The Economics of MUCK

or

Economic Values of Coastal Resources

Saginaw Bay Coastal Initiative (SBCI) Speakers Series

Bay City State Recreation Area

November 4, 2009

Robert B. Richardson, Ph.D.

Michigan State University

OUTLINE

- Introduction
- Economic values of coastal resources
- Total economic value

1. Direct use value
2. Property value
3. Community economic impacts
4. Other economic values

Introduction

- Environmental economics
- Economic value
  - Value for whom?
  - Associated with use
  - Competing uses
- Intrinsic value
- Economic impact

Economic Benefits of Coastal Resources

- Natural environments provide array of benefits
- Protection is necessary to ensure sustainability of benefits
- Special designations are intended to protect *unique* values provided by particular resources (e.g., National Lakeshore, National Seashore)
- Economists can estimate *benefits* of coastal resources by looking at tradeoffs
- Valuation methods depend on specific values

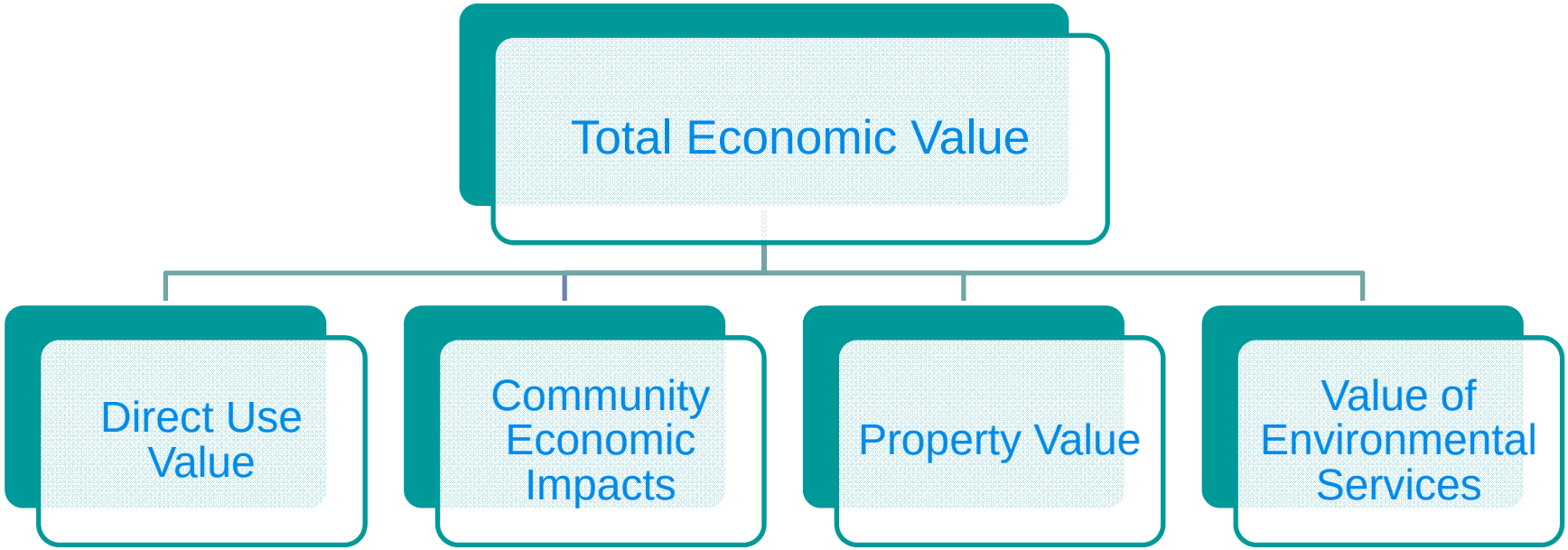
The Value of Beaches

- Beaches are popular!
- Recreation
- Tourism
- Real estate
- Development
- Conservation
- Environmental values

Values of Beaches

- Coastal states receive 85% of tourist-related revenues in the U.S. (World Almanac, 2001)
- 75% of summer travelers visit beaches (Morgan, 2000)
- Residents of the U.S. make about 2 billion beach visits each year (Clean Beaches Council, 2001)
- Beach visitation contributes about $257 billion to national economy (or 2.6%) (Houston, 2002)
  - Supports local businesses
  - Generates millions in tax revenues and parking fees

Total Economic Value



1. Direct Use Value

- Includes recreation, sightseeing, photography
- Coastal areas host millions of visitor days per year
- Value of recreation benefits
- Value of market goods: price
- Non-market “goods”: willingness to pay
- Economic benefits of recreation defined as “willingness to pay” over and above travel costs (consumer surplus)

Measuring Visitation

- Permits
- Parking lot counts
- Aerial surveys
- Lifeguard counts
- Laser technology

Measuring Visitation *(continued)*

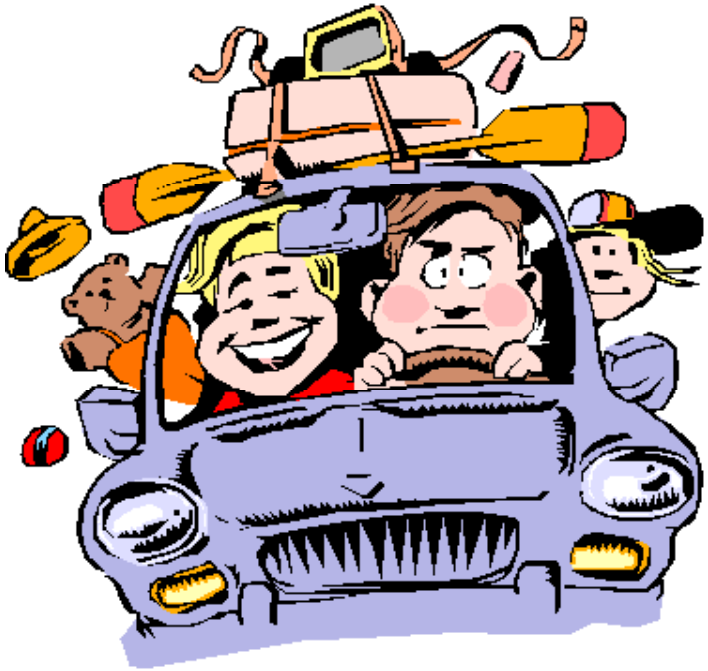
- Parking counts are effective if most visitors drive
- Lifeguard counts are often unreliable
- Aerial surveys are expensive and unreliable
- Turnover
- Laser is relatively accurate, reliable

Non-Market Valuation

- Economists use two methods to value recreation benefits
  - Travel cost method
  - Contingent valuation method
- Approved by two federal agencies as accepted approaches for estimating non-market values such as recreation benefits and costs of environmental damages
  - U.S. Water Resources Council, 1983
  - U.S. Department of Interior, 1986, 1994

Travel Cost Method

- Collect visitor data on time and expenses to visit a site
- Analyze variations in travel costs to estimate recreation value
- Based on examination of actual behavior
- Difficult to account for substitution
- Residential choice ignored



Contingent Valuation

- Survey-based method
- Ask users about willingness to pay
- Estimate recreation value *to the user*
- Able to estimate “existence value”
- Hypothetical market
- However,
  - People often give inconsistent answers
  - ***Very*** sensitive to survey instrument

2. Property Value

- Coastal areas provide scenic backdrop for resorts, residential areas, and travelers
- Proximity to coastal resources has been shown to increase the value of personal property and tax revenues
- Hedonic property method used to estimate enhancement value of private property near beaches

Hedonic Property Method

- Can estimate the effect of beach proximity on property values
- Model requires data on housing prices, characteristics, locations
- Can estimate the impact of environmental quality on economic value by comparing across sites

3. Community Economic Impacts

- Visitor purchases in communities near beaches support regional jobs and generate income
- Beaches enhance quality of life, attract new residents, businesses
- Benefits from direct (spending) and indirect (multiplier) effects measured using input-output model

Input-Output Models

- Benefits measured in terms of impact to local employment, income, and output
- Relatively simple data needs
  - Visitation data
  - Average spending
- Model based on multipliers

4. Other Economic Values

- Value of environmental services
  - Wetlands provide flood control, waste treatment services
  - Estuaries and sea grass provide nutrient cycling services
  - Forests provide climate regulation, erosion control services
- Educational value
- Scientific value

Economic Impact of Beach Contamination

Value is a function of environmental quality

Economic Impact of Changes in Beach Quality

- Impact on economic value
  - Direct use, Property
- Impact on local economy
  - Employment, income, output

Impact on Recreation Value

- Develop a model of beach choice that includes variables representing quality
  - Water quality
  - Beach quality
  - Amenities
- Statistically estimate the effect of changes in quality on recreation behavior
  - Frequency, duration of visit
  - Alternative recreation choices

Impact on Property Value

- Develop a model of property value that includes variables representing quality
  - Water quality
  - Beach quality
  - Distance from beach
  - Scenic view
  - Amenities

- Statistically estimate the effect of changes in quality on property values

Impact on Local Economy

- Lost visitor expenditures
- Lost economic value
- Challenges
  - Beach access is relatively low cost or free
  - This does not mean that the value we place on beach use is low
  - What is the value of beach visits, beyond what people would pay?
  - How much of this value is lost due to dirty water?

Economic Impacts

- California – year-long survey of 760 households
- Impacts relatively small due to substitution possibilities
- Activity matters – non-swimmers bear less impacts

	Thousands $				
SCENARIO	LA	OC	R	SBerd	***Total***
1. Malibu (C to B)- one year	$133	$1.7	$1.8	$4.4	***$141***
2. Zuma (A to F) – one year	-$4,874	-$80.3	-$11.0	-$11.6	***-$5,273***
3. HSB Closes Summer	-$3,531	-$3,970	-$878	-$926	***-$9,304***

Conclusions

- In coastal areas, environmental quality matters
- Environmental degradation → economic impacts
- Economists have methods to estimate economic values of environmental resources

References

- Clean Beaches Council. The Blue Wave Campaign: Protecting a Precious Resource at Risk, 2001. http://www.cleanbeaches.org/bluewave/default.cfm
- Houston, James R. The Economic Value of Beaches – a 2002 update. U.S. Army Engineer Research and Development Center. 2002.
- King, Philip. The Fiscal Impact of Beaches in California. Public Research Institute, University of San Francisco, 1999. http://online.sfsu.edu/~pgking/handouts/thefiscalimpactofbeaches.pdf
- Morgan, David. "Catch the Blue Wave, Environmental Group Releases List of Cleanest U.S. Beaches," ABC News, 2000. http://abcnews.go.com/sections/travel/DailyNews/CleanBEaches000519.html
- Richardson, Robert B. The Economic Benefits of Wildlands in the Sierra Nevada Region of California. San Francisco: The Wilderness Society.
- Whitehead, John C., Peter A. Groothuis, Rob Southwick, Pat Foster-Turley. Economic Values of Saginaw Bay Coastal Marshes. June, 2006.
- World Almanac. Funk & Wagnalls Corp., Mahwah, New Jersey. 2001.