COST-BENEFIT ANALYSIS
Exercise 4. Economic Costs and Benefits

Answers to this exercise are due back by the end of Friday, May 8, at jhaughton@suffolk.edu.

1. Estimating demand

Estimate a demand curve for gasoline in the US, or in any state of the US, or any other entity (e.g. Senegal, West Africa).

For the U.S., information on gasoline use and prices is available on the Web – the Energy Information Agency is a good place to start. Explain each step that you take – e.g. choosing the variables, exploring the data, and assessing the goodness of the model(s) you estimate. I expect a thorough job of thinking through possible models, and dealing with dynamic effects (i.e. lags, etc.)!

2. Estimating Demand

The town of Arlington (where I live) operates a beach area in the summer called “The Reservation.” Part of a lake has been walled off and the water in this section is filtered. There is a sandy beach, old trees, and an extensive lawn. The facility is open from 9 a.m. to 7 p.m. from June 15 through August 31. There are two lifeguards on duty at all times.

Due to a budget crunch, the town is considering raising the entry fee. The question to be addressed is whether this would be a good idea – financially, or economically.

Some (simplified) background: To use the Reservation, town residents must pay an entry fee of $2 per visit per person. At this price the Reservation receives 25,000 visits annually. If access were free, it is believed that there would be 40,000 visits.

The lifeguards are hired for the season, and are paid wages of $16 per hour. There are additional costs of maintaining the facility – picking up trash, mowing the lawn, raking sand, mending the benches – which are proportional to the number of users, and come to $0.40 per visitor per day in season. Once a year, a major overhaul of the facility is needed – adding sand to beach, trimming the trees, maintaining the equipment. The total cost of this is $20,000. If the land were not used for the Reservation, it would be left alone, as a wild park, with negligible public value. The demand curve is assumed to be linear.

a. Does the Reservation operate on a sound financial footing? Explain.
b. Would the financial position of the Reservation improve or worsen if the admission fee were doubled? Explain.
c. From an economic point of view, should the Reservation continue to operate? Explain. [Hint: Work out the CS, and compare to the costs.]
d. Would the economic NPV be raised or lowered if the fees were doubled? Explain.
e. [Optional] At a price of $2 per visit, what is the own-price elasticity of demand?
f. [Optional] What price would maximize revenue?
g. [Optional] What is the socially optimal output? Explain.
h. What do you recommend that Arlington do? Why? [A brief answer would be fine.]