

Assignment 4

(Due May 7)

1. Some people argue that the government should use lower discount rate for environmental project when conducting benefit-cost analysis. What is the main reason for doing so?

2. What is the difference between moral hazard and adverse selection? Explain using examples that are NOT discussed in class.

3. Suppose that the probability of getting in an accident is 2%. The average cost of an accident is \$50,000. Suppose that the average car driver has utility functions given by

$$U(I) = I^{1/3}$$

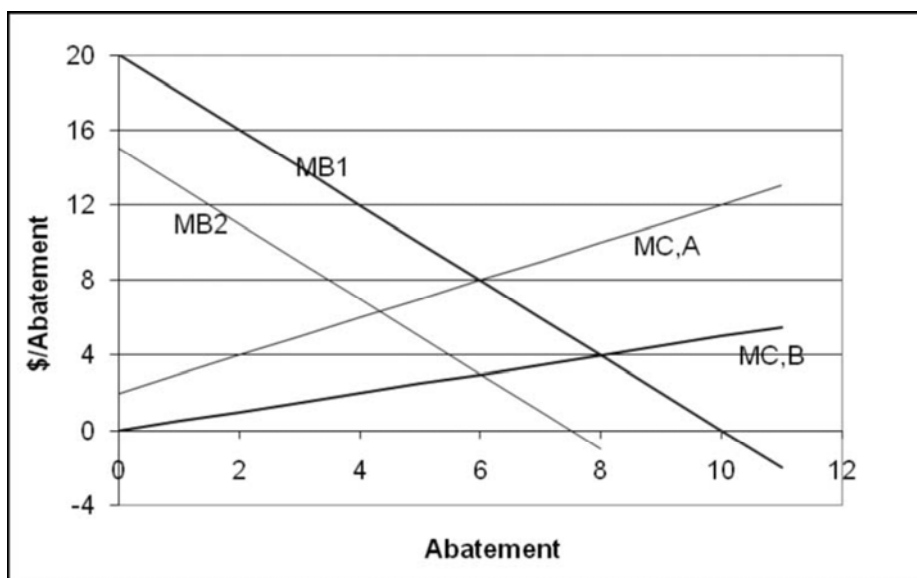
a) Assuming that this individual earns \$100,000 per year in income, calculate his expected utility if he buys no insurance.

b) Calculate the amount this individual would be willing to pay for a full coverage insurance policy.

c) Repeat (a) and (b) for an individual who earns \$50,000 per year.

d) How much should the insurance company charge for a policy if it can't discriminate between the two individuals? What should it charge if it can discriminate?

4. In the figure below, MB1 is the marginal benefit that town 1 gets from abatement; MB2 is the marginal benefit for town 2. MC, A is the marginal cost of abatement for source A, and MC, B is the marginal cost of abatement to source B. Use this figure to answer the following questions.



a) If source A is located in town 1, what is the efficient level of abatement for town 1? Why?

b) If source B is located in town 1, what is the efficient level of abatement for town 1? Why?

c) If source A is located in town 1, what level of pollution tax will achieve the efficient level of pollution for town 1? Why will that level of tax achieve the efficient level?

d) If source B is located in town 1, what level of pollution tax will achieve the efficient level of pollution for town 1? Why will that level of tax achieve the efficient level?

- e) If source A is in town 1, and if source B is in town 2, is a uniform pollution tax or a uniform pollution standard (that is, a tax or a standard that is the same in both places) more efficient? Why?
- f) Suppose the government prefers to use a tax to regulate pollution, given your answer in (e), what kind of suggestions will you offer to the government?

5. The following table gives information on visitors to Jellybear Park:

City of Origin	Population	Total Distance	Cost/Visit	Visit/Capita	Total Visits
Alabaster	1000	1			
Beautiful	3000	3			
Cornucopia	5000	5			
Delight	7000	7			

The only cost of traveling to the park is mileage, at \$1/mile. The researcher estimates the relationship between costs and number of visits per capita (per person) to be $\text{Visits per capita} = 1 - 0.15 \cdot \text{Cost}$.

- (a) Identifying total costs of a visit from each place, visits per capita from each town, and the total number of visits from each town (the visits/capita multiplied by the population) and filling the table.
- (b) Does the researcher observe anyone coming from Delight to Jellybear? Why?
- (c) Because of management costs, park managers are considering charging for admission to Jellybear. They are considering prices ranging from \$1/visit to \$5/visit. For each whole dollar value between \$1 and \$5 per visit, figure out (i) the new cost of visiting for each town, (ii) the new number of visits/capita from each town, (iii) the new number of visits from each town, and (iv) the total visits (remember that negative visits do not exist; they count as zero). Fill in the following table (Total visits is the sum from each place).

	Total	Alabaster			Beautiful			Cornucopia		
Admission Price	Visits	Cost/Visit	Visit/Capita	Visits	Cost/Visit	Visit/Capita	Visits	Cost/Visit	Visit/Capita	Visits
\$0										
\$1										
\$2										
\$3										
\$4										
\$5										

- (d) Put the information on admission price and total visits in the table from (c). This table shows the relationship between admission price and total number of visits. What is it?
- (e) Estimate the consumer surplus associated with visiting Jellybear Park when the admission fee is \$0. (It will be an approximate value, because the relationship in (e) is not a straight line.)