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National Center for Real Estate Research

The Value of Housing
Characteristics

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THE VALUE OF HOUSING CHARACTERISTICS

by

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EXECUTIVE SUMMARY

THE VALUE OF HOUSING CHARACTERISTICS

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A house is made up of many different components, each of which may add value to (or subtract value from) the asset. The physical attributes that determine the productive appeal of the property include the physical improvements to the site, such as the size, quality, and style of the structure and other factors such as location and age. Per standard appraisal practice, property value is usually affected by (1) physical characteristics and location, (2) conditions of sale, (3) market conditions, and (4) financing.

Hedonic regression analysis is commonly used to estimate the effect of these factors on value. Regression analysis has two strengths: first, it can be used to value a large number of properties and/or factors, and, second, it can be used to explain value as well as estimate it. The ability of regression analysis to explain price means that it can be used to estimate the value of individual characteristics and their marginal contribution to the value of the property. This information can be useful to a number of market participants including homeowners seeking to sell or renovate their properties, real estate agents who may be called upon to value individual components, real estate appraisers when estimating property values, and real estate developers in understanding trends in homebuyers' taste and preferences.

This study applies hedonic analysis to TReND MLS (Philadelphia area) data of detailed property characteristics, and selling prices to estimate the marginal value of individual characteristics of housing. These values can vary with consumers' tastes and preferences, the price of the property, location, etc. Knowing the marginal contribution to value of individual

characteristics can allow better comparisons between similar homes and increase efficiency in home pricing and valuation.

The TReND MLS data for the Philadelphia area contain 28,828 observations from twenty-one counties and include property characteristics and selling prices. The theoretical model is discussed and an empirical model is developed to estimate the value of a number of property characteristics. The variables behave generally as expected. Some major conclusions are:

- each additional 1,000 square feet of living space increases selling price by about 3.3 percent;

- each additional bedroom adds about four percent to price;

- bathrooms have a dramatic effect on selling price with each full bath adding about 24 percent to selling price;

- central air conditioning adds about 12 percent to price;

- nine foot ceilings add about six percent to price;

- a sitting area in the master bedroom increases price by eight percent;

- on average, two-story houses sell for more than one-story houses;

- the negative effects of age are most pronounced for houses 21-30 years old;

- a basement increases value by nine percent;

- a laundry in the basement decreases value by two percent;

- houses with vinyl and aluminum exteriors sell for about four percent less than houses with brick while houses with stucco and wood exteriors sell for about nine percent more;

- contemporary and Dutch style houses command the highest prices;

- a slate or wood shake roof adds value to a house;

- houses with flat roofs sell for about 10 percent less than those with pitched roofs;

- internal features that add the most value are a family room, a dining room, a whirlpool, and a security system;

- fireplaces have a strong, positive effect on selling price with each fireplace adding about 12 percent;

- floors that are wood, tile, or a combination of those add the most value;

- kitchen features that are most valued are a built-in refrigerator, a kitchen island, and a double oven;

- a useable attic adds about two percent to price;

- a garage adds about 13 percent to selling price;

- an in-ground swimming pool adds about eight percent to value while an above ground pool adds no value;

- exterior features that affect selling price most included a patio, a sprinkler system, a paddock, and a tennis court;

- there are no significant price differences for houses that are on flat lots versus sloping lots;

- any location on water, or having a water view, adds value to a house;

- being in close proximity to golf adds about eight percent to the selling price;

- houses advertised as fixer-uppers sell, on average, for 24 percent less than other houses; and

- houses with FHA or VA financing sell for less, on average, than houses with conventional financing.

An Oaxaca decomposition procedure was used to determine if house price differences are due to differences in characteristics across areas or whether they are due to differences in how these characteristics are priced across locations. The "explained" gap shows the difference in selling prices due to differences in characteristics and the "unexplained" portion shows the difference in prices due to variation in the value of the characteristics. For eleven of twenty-one counties, more of the difference in the county price relative to the average price for the area was attributable to the unexplained gap. This implies that the difference in average county selling price compared to the overall average for most counties was primarily due to differences in the pricing of characteristics rather than differences in housing characteristics across counties.

A reduced hedonic model was estimated for counties for which sufficient data were available. Some variables were less significant when the data are segmented. Some major results are:

- for each county, selling price is negatively related to time on the market. However, the coefficient was statistically significant in only four of eight counties;

- structural characteristics (square feet, lot size, bedrooms, bathrooms, central air conditioning) are generally significant for most counties;

- age has a significant negative effect on price in most counties;

- a basement adds value in most counties;

- a family room and dining room tended to be valued across counties;

- a fireplace consistently adds value across counties;

- a garage and in-ground pool significantly increase price although an above ground pool add little value; and

- the time trend variables shows that selling prices were significantly higher at the end of the study period for all counties.

The data were segmented into two time periods, 1996-1999 and 2000-2003 and the full hedonic model was estimated to examine differences in the coefficients across time. Some major conclusions are:

- for most characteristics, the effect on selling price was not significantly different across the two periods;

- there was no significant difference in the number of days on the market across the two time periods;

- the effect of square footage on price declined in the 2000s period while the effect of lot size did not change;

- central air conditioning had a greater effect on price in the latter time period while the effect of bedrooms, bathrooms, house style, house type, basement, or a swimming pool did not change across periods;

- the effect of fireplaces on selling price increased in the 2000s period;

- some internal amenities such as a dining room and built-in refrigerator had a decreasing effect on price while others such as an eat-in kitchen and utility/mud room had an increasing effect; and

- price discounts for fixer-uppers decreased in the 2000s period while houses listed as average-plus sold for greater premiums in the 2000s period.

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- Office
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- Commercial property finance

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