The Coastal Business Journal

ISSN: 2163-9280 ***Spring 2013***

Volume 12, Number 1

THE VALUE OF A WATER VIEW: VARIABILITY OVER 25 YEARS IN A COASTAL HOUSING MARKET

Julia L. Hansen, Western Washington University
Earl D. Benson, Western Washington University

ABSTRACT

Given a relatively inelastic supply of locations with coastal water views, the price of a water view is likely to rise during housing market upturns and fall during downturns. Using 25 years of data and more than 20,000 home sales for Bellingham, Washington, this study uses the hedonic methodology to estimate water view premiums over different phases of the housing cycle. Views are differentiated both by scope and by distance from the water. Results show real dollar premiums associated with water views move with the housing cycle, rising when housing demand and overall market prices increase and falling when the overall price of housing declines. In addition, the relative value of a view fluctuates as well.

INTRODUCTION

The value of a residential "view" has been well-documented in numerous studies over the past 15 years or so. Water views in particular have been found to add significantly to the sales price of a single-family home. While earlier research used a generic definition of view, classifying all properties as "view" or "no view", recent studies have examined several dimensions of the view amenity, including view scope (degree of obstruction by buildings or trees) and distance from the water. When views are differentiated by scope and distance, view premiums are found to increase with the scope of the view and decrease with distance from the water (see, for example, Benson et al., 1998 and Bourassa et al., 2004).

With few exceptions, previous studies have estimated view values in a particular market over a relatively short period of time. An interesting question concerns what happens to view premiums over a longer period of time. Theory suggests that prices of housing attributes with relatively inelastic supply are likely to change over time in response to changing demand. Because the supply of land with view potential is limited, the "quantity" of lots with water views cannot rise significantly in response to rising prices. In that case, the implicit price of a view would be expected to rise and fall with the cyclical variation in home prices. What is less clear is what might happen to the relative value of a view over time, where relative value is the view premium as a percentage of home value. Is this relative premium roughly constant over time or should we expect it to fluctuate, as well, with home values?

Unlike previous studies that use a much more limited database, this study examines a 25-year period (that includes two complete housing cycles) and more than 20,000 transactions. The hedonic methodology is used to estimate real prices of water views in Bellingham, WA, for the period 1984-2009. In this coastal market, properties with water views comprised 21 percent of all single-family transactions during this period. Author-collected view data distinguishes between type of water view (ocean or lake) and scope of view, ranging from full, unobstructed views to partial views. In addition, ocean views are differentiated by distance from the water. Results suggest that view premiums can vary substantially over time, both in terms of the dollar premium (as measured by the inflation-adjusted implicit price), and in relative terms (as measured by the percentage of sales price).

The following section provides a review of the recent literature on the value of view amenities. Data and local housing market cycles are described in Section III. Section IV presents results of hedonic modeling when views are differentiated by type and scope, while Section V presents results when view/distance interaction variables are included for ocean views. A final section provides a summary and conclusions.

PREVIOUS RESEARCH

Prior to 1997, research on single-family view premiums used simple binary (0-1) definitions of view, and most did not incorporate distance (see Benson et al. (1998) and Bourassa et al. (2004) for a thorough review of these early studies). Later studies have incorporated more complex measures that include interactive measures of view and distance and incorporate geographic information systems (GIS) and other objective measurement techniques. These studies are discussed in detail below.

An early study that used both view and distance as independent variables in a hedonic pricing model was done by Milton et al. (1984), who analyze sales prices of vacant parcels near Florida’s Apalachicola Bay. Independent variables include distance from the Gulf and a dummy variable for view/no view. Using three different locations around the bay, they find that distance and view are both important determinants of parcel value. Other studies, focusing on lake views, include Smith (1994), Lansford and Jones (1995), and Doss and Taff (1996). All three studies find that lake view adds significant value and distance from the lake reduces the value of homes, with the first two studies looking at sales prices and the third study using assessed values. None of these earlier papers attempt to interact distance with view.

Starting with a study of the housing market in Point Roberts, Washington, (an area for which no land link exists from the U.S. and if traveling by car one must enter from Canada), the definition of a view was expanded beyond the binary definition of earlier studies to include the scope and quality of the view (Benson at al., 1997). The authors personally collected view data for 397 residential properties, by visiting each property and classifying views into four categories--ocean frontage, unobstructed ocean view, partial ocean view and no view. Personal inspection was judged to be the best way to assess the impact of obstructions such as buildings or trees. Estimated view premiums for the three categories are 147 percent, 32 percent, and 10 percent, respectively, relative to “no view” home sales. No distance variables were included.

The first paper to investigate the complexities of view and distance was Benson et al. (1998). A database was constructed that contained 7,305 single-family homes sold in

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

Bellingham, Washington, over the period 1984-1993. View data was collected by the authors by personally conducting a site visit for each view property. Views were classified into mountain, lake, and "ocean" views (views of Bellingham Bay). Ocean views were further classified into four quality categories ranging from unobstructed ocean view to poor partial ocean view. Distance from the water was calculated for each view property, using GIS software. Interaction variables for each of the four ocean views with distance from the water were also calculated. Hedonic estimation results yield view premiums that increase with the scope of an ocean view. For the year 1993, premiums range from 8 percent for a poor partial ocean view to 60 percent for an unobstructed ocean view. Lake frontage is found to add 127 percent to value. The view premium for all ocean view scopes is found to fall significantly with distance from the water. Again for the year 1993, estimated view premiums for properties 0.1 miles from the bay were 68, 56, 37, and 26 percent respectively for the four view categories in declining order of quality; one mile from the bay, the view premiums were 45, 30, 28, and 12 percent, respectively, for the four categories.

The same study (Benson et al., 1998) was also the first to estimate view values over time. Results show that view premiums in percentage terms rose during the late 1980s, a period of growing demand and rising prices in the local market. For example, the percentage impact of an unobstructed ocean view (not controlling for distance) rose from 50% in 1984 and 1986 to roughly 60% from 1988 to 1993. During a period in which overall house prices are rising faster than the rate of inflation, even a constant percentage view premium implies an increase in the real price of a view. When the percentage premium is rising, that implies an even larger increase in the real view price. Thus findings of this study are consistent with the theory that prices of housing attributes with a relatively inelastic supply, such as view amenities, are likely to move with the housing cycle. During the same time period (1984-93), estimated elasticities for dwelling square footage remained relatively constant.

In a follow-up study, Benson et al. (2000) use the same Bellingham, WA, database as described above but focus on 1991-1993, a period of time in which the local market was relatively stable. They show that pooling the data for the three-year period yields estimates of view premiums that are similar to the individual year estimates. Given the likelihood of changing view values over the housing cycle, however, pooling is not likely to be appropriate for long periods of time.

Studies by Seiler et al. (2001) and Bond et al. (2002) examine the value of views of Lake Erie in Cuyahoga County, OH. Both studies used a simple dummy variable for view. The 2001 study of 1,172 homes showed that assessed values were $115,000 higher (a 56 percent premium) for view properties in 1998. Using a database of 190 home sales the 2002 study showed that sales prices during the 1998 to 2000 period were $256,545 higher (a 90 percent premium) for view properties. Neither study incorporated variables measuring distance from the water.

Bourassa et al. (2004) examine 4,814 real estate transactions in Auckland, New Zealand. Their explanatory variables include several dimensions of the view amenity including type and scope of view, and distance from the coast. They also include variables to capture the

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

"appearance" of the surrounding area, the quality of landscaping in the neighborhood, and average quality of structures in the neighborhood. Hedonic regression estimates suggest that a wide view at the coast provides a 59 percent premium over properties having no view, while a medium scope view and a narrow view yield premiums of 33 and 4 percent, respectively. At a distance of 100 meters from the coast, the view premiums are 18, 13, and 10 percent, respectively. The study shows that the view amenity (or aesthetic externalities as they call them) is multidimensional.

In another paper using transactions for coastal New Zealand, Bourassa et al. (2005) examine view values over time (1986-1996) in three cities: Auckland, Christchurch, and Wellington. Using housing attribute data that includes a binary variable for water view and a variable measuring distance from the coast, the authors estimate a hedonic model for each of eleven years for each city. Estimated percentage price impacts suggest that the premium for a water view varies over time, as well as across cities. When evaluated at the real mean sales price, estimated percentage impacts imply real prices for water views that move roughly with the local housing cycle, at least for Auckland and Christchurch. View premiums are found to be inversely related to the scarcity of views across cities, lowest in Wellington, the city with the fewest water views, and highest in Christchurch, the city with the most water views. Like Benson et al. (1998), this study finds elasticities for dwelling square footage ("floor space") to be highly stable over time. Because the paper does not report complete regression equation estimates or tests of significance for estimated coefficients, it is somewhat difficult to interpret the results, or to compare with other studies.

Samarasinghe and Sharp (2008) also focus on view values in Auckland, New Zealand, using a database of 2,531 home sales in 2004. Estimation of a hedonic model yields results similar to previous studies that differentiate water views by scope, and that interact view with distance from the water. The effect of distance is found to be greatest for properties with the widest scope of water view. Wide scope water views are found to increases sales price by roughly 44 percent at the coastline. In this study, the authors attempt to control for neighborhood quality by including socioeconomic variables, finding that homes sell for higher prices in neighborhoods with a higher percentage of European ethnic groups, and lower prices in neighborhoods with family income below $50,000(NZ).

Filippova (2009) examines whether water view premiums vary across housing submarkets. Using data for over 53,000 home sales from 2004 to 2006 in Auckland, New Zealand, the author uses a spatial definition of submarkets, dividing the Auckland region into geographic areas of 3,000-5,000 people. To focus on the effect of socioeconomic factors on view premiums, only those submarkets with similar water view scarcities are included in the hedonic analysis. Several view variables are included in the estimation, based on scope of view and distance from the water. The impact of view on sales price was found to vary in the expected way based on scope and distance, and also to vary significantly from one submarket to another. For example, for the region as a whole a wide water view 500 meters from the coast is found to add 18 percent to value; when estimated for submarkets, however, the premium varies from 5 to 54 percent.

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

Results suggest that differences in view premiums across submarkets are associated with differences in household socioeconomic characteristics.

Shultz and Smith (2008) examine the value of views of manmade lakes in Omaha using a sample of 1298 home sales from 2000 to 2006. They find that view premiums are between 7.6 and 8.3 percent. Interestingly they find that multiple listing service data underestimates the number of view properties by 79 percent, that GIS frontage calculations overestimate the number by 42 percent, and that GIS viewshed analyses overestimated the number by about 0.5 percent. In order to correct the GIS viewshed data, they conducted site visits to take into account view obstructions.

Bin, et al. (2008) measure a home's view as the number of degrees of view (maximum = 180), using LIDAR (Light Detection and Ranging) data, in their study of coastal views and flood hazard risk in North Carolina. The LIDAR technique makes it possible to account for obstructions to view from buildings and trees, using a continuous view measure which uses GIS measures that are "objective" and replicable. In examining 1,075 home sales from 1995 to 2002, they estimate that "willingness to pay" increases at a rate of $995 per degree of view (or about $179,000 for a 180 degree water view at the coast) in 2002 dollars. The $179,000 is roughly 60 percent of the average selling price of $298,000. Unfortunately, we cannot calculate the percent impact of a view home relative to a no view home because of insufficient information provided.

Morgan and Hamilton (2011) examine Pensacola Beach, Florida, home sales from 1998 to 2007 using a similar methodology to that of Bin et al. (2008). They find the marginal willingness-to-pay is $1,228 per degree of viewshed (about $221,000 for a 180 degree water view) in 2007 dollars, when the average sales price was $559,000. The $221,000 is about 40 percent of the average selling price.

Baranzini and Schaerer (2011) use GIS techniques to develop three-dimensional view variables. For water views, they create a continuous variable that measures the number of hectares of "water-covered areas" that can be seen from individual apartments in apartment buildings in Geneva, Switzerland. They examine the rents on 12,932 apartment units in 2005, with the average rent being CHF 1,122. The model combines a topographical land profile with a "surface numerical model", that takes into account heights of all objects, including buildings and trees. They find that dwellings with the maximum view of water-covered areas (88 hectares) rent for 57 percent more than a dwelling with no water view.

Hindsley, et al. (2012) use LIDAR data and GIS techniques to create three-dimensional view variables for 1,081 home sales in Pinellas County, Florida. Four continuous variables measuring Gulf of Mexico views are constructed. In measuring view scope, both natural and man-made obstructions are taken into account, including structures, sand dunes, trees and other vegetation. They estimate a marginal view scope value of $1,300 per degree of water view (about $234,000 for a 180 degree water view). This represents about 49% of the average home sales price of $475,400.

The Coastal Business Journal

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

Finally, Wallner (2012) uses GIS techniques to develop four view measures for a database of 24,491 Sydney, Australia home sales in 2008. Using a continuous variable for water views that measures the number of square kilometers of visible water surface area, the average water view is found to add 6.8 to 12.7% to a property's value. Water views in the top 5th percentile are found to increase property values 18.2 to 34.7%. For an angular diameter measure of water views, the maximum water view adds 59.4 to 107.0% to value. Compared to a binary (0-1) view variable for the same sample, the GIS measures improve out-of-sample prediction accuracy. As pointed out by the author, however, GIS measures cannot identify trees, telephone poles and other "idiosyncrasies" that can only be captured with an on-site inspection of a property.

In sum, these studies tend to show that "world-class" water view premiums for homes that are near the coastline tend to be about 45 to 70 percent, relative to no view homes; and premiums for waterfront homes tend to be 125 to 150 percent (though these premiums reflect more than "view" since these properties have direct access to water, often with a dock). This contrasts with "lake view" homes in Omaha that have 8 percent premiums. As discussed above, only two studies have examined the movement of view premiums over time -- Benson et al. (1998) for the period 1984-1993 in Bellingham, WA., and Bourassa et al. (2005) for the period 1986-1996 in Auckland, Christchurch and Wellington, New Zealand – and none have incorporated the most recent housing cycle. This paper estimates water view premiums over a 25-year period, including the housing boom and bust of the 2000s.

DATA AND LOCAL MARKET HOUSING CYCLES

Data

To conduct the analysis of view values, this study uses data for single-family home transactions in Bellingham, Washington for the period January 1984 through July 2009. Databases obtained from the Whatcom County Assessor included a total of 29,854 transactions. After removal of invalid and/or inappropriate transactions, the sample size is 20,883. Transactions were removed for the following reasons: 1) transaction prices were identified as possibly not reflecting market prices because the sale was between family members, the property was a foreclosure sale, or the property was sold to a relocation firm 2) transaction prices represented multiple property sales 3) the transaction was a lot-only sale, 4) the transaction was a duplicate of another transaction for the same property on the same date, 5) the property was remodeled after the transaction date, and 6) data for the transaction was missing or in error, such as an invalid sales date, no year built information, or the number of bathrooms coded as zero.

Bellingham is the central city of a small metropolitan area in the northwest corner of the contiguous U.S. It is located 90 miles north of Seattle and 45 miles south of Vancouver, British Columbia. The city is particularly well-suited for a view study given the prevalence of water views and the diversity of view quality caused by hills and trees. The market is small enough that the authors were able to collect view information by personal inspection of all properties in the sample that could potentially have a water view. These were properties in neighborhoods located either on the water, or on hills facing the water. Personal inspection was the best method to ensure accurate view classifications. To determine the view from the main living area, properties were inspected from street level, and from above and along the side where possible and when necessary. This fieldwork was conducted in August and September, 1995, in August 2004 and in July and August, 2009. During the most recent inspection of view properties, the authors also updated view classifications for some of the properties already in the sample. Most of the view neighborhoods in Bellingham are established neighborhoods, in which virtually no new construction has occurred. However, view classifications for a few properties were changed due to the growth of trees.

View properties are classified by type of water view – ocean view (a view of Bellingham Bay) or lake view (a view of Lake Whatcom). Ocean views are further subdivided into four quality levels ranging from full ocean view to poor partial ocean view. Generally speaking, the quality of ocean views was determined based on the degree of obstruction, with more obstructed views judged to be lower quality. While there are no true oceanfront properties in Bellingham due to the existence of a railroad right-of-way along the water, there are a number of lakefront properties. Lake view properties are classified into three quality categories – lakefront, full lake view and partial lake view. The following vector of view dummy variables was created:

OCEANVIEW1 = 1 if the home has a full (unobstructed) view of Bellingham Bay, else 0,
OCEANVIEW2 = 1 if the home has a superior partial bay view (some obstruction by buildings, trees, etc., up to 30% obstruction), else 0,
OCEANVIEW3 = 1 if the home has a good partial bay view (significant obstructions, from 30% to 60% obstruction), else 0,
OCEANVIEW4 = 1 if the home has a poor partial bay view (some water could be seen, more than 60% obstruction), else 0,
LAKEFRONT = 1 if the home has a lake view from lakefront property, else 0,
LAKEVIEW1 = 1 if the home has a full lake view from non-lakefront property, else 0, and
LAKEVIEW2 = 1 if the home has a partial lake view from non-lakefront property, else 0,

with the omitted category containing homes with no water view.

Table 1 provides definitions of variables, and descriptive statistics are shown in Table 2. Property characteristics data were obtained from the Whatcom County Assessor; these data are supplemented by distance from Bellingham Bay and neighborhood variables provided for our sample by the City of Bellingham. For the full 25½-year sample, the average property is approximately 43 years old at the time of sale, and the mean square footage is 1479, excluding finished and unfinished basement. Properties with water views comprise 21.2 percent of all

The Coastal Business Journal

ISSN: 2163-9280 *Spring 2013*
Volume 12, Number 1

transactions. As shown in Table 2, 5.0 percent of transactions were for houses with an unobstructed ocean view, 2.6 percent were for houses with a superior partial ocean view, and 4.0 percent and 6.2 percent for houses with a good or poor partial ocean view, respectively. An additional 0.5 percent of transactions were for lakefront property, 0.6 percent for full lake view property, and 2.3 percent for partial lake view property. The set of explanatory variables for the hedonic model includes dummy variables for 20 neighborhoods, as defined by Bellingham city government. Neighborhood dummy variables are included to control for unobserved locational factors that affect housing prices; such factors may include socioeconomic characteristics of neighborhood households.

The Coastal Business Journal

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

Table 1. Variable Definitions

Variable Name	Definition
PRICE	Sales price of house (2009 dollars)
AGE	Year of sale minus the year house was built
REMODEL	Dummy variable (1if house remodeled since 1960, otherwise 0)
SQFT	House square feet (above grade)
FBASEM_SF	Finished basement square feet
UFBASEM_SF	Unfinished basement square feet
GARAGE_SF	Garage square feet
CARPORT_SF	Carport square feet
DECK_SF	Deck square feet
PATIO_SF	Patio square feet
BEDRMS	Number of bedrooms
BATHS	Number of bathrooms
QUALITY1	Dummy variable (1 if quality given a well above average assessor rating of 5 or 6 on a 1-6 scale; otherwise 0)
QUALITY2	Dummy variable (1 if quality given an above average assessor rating of 2 on a 1-6 scale; otherwise 0)
QUALITY3	Dummy variable (1 if quality given an average assessor rating of 2 on a 1-6 scale; otherwise 0)
QUALITY4	Dummy variable (1 if quality given a below average assessor rating of 2 on a 1-6 scale; otherwise 0)
QUALITY5	Dummy variable (1 if quality given a below average assessor rating of 1 on a 1-6 scale; otherwise 0)
QUALITY+	Dummy variable (1 if house given an additional quality classification of plus, otherwise zero)
QUALITY-	Dummy variable (1 if house given an additional quality classification of minus, otherwise zero)
CONDITION1	Dummy variable (1 if condition given an above average assessor rating of 4, 5 or 6 on a 1-6 scale, otherwise zero)
CONDTION2	Dummy variable (1 if condition given an average assessor rating of 3 on a 1-6 scale, otherwise zero)
CONDITION3	Dummy variable (1 if condition given a below average assessor rating of 1 or 2 on a 1-6 scale, otherwise zero)
OCEANVIEW1	Dummy variable (1 if house has an unobstructed view of Bellingham Bay; if not, 0)
OCEANVIEW2	Dummy variable (1 if house has a superior partial bay view (up to 30% obstruction); if not, 0)
OCEANVIEW3	Dummy variable (1 if house has a good partial bay view (30 to 60% obstruction) ; if not, 0)
OCEANVIEW4	Dummy variable (1 if house has a poor partial bay view (more than 60% obstruction); if not, 0)
LAKEFRONT	Dummy variable (1 if property fronts on Lake Whatcom; if not, 0)
LAKEVIEW1	Dummy variable (1 if house has an unobstructed Lake Whatcom view from non-lakefront property; if not, 0)
LAKEVIEW2	Dummy variable (1 if house has a partial Lake Whatcom view from non-lakefront property; if not, 0)
DBAY	Shortest distance in miles from Bellingham Bay
N1….N20	Dummy variables for 21 neighborhoods (defined by City of Bellingham). The omitted neighborhood is Roosevelt.
Y1985 … Y2004	Dummy variable (1 if house sold in that year, otherwise 0)

Table 2. Summary Statistics of Sample Variables (n=20883)

Continuous variables:	**Mean**	**Std. Dev.**	**Min.**	**Max.**	***Dummy Variables*:***	**Mean**	**n**
PRICE (2009$)	$229,530	$131,318	$31,048	$2,088,670	REMODEL	0.061	1273
AGE	43	36	0	123	QUALITY1	0.004	92
SQFT	1479	566	368	6585	QUALITY2	0.101	2105
FBASEMT_SF	128	354	0	3344	QUALITY3	0.610	12736
UBASEM_SF	142	310	0	2710	QUALITY4	0.281	5868
GARAGE_SF	319	254	0	1890	QUALITY5	0.003	82
CARPORT_SF	26	101	0	1664	QUALITY+	0.290	6066
DECK_SF	118	188	0	1690	QUALITY-	0.184	3848
PATIO_SF	69	168	0	3840	CONDITION1	0.497	10375
BEDRMS	2.89	0.81	1	8	CONDITION2	0.401	8368
BATHS	1.76	0.73	1	6	CONDITION3	0.102	2140
DBAY (miles)	1.44	0.95	0.02	4.06	OCEANVIEW1	0.050	1053
					OCEANVIEW2	0.026	548
					OCEANVIEW3	0.040	828
					OCEANVIEW4	0.062	1294
					LAKEFRONT	0.005	94
					LAKEVIEW	0.006	134
					LAKEVIEW2	0.023	475

*Dummy variable means give the proportion of sample transactions with this attribute.

Pairwise correlations between explanatory variables are generally small; the only exceptions are the correlations between total square footage and the number of bathrooms, and total square footage and the number of bedrooms (correlation coefficients of 0.70 and 0.66, respectively). Of particular interest given our focus on views, pairwise correlations between each of the view dummy variables and the other explanatory variables are very small, with only one above 0.36. Computation of variance inflation factors for all explanatory variables results in very low values for the view variables (between 1.2 and 1.6) and values less than 4 for all variables except for "dbay", leading us to conclude that multicollinearity is not a problem for our sample.

Local Market Housing Cycles

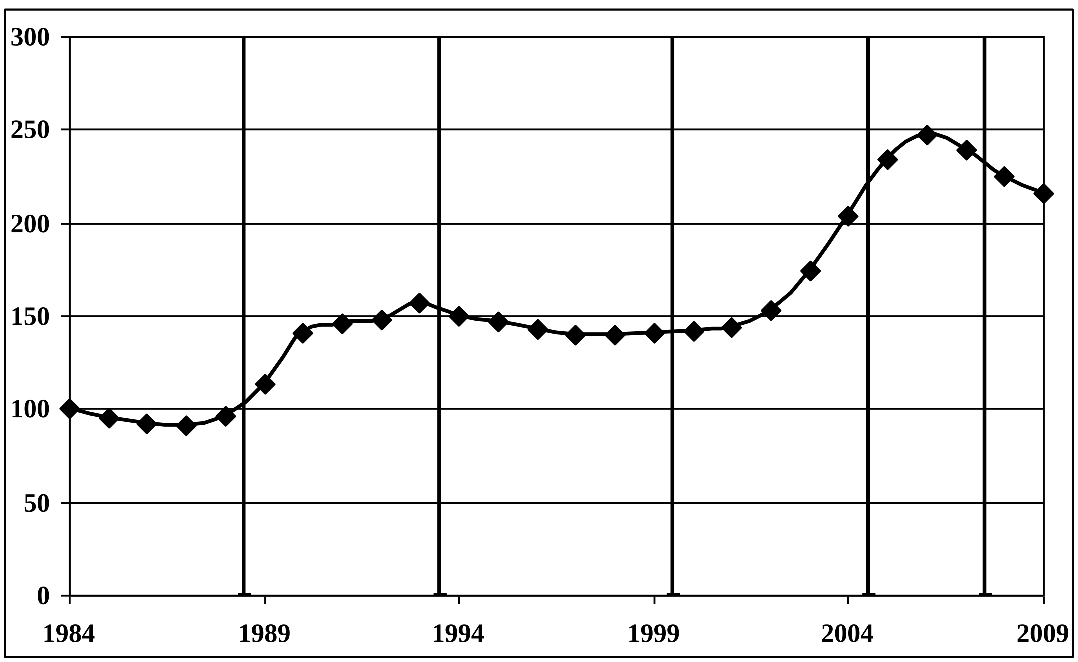
The first step in the empirical analysis is an examination of housing price cycles in the local market. In order to identify the movement of housing prices over time, we pooled our 25 ½ years of data and used it to construct a real hedonic price index. (The specification for the

The Coastal Business Journal

ISSN: 2163-9280 | Spring 2013
Volume 12, Number 1

pooled hedonic model is identical to the specification used in Model 1 (shown in Table 3 below), with dummy variables for each year of the sample after 1984. The dependent variable is the natural log of the sales price adjusted for inflation using the Seattle CPI-U. Hedonic price index values are computed as exp(β)*100, where β is the estimated coefficient on the year dummy variable.) This index, illustrated in Figure 1, provides a measure of the inflation-adjusted constant-quality house price. As shown in the figure, the Bellingham single-family market experienced two housing price cycles during the period of our data. Real prices rose substantially during the period 1988-1993 (about 62 percent), then fell slightly from 1994-1999 (about 6 percent). For the more recent cycle, the index peaks in 2006 at a level about 74 percent higher than the 2000 level. It should be noted that the time period for this study does not capture the entire recent cycle, as the downturn did not end in 2009. (As of 1st quarter 2011, the FHFA repeat sales price index for the Bellingham MSA continued to fall.)

Figure 1. Real Hedonic House Price Index, Bellingham



For purposes of examining how the value of a view varies with the housing cycle, we identify six time periods over which to create pooled subsamples of our data. The time periods are chosen to represent phases of the local housing cycle, as indicated by the movement of real prices in Figure 1. Shown by vertical bars in the figure, the six time periods are as follows:

Time Period	Years	House Price Movement
1	1984-1988	Stable/slight decline

2	1989-1993	Rising
3	1994-1999	Stable/slight decline
4	2000-2004	Rising
5	2005-2007	Peaking
6	2008-2009	Falling

If the price of a view moves with the real estate cycle as hypothesized, we would expect view prices measured in real terms to rise in Period 2, fall in Period 3, then rise again in Period 4, following by a peak in Period 5, and a decline in Period 6. To estimate the real price of different views, we estimate a hedonic housing price model for each of the six time periods. With the dependent variable given by the log of the real sales price (see below), the coefficients on view dummy variables yield the percentage impact of a particular view type. An estimate of the real dollar price of a view can then be obtained by multiplying the percentage impact by the mean real sales price for the time period.

HEDONIC MODEL 1: THE VALUE OF WATER VIEWS OVER TIME

A hedonic pricing model is used to estimate the value of water views in the Bellingham single-family housing market. Theory gives little guidance with respect to the appropriate functional form for the hedonic model. A maximum-likelihood Box-Cox hedonic model is an attractive choice, as it provides a flexible functional form. However, a Box-Cox model has the disadvantage of not allowing for continuous variables with zero values (and thus does not allow the use of view/distance interaction variables used below in Model 2). Given this disadvantage, and given that previous estimation of a Box-Cox hedonic model for this market yielded results very similar those obtained from a log-linear model (Benson et al., 1998), we chose the log-linear model. The following model is estimated:

$$\ln(P_i) = \alpha + \sum_{j=1}^{n} \beta_j X_{ji} + \sum_{k=1}^{m} \gamma_k Z_{ki} + e_i$$

where $\ln(P)$ is the natural log of price of property i, X is a vector of the natural logs of j property characteristics such as age and square footage, and Z is a vector of dummy variables, including dummy variables for sale year and neighborhood.

To test the hypothesis that water views add significantly to value, our first hedonic model (Model 1) includes dummy variables for ocean and lake views. In the next section of the paper, additional variables are added to test the hypothesis that view values vary with distance. Estimation results for Model 1, which is estimated for all six time periods using ordinary least squares, are shown in Table 3.

Most of the variables describing property characteristics are significant, with the expected sign. Sales prices are higher, the newer the house, the better the quality and condition, and the greater the above-grade square footage, as well as the greater the basement square footage, garage square footage, etc. A variable measuring distance from Bellingham Bay is negative and significant, but the magnitude is very small. With only two exceptions, estimated coefficients

The Coastal Business Journal

ISSN: 2163-9280

Spring 2013
Volume 12, Number 1

for the water view variables are positive and significant at the 1% level in all time periods. Coefficients not significantly different from zero are the coefficient on poor partial ocean view in the 1984-88 time period, and the coefficient on unobstructed lake view in the 2008-09 period.

Table 3. Hedonic Regression Results, Model 1
Dependent variable is ln(P)

	Time Period					
	1984-88	**1989-93**	**1994-99**	**2000-04**	**2005-07**	**2008-09**
C	8.9002 [a]	8.8817 [a]	9.5373 [a]	9.3565 [a]	9.8154 [a]	9.7007 [a]
ln(AGE)	-0.0612 [a]	-0.0218 [a]	-0.0124 [a]	-0.0116 [a]	-0.0013 [a]	0.0144 [a]
REMODEL	0.0921 [a]	0.0461 [a]	0.0224 [a]	0.0070	0.0167	0.0346 [c]
ln(SQFT)	0.3952 [a]	0.3991 [a]	0.3484 [a]	0.3589 [a]	0.3635 [a]	0.3556 [a]
ln(FBASEM_SF)	0.0227 [a]	0.0178 [a]	0.0174 [a]	0.0209 [a]	0.0184 [a]	0.0216 [a]
ln(UBASEM_SF)	0.0103 [a]	0.0082 [a]	0.0060 [a]	0.0078 [a]	0.0056 [a]	0.0065 [a]
ln(GARAGE_SF)	0.0142 [a]	0.0109 [a]	0.0098 [a]	0.0086 [a]	0.0072 [a]	0.0073 [a]
ln(CARPORT_SF)	0.0106 [a]	0.0084 [a]	0.0057 [a]	0.0030 [a]	0.0042 [a]	-0.0011
ln(DECK_SF)	0.0060 [a]	0.0049 [a]	0.0046 [a]	0.0040 [a]	0.0048 [a]	0.0052
ln(PATIO_SF)	0.0099 [a]	0.0039 [a]	0.0038 [a]	0.0043 [a]	0.0033 [a]	0.0031
ln(BEDRMS)	0.0000	0.0064	0.0247 [b]	0.0170	0.0139	0.0169
ln(BATHS)	0.06912 [a]	0.0513 [a]	0.0335 [a]	0.0250 [a]	0.0119	0.0218
QUALITY1	0.4555 [a]	0.2696 [a]	0.4457 [a]	0.4348 [a]	0.3942 [a]	0.5195 [a]
QUALITY2	0.2614 [a]	0.2049 [a]	0.2830 [a]	0.2583 [a]	0.2755 [a]	0.26546 [a]
QUALITY4	-0.1290 [a]	-0.1209 [a]	-0.1566 [a]	-0.1344 [a]	-0.1310 [a]	-0.1289 [a]
QUALITY5	-0.2127 [a]	-0.3058 [a]	-0.3668 [a]	-0.2873 [a]	-0.1469 [a]	-0.0957
QUALITY+	0.0811 [a]	0.0780 [a]	0.0790 [a]	0.0735 [a]	0.0815 [a]	0.0667 [a]
QUALITY-	-0.0428 [a]	-0.0497 [a]	-0.0749 [a]	-0.0697 [a]	-0.0434 [a]	-0.0417 [a]
CONDITION1	0.0401 [a]	0.0678 [a]	0.0477 [a]	0.0609 [a]	0.0417 [a]	0.0535 [a]
CONDITION3	-0.0610 [a]	-0.1057 [a]	-0.0782 [a]	-0.0777 [a]	-0.0286 [a]	-0.0329
OCEANVIEW1	0.2436 [a]	0.2743 [a]	0.1904 [a]	0.2042 [a]	0.2114 [a]	0.1738 [a]
OCEANVIEW2	0.1034 [a]	0.1949 [a]	0.1316 [a]	0.1327 [a]	0.1703 [a]	0.1226 [a]
OCEANVIEW3	0.0842 [a]	0.1442 [a]	0.0660 [a]	0.0976 [a]	0.1124 [a]	0.0864 [a]
OCEANVIEW4	0.0049	0.0468 [a]	0.0435 [a]	0.0612 [a]	0.0648 [a]	0.0733 [a]
LAKEFRONT	0.6373 [a]	0.7419 [a]	0.5465 [a]	0.6286 [a]	0.6827 [a]	0.7755 [a]
LAKEVIEW1	0.1923 [a]	0.2490 [a]	0.1145 [a]	0.1326 [a]	0.2165 [a]	0.0475
LAKEVIEW2	0.0921 [a]	0.1147 [a]	0.0370 [a]	0.0467 [a]	0.0826 [a]	0.0848 [a]
ln(DBAY)	-0.0368 [a]	-0.0305 [a]	-0.0201 [a]	-0.0343 [a]	-0.0890 [a]	-0.0222
Edgemoor	0.2621 [a]	0.2956 [a]	0.2533 [a]	0.3177 [a]	0.2562 [a]	0.4219 [a]
South Hill	0.1257 [a]	0.1770 [a]	0.1276 [a]	0.2429 [a]	0.1265 [a]	0.3160 [a]
R-squared	0.8603	0.8633	0.8626	0.8648	0.8205	0.8427
Adjusted R-sq.	0.8579	0.8613	0.8612	0.8635	0.8174	0.8346
S.E. of regression	0.1788	0.1841	0.1416	0.1547	0.1539	0.1455
n	2851	3441	5099	5534	2951	1007

[a]Significant at the 1% level; [b]significant at the 5% level; [c]significant at the 10% level. Estimated coefficients for year dummy variables and neighborhood dummy variables other than Edgemoor and South Hill are not shown.

The Coastal Business Journal

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

Table 4 shows percentage impacts of views on sales price, (computed as $100*(e^{\beta}-1)$, where β is the estimated coefficient), along with real prices of views over time. (The correct interpretation of coefficients on dummy variables when the dependent variable is specified in logs was first pointed out by Halvorsen and Palmquist (1980).) In every time period, the percentage price impact is highest for lakefront properties. This is not surprising, given that lakefront locations provide recreational amenities as well as view amenities. Percentage impacts for ocean views generally decline as the scope of the view narrows. It should be noted that estimated percentage impacts for ocean views are significantly lower than those found in previous research for this market (Benson et al., 1998) for the time period 1984-1993. This can be explained by the addition of neighborhood dummy variables to the model. The two Bellingham neighborhoods with the highest prevalence of ocean views--Edgemoor and South Hill--are also the most prestigious neighborhoods, and according to our regression results command the highest neighborhood premiums (shown in Table 3). After controlling for neighborhood, the estimated marginal impact of an ocean view on sales price is, therefore, reduced.

The Coastal Business Journal

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

Table 4. Percentage Impacts and Real Prices of Water Views

	Time Period					
	1984-88	1989-93	1994-99	2000-04	2005-07	2008-09
OCEANVIEW1:						
Percent Impact	27.6%	31.6%	21.0%	22.6%	23.5%	19.0%
Price (2009$)*	$36,999	$58,734	$43,577	$54,558	$83,246	$62,976
OCEANVIEW2:						
Percent Impact	10.9%	21.5%	14.1%	14.2%	18.6%	13.0%
Price (2009$)	$14,609	$40,044	$29,235	$34,189	$65,649	$43,291
OCEANVIEW3:						
Percent Impact	8.8%	15.5%	6.8%	10.2%	11.9%	9.0%
Price (2009$)	$11,780	$28,862	$14,186	$24,686	$42,077	$29,949
OCEANVIEW4:						
Percent Impact	0.5%**	4.8%	4.4%	6.3%	6.7%	7.6%
Price (2009$)	$664	$8,909	$9,238	$15,205	$23,676	$25,244
LAKEFRONT:						
Percent Impact	89.1%	110.0%	72.7%	87.5%	97.9%	117.2%
Price (2009$)	$119,557	$204,682	$151,139	$210,748	$346,309	$388,719
LAKEVIEW1:						
Percent Impact	21.2%	28.3%	12.1%	14.2%	24.2%	4.9%**
Price (2009$)	$28,439	$52,616	$25,210	$34,159	$85,472	$16,126
LAKEVIEW2:						
Percent Impact	9.7%	12.2%	3.8%	4.8%	8.6%	8.9%
Price (2009$)	$12,947	$22,625	$7,822	$11,520	$30,473	$29,375

*Percentage impacts are evaluated at the mean sales price for the time period ($2009 dollars). **Coefficient not significantly different from zero.

We suspect, however, that the neighborhood premiums themselves are not independent of views. It is likely that the high prevalence of view properties in certain neighborhoods leads to greater prestige and higher household incomes, making the neighborhood more attractive and leading to higher prices even for non-view properties. In addition, both neighborhoods mentioned above are located along Bellingham Bay, and provide water views not only from private houses, but from roads, sidewalks and common areas, another factor which may contribute to higher prices for non-view properties. If the view and neighborhood effects are combined for these two neighborhoods, the value premium can be quite high. In the case of the Edgemoor neighborhood, for example, the combined percentage impact for view and neighborhood for the 2005-2007 time period is 59.62 percent for an unobstructed ocean view (OCEANVIEW1) and 53.19 percent for a superior partial ocean view (OCEANVIEW2).

For all the different view types, estimated percentage impacts rise during period 2, a period in which the market price level was rising, then fall in time period 3, rise again in period 4 and reach a peak in period 5, the period in which real housing prices peaked in the overall market (2005-2007). For all views except for poor partial ocean view and lakefront, the percentage impact then falls in the most recent time period (2008-09). (It should be noted that only six lakefront properties sold in that time period, making it difficult to interpret that particular result.) For all view types except for the lowest-quality ocean view, percentage impacts are highest in period 2, the 1989-93 time period. It is interesting to note that the coefficients (and hence percentage impacts) for the two dummy variables for above-average structure quality – QUALITY1 and QUALITY2 – are lowest in time period 2, perhaps indicating a higher than normal willingness of buyers during the housing boom of the late 1980s and early 1990s to trade off structure quality for views.

Evaluating percentage impacts at the real mean sales price for each time period yields estimates of the real dollar prices of water and lake views. The movement of real view prices across time periods is illustrated in Figures 2 and 3. For all view types, prices generally move as expected with the housing cycle, exceptions being the increase in real price for poor partial ocean views and lakefront during the recent downturn (period 6). Again we note the very small sample size for lakefront properties in this time period. Although the percent impact of most view types is lower during the most recent housing boom than during the earlier boom, real prices of views are higher, given that the percent impacts are being applied to much higher sales prices. For example, estimation results suggest that a full ocean view adds 31.6 percent to value in the 1989-93 time period, implying a real price of $58,734; although the premium for 2005-07 time period is 23.5 percent, the corresponding real price of an unobstructed ocean view is $83,246.

In contrast to the percentage price impacts for views, the elasticities for square footage are quite stable across all six time periods. As shown by the coefficients on the SQFT variable in Table 3, these elasticities vary from 0.348 to 0.399, implying that a 1 percent increase in square feet increases the sale price by .348 to .399 percent, *ceteris paribus*. It should be noted that this elasticity measures the impact of an increase in above-grade square footage, holding the number of bedrooms, bathrooms, and basement square feet constant. Of course a stable elasticity does not imply a constant dollar price of square footage. Evaluating the elasticity value at the mean sales price and mean square footage for each time period yields a real price of square footage that moves with the Bellingham housing cycle. Based on the elasticities estimated here, the price of a marginal square foot in real terms moves from $37.50 in time period 1 to $54.16 in period 2, then to $48.33, $57.11, $83.20 and $75.73 in the last 4 time periods, respectively. The finding of a stable square footage elasticity, and a real price of square footage that varies with the housing cycle, is similar to the findings of Bourassa et al. (2005).

The Coastal Business Journal

ISSN: 2163-9280 *Spring 2013*
Volume 12, Number 1

Figure 2. Real Price of Ocean Views (2009$), Time Periods 1-6

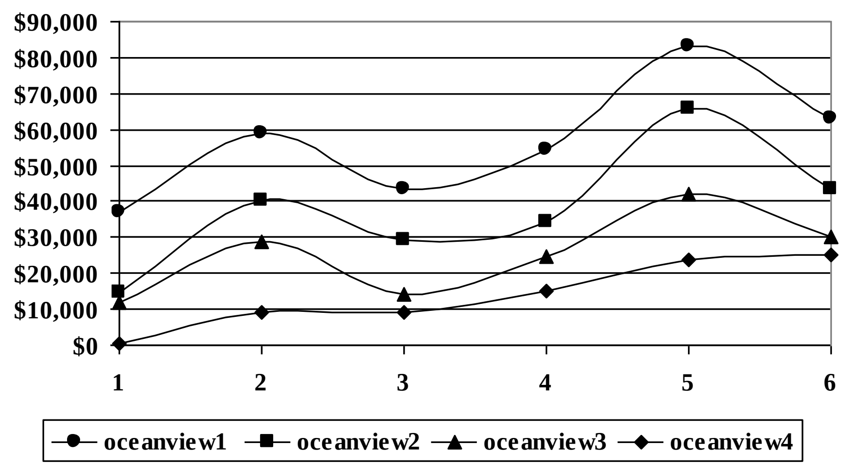
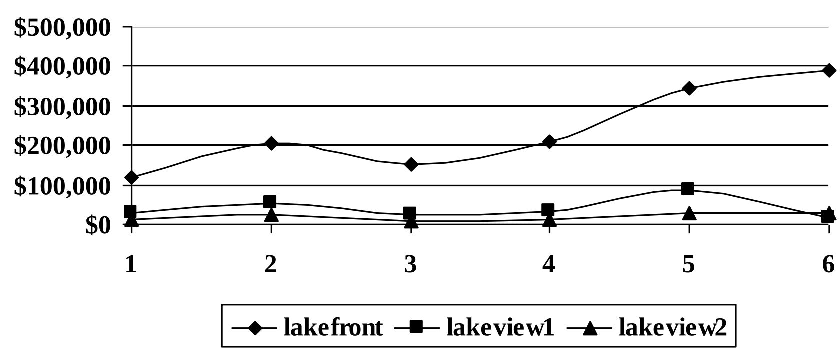


Figure 3. Real Price of Lake Views (2009$), Time Periods 1-6



HEDONIC MODEL 2: THE EFFECT OF DISTANCE FROM THE WATER ON VIEW VALUES

The previous section explored the value of different types of water views – both ocean and lake views, and how those values have varied over a long period of time. In this section of the paper, we consider that for ocean view and partial ocean view properties, the value of a view may vary depending on distance from the water. More specifically, we hypothesize that the

ISSN: 2163-9280 *Spring 2013*
Volume 12, Number 1

more distant the view, the smaller the view premium, everything else held constant. To test this hypothesis over the six time periods of this study, variables interacting each of the four ocean view variables with distance are added to the hedonic model. Interaction variables (OCEAND1-4) are defined as the natural log of (DBAY + 1), where as defined in Table 1, DBAY is the shortest distance in miles from Bellingham Bay. In this model, the impact of a view on sales price is determined by the estimated coefficients on both the view dummy variable and the view/distance variable. As shown by Benson et al. (1998), the percentage impact of a particular type of ocean view on sales price is given by: $100 * [e^{(\beta+\gamma*(OCEAND)}-1]$, where β is the coefficient on the view dummy variable, and γ is the coefficient on the view/distance interaction term.

The Coastal Business Journal

ISSN: 2163-9280 Spring 2013
Volume 12, Number 1

Table 5. Selected Hedonic Regression Results and Percentage Impacts, Model 2

	Time Period											
	1984-88		1989-93		1994-99		2000-04		2005-07		2008-09	
Coefficient:												
OCEANVIEW1	0.3431	a	0.4128	a	0.2876	a	0.2604	a	0.2585	a	0.2721	a
OCEAND1	-0.2251	a	-0.2718	a	-0.140	a	-0.0839	a	-0.0606	c	-0.1646	a
OCEANVIEW2	0.2098	a	0.3531	a	0.2551	a	0.1861	a	0.2520	a	0.1993	a
OCEAND2	-0.1249	a	-0.2001	a	-0.1397	a	-0.0701	a	-0.0987	b	-0.0899	
OCEANVIEW3	0.1590	a	0.2123	a	0.1318	a	0.1424	a	0.2219	a	0.2433	a
OCEAND3	-0.0908	a	-0.0697	c	-0.0666	b	-0.0549	b	-0.1312	a	-0.1820	a
OCEANVIEW4	0.0190		0.4128	a	0.0689	a	0.1082	a	0.1130	a	0.0736	
OCEAND4	-0.0133		-0.2717	a	-0.0259		-0.0601	a	-0.0557		-0.0135	
Percentage Impacts:												
OCEANVIEW1												
0.1 miles	37.9%		47.2%		31.6%		28.7%		28.8%		29.2%	
0.5 miles	28.6%		35.3%		26.0%		25.4%		26.4%		22.8%	
1 mile	20.6%		25.2%		21.0%		22.4%		24.1%		17.1%	
2 miles	10.1%		12.1%		14.3%		18.3%		21.1%		9.6%	
OCEANVIEW2												
0.1 miles	21.9%		39.7%		27.3%		19.7%		27.5%		21.0%	*
0.5 miles	17.3%		31.2%		21.9%		17.1%		23.6%		17.7%	*
1 mile	13.1%		23.9%		17.1%		14.7%		20.1%		14.7%	*
2 miles	7.5%		14.3%		10.7%		11.2%		15.4%		10.6%	*
OCEANVIEW3												
0.1 miles	16.2%		22.8%		13.4%		14.7%		23.3%		25.4%	
0.5 miles	13.0%		20.2%		11.0%		12.8%		18.4%		18.5%	
1 mile	10.1%		17.8%		8.9%		11.0%		14.0%		12.4%	
2 miles	6.1%		14.5%		6.0%		8.6%		8.1%		4.4%	

[a]Significant at the 1% level; [b]significant at the 5% level; [c]significant at the 10% level. *Distance interaction term is not statistically significant.

Table 5 (above) shows selected hedonic regression results for Model 2 – the coefficients on the view dummy variables and interaction terms – and implied percentage impacts. Distance is a significant addition to the specification of ocean views for the three highest-quality ocean views (for most time periods), but not for the lowest-quality ocean view. For the highest-quality ocean views – a full ocean view -- coefficients on the view/distance interaction variables are negative and significant at the 1 percent level for all time periods except 2005-2007 (where the coefficient is significant at the 10 percent level). For superior partial ocean views, the coefficients for the

The Coastal Business Journal

ISSN: 2163-9280

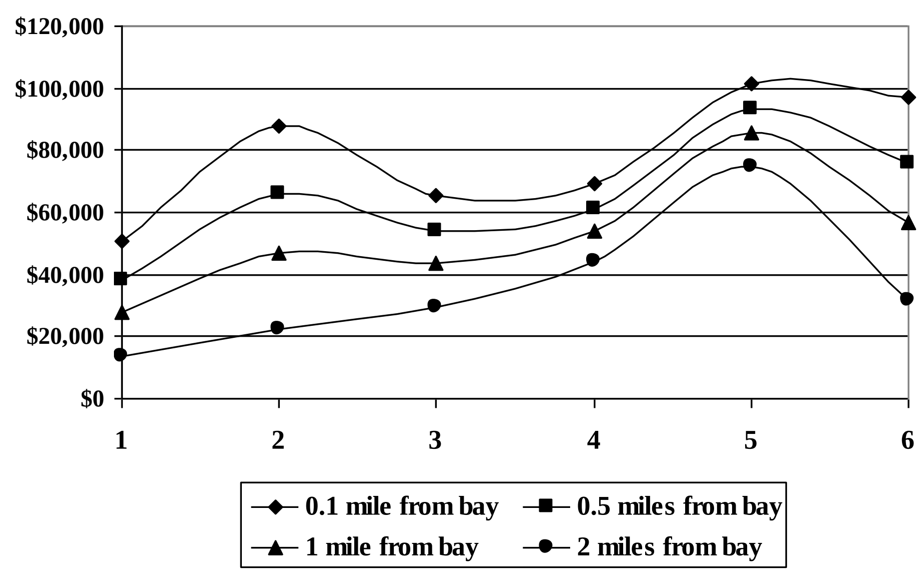
Spring 2013
Volume 12, Number 1

interaction terms are negative and significant for all time periods except for the most recent period, and for good partial ocean views, coefficients are negative and significant at at least the 10 percent level for all time periods. The view/distance interaction term does not generally perform well for poor partial ocean views.

For the three highest-quality ocean views, percentage price impacts tend to move with the housing cycle, but there are some exceptions to the general pattern. For example, the percentage impact of unobstructed water views at locations 0.1 mile from the water doesn't fall during the recent downturn (time period 6). For the same quality-level at locations 2 miles from the water, percentage price impacts rise during all time periods except the most recent. As a result, the percentage impacts at different distances become more similar up until period 5 (2005-07), and less similar after period 5.

As in the previous section of the paper, real dollar prices of water and lake views are obtained by evaluating percentage impacts at the real mean sales price for each time period. Figure 4 illustrates real prices for unobstructed ocean view properties located 0.1 mile, 0.5 miles, 1 mile and 2 miles from the water. While prices at all distances tend to track the overall market, the relationship between distance from the water and the value of a view has clearly varied over time.

Figure 4. Real Price of a Full Ocean View (2009$), Time Periods 1-6



For example, for full ocean view properties within 0.1 mile of the bay, the view premium is $50,893, $87,912, $65,578, and $101,701 for periods 1, 2, 3 and 5, respectively. From a distance of 2 miles the premium is $13,486, $22,527, $29,723, and $74,842 for the same periods, but falls to $31,692 in period 6. The reduced effect of distance starting in time period 3, and continuing in time periods 4 and 5 is unexpected, and appears to be related to an increase in the number of sales of full ocean view properties located more than 3 miles from Bellingham Bay. For the 1989-93 time period, there were no sales of full ocean view properties located farther than 3 miles in our sample, but for the next three time periods, the percentage of full ocean view properties at distances greater than 3 miles rises to 12.8 percent, and then to 23.9 and 20.1 percent. (The percentage for the most recent time period drops to 10.3 percent.)

The increase in the percentage of full ocean view properties located at distances beyond 3 miles is likely explained by the development of a new area of Bellingham view homes in the late 1990s and early 2000s (the "Barkley area"). This area is farther from the bay than other view areas in the city, and many houses are located more than 3 miles from the water. Because the area is located on a high hill, however, many properties have full ocean views. We suspect that a high value for full ocean views in the Barkley area, in spite of the relatively great distance from the water, is causing the reduction in the view/distance interaction term, particular for the 2000-2004 and 2005-2007 time periods. The value of these views may be explained by the dimension of elevation. It is possible that higher elevation can offset the effect of distance by "opening up" the view, and in the case of the Barkley area, affording a view of a greater expanse of water and islands. More research is needed to investigate the impact of elevation on view values.

SUMMARY AND CONCLUSIONS

Very little research has focused on the value of water views over the housing cycle. This study uses housing market sales data for the coastal city of Bellingham, Washington to estimate the value of ocean and lake views over a 25-year period from 1984-2009. Both ocean and lake views are categorized by quality level, as defined by the scope of the view (or conversely, the degree of obstruction), and in the case of ocean views by distance from the ocean as well. The view classifications were determined by a site visit to each potential view property, a method judged by the authors to be the best way to account for obstructions such as building and trees.

The empirical work in the paper addresses both the "absolute" change and the "relative" change of water view premiums over this 25-year period. Results show that real prices of water views have moved substantially over the housing cycle. Real prices of ocean and lake views of all quality levels rose during the housing upturn of the late 1980s and early 1990s, then fell, then rose again during the housing boom of the 2000s before declining again in the most recent period. Measured in 2009 dollars, the price of the highest-quality ocean view (an unobstructed view of Bellingham Bay and the San Juan Islands) peaks at about $83,000 in 2005-2007, the time period corresponding to the peak of the local market. Taking distance into account, the highest-quality ocean view home commands a premium in the 2005-2007 period of about $102,000 if located 0.1 miles from the bay and a premium of $75,000 if located 2 miles away. In the 1994-1999, the period prior to the recent housing boom, these view premiums were only $66,000 and $30,000, respectively.

We find that water view premiums move with the housing cycle not only when measured in inflation-adjusted dollar terms, but also when measured on a relative basis. For this market, percentage premiums appear to have peaked during the housing boom of the late 1980s and early 1990s, and then fell in the late 1990s. They recovered in the early 2000s, reached a peak in the boom years of 2005-2007, and fell as home prices dropped in 2008-2009. For example, the view premium for a home that is within 0.1 miles of the bay, with a superior partial bay view rose from 21.9 percent in the mid-1980s to 39.7 percent in the late 1980s and early 1990s, only to fall to 27.3 percent and 19.7 percent in the subsequent two periods. Then, the relative premium rose to 27.5 percent in the 2005-2007 period and fell to 21 percent in 2008-2009. This pattern was true for all view/distance categories except for the best view category (with the highest home values) which exhibited much less variation compared to the other categories. One implication is that percentage view premiums cannot be assumed to be constant over time, or assumed to be similar for similar phases of the housing cycle. Percentage view premiums for the next housing upturn, for example, may differ from premiums exhibited during previous upturns. Results here suggest that in addition to the scope of a view, and distance from the water, careful assessment of views should consider that not only the dollar value but the percentage impact of a view may vary with the housing cycle.

REFERENCES

Baranzini, A. & Schaerer, C. 2011. A Sight for Sore Eyes: Assessing the Value of View and Land Use in the Housing Market. *Journal of Housing Economics* 20 (3): 191-199.

Benson, E.D., Hansen, J.L., Schwartz, A.L. & Smersh, G.T. 1997. The Influence of Canadian Investment on U.S. Residential Property Values. *Journal of Real Estate Research* 13 (3): 231-249.

Benson, E.D., Hansen, J.L., Schwartz, A.L. & Smersh, G.T. 1998, Pricing Residential Amenities: The Value of a View. *Journal of Real Estate Finance and Economics* 16 (1): 55-73.

Benson, E.D., Hansen, J.L., Schwartz, A.L. 2000. Water Views and Residential Property Values. *The Appraisal Journal* 68 (3): 260-271.

Bin, O., Crawford, T.W., Kruse, J.B., & Landry C.E. 2008. Viewscapes and Flood Hazard: Coastal Housing Market Response to Amenities and Risk. *Land Economics* 84 (3):434-448.

Bond. M.T., Seiler, V.L., & Seiler, M.J. 2002 Residential Real Estate Prices: A Room with a View. *Journal of Real Estate Research* 23 (1/2): 129-137.

Bourassa, S.C., Hoesli, M., & Sun, J. 2005. The Price of Aesthetic Externalities. *Journal of Real Estate Literature* 13 (2): 167-187.

Bourassa, S.C., Hoesli, M., & Sun, J. 2004. What's in a View? *Environment and Planning A* 36 (8): 1427-1450.

Doss, C.R., & Taff, S.J. 1996. The Influence of Wetland Type and Wetland Proximity on Residential Property Values. *Journal of Agricultural and Resource Economics* 21 (1): 12-29.

Filippova, O. 2009. The Influence of Submarkets on Water View House Price Premiums in New Zealand. *International Journal of Housing Markets and Analysis* 2 (1): 91-105.

Halvorsen, R., & Palmquist, R. 1980. The Interpretation of Dummy Variables in Semilogarimthmic Equations. *American Economic Review* 70 (3): 474-475.

Hindsley, P., Hamilton, S.E., & Morgan, O.A. 2012. Gulf Views: Toward a Better Understanding of Viewshed Scope in Hedonic Property Models. *Journal of Real Estate Finance and Economics*, forthcoming.

Lansford, N.H., & Jones L.L. 1995. Marginal Price of Lake Recreation and Aesthetics: An Hedonic Approach. *Journal of Agricultural and Applied Economics* 27 (1): 212-223.

Milton, J.T., Gressel, J., & Mulkey, D. 1984. Hedonic Amenity Valuation and Functional Form Specification. *Land Economics* 60 (4): 378-387.

Morgan, O.A. & Hamilton, S.E. 2011. Disentangling Access and View Amenities in Access-Restricted Coastal Residential Communities. *Journal of Agricultural and Applied Economics* 43 (2): 157-166.

Samarasinghe, O., & Sharp, B. 2008. The Value of a View: A Spatial Hedonic Analysis. *New Zealand Economic Papers* 42 (1): 59-78.

Schultz, S. & Schmitz, N. 2008. Viewshed Analyses to Measure the Impact of Lake Views on Urban Residential Properties. *The Appraisal Journal* 76 (3): 224-232.

Seiler, M.J., Bond. M.T., & Seiler, V.L. 2001. The Impact of World Class Great Lakes Water Views on Residential Property Value. *The Appraisal Journal* 69:3, pp. 287-295.

Smith, B.H. 1994. Coastal Setback and the Impact of Water Amenities. *Geographical Analysis* 26 (4): 364-369.

Wallner, R. 2012. GIS Measures of Residential Property Values. *Journal of Real Estate Literature* 20:2, pp.225-244.

ABOUT THE AUTHORS

Julia L. Hansen is Professor of Economics in the Economics Department at Western Washington University and has a Ph.D. in economics from the University of California, Berkeley. Her teaching and research activities include microeconomics, urban economics, public finance, and real estate. Her publications have appeared in the *Journal of Urban Economics, Journal of Real Estate Finance and Economics, Journal of Housing Economics, Land Economics, Journal of Real Estate Research, and The Appraisal Journal.* She is also the Editor of the annual *Whatcom County Real Estate Research Report*.

The Coastal Business Journal

ISSN: 2163-9280

Spring 2013
Volume 12, Number 1

Earl D. Benson is Professor of Finance in the Finance and Marketing Department at Western Washington University and has a Ph.D. in finance from the University of Oregon. His teaching includes financial management, investments, and portfolio analysis and management. Research interests include real estate valuation, portfolio analysis, and determinants of municipal bond interest costs. His publications have appeared in the *Journal of Finance, Journal of Financial and Quantitative Analysis, Financial Analysts Journal, Journal of Portfolio Management, Journal of Money, Credit and Banking, Journal of Real Estate Finance and Economics, Land Economics, Journal of Real Estate Research, The Appraisal Journal, Public Finance Quarterly, Journal of Accounting, Auditing and Finance, Research in Governmental and Nonprofit Accounting, Advances in Accounting, Public Budgeting and Finance, and the Municipal Finance Journal.*