Assessing Public Environmental Values

Survey Methods

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Preference-based Values

*Brown, 1984*

**Held Values**

“...enduring conceptions of the preferable”

**Assigned Values**

“Relative importance or ‘worth’ of a particular object in a particular context”
“Traditional” Model

Held Values

Assigned Value

Perception

Environmental Conditions

Expressed Preferences
Values and Expressed Preferences

Verbal description
Verbal label
Environment
Data / graphics
Photo
Virtual reality

Traditional view

Held Values

Preferences
Verbal response
choice
w-t-p
Rating
Clicks & joy sticks
“Radical” Model

CONTEXT

Held Values

Assigned Value

Perception/Affect

Environmental Conditions

Expressed Preferences
Socio-psychological assessments

Essentially parallel to economic “stated preference” methods

Preferences (judgments) expressed as choices, rankings or ratings—not w-t-p $

Value metrics include importance, liking, preference, acceptance (rarely dollars)

Under-informed, undeliberated, irrational public response to policies/outcomes

Relative, multidimensional and contextual
Survey Method Issues

Target
Specific actions, outcomes or general policies
Means, ends, equity issues, institutional

Constituencies
General public, local communities, “stakeholders”
Acting for self, household, nation, humanity

Representations
Verbal (descriptions, labels), graphic, multi-media, direct/on-site
Survey Method Issues  2

Contact

Mail, telephone, face-to-face (intercept, home, work)

Expressions

Preferences, knowledge, beliefs, intensions, attitudes, acceptance

Open and/or closed (choices, ratings, allocations)

Analysis

Factor analysis, multiple-regression, causal models

Items => factors (conceptual attributes)

Respondents => types (dispositions/biases)
Survey Methods

Multi-item survey
- Distinct verbal statements
- Closed responses (ratings)
- Mail, telephone, face-to-face, internet

Conjoint
- Multi-dimensional scenarios (designed)
- Verbal descriptions/stories
- Choice and/or rating responses
**Survey Methods 2**

**Perceptual Survey**
- Visual or multi-media representations
- Conjoint or part of conjoint
- Closed responses
- Mail, face-to-face, internet

**Behavior Observation**
- Traces, diaries, registrations, monitoring
  (cameras, step pads, etc), direct observation
- “Revealed preferences”
Multi-item Verbal Survey

USDA Forest Service

GPRA, Strategic Plan (Shields et al 2002)

Telephone survey (n = 7,000+)

Values, Objectives, Beliefs & Attitudes

30 items each (overlapping)

Each respondent gets subset

5-point rating scales (agree, importance, favor)
Theory of Planned Behavior

*Rational model*

Environmental Conditions

Beliefs ➔ Attitudes ➔ Intentions ➔ Behavior

*Social Norms*

*Control*
Values

2. Natural resources must be preserved even if people must do without some products.

Strongly disagree 1 2 3 4 5 agree

15. Forests have a right to exist for their own sake, regardless of human concerns and uses.

19. The most important role for the public lands is providing jobs and income for local people.
Objectives

5. Developing new paved roads on forests and grasslands for access for cars and recreational vehicles.

Not at all important 1 2 3 4 5 important


26. Making management decisions concerning the use of forests and grasslands at the local level rather than at the national level.
Beliefs

5. Developing new paved roads on forests and grasslands for access for cars and recreational vehicles.

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>Strongly agree</th>
</tr>
</thead>
</table>

8. Preserving the natural resources of forests and grasslands through such policies as no timber harvesting or no mining.

25. Allowing for diverse uses of forests and grasslands such as grazing, recreation, and wildlife habitat.
Attitudes

5. Developing new paved roads on forests and grasslands for access for cars and recreational vehicles.


22. Informing the public on the economic value received by developing our natural resources.
Results

Demographics
East vs West x Metro vs non-metro

Familiarity with USFS
“Factual questions” (*FS sets hunting regulations*)

Mean rating per VOBA item

Factors (composed item-response patterns)
Socially Responsible Individual Values
4.16 out of 5.0 (5.0 = biocentric)

Socially Responsible Management Values
2.94 out of 5.0 (5.0 = develop/consume)
Conclusions

Re: preservation/conservation:

“… important objectives for the public are the preservation of natural resources through policies that restrict commodity uses, protection of ecosystems and wildlife habitat, and preservation of the ability to enjoy a “wilderness” experience. A somewhat important objective is the preservation of local cultural uses.”
Conjoint Example

USDA Forest Service

Wildfire risk management (Kneeshaw et al 2004; University cooperative research)

Forests near Denver, Seattle, Los Angeles

3 different fire histories

Direct contact (2706) => mail survey (1288)

3 policies (suppress, control, let-burn)

Rate Acceptability (7-points, -3 to 0 to +3)
Conjoint Scenarios

Five attributes (dimensions), 2 levels each
  Origin of fire (lightning vs. humans-unintentional)
  Impact on air quality (none vs. poor air quality)
  Risk of private property damage (low vs. high)
  Forest recovery (quick vs. many years)
  Recreation Impact (remain open vs. closed)

Fractional Factorial Design
  Main effects tests only
  => 8 Scenarios
  Regression coefficients for each dimension
Conjoint Scenarios

Least Accepted Scenario (let-burn policy)
- Human-caused fire
- Poor air quality
- High risk of private property damage
- Many years for forest to recover
- Recreation areas closed for the season

Most Accepted Scenario (let-burn policy)
- Lightening-caused fire
- No affect on air quality
- Low risk of private property damage
- Rapid recovery of forest
- Recreation areas remain open
Conjoint Results

Acceptance of Let-burn Policy

<table>
<thead>
<tr>
<th>%</th>
<th>Attribute of Fire</th>
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<tbody>
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<td>16</td>
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</table>
Perceptual Survey Example

University research—USFS sponsored
Northwest Forest Plan (spotted owl)

57 nominal interest groups in NW span
*preservation to production* (Ribe 2002)

Direct contact, 1120 respondents, in groups
Verbal questions re: policy attitudes

115 color slides ranging from fresh large
clear-cuts to pristine forest
Verbal/Attitude Component

I believe the northern spotted owl is not threatened with extinction.

Strongly disagree 1 2 3 4 5 Strongly agree

I believe the northern spotted owl should be saved even at a high economic cost.

Cluster analysis to yield 3 distinct, coherent groups:

Productionists
Unaligned
Protectionists
Perceptual Component

Independent groups (≈ random assignment)

Scenic Beauty (11 point scale)
-5 (very ugly) to +5 (very beautiful)

Acceptability (as National Forest condition)
-5 (very unacceptable) to +5 (very acceptable)

Apply knowledge & sensibilities re: NF management
Perceptual Results

115 Forest Scenes (ordered by mean rating)

Mean Rating

+5

-3

All Respondents

(& \leq each group)

115 Forest Scenes (ordered by mean rating)

In the spirit of the results

Scenic beauty
Acceptability
Perceptual Results

Acceptability: comparison

In the spirit of the results

115 Forest Scenes (ordered by mean rating)