

Quiz #6 (answers)
ECNS 432
Spring 2018

_____Name

Suppose we want to estimate the benefits of improving the level (i.e., quality) of a scenic view in a neighborhood by one unit (assume "views" are perfectly measurable and are scaled from 1 (lowest) to 10 (highest)). Using the housing market and the hedonic price method you can accomplish this task. Suppose the price of a house (measured in hundreds of thousands of dollars) can be illustrated as follows

$$P = f(\text{view}) = \text{view}^\alpha,$$

where *view* denotes the level of scenic view.

a.) Suppose $\alpha = 1/4$. Graph the price function for the following levels of scenic view:

$$\text{view} = 1, \text{view} = 3, \text{view} = 5, \text{view} = 7, \text{view} = 9.$$

Make sure to label your graph.

A graph where the vertical access is house price (in hundreds of thousands of dollars) and the horizontal axis is levels of view. The following combinations of (price, view) should be as follows:

$$f(1) = 1$$

$$f(3) = 1.316$$

$$f(5) = 1.495$$

$$f(7) = 1.627$$

$$f(9) = 1.732$$

b.) Does the price function exhibit the property of diminishing marginal returns to scenic views?

Use calculus to show whether or not this is the case.

$$\frac{\partial P}{\partial \text{view}} = \left(\frac{1}{4}\right) \text{view}^{-3/4} > 0$$

$$\frac{\partial^2 P}{\partial \text{view}^2} = \left(-\frac{3}{16}\right) \text{view}^{-7/4} < 0$$

c.) Again assuming that $\alpha = 1/4$, what is the hedonic price associated with one more unit of scenic view given an initial level of views of $view = 1$? What about for $view = 3$, $view = 5$, $view = 7$, and $view = 9$?

$$r_{v1} = (1/4)(1)^{-3/4} = .25$$

$$r_{v3} = (1/4)(3)^{-3/4} = .110$$

$$r_{v5} = (1/4)(5)^{-3/4} = .075$$

$$r_{v7} = (1/4)(7)^{-3/4} = .058$$

$$r_{v9} = (1/4)(9)^{-3/4} = .048$$

d.) Given your values from part c.), graph a demand curve for scenic views. Show on your graph the benefits associated with increasing the level of scenic view by 2 units for households who originally had $view = 3$.

Plot the points above and highlight the CS area between the values of .110 and .075 on the vertical axis and the values 0 and 5 on the horizontal axis.