**Measuring benefits, environmental goods**

 Benefits of goods such as clean air, water are hard to measure

We need to estimate benefits when determining public policy

In this course value of environmental goods measured mainly by estimating the benefits of eliminating a bad

Value of environmental goods is measured by how much people are willing to pay for it

Difficult to measure because there is no market for many environmental goods

People aren’t normally observed explicitly paying for the good

 Example: Value of Flower in Wetlands [article](http://milesfinney.net/334/articles/wildflower.htm)

**What are our motivations for valuing environmental goods?**

1. Use value

Benefits people get from direct use of good

* Recreation
* Health (eating clean fish etc)
* Aesthetic appreciation

2. Non-use value

People willing to pay for some environmental goods they will never use

Example: wildlife in Alaska (drilling)

3. Option Value

Amount people willing to pay to preserve the option of experiencing good

Example: Grand Canyon

4. Bequest value

Willingness to pay to leave behind environmental good for future generations

Example: Grand Canyon’s value to grandkids

**How do we measure willingness to pay?**

1. Revealed preference

 What information can we take from the actual choices people make?

2. Stated preference

Value of environmental goods taken from survey data

**Revealed Preference**

Estimated mainly for use value

1. travel cost method [example](http://milesfinney.net/334/articles/Beach_Economics.pdf)

Calculate expenditures by households travelling to places such as beaches, lakes

Can be used to estimated lost benefits from beach closures due to oil spill

Does not account for value by non-users

2. housing price differences

Controlling for other factors, housing prices found lower in more polluted areas

Relationship implies value of clean air

3. Differences in wages across areas

Wages should be higher in more polluted areas

Measured difference in wage implies the benefit of eliminating pollution

4. Efforts to avert pollution [bottled water example](https://www.cambridge.org/core/journals/agricultural-and-resource-economics-review/article/reports-of-water-quality-violations-induce-consumers-to-buy-bottled-water/E11CCBDAF56DDC71EE53423C73980AC3)

Expenditure on air conditioning, bottled water etc.

**Stated preference**

 Asking people how much they value a good

 San Gabriel Mountains Questionnaire

Problems with method:

1. strategic bias: respondents may lie to try to influence particular outcome

2. Information bias: respondents valuing good that it has little information on

3. hypothetical bias: respondents not making actual choices