Beach Quality and the Enhancement of Recreational Property Values

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This study uses the hedonic pricing technique to examine the contribution of beach quality, as measured by beach width, to property values in two South Carolina coastal towns. Using two separate models, we estimate the values of wider beaches to vacant lots and single family homes, both with and without water frontage. For oceanfront property, increasing the beach width from 79 to 80 feet, increases the value of developed and undeveloped lots by $558 and $754, respectively. An increase in beach width from 79 to 80 feet, increases the value of developed and undeveloped lots, located a 1/2 mile from the beach by $254 and $165, respectively. The willingness to pay for wider beaches is an indication of the size of the storm protection and recreational values produced by wider beaches.

KEYWORDS: Residential property values, value of beach quality, hedonic valuation method.

Introduction

As the demand for outdoor recreation has grown in recent years, more and more people have chosen seashore areas for permanent residences and vacationing. As a result, coastal property values have risen substantially and this trend is expected to continue. A 1993 survey indicates that the market for second homes and recreational properties is enjoying a renewed interest, with property near the beach as the top choice of buyers (Ragatz Associates, Inc., 1993). Beach quality is an important determinant of coastal property values, but one that has received very little examination, partly because its influence is difficult to measure. This study uses the hedonic pricing technique to show how the value of wider beaches, a key characteristic of beach quality, can be estimated from residential property sales. Specifically, we measure the effect of beach quality on developed and undeveloped coastal property values.

Beaches provide aesthetic pleasure as well as recreational uses such as swimming, surfing, sunbathing, fishing, and volleyball to residents and tourists. Yet, many of these recreational pleasures are threatened by beach erosion. A 1971 study by the U.S. Army Corps of Engineers found that 21,000
of the 84,000 miles of shoreline in the United States was experiencing "significant erosion". The North Atlantic, Lower Mississippi, and California shorelines were suffering from "significant erosion" on over 80% of their shorelines (Platt, Miller, Beatley, Melville, Mathenia, 1992).

Lindsay, Halstead, Tupper, and Vaske (1992) in a survey of beach users at Maine and New Hampshire beaches, found that 88% of the respondents felt very strongly that they would enjoy the experience less if the beach was narrower due to erosion. In the basic model of demand for outdoor recreation services, congestion, which is considered a negative externality, reduces the economic value of a recreational experience (Fisher and Krutilla, 1972). McConnell (1977) specifies the model for beach users, indicating how congestion would enter the utility function, along with other quality variables, to determine the demand for recreation.

Evidence from several studies indicates that the beach experience diminishes as the site becomes more crowded, consequently users would be expected to value wider beaches, other factors being equal, since congestion would be less. Using the contingent valuation technique, McConnell (1977) and Bell (1986) find that consumer surplus increases with more beach space per person. Silberman and Klock (1988), using a more direct survey approach to measure the recreational and existence value users place on beach area, find similar benefits to wider beaches.1

Serious erosion of beaches endangers oceanfront property, and in extreme cases leads to houses toppling into the ocean. Wider beaches also provide protection from flooding due to storms and high tides which can cause significant damage, not only to oceanfront property but also to homes and lots farther removed from the beach. Because wider beaches offer greater protection, beach width is a valuable asset to property owners. This is in addition to the recreational values that property owners gain from the access provided by the proximity to the beach, which will be enhanced with a wider beach. Therefore, the expectation is that a wider beach increases the market price of recreational property, since property values capture the gains associated with a wider beach accruing to both property owners and tourists renting the units.

The Hedonic Method

The hedonic pricing model is based on the understanding that a house is composed of a bundle of individual characteristics, each of which has an implicit price. The market price of the house is determined by the sum total of the individual parts. Rosen (1974) established the theoretical framework for the hedonic method, which has been widely used in economic studies to analyze the impact of particular characteristics on property prices. Use of

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1Congestion at a recreational site does not always have a negative impact on user satisfaction. Manning and Gali (1980) find no relationship between user density and satisfaction for river recreationists in Vermont, when the sample is broken down into major using groups.
the hedonic technique allows the calculation of the implicit price of a particular attribute's contribution to the total value of a property, as perceived by the purchaser of the property. Following Freeman (1979), the implicit price function can be summarized by:

\[ P_i = P(S_i, N_i, Q) \]

where the price of the \( i \)th house \( (P_i) \) is a function of a vector of structural characteristics \( (S_i) \), such as lot size, number of rooms, etc.; a vector of neighborhood characteristics \( (N_i) \), such as quality of schools and proximity to city services; and a vector of environmental characteristics, such as air or water quality \( (Q) \). The implicit price of a particular characteristic is calculated by differentiating the implicit price function with respect to the characteristic.

Hedonic models in studies by Shabman and Bertelson (1972), Conner, Gibbs, and Reynolds (1973), Brown and Pollakowski (1977), Milon, Gressel, and Mulkey (1984), Parsons and Wu (1991), and Wertheim, Jividen, Chatterjee, and Capen (1992) have examined the implicit value that property attributes such as, view of, frontage on, and proximity to water contribute to coastal property. These studies show that property values are inversely related to the distance from a beach, presumably because as distance to the beach increases, travel costs rise and the aesthetic amenities of being near the water decline. According to this model, a property owner will trade lower property costs for increased distance from a beach, thereby revealing the implicit savings of locating farther from a beach. Edwards (1989) provides a formal derivation of the implicit demand for distance to a local public beach, which allows the estimation of recreational value from housing prices in Edwards and Gable (1991).

To the authors' knowledge, Wilman and Krutilla (1980) provide the only study using the hedonic technique to examine the relationship between beach quality and property value. They measure quality by an index of characteristics (obtained from a survey of local beach officials) attesting to the general attractiveness of a beach. They estimate the decreased value resulting from beach pollution using rents paid for tourist accommodations on Cape Cod as a measure of the willingness to pay for the beach experience. We, on the other hand, use the hedonic technique to calculate the effect of beach width (as a partial measure of beach quality) on residential property values.

We also explore the value of wider beaches on vacant lots, a useful exercise since the problem of controlling for housing improvement effects can be avoided. Few hedonic models use vacant lot prices as the response variable because of the difficulty of obtaining reliable sales data on vacant land transactions. There is some debate as to whether land rent or housing price should be the response variable in hedonic pricing models (Fischel, 1990, p. 43). Since a wider beach is a site characteristic and not affected by structural improvements, the value should be capitalized in the price of the land. Therefore, on a priori grounds, the price of an undeveloped lot is a desirable indicator of beach quality value (Freeman, 1979, p. 129).
Among the few studies that compare developed and undeveloped property is a study by Peterson (1974), which compared the effect of zoning on vacant lot and housing prices for the Boston area.\(^2\) He found that allowing four houses on an acre lot instead of only one increased the land value by thirty percent and that the effect of land use constraints was almost fully capitalized in land values. Our study allows an examination of the extent to which the value of wider beaches is capitalized in vacant lot prices.

Studies using the hedonic technique have sometimes been criticized for choosing the model's functional form based on convenience rather than theory (Halvorsen and Pollakowski, 1981). A priori the hedonic model functional form is unknown, although since the linear model implies that bundles can be unbundled and repackaged, nonlinear models perform better. Box and Cox (1964) have proposed a general form of transformation that provides a statistical basis for the choice of the functional form, where \(\alpha\) and \(\beta\) are the unknown Box-Cox transformation parameters to be estimated.\(^3\) Using this approach, the double-log form was determined to be the appropriate functional form for the model in this study, so that the logs of all continuous variables on both sides of the two equations are taken. The double-log form is intuitively appealing since it allows the incremental value that a variable adds to price to depend on the existing level of other attributes. Also, the logarithmic model allows for diminishing returns to additional beach width. For instance, an additional foot of sand tends to increase value more when widened from 49' to 50' than say from 149' to 150'.

Data and Model Specification

This study focuses on two specific localities in a South Carolina resort area known as the Grand Strand. The Grand Strand consists of a string of

\(^2\)Conner, et al., (1973) compare the effect of water frontage on developed and undeveloped property along the Kissimmee River Basin in Florida, but they use two different methods. For vacant lots, the hedonic approach is used but for developed property they use a survey of property owners to estimate the values.

\(^3\)For the hedonic price equation, the following Box-Cox model was estimated using a maximum likelihood algorithm:

\[
P^{(\alpha)} = a_0 + \sum a_i h_i^\beta + \sum a_j P_j
\]

where:

\[
P^{(\alpha)} = (P^{(\alpha)} - 1)/\alpha \quad \text{when } \alpha \neq 0
\]

\[
= 1n P \quad \text{when } \alpha = 0
\]

\[
h_i^\beta = (h_i^\beta - 1)/\beta \quad \text{when } \beta \neq 0
\]

\[
= \beta 1nh_i \quad \text{when } \beta = 0
\]

Because different parameters for each independent variable \((P)\) are expensive to compute, \(\beta\) was given the same value for each \(h\). Iterations were performed for \(\alpha\) and \(\beta\) over the interval -1.00 to 1.00 by increments of 0.1. After standardizing the independent and dependent variables, maximizing the likelihood function is equivalent to minimizing the transformed residual sum of squares (Judge, Griffiths, Hill, Lutkepol, & Lee, 1985).
beach communities along a 60 mile stretch of coastline from the North Carolina border to Georgetown, South Carolina. We concentrate on Surfside Beach and Garden City, two adjacent towns bordering the Atlantic Ocean and lying just south of the city of Myrtle Beach. Surfside, a residential development dating back to the 1950s, has about 2.1 miles of coastline, while Garden City, an area that has had significant growth in the post-1950s, has a coastline of 4.9 miles. The two communities consist predominantly of single family beach houses and small condominiums, much of which consists of summer rentals. Several large high-rise apartment buildings are located on the northern end of Garden City and a medium-sized hotel is situated on the northern end of Surfside. In South Carolina, as in most other states, coastal beaches up to the mean high tideline belong to the public.

Two variables are included in the hedonic model to capture the influence of beach width on property value - the width of beach at high tide, WBHT, and an interaction variable, DBCH*WBHT, created by multiplying distance to the nearest beach (DBCH) by beach width. As noted earlier, Edwards (1989) shows that property farther from a beach will be less valued, so that the DBCH variable will capture the recreational value of being near to the beach. Since using only DBCH would not capture the full impact of beach width, we use the interaction variable, DBCH*WBHT, to adjust for the recreational benefits from wider beaches. The variable WBHT captures the protection value provided by a wider beach.

A series of 32 survey markers spaced along the shorelines of these two towns provide the beach width measurements. The survey marker readings, provided by the South Carolina Coastal Council for Spring 1989, are placed strategically to provide accurate measures of beach width, which is necessary data for state coastal policies. Beach width at Surfside generally exceeds that at Garden City. For example, based on 1989 readings at high tide, Surfside beaches averaged 96 feet in width, while Garden City beaches averaged 64 feet. Garden City beaches varied from 0 to 140 feet at high tide while Surfside Beaches varied from 57 to 119 feet. Three different measurements of beach quality were considered: beach widths at high tide and low tide, and sand volume. The nearest survey marker to a particular property indicates the width of beach for that property.

Utilizing separate samples of single family homes and vacant lots from Surfside Beach and Garden City, we estimate two hedonic price models to

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4 Although shorelines are dynamic, for the period of time in this study, the width of beach for this area has remained fairly constant. The high-tide width parameter calculation starts at an elevation of +8 feet, usually the base of the dune or seawall and goes out to a point +3 feet above the mean sea level.

5 Although there is significant variation in beach width along the shoreline, some tracts have the same beach width measurement, thus causing possible spatial autocorrelation. An examination of the Durbin-Watson statistic and a plot of the residuals suggest that this is not a problem.

6 The sand volume is a cross-section profile of the beach, starting at an elevation of +8 feet, usually at the base of the dune or seawall, and measured out to -5 feet below the mean sea level.
determine the value of beaches to property owners. In addition to the beach width variable, locational, amenity, and structural variables, as discussed earlier, are categories of regressors used to explain the price response variable. Of course, structural regressors are not included in the vacant lot model. A list of variable definitions and their descriptive statistics, for the housing and vacant lot models, are listed in Table 1 and Table 2, respectively.

**Table 1**

Variable Descriptions and Descriptive Statistics for Housing Model

<table>
<thead>
<tr>
<th>Variable Definition</th>
<th>Mean</th>
<th>Stan. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price of house (deflated)</td>
<td>$93677</td>
<td>$52377</td>
</tr>
<tr>
<td>Age of house (years)</td>
<td>12.11</td>
<td>9.08</td>
</tr>
<tr>
<td>Size of living area (square feet)</td>
<td>1989.30</td>
<td>840.35</td>
</tr>
<tr>
<td>Number of bathrooms</td>
<td>2.02</td>
<td>.83</td>
</tr>
<tr>
<td>Dummy variable (1 = fireplace)</td>
<td>.19</td>
<td>.39</td>
</tr>
<tr>
<td>Distance to nearest beach (feet)</td>
<td>1785.60</td>
<td>1217.10</td>
</tr>
<tr>
<td>Distance to center of Myrtle Beach (miles)</td>
<td>9.99</td>
<td>1.97</td>
</tr>
<tr>
<td>Dummy variable (1 = located on oceanfront)</td>
<td>.09</td>
<td>.28</td>
</tr>
<tr>
<td>Width of beach at high tide (feet)</td>
<td>89.40</td>
<td>23.21</td>
</tr>
<tr>
<td>Dummy variable (1 = view of ocean)</td>
<td>.20</td>
<td>.39</td>
</tr>
<tr>
<td>Dummy variable (1 = located on inlet)</td>
<td>.12</td>
<td>.33</td>
</tr>
<tr>
<td>Dummy variable (1 = dock)</td>
<td>.06</td>
<td>.24</td>
</tr>
<tr>
<td>Dummy variable (1 = sold after Hurricane Hugo)</td>
<td>.12</td>
<td>.32</td>
</tr>
</tbody>
</table>

**Table 2**

Variable Descriptions and Descriptive Statistics for Vacant Lot Model

<table>
<thead>
<tr>
<th>Variable Definition</th>
<th>Mean</th>
<th>Stan. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selling price of lot (deflated)</td>
<td>$40978</td>
<td>$38571</td>
</tr>
<tr>
<td>Size of lot (square feet)</td>
<td>12804</td>
<td>11993</td>
</tr>
<tr>
<td>Distance to nearest beach (feet)</td>
<td>3275.1</td>
<td>2877.5</td>
</tr>
<tr>
<td>Distance to center of Myrtle Beach (miles)</td>
<td>9.98</td>
<td>1.76</td>
</tr>
<tr>
<td>Dummy variable (1 = located on oceanfront)</td>
<td>.08</td>
<td>.27</td>
</tr>
<tr>
<td>Width of beach at high tide (feet)</td>
<td>84.88</td>
<td>35.68</td>
</tr>
<tr>
<td>Dummy variable (1 = view of ocean)</td>
<td>.14</td>
<td>.35</td>
</tr>
<tr>
<td>Dummy variable (1 = located on inlet)</td>
<td>.05</td>
<td>.21</td>
</tr>
<tr>
<td>Month of sale, 1 (Jan. 1983) to 96 (Dec. 1990)</td>
<td>40.20</td>
<td>29.90</td>
</tr>
<tr>
<td>Dummy variable (1 = sold after Hurricane Hugo)</td>
<td>.14</td>
<td>.21</td>
</tr>
</tbody>
</table>
For developed property, 385 single family homes that were sold between 1983 and 1991 in the two communities comprise the sample. For vacant lots 169 separate land transactions occurring between 1983 and 1991 in Surfside and Garden City make up the sample. The dependent variable is the actual selling price of the house or lot, each adjusted to 1983 prices by the national price index for housing. Selling price, location, and information such as square footage, number of rooms, and age of structure, were obtained from multiple listing catalogs and county tax records. Distance variables were derived from various area maps. Numerous visits to the test area were conducted to obtain and verify information requiring actual sight.

The Hugo variable is a dummy variable which takes on a value of one if the house was sold after Hurricane Hugo, which struck the South Carolina coast in September of 1989 causing $6 billion in property damage. This variable is included since buyers might be less willing to buy property following a demonstration of the damage resulting from storm risk. Variables that may be correlated with beach distance and width, such as view of water and location on the oceanfront or inlet, were also included. These factors measure the aesthetic benefits of water-related location. The inlet variable measures the benefits of living along a waterway that borders some parts of Garden City. Such a location provides the property owner the opportunity to construct a dock, have convenient boat access to water, and enjoy a view.

Results

Table 3 lists the ordinary least squares estimates of the hedonic price functions for single family homes and vacant lots, along with their t-values. As discussed earlier, the double-log model was determined to be the correct functional form, so that logs of all continuous variables were taken. The regressors predict 81 percent of the variation in logs of housing prices, and 72 percent of the variation in the logs of vacant lot prices. All signs are as expected, and most variables are significant at the 1 percent level for both models.

Of the three width measures considered, high tide beach is used because it is a better estimator in terms of increased $R^2$ and t values. This approach is reasonable since property owners clearly perceive greater differences in beach width at high tide than at low tide. For example, at high tide in some places beach width may be 0, while at low tide all sections of beach have some visible sand. The sand volume measure was positive and significant but not as important as high tide beach in predicting housing prices. The low tide beach width coefficient was negative but not significant.

The distance to Myrtle Beach variable is positive, indicating that the farther away a house or lot is from Myrtle Beach the higher the value of the

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7 Peterson and Stynes (1986) report on the bias that may be introduced in nonlinear models, requiring greater caution when interpreting predictions.
**TABLE 3**

*Hedonic Model for Single Family Homes and Vacant Lots*

<table>
<thead>
<tr>
<th>Variable Definition</th>
<th>Single Family Homes Coeff. (t-values)</th>
<th>Vacant Lots Coeff. (t-values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of house (years)</td>
<td>-.0247 (2.369)</td>
<td>—</td>
</tr>
<tr>
<td>Size of living area (square feet)</td>
<td>.6115 (14.578)</td>
<td>—</td>
</tr>
<tr>
<td>Size of lot (square feet)</td>
<td>—</td>
<td>.4003 (5.749)</td>
</tr>
<tr>
<td>Number of bathrooms</td>
<td>.1314 (3.278)</td>
<td>—</td>
</tr>
<tr>
<td>Dummy variable (1 = fireplace)</td>
<td>.0308** (0.951)</td>
<td>—</td>
</tr>
<tr>
<td>Distance to nearest beach (feet) × Width of beach at high tide (feet)</td>
<td>-.1277 (6.723)</td>
<td>-.1975 (7.856)</td>
</tr>
<tr>
<td>Distance to center of Myrtle Beach (miles)</td>
<td>.3657</td>
<td>.7182</td>
</tr>
<tr>
<td>Dummy variable (1 = located on oceanfront)</td>
<td>.2662 (4.923)</td>
<td>.3418* (2.062)</td>
</tr>
<tr>
<td>Width of beach at high tide (feet)</td>
<td>.2589 (6.446)</td>
<td>.4746</td>
</tr>
<tr>
<td>Dummy variable (1 = view of ocean)</td>
<td>.0348** (0.757)</td>
<td>.3474* (2.223)</td>
</tr>
<tr>
<td>Dummy variable (1 = located on inlet)</td>
<td>.0545** (1.110)</td>
<td>.5930</td>
</tr>
<tr>
<td>Month of sale, 1 (Jan. 1983) to 96 (Dec. 1990)</td>
<td>.0251** (0.152)</td>
<td>.1783 (5.266)</td>
</tr>
<tr>
<td>Dummy variable (1 = dock)</td>
<td>.2086 (3.338)</td>
<td>—</td>
</tr>
<tr>
<td>Dummy variable (1 = sold after Hurricane Hugo)</td>
<td>-.1611 (4.099)</td>
<td>-.2855 (3.150)</td>
</tr>
<tr>
<td>Intercept</td>
<td>6.1430 (14.377)</td>
<td>4.5693 (4.562)</td>
</tr>
</tbody>
</table>

*N = 385; N = 169; Adj. R² = .81 Adj. R² = .72

\[ F = 121.62 \]

\[ F = 49.17 \]

* = p < .10; ** = n.s.
property, other things constant. Since the southern most observations of this sample are located in an exclusive section of Garden City, this variable is probably capturing some of this neighborhood effect. Furthermore, although Myrtle Beach is the nearest city to the sample area, it is not a mononuclear city, and doesn't provide the types of services that are normally found in larger cities.

The water-related attributes have the expected positive sign, although ocean view and inlet location are insignificant in the housing model. This is most likely due to some correlation between structural attributes, such as docks, and the water related attributes. As expected, the interaction variable between beach width and distance to beach is negative, indicating that property values decrease as the distance from beaches of different widths increases.

The positive and significant relationship between beach width and housing prices indicates that wider beaches increase property values. Using the implicit function theorem, our study shows that for oceanfront homes an additional foot of high tide beach width, specifically the marginal change from 79 to 80 feet, increases the market value of the average oceanfront house and lot by approximately $558. However, there are diminishing returns to beach width. For instance, increasing the width of beach from 119 to 120 feet raises market value by only $371. Also, the value of wider beaches is less for homes farther removed from the beach, presumably because of less need for protection. Using the mean values for houses 1/2 of a mile from the beach, the increase in value is $254 as the beach is widened from 79 to 80 feet, and $169 for an increase from 119 to 120 feet.

Following the example of the housing price model, we can make estimations of the increased value additional beach width adds to vacant lots. For oceanfront lots, the model predicts that an additional foot of sand, an increase from 79 to 80 feet, will increase the value of a vacant lot by $754. Again, there are diminishing returns to wider beaches. If beach width is increased from 119 to 120 feet, for oceanfront lots, the price of a vacant lot will increase by $501. The marginal value of beach width, an increase from 79 to 80 feet, for lots 1/2 mile from the beach is $165, and for an increase from 119 to 120 feet, $110.

8A dummy variable indicating whether a house or lot was located in Surfside or Garden City was tested. However, since it was strongly collinear with the Myrtle Beach variable, and insignificant, it was not included in the final model. Also, since much of the housing in this area is rental property, one would expect very little if any sense of community.

9Benefits are calculated by the implicit function theorem so that the value of a one foot increase in beach width would be equal to: \( \frac{P}{W} (b_w + b_h) \) where \( P \) is the price of the house, the \( b \)'s are the coefficients of the beach width and interaction variable, respectively.

10Including the reduction in property value from the interaction variable DBHT for the house 1/2 mile from the beach decreases the effect of the wider beach from $524 to $129, when the increase is from 79 to 80 feet.
For a given increase in beach width, the value of an oceanfront vacant lot increases by a greater amount than an oceanfront developed lot similarly situated.\textsuperscript{11} For lots farther back, this relationship is reversed. It might be expected that the marginal value of beach width would be greater for a developed lot, as suggested by a model developed by Polinsky and Rubinfeld (1977, p. 167). They suggest that an amenity improvement (e.g., air quality), increases the value of a developed lot by more than the increase in a vacant lot value because of factor substitution in housing production. A house could be built on an empty lot to adjust to the quality of an amenity. In the case of coastal property, houses could be constructed to be more flood resistant, thereby lessening flood damage. Structural adjustments such as building a house on stilts or using sturdier materials, would lessen the damage from flooding for any given level of beach width, thus achieving some of the benefits of a wider beach. Although a house that is already constructed could be similarly altered, the process would be costly.

Coastal communities that are part of the National Flood Insurance Program (NFIP) must meet minimum building code requirements that make structures more flood resistant. Garden City and Surfside Beach entered the program in 1978. A study by Pleasant and London (1990) following 1989's Hurricane Hugo found that no building in Garden City that was built after 1978 suffered major damage or was considered beyond repair. We tested a variable to determine if post 1978 built homes capitalized the value of this increased protection. The dummy variable for houses built after 1978, although of the correct sign, was insignificant. It may be that for property owners with insurance subsidized by the federal government, this added protection is not highly valued.\textsuperscript{12} Possibly, since this is the first serious damage in our sample area from a hurricane in many years, many property owners would have little regard for increased protection.

Conclusions

This study shows that the value of wider beaches accruing to coastal property owners can be estimated using the hedonic approach. The quality of a beach is a major determinant of coastal property value, yet this study is one of the few to have examined this relationship. We find that increasing the beach width from 79 to 80 feet, increases the value oceanfront developed and undeveloped property by $558 and $754, respectively. An increase in beach width from 79 to 80 feet, increases the value of developed and undeveloped lots, located 1/2 mile from the beach, by $254 and $165, respec-

\textsuperscript{11} This result may be misleading since there are only 13 oceanfront lots in our sample, all of which are in Garden City.

\textsuperscript{12} The National Flood Insurance Act of 1968 was not set up to be actuarially sound. About 41 percent of the policies were subsidized in 1993, with an average premium of about $401 for subsidized policies (U.S. General Accounting Office, 1994).
tively. We expect that the willingness to pay for wider beaches is an indication of the size of the storm protection and recreational values produced by wider beaches. While this link between beach quality and property values is expected, the hedonic method permits the quantification of the values. Furthermore, these values can be estimated for properties at different distances from the beach.

Our study is also valuable because of the comparison between vacant lots and developed lots. We find that beach width is directly related to selling price in both cases, although additional beach width increases oceanfront vacant lot prices by more than oceanfront housing prices. This relationship is reversed for property not on the ocean. This could be due to substitution between land and capital on vacant lots thus providing some of the same results of a wider beach. It is important to consider this fact when estimating the value of a site characteristic such as beach quality.

In recent years the use of coastal resources has received greater attention due in part to increasing numbers of people seeking access to coastal beaches. A combination of expansion in recreational capacity and user fees has been shown to be a possible solution to congestion of outdoor resources (Rosenthal, Loomis, and Peterson, 1984). For crowded beaches, this would be a likely possibility as beach nourishment coupled with user fees would provide a viable option. This study provides preliminary evidence that hedonic models can help estimate the values that users and property owners derive from wider beaches. Beach value assessments may be useful to public policymakers who are called upon to make decisions on how much to spend on projects such as beach nourishment and land protection, and who should pay for them. Use of our model can also improve estimations of beach erosion damages, thus leading to more efficient policies. As pressures build from the growing and competing demands on scarce coastal resources, it will become imperative to develop and use studies such as ours in order to make efficient choices among the vying parties.

References


