



The Regional Training Workshop
Economic Valuation of the Goods and Services of Coastal Habitats
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Exercise on Contingent Valuation

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Outline

- Policy and research questions
- Scenario setting
- Design of "offer/bid price" for dichotomous choice
- Non-parametric model
- Parametric model

Policy Question

The problem:

AA Island is an important tourist destination of Thailand. Its tourism depends predominantly on coastal and marine biological resources. An establishment as a marine national park will help protect AA Island for further degradation.

The policy question:

The government wants to know the benefit of this program.

Specific research questions:

1. Will the citizen of Thailand accept and vote for the program?
2. If yes, how much WTP of each citizen for the protection and conservation of this island ?
3. What will be the non-use value of AA Island?

Exercise: Estimate the citizen's WTP using parametric and non-parametric model

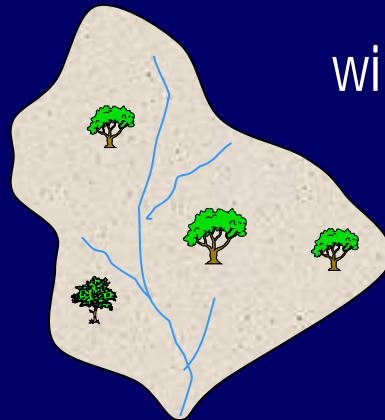
Basic information: The total population of Thailand is 65 million, with the employment rate of 60% in 2007

Contingent Valuation Method (CVM)

Hypothetical market (situation)

Trade-off between \$ and resource

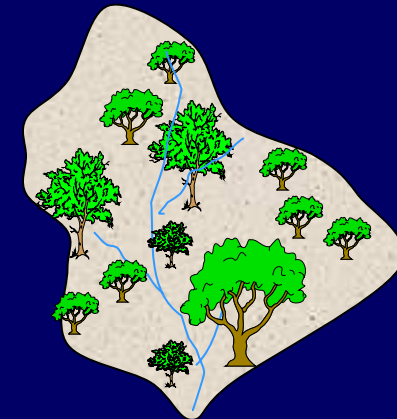
current situation



willing to pay for the protection



hypothetical situation



not willing to pay



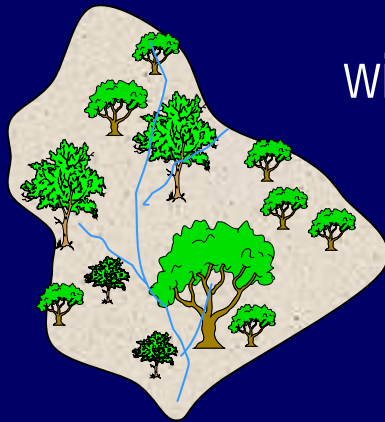
(proposed scenario/condition
with required payment)

Hypothetical market (situation)

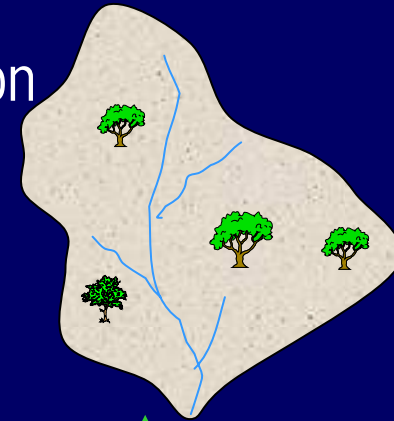
Trade-off between \$ and resource

current situation

hypothetical situation



willing to pay to avoid the situation



not willing to pay and accept the worse situation



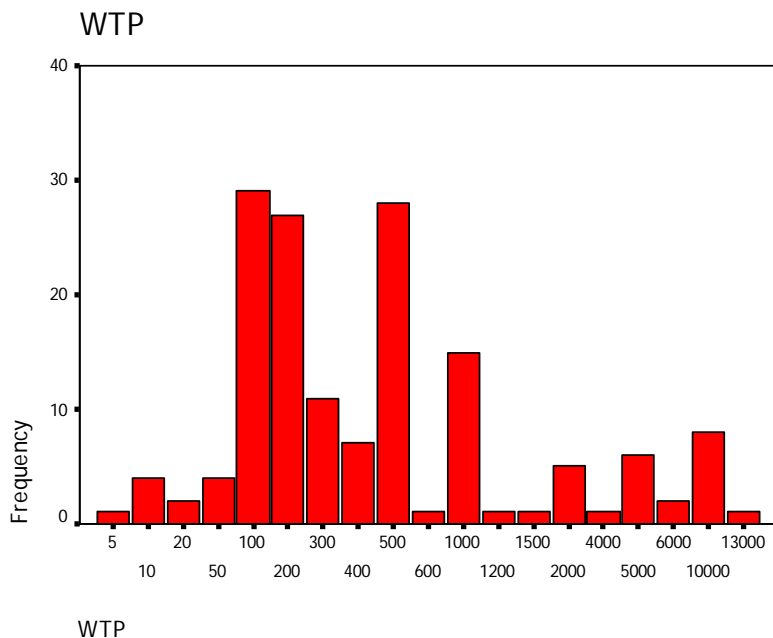
(proposed scenario/condition with required payment)

How to design the "bid price" in the survey of dichotomous choice?

1. Conduct "pre-survey" of residents with "open-ended question"

If the situation is.... , how much in maximum would you be willing to pay: _____ Baht/person/year.

2. Analyze data using "histogram" and design for the set of bid/offer price.



100

200

300

400

500

600

.....

Baht/
person/
year

Instruction:

1. Transform the data from the excel format to the SPSS format (*from file: dichotomous_PJ.xls*)
2. Get familiar with the data by checking for outliers, missing values, etc.
3. Using non-parametric model to estimate an average wtp/person/year
4. Using parametric model to estimate an average wtp/person/year
5. Conduct descriptive analysis and cross-tabulation analysis (note that there are some qualitative variables)
6. Calculate the mean WTP.

File: dichotomous_PJ.xls =>> example of variables

Bid	The offer/bid price (100, 200, 300, 400, 500, 600)
wtp	Response: yes = 1, no = 0
Method	Payment mode: 1=bank transfer 2=bank check 3=postal check 4=credit card 5=cash 6=other modes
Gender	Male = 1, female = 0
Marital status	single=0, married=1, divorced/separated=2
current income (Baht/month)	0. Less than 5,000 Baht 1. between 5,000 – 9,999 baht 2. between 10,000 – 14,999 Baht 3. between 15,000 – 19,999 Baht 4. between 20,000 – 24,999 Baht 5. between 25,000- 29,999 Baht 6. 30,000 Baht and above

Importing file: dichotomous_PJ.xls ==>> SPSS format, then
 conduct descriptive analysis

analyze/descriptive statistics/descriptives

Socio-econ. characteristic	No.of respondent	Percentage	% sample willing to pay
Gender			
- female			
- male			
Occupation			
- govt employee			
- own business			
- ...			
- ...			
.....			
Total		100.00	

Conduct cross-tabulation b/w "bid" and "wtp01"

analyze/descriptive statistics/cross_tabs

yes

bid * wtp01 Crosstabulation

			wtp01		Total
			0	1	
bid	100	Count	33	117	150
		% within bid	22.0%	78.0%	100.0%
	200	Count	40	110	150
		% within bid	26.7%	73.3%	100.0%
	300	Count	60	90	150
		% within bid	40.0%	60.0%	100.0%
	400	Count	70	80	150
		% within bid	46.7%	53.3%	100.0%
	500	Count	85	65	150
		% within bid	56.7%	43.3%	100.0%
	600	Count	113	37	150
		% within bid	75.3%	24.7%	100.0%
Total		Count	401	499	900
		% within bid	44.6%	55.4%	100.0%

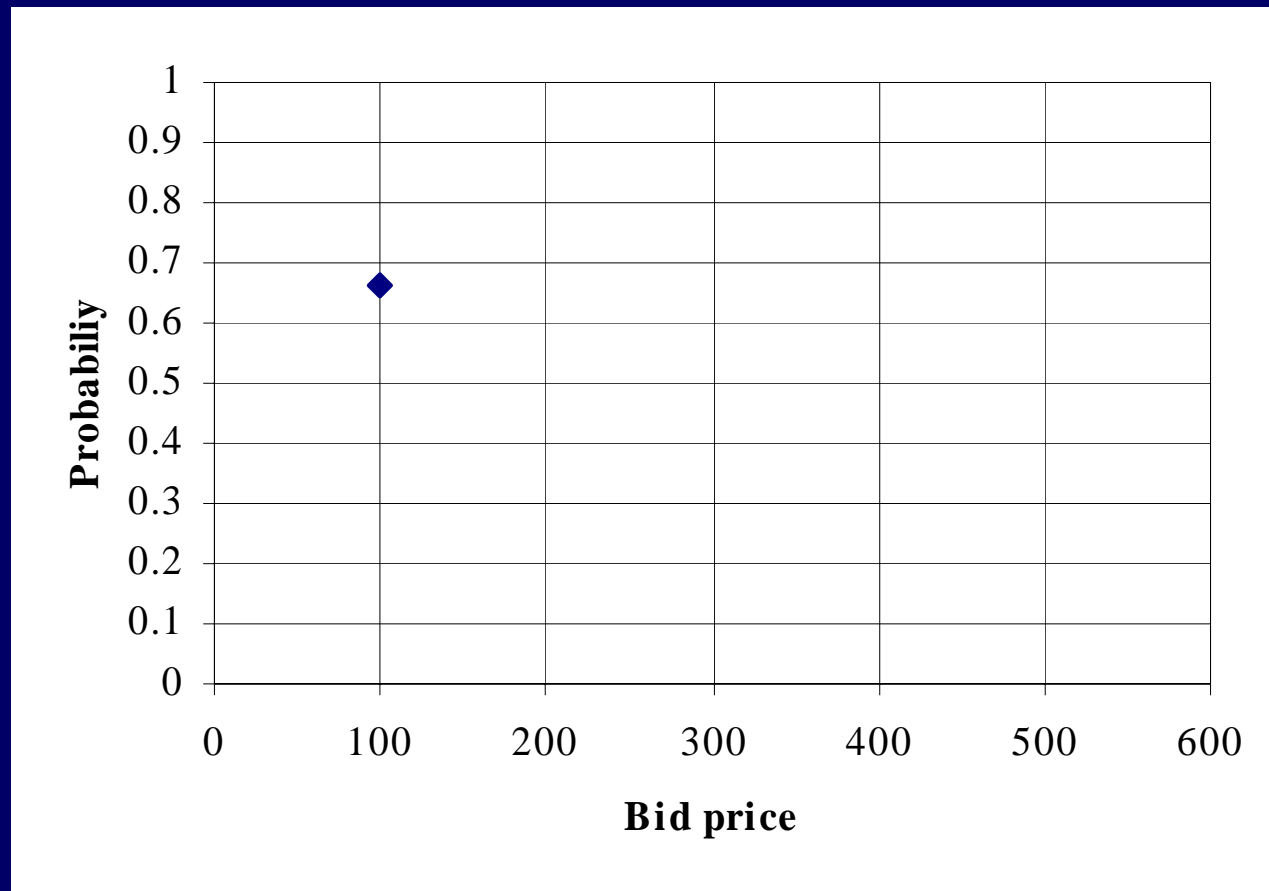
Non-parametric estimation

Bid level	No.of sub-samples	No.of sample answering "YES"	%answering Y for each group	Description	WTP per group
				22.0% of people would have WTP b/w 0-100 B/yr	
100	150	117	.78		
200					
300					
400					
500			.433	18.6% of them would have WTP b/w 500-600 B/yr	
600	150	37	.247	24.7% of them would have WTP at least 600 B/yr	
Total	900				Calc.WTP for 900 samples 12

Calculation of the mean WTP:

mean WTP/person = WTP of total samples / no.of total samples

Plot graph for the probability function



Area under the curve signifies the mean WTP of a person.

Parametric estimation

For simplicity, assumed the linear function with bivariate model:

$$wtp = a_0 + a_1 bid$$

1. Calculate the mean WTP:

$$\text{mean WTP} = - (a_0/a_1)$$

2. Calculate the non-use value of AA Island:

$$\text{non-use value} = \text{mean WTP} \times \text{total population}$$

analyze/regression/binary logistics..

Results:

from
$$WTP = a - b \text{ BID}$$

We get:
$$WTP = 1.847 - 0.005 \text{ BID}$$

$$\text{Mean WTP} = - (1.847 / 0.005)$$

$$= \dots\dots\dots \text{ B/person/yr.}$$

Compare results obtained from parametric and non-parametric models