

Economic Value

- refers to the contribution made to human welfare, measured in terms of each individual's personal assessment
- is a comparative concept, defining the trade-off between two situations: that is, the answer to a carefully defined question in which two alternatives are being compared
- of a specific change is the amount that person would need to pay, or be paid, in order to be as well off as s/he would have been without the change

Two ways to measure this:

- willingness to pay (WTP): how much are you willing to pay
- willingness to accept (WTA): how much must you be paid
- compensation can be measured in any common units desired (precious metal, sea shells, cattle, cigarettes)

Environmental Goods

Whether WTP or WTA is the correct measure depends on the property right to the good or service under consideration

- If the individual does not currently have possession of the good, and does not have a legal entitlement to it, then the correct measure is WTP
- If the individual has possession of the good, and has legal entitlement to it, and is being asked to give up that entitlement, then the correct measure is WTA
- WTP and WTA are usually the same, but this may not be the case for non-marketed goods, such as most environmental goods, because WTP and WTA depend upon the availability of substitutes for the non-marketed good (think about a soft drink and the Grand Canyon)

Contingent Valuation

Contingent valuation (CV) is a survey-based method frequently used for placing monetary values on environmental goods and services not bought and sold in the marketplace

CV is usually the only feasible method for including passive-use in an economic analysis. Do people benefit from a good or service without physically using it?

Examples of passive-use value

- *existence value*: just because it exists
- *option value*: ability to possibly use in future
- *bequest value*: ability for use by future generations
- *altruistic value*: preservation

Why care about passive-use value?

Without the consideration of these passive uses, many environmental goods or services have little or no economic value. For example:

- remote wilderness areas (ANWR, Antarctica)
- ecosystem services (wetlands)
- biodiversity

Options for consideration of passive-use values:

- Exclude them from consideration
- Include passive-use values, but only through expert opinion
- Include monetary passive use-values

Legal Status

- Executive Order 12291 (1981) mandates the evaluation of all cost and benefits of regulatory alternatives, and mandates use of the specific regulatory method that “maximizes net benefit” (= benefits – costs)
- 1989 U.S. Appellate Court decision, *Ohio v. Department of Interior*, mandated that passive-use values be included in a natural resource damage assessment to the extent that they can be reliably measured
- Executive Order 12866 (1993) affirms EO 12291, and clarifies that net benefits analysis include all potential economic, environmental, public health and safety advantages, and consider distributive impacts and equity

NOAA Panel Recommendations

What criteria should the results of a CV study meet? Most good CV surveys contain the following:

- an introductory section that helps set the general context for the decision to be made
- a detailed description of the good or service to be offered to the respondent
- the institutional setting in which the good will be provided
- the manner in which the good will be paid for
- a method by which the survey elicits the respondent's preferences with respect to the good
- debriefing questions about why respondents answered certain questions the way that they did
- a set of questions regarding respondent characteristics including attitudes and demographic information

Rest assured that all of your answers are strictly confidential.

Are you male female

Year: Freshman Sophomore Junior Senior Graduate

Major: _____

GPA: _____

Ethnicity:

African Asian Caucasian Hispanic Native American
 Pacific Islander Other: _____

Do you live on campus? Yes No

Indicate which of the following outdoor recreation activities you have engaged in during the past year? Hiking Biking Kayaking
 Skiing Fishing Camping Hunting Backpacking
 Other: _____

How often do you attend church, synagogue, mosque, or other place of worship? More than once a week Weekly Almost every week
 Once or twice a month A few times a year Never

How important would you say religion is in your own life?
 Extremely important Very important Moderately important
 Not too important Not important at all

In general, how concerned are you about most environmental issues?
 Extremely concerned Very concerned Moderately concerned
 Not too concerned Not concerned at all

How would you describe your political beliefs?
 Very Conservative Conservative Moderate Liberal Very Liberal

Which most appropriately describes the area you are from?
 Rural area Suburban area Urban area

Which figure most accurately indicates your annual family income?
 Less than \$50,000 \$50,000—\$90,000 \$90,000—\$130,000
 \$130,000—\$170,000 \$170,000—\$210,000 More than \$210,000

Who is primarily responsible for the cost of your education?
 Me My parents I'm on scholarship Other _____

Thank you for your participation.



Rainforest Management Survey Spring 2006

In order to make sound decisions concerning the future of tropical rainforests, it is important to understand the various services that rainforests provide, as well as how these services would be affected by possible changes in the way rainforests are managed. The answers you give to the questions in this survey are very important in this process. Please try to answer each of the questions.

In this first section we would like to tell you a little about the current state of tropical rainforests.

Tropical rainforests are defined as areas between the tropic of Capricorn and Cancer that receive 100 or more inches of rain per year and have a minimum of 10% land area covered by woody vegetation. Although the world's tropical rainforests make up only approximately 6% of its total land surface, an estimated 95% of the world's biodiversity in plant and animal life is found in these areas.

Tropical Rainforests are beneficial for both tangible and intangible reasons. They are useful for commercial manufacturing purposes, with hardwoods such as mahogany and teak being plentiful. They play an important role in preventing soil erosion and degradation. Because of the incredible biodiversity found in rainforests, they are useful for research, especially medicinal research. Approximately 25% of new medicines originate in a tropical rain forest life form. Finally, the tropical rainforests play an important role in the regulation of Earth's natural chemistry. They convert vast quantities of atmospheric carbon dioxide into oxygen via photosynthesis, and thus sequester large amounts of carbon. Further harvesting of rainforests will result in increased levels of carbon dioxide in the atmosphere that may exacerbate global warming.

Currently only 5% of rainforest land is preserved. Experts believe that a minimum of 10% of rainforest land must be preserved to avoid serious environmental consequences for our entire planet.

The land where tropical rainforests exist in the Amazon basin is owned by the national governments of each country. In the absence of preservation, it is possible, if not likely, that timbering rights to these lands will be leased to commercial interests, both foreign and domestic, that seek to harvest the various, valuable hardwoods in the forest (including mahogany, cocobolo, teak, bubinga, padauk, rosewood and zebrawood) for manufacturing purposes. The income generated by these leases will be helpful in financing the efforts of these nations to further their economic development.

In this section we would like to tell you about a proposal concerning tropical rainforests.

An environmental concerns group has created a proposal that offers a means by which the University could participate in the conservation of the tropical rainforests in the Amazon basin of South America. The group has determined to measure interest among students and faculty of purchasing 1,000 acres of tropical rainforest. The land purchased will be chosen so that no indigenous populations are displaced, and will be preserved through the creation of a national park. No further harvesting will be allowed, but ecotourism and research will be allowed. Park rangers will be employed to patrol the property, and ecotourism revenue will be used to offset the costs of managing and operating the park.

To fund the proposal, students would be allowed a one-time-only donation to the Amazon Rainforest Preservation Organization, a not-for-profit, nongovernmental organization. Currently, the group is unsure precisely how much interested participants need to contribute to proceed with the donation. While we have only an approximate donation estimate presented below, it is important that you indicate whether or not you would contribute a donation of at least this amount if presented an opportunity to do so. Provided there is sufficient interest in rainforest preservation at the University, students would be given an opportunity to donate by clicking the appropriate box during an upcoming semester registration.

If this proposal is adopted, would you be willing to donate at least \$x on a one-time-only basis to help preserve 1,000 acres of Amazonian tropical rainforest?

- YES
 NO

To help us better understand your answer, please indicate the single most important reason for your response to the preceding question:

- In general, this project is *not* a good use of my money.
 In general, this project is a good use of my money.
 The plan is unclear or unrealistic.
 I already contribute to environmental causes as much as I can afford.
 No one should have the right to damage rainforests in the first place.
 Other: _____

Variable	Model 1					
	Squatter Split			Forest Split		
	β	t-stat	\$	β	t-stat	\$
Constant	0.1057	0.260	-\$81.31	0.7276	2.159	-\$661.46
Politically Conservative	0.3272	2.064	-\$251.69	0.1723	1.232	-\$156.64
Self-Funding	0.1980	0.909	-\$152.31	0.3907	1.745	-\$355.18
Religion is Important	-0.3094	-1.277	\$238.00	-0.0964	-0.472	\$87.64
Attends Church	0.3305	2.001	-\$254.23	0.1122	0.754	-\$102.00
Environmentally Concerned	-0.5987	-2.039	\$460.54	-0.7039	-2.877	\$639.91
Family Income	-0.0219	-2.090	\$16.85	-0.0178	-1.944	\$16.18
Hispanic	-0.7058	-2.535	\$542.92	-0.2738	-1.199	\$248.91
GPA	0.0966	2.177	-\$74.31	0.0293	0.762	-\$26.64
Bid Amount	0.0013	5.984	\$769.23	0.0011	5.578	\$909.09
Hiking	-0.0407	-0.282	\$31.31	-0.1911	-1.467	\$173.73
Public Good	-0.5025	-1.803	\$386.54	-0.9231	-3.962	\$839.18
Business or Economics Major	0.3876	2.261	-\$298.15	0.0009	0.006	-\$0.82
Sciences Major	-0.0316	-0.162	\$24.31	0.1639	0.923	-\$149.00
Political Science Major	0.0822	0.327	-\$63.23	0.4638	2.188	-\$421.64
Undecided Major	1.1299	4.677	-\$869.15	0.4005	1.977	-\$364.09
Multiple Majors	0.0631	0.324	-\$48.54	-0.1678	-1.069	\$152.55

Variable	Model 2					
	Squatter Split			Forest Split		
	β	t-stat	\$	β	t-stat	\$
Constant	-0.0087	-0.024	\$6.69	0.7684	2.710	-\$698.55
Politically Conservative	0.307	1.955	-\$236.15			
Self-Funding				0.3632	1.646	-\$330.18
Religion is Important						
Attends Church	0.2297	1.573	-\$176.69			
Environmentally Concerned	-0.6425	-2.255	\$494.23	-0.7983	-3.384	\$725.73
Family Income	-0.0253	-2.501	\$19.46	-0.017	-1.916	\$15.45
Hispanic	-0.7088	-2.570	\$545.23			
GPA	0.1031	2.376	-\$79.31			
Bid Amount	0.0013	6.033	\$769.23	0.0011	6.005	\$909.09
Hiking						
Public Good	-0.4942	-1.795	\$380.15	-0.9123	-3.951	\$829.36
Business or Economics Major	0.4099	2.515	-\$315.31			
Sciences Major						
Political Science Major				0.4014	1.977	-\$364.91
Undecided Major	1.1027	4.757	-\$848.23	0.4106	2.209	-\$373.27
Multiple Majors						