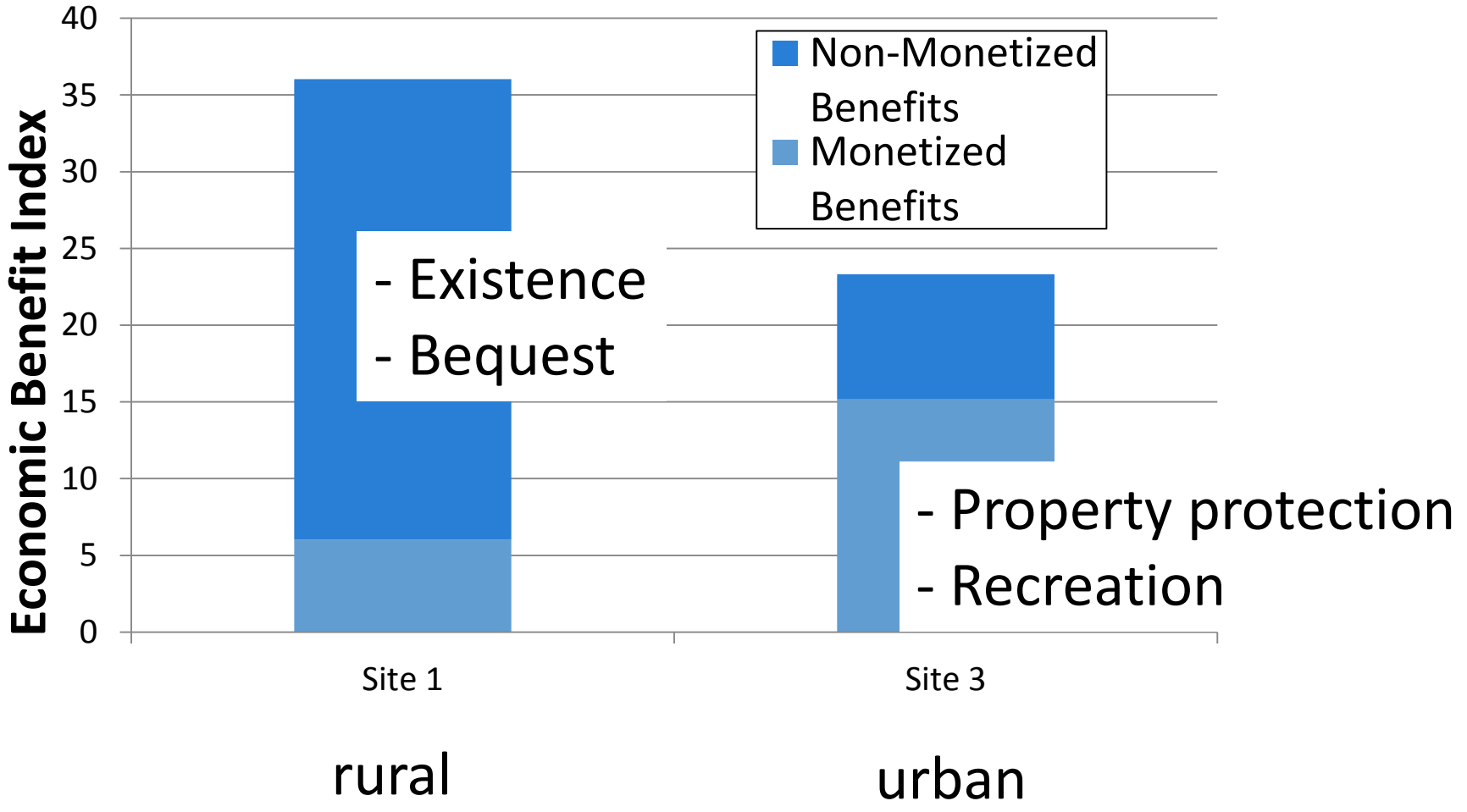
Gower Distance Metric

Scarcity Metric



Outcomes

Key Outcome
Different Priorities with Non-monetary Metrics



Conclusions

- Potential benefits are often reflected by the relative scarcity of the ecosytem good or service
  - Use BRIs to:
    - Demonstrate a service is possible
    - Characterize the scarcity
- Benefit relevant indicators provide context for ecological indicators
  - Suggest what people *might* be willing to pay for, given their behavior within and outside of markets