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PRINCIPAL

Statistical Evidence on the Increase in Portland Home Values Correlated with Historic Districts

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There has been a considerable dialog on the economic benefits of forming an historic district for Eastmoreland. The overwhelming evidence from the historic district literature and peer reviewed academic articles is that an historic district designation provides a significant increase in property values. Our extensive literature review indicates that values range from 5.0% to 22.0%.[1] A simple econometric model based on our recent research into property values in Portland indicates that an appropriate value is 6.0% with a 99.9% confidence interval of 1.1% to 11.5%.[2] For Eastmoreland, this means that pursuing the historic district designation will add $44,000 to the average value of existing homes.

The economic argument is straightforward. A home is usually the most important single investment a family makes. Buyers seek stable environments for their investments. If the preference is for a traditional neighborhood with an extensive urban tree canopy, off-street parking, and extensive setbacks, buyers will pay a premium to see their preferences protected by an historic designation.

Portland has traditionally not been data-oriented in its decision making. When doing a literature review of the economics of historic districts, it was clear that while such studies have been undertaken from China to England, not to mention many, many studies in other U.S. cities, we do not have one for Portland. I have been working with two professors on their study on Portland demolition issues – Professors Ellen Bassett of the University of Virginia and Andree Tremoulet of Portland State – but their work is just beginning.

Neighbors in Buckman doubting the land value benefits are quoted in some of the statements we have heard here in Eastmoreland, but their study was simply a comparison of Irvington's home prices with home prices in Irvington, Grant Park, and Hollywood for two years after the formation of the Irvington historic district.[3] The time period was too brief for statistical analysis and no such analysis was undertaken.

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[1] Historic District Econometric Literature Review, Robert McCullough and Charles Noble, July 8, 2016.
[2] Why are house prices so high in the Portland Metropolitan Area?, Robert McCullough, September 5, 2016
[3] http://keepbuckmanfree.org/propertyValues.html

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Irvington, a very similar neighborhood in terms of home value, size, and demographics has fared well since the formation of its historic district, rising from the fifth most valuable neighborhood in the city to the third – passing Eastmoreland and Northwest Heights:

Zillow Prices from 1996 to 2016
for Portland's Five Most Desirable Neighborhoods
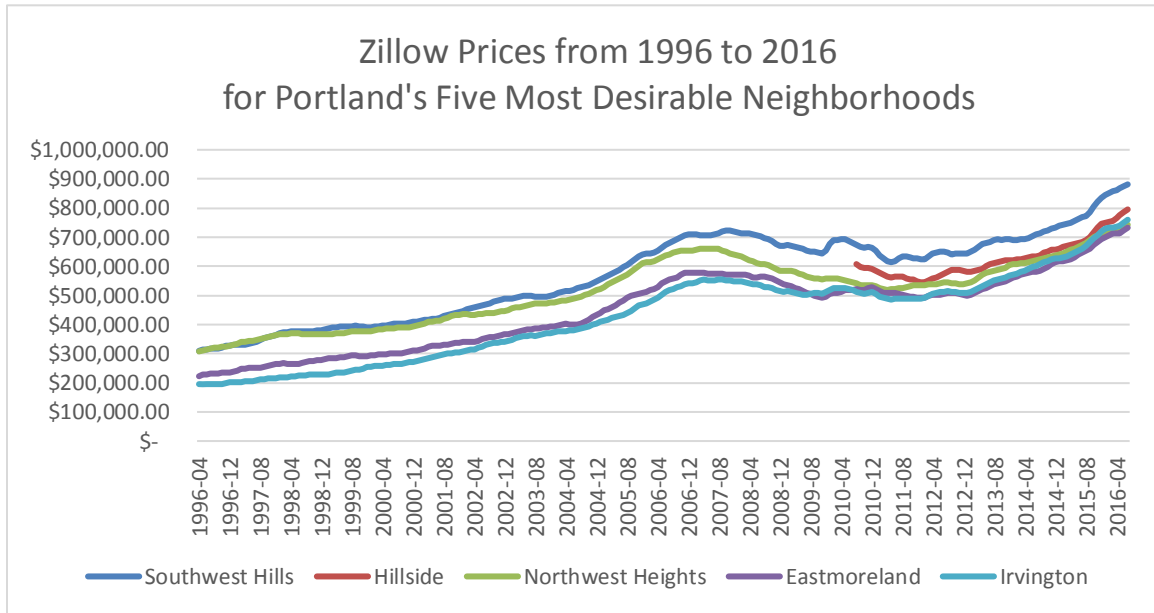
While this tends to reject the argument that Irvington has become less desirable in 2010 when they achieved the historic designation, it is not sufficient to prove that Irvington's change in relative value was caused by the historic designation. This is a standard problem in statistics; absent fairly advanced techniques, most statistics show correlation, not causation.

To get a better sense of the impact of historic district designations, the next step is to statistically analyze the formation dates of Portland's historic districts on property values.

Portland has five historic districts that are similar to the proposed Eastmoreland district:

- The Alphabet Historic District with 635 properties. The district is in the Northwest neighborhood, just north of Burnside. It was established in November 2000.
- Irvington comprising all of the Irvington neighborhood with 2,813 properties. Irvington's historic district was established in October 2010.
- King's Hill with 151 properties. This historic district is part of Goose Hollow and was registered in 1991.
- Ladd's Addition with 1,109 properties. Ladd's Addition is in the Hosford-Abernethy neighborhood. Ladd's Addition was created in 1988.

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- South Portland Historical District has 260 properties. It is in the Corbett-Terwil-
  liger-Lair Hill neighborhood. South Portland was created in July 1998.

Each of these have housing price data available from Zillow for the past twenty years. The
standard practice for estimating the impact of qualitative variables is to use a "dummy
variable." A dummy variable represents data that cannot be a range of different values.
For example, age can have a range of values from birth to extreme old age. However,
being a U.S. citizen has only two values – yes, I am a citizen, or no, I am not a citizen.

In this analysis I have included time and distance from Portland's center, since my previous
study indicated that the city's neighborhoods are changing in value as both a function of
time and distance from the urban core. I have also added a dummy variable for the presence
of an historic district created since 1996. This excludes a dummy variable for Ladd's Ad-
dition and King's Hill. The logic for excluding "counting" their appreciation towards the
benefits of forming an historic district is that these two districts were formed before the
start of the price series. Adding a dummy variable would have the same value for every
month in the study – making the interpretation of the change to an historic district prob-
lematic.

The simple model used in applying the Federal Housing Finance Agency spatial analysis
to Portland was:

$$P_{nt} = e^{a + b\ Distance\ to\ Central\ City + \varepsilon}$$

where P$_{nt}$ is the Zillow price for month t and neighborhood n. The analysis was conducted
for each of the months over the twenty years of Zillow data. The statistical results im-
proved over time and the estimate for b reflected an increasing preference for homes near-
est the center of the city.

This model uses the same data and specification of my last review of Portland housing
prices. The only change is to shift to a pooled time series cross sectional regression and
the inclusion of dummy variables for historic districts registered during the past twenty
years.

The revised pooled time series cross sectional model is:

$$P_{nt} = e^{a + b\ Distance\ to\ Central\ City + c\ Time + d\ Historic\ District\ Dummy\ Variable + \varepsilon}$$

where the Historic District dummy variable is "1" if a historic district has been formed in
that neighborhood on or after time "t", otherwise "0".

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The data comprises 18,954 observations. The regression R^2 is .24 with an F statistic of 2,046.7. The statistical results are significant at the 99.9% level. What this means in everyday English is that the regression is very unlikely to be the result of simple chance. All of the explanatory variables are also significant at the 99.9% level.

I also spent some time considering the issue of the match between the geography of the historic district and the neighborhood. While Irvington comprises the entire neighborhood, other historic districts comprise only part of their neighborhood. I considered using a fraction based on the geographic area in the historic district or the land area within the historic district divided by the total land area in the neighborhood. While tempting, the mathematics of the regression makes the estimated parameter larger. In other words, the assumption using a dummy variable produces more conservative estimates than using a variable based on the percentage of housing or percentage of land area.

In conclusion, the extension of the location based property value model adding time and dummy variables for historic districts formed since 1996 has robust statistical properties. Its results are similar to those in the academic literature, but is far less sophisticated because of the limited amount of data we have in hand.