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Abstract:

This paper examines the effect water quality has on property values in Maryland's Anne Arundel County, located along the western shore of Chesapeake Bay. The study uses hedonic pricing techniques to accomplish this, which was an area lacking examination at the time this paper was written. The problem lies in how scientific water quality variables used (such as dissolved oxygen, nitrogen, and phosphorus) cannot be perceived by homeowners like air particulates can in air pollution. It is only when algae blooms and fish kills occur that homeowners notice, which is related to the perceived water clarity. The water quality variable used is fecal coliform bacteria and willingness to pay (WTP) is estimated for marginal improvements in this variable and a one-time improvement in a particular area.

The model estimates fecal coliform count significantly decreases property values. The study was also able to address many of the statistical faults previously encountered in hedonic pricing techniques when reaching all of these values. A change of 100 fecal coliform counts per 100 mL is estimated to produce a 1.5% negative change in property prices. This is a significant amount of change in the fecal coliform count, but a wide variety of values was measured and must be accounted for. For the eight specifications of the variables lot size and water quality, the range of mean effect on predicted price for a 100 count change is from a low of $5,114 to a high of $9,824. To test the specific site improvement now that fecal coliform levels are shown to depress property values, a particular area of 41 residential parcels suffering from fecal coliform counts ranging from 50 counts per 100 mL to 240 counts per 100 mL is used to demonstrate the model's effectiveness. The projected increase in property values based on a 100 counts per 100 mL decrease was approximately $230,000, or about 2% of the aggregate assessed value over $10 million dollars. In order for all properties in the area to achieve 200 counts per 100 mL, or the state standard, 494 properties would need improvement that would benefit by $12.145 million dollars in property value increase (although the estimate is likely an upper bound).