Environmental Economics and Policy (Econ 231-01)
Homework 4
Due Thursday November 10
60 points
Label and explain all graphs

1. Cost-Benefit Analysis (20 points)

The city of Minneapolis has asked you to conduct a benefit-cost analysis of a project that would clean up asbestos from the soil in a neighborhood north of downtown. The clean-up project is estimated to last ten years. The discount rate used by the city is 2.5%, and annual rate of inflation is projected to be 3%. A consulting firm has already estimated the benefits (in nominal terms), and the costs (in real terms). Benefits consist exclusively of the dollars saved from avoided hospital visits, and costs include dollars spent on labor and capital used for the clean-up.

Year	Benefits (nominal thousands $)	Costs (in thousands year 2010 $)
2010 (current year)	2,462	6,500
2011	3,741	6,500
2012	4,819	6,500
2013	7,947	6,500
2014	8,956	6,500
2015	9,882	6,500
2016	10,123	6,500
2017	11,971	6,500
2018	12,320	6,500
2019	14,548	6,500

a. Use a spreadsheet (please hand in an electronic file of the spreadsheet you use) to calculate the present value of benefits and the present value of costs. What is the benefit cost-ratio for this project? What is the value of the net gain to society of the project?

b. What might a benefit-cost analysis based only on the numbers in the table above be ignoring? That is, are there other potential costs or benefits that should be included in the analysis?

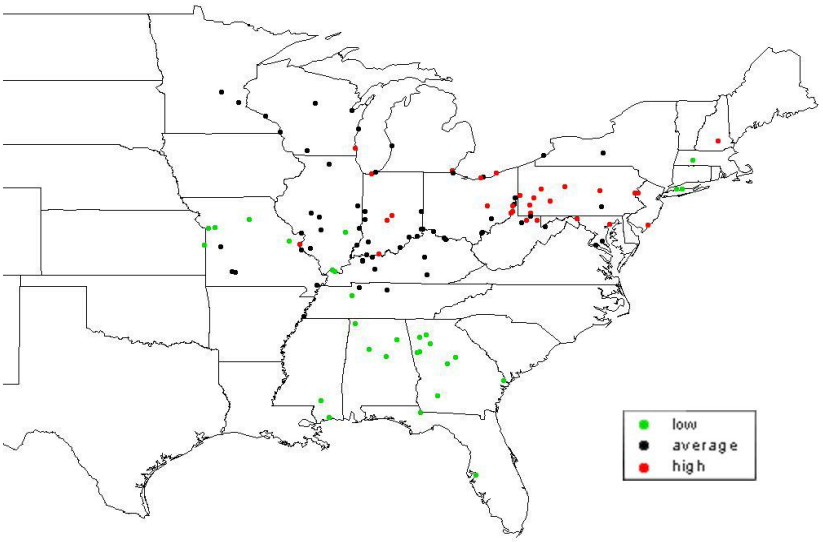
2. Cost-Benefit Analysis (20 points)

These questions ask you to think about how results of a cost-benefit analysis might change when we vary assumptions and uses the Hiawatha Corridor Light-Rail Transit project as an example.

a. If the proper discount rate were LOWER than that assumed in the study, what would happen to the results? Why?
b. The study assumes that the value of time is $9.12 per hour. What would happen to the results of the study if this were increased to $10.50 per hour? Explain.
c. The study identifies some omissions in the analysis. Pick one major omission and explain how you might estimate its effect on the cost-benefit results.

3. (20 points) Below, find two maps associated with Shadbegian et al.. Interpret them, making sure you refer to specific points on them, and describe their implications. In particular, would standards have been more efficient than tradable permits for the control of sulfur dioxide from utilities regulated by the Clean Air Act Amendments? Why or why not?

Benefits per ton



Allowance (permit) buyers and sellers