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The Corner House and Relative Property Values

An Empirical Study in Durham's Hope Valley

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ABSTRACT

This paper analyzes the effect that the positioning of a single-family home on its block has on its open market price. First, background information is presented and the arguments for and against owning a "corner house" are offered from a homebuyer's perspectives. The second part includes the results and discussion of an empirical study of homes in Durham's Hope Valley neighborhood. Drawing from data found at Zillow.com, a hedonic model for estimating property values was employed to determine the premium to which corner houses are valued with respect to houses located in the middle of the block. This study found no evidence that corner homes in Hope Valley are priced any differently than homes located in the middle of the block. Nevertheless paths for future research are recommended and outlined.

I. INTRODUCTION

The determinants of the value of housing have long been studied and constitute a large portion of the literature published in journals of urban economics and real estate. First and foremost, a house, as an asset, is a collection of various components, each of which add value to the whole. These physical elements comprise the characteristics most often advertised on real estate websites such as lot size, living space, number of bedrooms, garage, etc. Second, the value of a home is inextricably linked to overall market conditions, both within the region of sale by the law of supply and demand and nationally (or internationally) by interest rates and credit markets. Finally, housing's most unique feature as an asset, its positional permanence, profoundly affects its value and therefore, the price it might fetch on the open market.

Thus, the real estate mantra "location, location, location", while almost laughably clichéd, does not lack for support from modern economic theory. Studies have demonstrated that single-family homes with proximity to small neighborhood parks were valued as much as 13% higher[1], whereas those in close proximity to mobile home parks experienced negative effects on selling price[2], lending credence to the hackneyed expression. However, the focus of much of this research has long been the value added to (or deducted from) a property due to nearby features and amenities. This paper mitigates these effects as much as possible and adds controls for the physical differences among homes on the same street in order to examine the potential influence a home's position on its block might have on its value.

A simple exploration into the value of corner houses—here defined as those homes built on lots at the intersection of two streets, and therefore with at least two sides exposed to the public view—yields a surprisingly deep fissure in consumer preferences. Some Americans love the idea of owning a corner lot home, chiefly because of their generally larger lot size and accessibility and visibility from multiple sides. On the other hand many claim they would never own a corner house, citing lack of privacy and additional maintenance and upkeep. In addition, some states allow municipalities to assess double the taxes for two street "frontages", though no inquiry into Durham's policy regarding double assessment for corner lots was performed for this paper. Realtors are also divided, some claiming corner lots are more likely to be burglarized, while others counter that a more easily visible house, like a corner home, is safer. These contrasting views of alarming fervor and conviction provide an enticing opportunity to test Americans preferences empirically.

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[1] Espey, M., & Owusu-Edusei, K. (2001).
[2] Munneke, H. J., & Slawson, V. C. (1999).

From an economic perspective, corner houses offer a notably distinct home ownership experience to a potential buyer. Considering their uniqueness, homes on corner lots may fall within Haurin's description of the atypicality effect[3]. Under this theory, exceptional houses will attract a higher variance in offers from potential buyers. A homeowner's rational reaction to a higher variance of offers is to leave the home on the market longer than the average house in order to attract a higher number of offers. This effect was extended by Turnbull to include analysis of housing prices which the conclusion that an atypical home sells at a discount[4]. This follows intuitively considering atypical homes take longer to sell: controlling for time on the market, the atypical home will sell for less than a more average home.

II. DATA & METHODOLOGY

In this empirical study, data were gathered from Zillow.com, a leading online real estate database. The data are accessible by the public and include the year each home was built, its lot size, square footage of living space, number of bedrooms and bathrooms, and each home's Zestimate. The Zestimate is an estimated market valuation for a home generated by Zillow's formula with public and private information as inputs. For the purposes of this study, the Zestimate will serve as a proxy for the value of each home. The data set covers 32 homes selected from the Hope Valley neighborhood, and is subcategorized into 12 corner homes and 20 middle homes. The homes were chosen at random using a random number generator from lists compiled of corner homes and middle homes in the appropriate area. The means and standard deviations of the relevant variables can be found in Table 1 in the Appendix along with a map of Hope Valley.

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[3] Haurin, D. (1988).
[4] Turnbull, G. (2006).

The methodology undertaken involves a traditional hedonic pricing model implemented to isolate the corner house indicator variable's effect. This model assumes that the price, P, of a home—or Zestimate in this case—can be described as some function $P = f(X_i)$, where X_i represents some combination of features of the home . Following convention, the semi-log form of housing price is used. The equation used in evaluating the hedonic regression model is:

$$LogP_i = \beta_o + \beta_1 Bed_i + \beta_2 Bath_i + \beta_3 Sqft_i + \beta_4 Corner_i + \varepsilon_i$$

where P_i is the Zestimate and Bed_i, $Bath_i$, $Sqft_i$, and $Corner_i$ are respectively the number of bedrooms, number of bathrooms, square footage of living area, and an indicator variable equal to one if the house is on a corner and zero otherwise. Also, the β_i terms are parameters and ε_i represents the error terms. Each parameter β_i represents the elasticity of housing price with respect to its associated variable. Therefore,

$$\beta_4 = \delta P_i / \delta Corner_i = (\Delta logP_i / logP_i) / (\Delta Corner_i / Corner_i)$$

This model, while simple, includes some of the most powerful indicators of overall housing price to which the indicator variable $Corner_i$ was added. In this way, the explanatory power of $Corner_i$ can be determined while controlling as best as possible for the most important, traditional variables. In addition, it is worth noting that both the age of the home and the lot size were intentionally discarded as explanatory variables. Further research into the Hope Valley region revealed that the neighborhood is split between very old and brand new homes with large variation in lot size. Statistical testing revealed that both of these variables were surprisingly terrible at predicting home values for the randomly selected sample.

III. EMPIRICAL RESULTS & ANALYSIS

Table 2

logP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
bed	.2061717	.0986409	2.09	0.046	.0037773	.4085661
bath	-.1045652	.0726219	-1.44	0.161	-.253573	.0444427
sqft	.0002624	.0000634	4.14	0.000	.0001323	.0003926
corner	.1195867	.1220071	0.98	0.336	-.1307513	.3699247
_cons	11.75488	.2888625	40.69	0.000	11.16218	12.34758

The results of the hedonic pricing regression analysis are displayed above in Table 2. The overall R^2 of the regression was 0.7386 demonstrating that quite a large portion of the variation in price can be explained by variation in just a few variables. However, a single variable regression conducting using price and square footage yields an R^2 of 0.6782. This would suggest that square footage is by far the best predictor of housing prices in Hope Valley. Further study of table 2 reveals that square footage is the only variable with a significant t-statistic at the $p < 0.01$ level. In fact, the t-statistic for the indicator variable $Corner_i$ is not significant at any reasonable p-level. The model therefore provides no evidence that a corner home is treated any different on the market than a middle home.

One such explanation for this is the nature of the Hope Valley neighborhood. As one of the most secluded and affluent neighborhoods in Durham, fear of an increased chance of burglary and excessive noise and light from an additional side of the house are no longer issues to deter buyers. Additionally, assuming a potential homebuyer in this affluent neighborhood would have a high annual income, such negatives as higher maintenance (e.g. more grass to cut, more gardening, more leaves to collect) might not exist for a homeowner that hires others for

these tasks. In this sense, perhaps the nature of the quiet neighborhood is masking what would normally be a more pronounced atypicality and therefore lower demand for corner homes.

Additionally, in Hope Valley there is much more space between homes than the average street in Durham, and the lot sizes are significantly larger as well. In this way, perhaps the major benefits of owning a corner house in a more urban setting—larger lot size and less restricted positioning—might also be mitigated. If so, the atypicality of corner homes would be further reduced to a negligible level. It is therefore imperative that future research on this topic focus on a greater diversity of neighborhoods to determine the aggregate effect in Durham.

IV. CONCLUSIONS & LIMITATIONS

A hedonic pricing model was implemented to analyze the effect that the position of a house had on its price, specifically to determine if a corner house sells at a discount to its peers. The results of the analysis produced the unexciting result that in Hope Valley no such considerations are taken, as there is no evidence that a house on a corner is priced any differently than a house in the middle of the block.

However, more research can certainly be done on this subject. This study was severely limited in scope, collecting a very small sample size from only a single neighborhood in Durham. Future attempts ought to include many hundreds more observations from a greater variety of cities and neighborhoods. In addition, the hedonic model used included only a few explanatory variables. Most notably, there was no control for the time each home was on the market before sale as estimates for housing prices were used. In subsequent studies, greater care could be taken to determine a more robust model to predict housing prices, in particular a time-oriented analysis of sale prices. Lastly, Zestimates were used as a proxy for housing prices.

The degree to which these estimates are accurate has been the subject of heated debate. The consensus seems to be, however, that while most of the estimates are reasonably accurate (particularly given the lack of knowledge and inputs into Zillow's proprietary formula), when the estimates are wrong, they can be extraordinarily incorrect. If this is true, alternatives should be sought as use for housing prices. Including these factors would certainly allow for more insightful discoveries and implications in the future.

Works Cited

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Appendix

Table 1

		Zestimate	Beds	Bath	Square Feet	Lot size (acres)	Year Built
Averages	Corner Houses	632103	4.3	4.1	3816	0.78	1977
	Middle Houses	919973	4.6	4.5	5170	0.78	1981
	Aggregate	812022	4.5	4.4	4662	0.78	1980

		Zestimate	Beds	Bath	Square Feet	Lot size (acres)	Year Built
Standard Dev	Corner Houses	261400	0.78	1.28	1022	0.34	15
	Middle Houses	503536	0.89	1.37	1717	0.39	22
	Aggregate	446874	0.84	1	1619	0.36	19

Map of Hope Valley Neighborhood