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The Effect of Urban Stream Shade Coverage on Property Values

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Numerous studies have investigated the relationship between water quality and a property's sale price using the hedonic price method. Water quality measurements have included the level of dissolved oxygen, fecal coliform, pH and clarity. This study combines sale price information for single-family residential properties located in an urban watershed in Portland, Oregon with a proxy for water quality, the percentage of a stream channel covered by shade.

Shade percentage is based on the type and density of riparian vegetation. It is generated using ArcView 9 and the TTools extension from the Oregon Department of Environmental Quality. Vegetation coverage is coded into polygons from aerial photos that are re-sampled into a raster grid. Information from the raster is then used to calculate the percentage of a stream channel covered by shade. The results of the calculations are coded into a shape file that contains an information node every 100 meters along the stream channel. The shade percentage associated with each property sale is chosen from the nearest node.

The relationship between a property's sale price and the percentage of shade covering nearby streams is theoretically uncertain. While studies have shown that shade affects water quality and that improved water quality increases property values, shade may block desirable views, which could decrease property values. Shade may be the result of land-use regulations that reduce the amount of developable land and restrict a landowner's ability to remove vegetation.