

**Geographical Scope of University Expansion
and its Impact on Land and Housing Markets –
A Method and its Demonstration
with a Case Study of an Urban University**

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**Lincoln Institute of Land Policy
Working Paper**

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Lincoln Institute Product Code: WP06MK

Abstract

The discussion on the role of universities in the community has come under sharp focus during the last two decades. Universities are increasingly being seen as engines for economic growth and community development. Although an intuitive understanding of the possibilities of positive impact of universities on the community is widely shared, actual research on such impacts is inadequate. In addition, impacts are often understood more in terms of the general economy and much less in terms of impacts on specific segments of the market. The most important weakness of the debate relates to the lack of rigorous methodology to establish the geographical scope of the impact. Drawing insights from spatial statistics, this research establishes a more rigorous methodology to estimate the geographical scope of the impact on housing and land markets and estimates the impact through spatial hedonic pricing models. In addition, it analyzes two cases of university initiatives that have positively impacted their surrounding land and housing markets to draw policy insights.

About the Author

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The author wishes to thank Maybelle Bennet, Hassan Minor and Rodney Green of Howard University, Myla Moss of LeDroit Park Civic Association, Dominic Moulden of MANNA CDC, and Eugenie Birch, Susan Wachter, Dennis P. Culhane, Lucy Kerman, John Kromer, and Tony Sorrentino of University of Pennsylvania for sharing information and discussions about university initiatives in LeDroit Park and West Philly neighborhoods.

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Introduction:

In a 1980 article in *Urban Education*, John A. Dillon, drawing parallels between the evolution of land-grant universities in the 19th century and that of urban universities in the 20th century argued that while the land-grant universities largely reached their objectives, urban universities are in the process of finding their way toward the kind of support and acceptance required to make the vital contributions which are needed¹. Earlier in its 1972 report, Carnegie Commission on Higher Education had concluded. "...we need similar commitment to direct the attention of our colleges and universities to the concerns of urban America."² The article further identified the problems facing urban universities in achieving the staggering potentials for good. Several years later, in another article in *Urban Education*, Carol Severino, outlined the history of ambivalence and ambiguity about urban universities and their missions and objectives³. The article argued that reconceptualizations of urban problems in terms of more general human problems and of urban universities as metropolitan or generic deflected attention from urban institutions and inner cities. These are by no means representative of all the discussions and arguments made throughout the 20th century. However, arguably, most of these early discussions were centered around either the curriculum plans that were offered at these urban institutions and how they reflected the city in which they were located, or the physical layout of the campuses in how much they differed from more traditional universities in rural pastoral settings.

Lately, the discussion on the role of urban universities no longer emphasizes only the curriculum plans and the campus layouts in ways that they separate the surrounding areas from the campus. It includes numerous ideas that include various forms of development, provision of infrastructure and services to name a few. The quality of comprehensiveness that was considered desirable of urban universities mostly in terms of curriculum offerings now includes partnerships, community relations, and real estate development. It can be argued that quite possibly, the discussion now accepts the importance of urban universities for the well being of urban areas and to a large extent expects it to respond to the surrounding environment in positive and cooperative ways. This is evident in the 2002 report by Initiative for Competitive Inner Cities, and the first issue of Economic Development Information Coalition's quarterly magazine devoted to the role of universities in economic growth⁴. With such acceptance, this paper is an attempt to move

¹ The Evolution of the American Urban University, by John A. Dillon Jr. *Urban Education*, (1980) 15: 33-48.

² Ibid. Page 34.

³ The Idea of an Urban University: A History and Rhetoric of Ambivalence and Ambiguity, by Carol Severino, (1996) 31: 291-313.

⁴ Initiative for a Competitive Inner City (ICIC). 2002. *Leveraging Colleges and Universities for Urban Economic Development: An Action Agenda*. Boston: CEOs for Cities.
--Economic Development America. Winter 2004. Economic Development Information Coalition.

the discussion further by focusing on impacts that urban universities may have on the land and housing market. It establishes a methodology to measure such impacts and makes policy recommendations that in the view of the author will further the agenda of comprehensive development in the surrounding communities with the university at the center.

The Context

Most universities in urban settings have long experience of sometimes adverse and sometimes cooperative relationships with their respective cities in general and immediate surroundings in particular. However, the discussion has normally occurred at one of the two levels. First, at the conceptual level, the role of universities as academic institutions of higher learning in the society has been of interest for both pedagogical and economic reasons for a very long time. Second at the practical level, most universities in general and urban universities in particular had to pay attention to the complexities of land acquisition and land development. These complexities had to be addressed while trying to maintain some balance between the interests of their direct constituencies (students, faculty, staff and alumni) and indirect constituencies (population in the surrounding community and the city)⁵. At the first level, the university is assumed to be an actor in a relatively large economic unit. At the second level, the university is viewed as a real estate developer with relatively stronger sensitivity toward its environment. Research and planning at both levels could benefit from an understanding of the university's impact on land and housing markets. This paper is aimed at developing a methodologically rigorous approach to estimate the boundaries of such impact.

If the role of the university were to be discussed within the context of the knowledge economy and their impact on the economic well being of a region or a nation the geographical scope would not add much value to the discussion. Depending on the geographical scope of policy or planning objectives, the impact boundaries can be chosen from those of the city, the metropolitan area, the state or even the nation itself within a global economy. Alternatively, if the universities were to view their roles only in conjunction with their direct constituencies in a traditional sense⁶, boundaries again will not add much value. In this case, the boundary is contingent upon individual demands that are met in a piecemeal fashion as the situation develops. Both of these approaches largely ignored the impact of a university in its surrounding communities although the oft-repeated phrases with negative connotations such as “town-gown,” “ivory towers,” and “800 pound Gorilla sitting *on* ___ rather than sitting *with*” have been with us for quite some time⁷.

⁵ For an overview see *The University as Urban Developer: Case Studies and Analysis*, edited by David C. Perry and Wim Wiewel (2005), M. E. Sharpe, Armonk, NY

⁶ Traditionally, the direct constituencies have included the students, the university employees, and the alumni. The demands have mostly been in terms of student housing, employee parking, and sports and athletic facilities.

⁷ A broad history of university-community relations can be found in chapter 2, pages 10-38 of the dissertation titled “The Impact of Urban Universities on Neighborhood Housing Markets: University Activity and Inactivity” by Alvaro Cortes, Wayne State University, 2002.

Lately, however, the interests of a university have been viewed as intertwined with those of its surrounding communities. In this case, it becomes important to figure out what those surrounding communities are, how they interact with the university, and the potential for articulating a collective interest that benefits both, the university and the surrounding communities. An important document in this regard was published in 2002⁸. This document outlined an action agenda for universities, city and community leaders, and business leaders and argued that with a collaborative strategy for economic development in the inner cities, universities can play a role hitherto unknown in the economic development plans and strategies. Since its publication, there has been a fairly high level of interest in the impact of universities in the housing and land markets. This interest is not limited to economic impact studies or campus master plans. It goes beyond the piecemeal efforts to address the short-term needs of the university and views the university as an anchor and primary source for economic revitalization in the communities that surround it.

The lack of information on a methodologically rigorous approach to estimating impact boundaries are evidenced in both economic impact studies and campus development plans. Most studies that measure the impact of university expenditure on the metropolitan economy to be used as justification for some stated objectives are often unclear about the boundaries of such impacts. The geographical scope of these plans is assumed to be some conventional economic, political or administrative boundaries (e.g. central city, county, metropolitan statistical area) in conjunction with some notion of adjacency to the university. Campus development plans or initiatives on the other hand are mostly prepared based on the detailed and immediate interests of students, faculty, staff and the alumni. These plans have much smaller boundaries and often do not take into consideration the impact they will likely have on the surrounding land and housing markets. In subsequent studies of those plans, boundaries for such plans/initiatives are often determined based on notions of natural boundaries, individual perceptions of the decision-makers and influence of local outside actors among several other ad hoc bases. For the purposes of sound decision-making, establishing such geographical boundary is of fundamental importance that should be logically sound and procedurally clear, and must precede any analysis of the effects and impacts of expansion plans.

Central Question:

There are two main questions that this research attempts to answer. First, is there a method to estimate the geographical scope of impact that an expansion plan of a university has on the housing and land markets? Second, what variables should be included and modeled in the estimates of the impact? This study will demonstrate the method using data that is relevant for Jackson State University, Jackson, MS. Additionally; it will include two brief analyses of successful initiatives by University of Pennsylvania and Howard University.

⁸ Initiative for a Competitive Inner City (ICIC). 2002. Leveraging Colleges and Universities for Urban Economic Development: An Action Agenda. Boston: CEOs for Cities.

Theoretical Description and Model Specification:

Intraurban house price variation has been studied in detail by several researchers⁹. One of the problems with the hedonic price models was that they were aspatial although the phenomenon that they were trying to model was essentially spatial in nature. The consequence is a misspecification error. In order to correct for this problem several researchers have built spatial hedonic function and a wide variety of such models are available for application. The more popular of these specifications is the one in which after establishing spatial autocorrelation a variogram is constructed. The variogram yields the range beyond which data values are not correlated. Based on the fit between the empirical variogram to theoretical variogram a weight matrix can be estimated. The spatial specification of the hedonic price model will then have three sets of independent variables: structural characteristics, location characteristics and lastly the weight matrix. Within the set of location characteristics, there is another small set that specifies the distance between the location of the university expansion and each sold house in the dataset. Hence, this approach will accomplish three objectives: visualize the space in which the impact occurs, describe the scope of impact, and model the strength of impact.

We begin with the linear model in which the sale price is modeled as a function of structural attributes of the sold house and the neighborhood characteristics of the location of the house. In the linear specification one would expect that spatial misspecification. Such a misspecification could be detected in several different ways. In this research we rely on two measures: empirical variogram and the estimate of Moran's "I" for the residuals. The variogram is a crude indicator of the range in which values of an observation has influence over other observations. Moran's "I" is another indicator that has been widely used for detecting spatial autocorrelation. The value of Moran's "I" ranges between "-1" and "+1" with the expected value in case of no spatial autocorrelation to be equal to $-1/(n-1)$. A value closer to "+1" for this index indicates the presence of positive spatial autocorrelation and a value closer to "-1" indicates the presence of negative spatial autocorrelation, which would further suggest that an explicit spatial specification be made for the model. If the variogram produced shows no discernible spatial dependence and the index value is statistically insignificant, spatial considerations become irrelevant. Once a reasonable hedonic model is determined, the impact of the university can be modeled as an issue of accessibility. Each observation is assigned a value for its distance from the university and regressed to find out if the effect is significant and also whether it is negative or positive.

Hence the following models are considered. First, we consider the simple linear model with sale price as a function of structural attributes of the house and the neighborhood characteristics.

$$P = f(S, N) \quad \text{-----}(1)$$

⁹ For a brief overview please see Spatial Analysis of the Relationship between Housing Values and Investments in Transportation Infrastructure, by Brian A. Mikelbank. Annals of Regional Science (2004) 38:705-726.

Census tracts are used as proxies for neighborhood. “P” represents the price, “S” represents the structural attributes and “N” represents the neighborhood characteristics. The respective coefficients are denoted by “ β_s ” and “ β_n .”

Second, we consider the log linear model with natural logarithm of the sale price as a function of structural attributes of the house and the neighborhood characteristics.

$$Ln(P) = f(S, N) \text{-----}(2)$$

Third, we examine the residual structure, consider the variogram and estimate the Moran’s “I” to determine if further spatial specification is necessary. If yes, a weight matrix is created based on the fit between the empirical variogram and the model variogram. This weight matrix is then used in the spatial specification of sale price as a function of structural attributes of the house, the neighborhood characteristics, and the weight matrix.

$$P = f(S, N, W) \text{-----}(3)$$

$$Ln(P) = f(S, N, W) \text{-----}(4)$$

“W” represents the weight matrix and its coefficient is denoted by “ ρ .”

Fourth, we include the distance between the university and all the data points as a proxy for accessibility to all the functions that a university performs and resources that I may provide.

$$P = f(S, N, W, D) \text{-----}(5) \text{ spatial specification}$$

$$Ln(P) = f(S, N, W, D) \text{-----}(6) \text{ spatial specification}$$

“D” represents the distance between the university and all the data points. Its coefficient is denoted by “ β_d .”

If the spatial specification is determined to be irrelevant the equations take the following forms.

$$P = f(S, N, D) \text{-----}(7) \text{ aspatial specification}$$

$$Ln(P) = f(S, N, D) \text{-----}(8) \text{ aspatial specification}$$

Data and Variables:

Three main sources of data were used in the analysis. The first set of data came from the county assessor’s “Land Roll files.” Converting the Land Roll data to an easier to manipulate format to be used for statistical analysis has proven to be quite a challenge. Nonetheless no other data source (private vendors or another county or city office) could be found for sale data. This dataset lists reported sales up to 1999. Since homebuyers are not obliged to report the price of their homes to the assessor’s office, the data may have a self-selection bias. In addition, due to missing values in important variables such as number of rooms, the actual number of usable observation is reduced to 1460. In spite of this data limitation, this was the only source for the structural attributes of the sold homes in the city of Jackson. The second set of data came from the Department of Planning for the City of Jackson. This data included the base parcel maps with very little usable attribute variables. In addition, the data was in unknown projection, which made it

difficult to visualize the housing market in the city with additional census data. Fortunately, that problem has been fixed now. The third set of data was downloaded from the Bureau of Census on the neighborhood characteristics. The data from all the three sources have been combined to generate a Geographic Information System (GIS) dataset that was used in the analysis.

The following is the list of variables that have been included in the model presented in this initial draft report. It is worth noting that some of the structural variables such as exterior wall, plumbing, Electricity, roof type and roof material were excluded from the analysis for one or both of the following reasons. Some of the data had too many missing values and in a stepwise regression addition of those variables did not improve the regression results in a statistically significant manner.

Table 1

	Mean	Std. Deviation	Description
Saleamt	76,970	53819	Sale Price (in Dollars)
Basarea	1510	498.16	Total living area (in Sq.Ft)
Cond	65.93	15.82	Condition (Percentage rated good)
Rooms	5.71	1.65	Total number of rooms
Floor			Floor Material (Dummy variable)
Intfnsh			Interior Finish (Dummy variable)
Story	1.16	0.40	Number of Stories
Bath	1.90	0.82	Number of Bathrooms
Yr			Sale Year
Minorty	0.52	0.30	Percentage Minority (1999)
Mhhinc	40,182	15,712	Median Household Income (1999)
Vacrate	0.07	0.03	Vacancy Rate (1999)
Pownocc	0.64	0.20	Percent Owner Occupied (1999)
Qtrtr			Sale Quarter (Dummy Variable)
Age	26	17.69	Age of House
DistJsu	5.21	1.98	Distance to Jackson State University (miles)
N=1460			

Empirical Results and Analysis:

The first model was fitted to data with the following results.

Table 2: Regression 1

Variable	Coefficients	t-statistic	p-value
Constant	-196878.42	-6.32	0.00
Adjarea	25.09	5.86	0.00
AdjareaSQ	0.00	5.34	0.00
Rooms	1627.72	3.75	0.00
Bath	4498.35	3.68	0.00
Story	7202.44	3.47	0.00
Cond	485.94	2.86	0.00
Age	-619.32	-2.97	0.00
AgeSQ	2.09	3.04	0.00
Yr	1481.83	4.31	0.00
Minority	-29465.61	-8.55	0.00
Mhhinc	0.17	2.01	0.04
Vacrate	10848.18	0.44	0.66
Pownocc	-23148.25	-4.00	0.00
Q1	4532.79	2.41	0.02
Q2	2122.20	1.16	0.25
Q3	1741.59	0.87	0.38
Flr4	24655.39	4.30	0.00
Flr8	26593.06	4.95	0.00
Flr10	14621.99	2.30	0.02
Flr14	16688.45	3.08	0.00
Flr32	18026.61	2.56	0.01
Ifnsh5	32466.86	2.82	0.00
Ifnsh6	23753.02	2.22	0.03
Ifnsh7	24942.91	2.38	0.02

Dependent Variable: Sale Price, Adjusted $R^2 = 0.78$, $N = 1460$

The above results are surprisingly very good and in accordance with generally expected signs and statistical significance with very few exceptions. One needs to be careful with the explanation of hedonic regression models due to the fact that several of the variables are often interrelated. For example more expensive homes are likely to have similar structural characteristics. Due to this reason strictly statistical interpretations should be seen as merely statistical and substantive meaning should not be assigned to them without further basis. The adjusted R^2 value of 0.78 is quite high for a model with such a relatively small set of variables. The variable of adjusted area of the house is statistically significant and positively related to sale price. However, the coefficient for squared adjusted area is significant and close to zero. This suggests that as houses get larger the effect wanes. The coefficients for rooms, bathrooms, number of stories, and physical condition are both significant and positive as expected. Coefficient for the age of the

house is negative and statistically significant. However, the coefficient for its square is positive and significant. One plausible explanation for this could be that houses depreciate as they get older but the rate of depreciation decreases, as very old houses are valued for historic reasons or their design and style. The coefficient for the year of sale is positive and significant and it simply reflects the average increase in the mean price. Percentage minority has a negative and significant coefficient. This is borne by the fact that more expensive neighborhoods in the county have relatively lower minority population. The coefficient for median household income in the neighborhood is positive and statistically significant. The coefficients for vacancy rate and percentage owner occupied are quite surprising. Vacancy rate has an insignificant coefficient while percentage owner occupied has a significant but negative coefficient. Quarterly sales suggest that sale in the first quarter fetches higher price than other quarters. The dummy variables for type of floor and interior finish have positive and significant coefficients. It should be noted that these dummies are likely picking up the effects of unmeasured house-quality variables.

The second model with log of sale price as the dependent variable was fitted to data with the following results.

Table 3: Regression 2

Variable	Coefficients	t-statistic	p-value
Constant	8.079418	27.74	0.00
Adjarea	0.000766	19.13	0.00
AdjareaSQ	0.000000	-9.34	0.00
Rooms	0.007247	1.79	0.07
Bath	0.035701	3.13	0.00
Story	0.041507	2.14	0.03
Cond	0.010870	6.85	0.00
Age	0.000913	0.47	0.64
AgeSQ	0.000000	0.08	0.94
Yr	0.007225	2.25	0.02
Minorty	-0.289247	-8.97	0.00
Mhhinc	0.000005	6.59	0.00
Vacrate	-0.702151	-3.04	0.00
Pownocc	-0.339840	-6.28	0.00
Q1	0.047824	2.72	0.01
Q2	0.041214	2.41	0.02
Q3	0.031804	1.70	0.09
Flr4	0.188281	3.52	0.00
Flr8	0.195362	3.90	0.00
Flr10	0.160200	2.70	0.01
Flr14	0.205850	4.07	0.00
Flr32	0.231999	3.53	0.00
Ifnsh5	0.329473	3.07	0.00
Ifnsh6	0.228026	2.28	0.02
Ifnsh7	0.270790	2.76	0.01

Dependent Variable: Log of Sale Price, Adjusted R² = 0.83,
N = 1460

These results were again generally in line with expected signs and significance. This model however, has a significantly better fit, which is evidenced by the higher R^2 value of 0.83. Arguably, this model is closer to the original intent of hedonic models, which was to estimate the marginal attributes of the prices of homes. However, the interpretations are normally easier for models with sale price as dependent variable. In this case, we find that rooms, and age become insignificant suggesting that marginal contributions of these variables are either statistically not different from zero or being captured on other structural variables. Other variable of note are those of vacancy rate and the dummy for the second quarter. The coefficient for vacancy rate become significant while changing its sign to negative which is more in line with what one would expect. The coefficient for the second quarter becomes significant with the same positive sign, which is to suggest that the marginal contribution is significantly different from zero. The rest of the variables remain largely unchanged.

Now we look at the variogram. Range of 11437.51 feet translates to 2.17 miles. The value of Global Moran's "I" is estimated at 0.004316. Therefore, we fail to reject the null hypothesis that there is no spatial autocorrelation. This is to say that no explicit treatment of the spatial weight matrix is warranted. Compounded with the fact that the range of variogram does not occur at a shorter distance suggests that although some spatial autocorrelation might be present in the data it may not have much effect on the OLS estimates. In order to be further assured, we look at the histogram of the residuals for regression 2 and find that the residuals are quite normally distributed. Hence we can conclude that spatial specification is unnecessary and the OLS estimators are both unbiased and efficient.

Figure 1

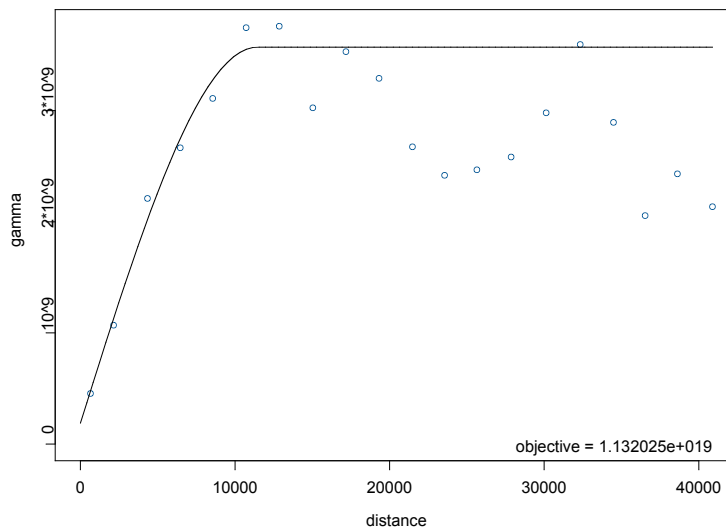
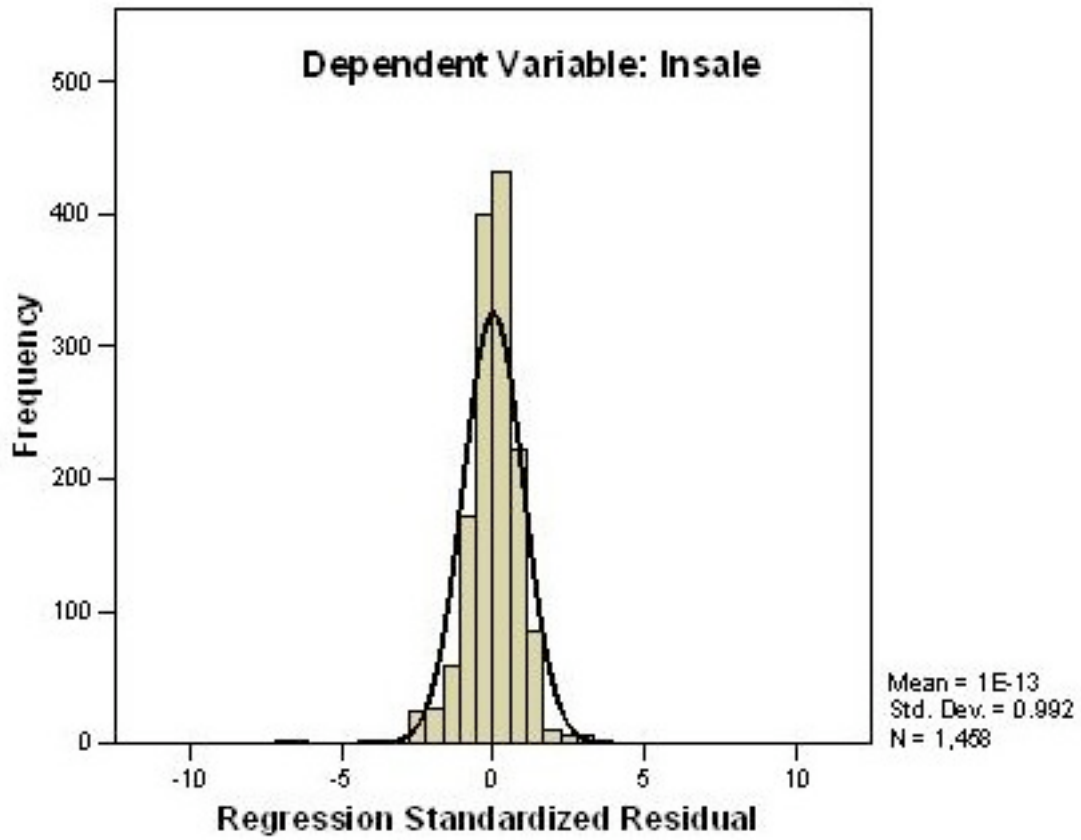


Figure 2



Since the spatial specification is deemed unnecessary we can skip models 3 – 6 and proceed to estimate models 7 and 8 with similar specification as earlier. Model 7 was fitted to data with the following results.

Table 4: Regression 7

Variable	Coefficients	t-statistic	p-value
Constant	-212854.62	-6.81	0.00
Adjarea	25.75	6.03	0.00
AdjareaSQ	0.00	5.23	0.00
Rooms	1437.85	3.31	0.00
Bath	5043.99	4.12	0.00
Story	6895.81	3.33	0.00
Cond	518.29	3.06	0.00
Age	-552.24	-2.66	0.01
AgeSQ	1.86	2.71	0.01
Yr	1429.20	4.17	0.00
Minorty	-31173.44	-8.55	0.00
Mhhinc	0.00	0.03	0.98
Vacrate	43590.84	1.69	0.09
Pownocc	-18791.37	-3.05	0.00
Q1	4407.35	2.36	0.02
Q2	2064.53	1.14	0.26
Q3	1494.54	0.75	0.45
Flr4	24508.00	4.30	0.00
Flr8	27797.63	5.19	0.00
Flr10	15851.62	2.51	0.01
Flr14	17503.90	3.25	0.00
Flr32	19057.52	2.72	0.01
Ifnsh5	29944.73	2.61	0.01
Ifnsh6	24811.23	2.33	0.02
Ifnsh7	24842.50	2.38	0.02
Distjsu	6622.85	3.42	0.00
DistSQ	-515.41	-2.70	0.01

Dependent Variable: Log of Sale Price, Adjusted $R^2 = 0.785$, $N = 1460$

This model is found to be remarkably similar to the first model with sale price as the dependent variable. Most of the variables remain unchanged in their signs and show relatively stable influence on prices with the exception of median household income. The coefficient for this variable now becomes insignificant. This indicates that the influence of median household income is being captured elsewhere. The variable for distance from the university is measured in miles. The positive and statistically significant coefficient indicates that each additional mile away from the university's main campus, housing prices on average go up by almost sixty six hundred dollars. However, the coefficient for the distance squared is significant and opposite in sign. This is to suggest that as the distance from the university increases, on average the effect wanes and then becomes negative. The results of log linear model are given in the following table.

Table 5: Regression 8

Variable	Coefficients	t-statistic	p-value
Constant	7.745080	27.18	0.00
Adjarea	0.000775	19.92	0.00
AdjareaSQ	0.000000	-9.83	0.00
Bath	0.047458	4.26	0.00
Story	0.033714	1.79	0.07
Cond	0.011302	7.31	0.00
Age	0.002248	1.19	0.24
AgeSQ	-0.000004	-0.69	0.49
Yr	0.006513	2.08	0.04
Minorty	-0.304871	-9.16	0.00
Mhhinc	0.000002	2.06	0.04
Vacrate	-0.058439	-0.25	0.80
Pownocc	-0.222268	-3.95	0.00
Q1	0.044371	2.60	0.01
Q2	0.039039	2.35	0.02
Q3	0.026424	1.45	0.15
Rooms	0.003290	0.83	0.41
Flr4	0.189340	3.64	0.00
Flr8	0.224272	4.59	0.00
Flr10	0.179437	3.11	0.00
Flr14	0.221048	4.50	0.00
Flr32	0.251180	3.93	0.00
Ifnsh5	0.280945	2.69	0.01
Ifnsh6	0.250831	2.58	0.01
Ifnsh7	0.270535	2.84	0.00
Distjsu	0.113742	6.44	0.00
DistSQ	-0.007941	-4.57	0.00

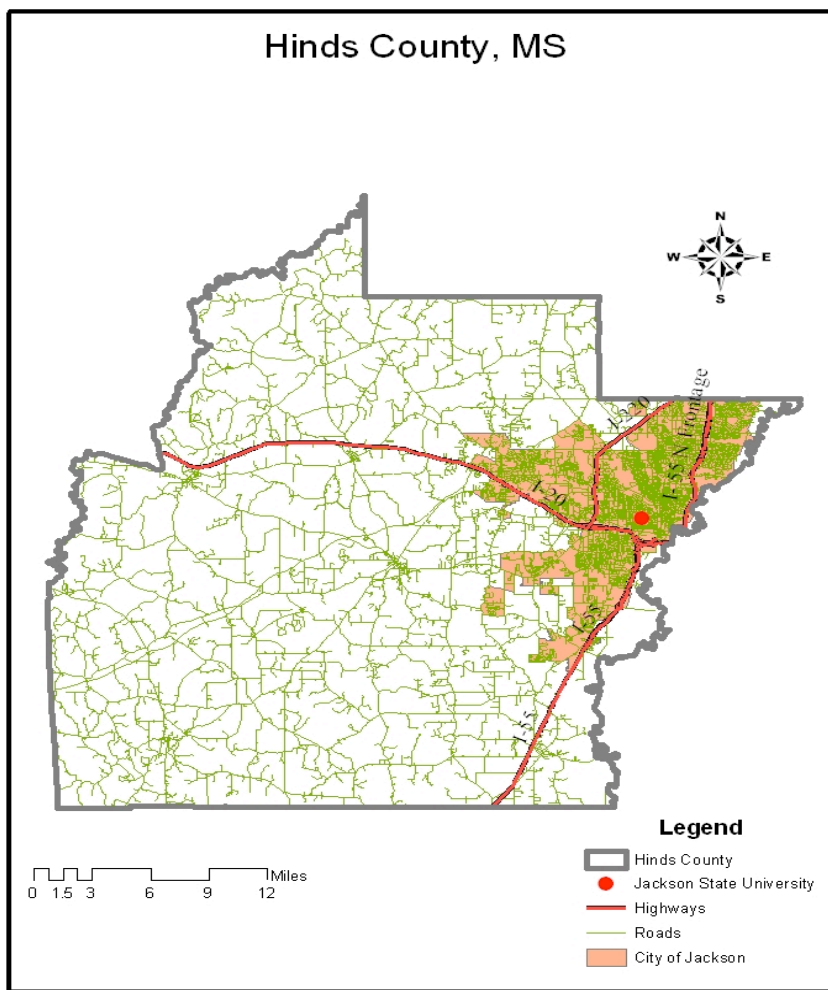
Dependent Variable: Log of Sale Price, Adjusted $R^2 = 0.84$, $N = 1460$

This model has the best fit, which is evidenced by the highest R^2 value of 0.84. The variables of highest interest (distance to the university) remain unchanged in both direction and significance. For each additional mile from the campus, the average price of a house increases by about 11%. As found earlier, this influence is reversed as the distance increases, which is evidenced by the negative and significant coefficient for the square of distance. As Jackson State University makes initiatives aimed at revitalizing its surrounding community, the same regression model can be implemented and used for judging the impact for a post-test analysis.

Discussion:

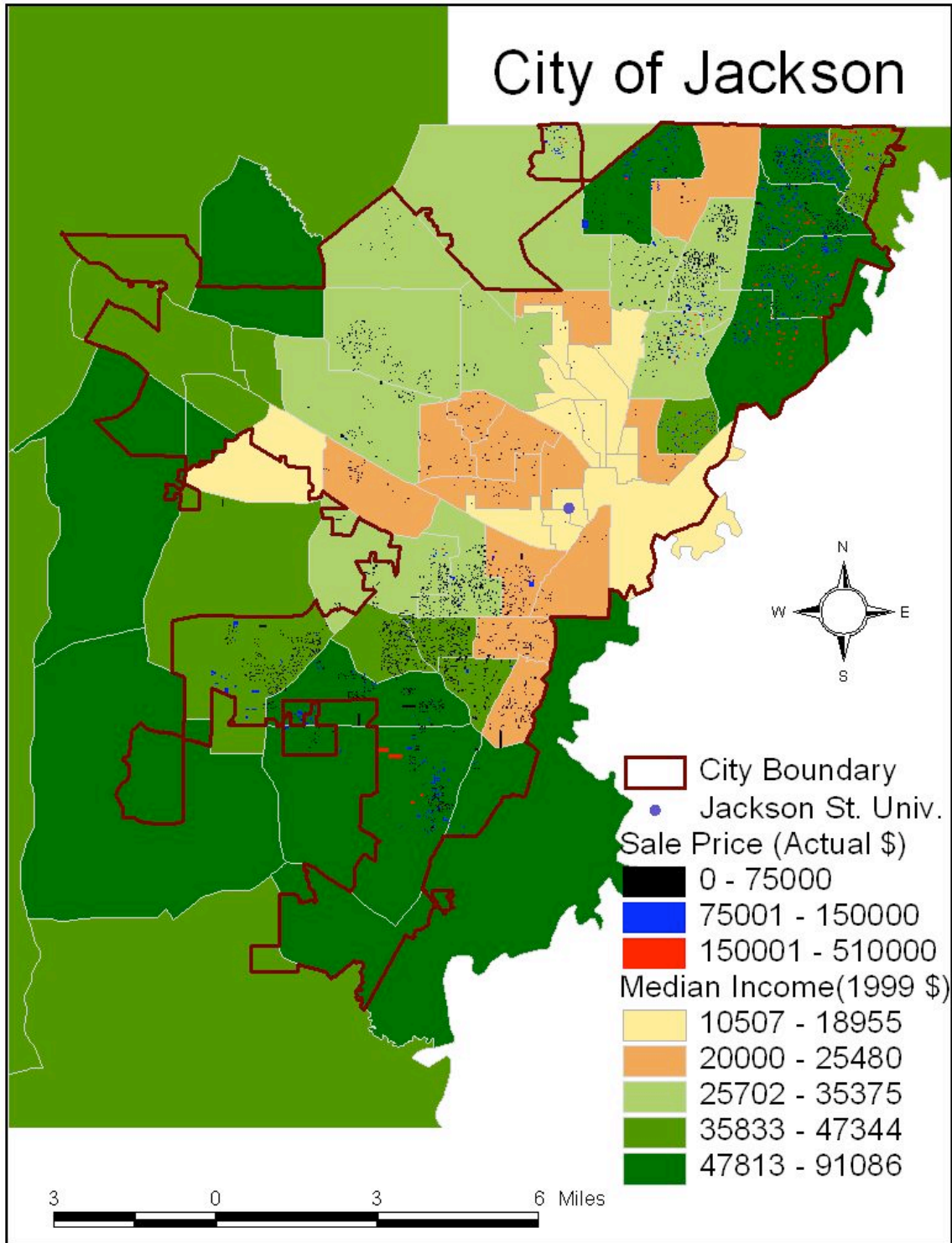
The foregoing analysis can be further explained with the aid of a few basic maps to show the location of neighborhood characteristics that explicitly demonstrate the concentration of poorer neighborhoods around the university. The following map simply shows the relative location of the university within the county.

Figure 3



The campus is located west of the downtown with one neighborhood of high-priced houses located at about three miles northwest of the campus. This is a small and older community named Bellhaven with stately homes that continues to remain the most desirable location within the city.

Figure 4



Another small and high priced community named Fondren is located at about six to seven miles north of the campus which has witnessed a turnaround in its fortunes. The third area of the city with higher priced houses is located in the northeast corner of the city on the right side of I-55. A census tract map with median income gradients and overlaid with graduated sale price for the city clearly shows that other than the three communities, rest of the city is quite poor and has a very high concentration of inexpensive houses and lower income communities around and west of the campus.

Given the history of urban universities in general and Jackson State University in particular, it is no surprise that the communities surrounding the university are very poor with high concentration of minority population. In manner similar to cases with several other urban universities until the last couple of years, the university did not see its role in the immediate surrounding community with high degree of seriousness until recently. In 2002, the university undertook what is known as e-City Initiative “to demonstrate the use of technology to develop and assist in the development of economies and neighborhoods in West Jackson¹⁰. In the last two years several initiatives have been made by the university in terms of increasing awareness of the resources available at the university that can be used toward community and economic development. Most of the programs are in their infancy and therefore do not warrant an assessment at this early stage. However, being at an early stage should not prevent the university from learning from some of the successful stories. It is in this context that the experiences at University of Pennsylvania and Howard University can be discussed.

Howard and Penn:

The central issue addressed in this paper was to propose a more rigorous methodology to estimate the impact of university on land and housing market. After having done so, it is appropriate to discuss what to do with it. In this section I will discuss two cases in which Howard University¹¹ and the University of Pennsylvania¹² appear to have been very successful at revitalizing their surrounding communities. Instead of discussing the two cases one after the other in chronological manner, I have chosen to discuss them in terms of issues that are relatively straightforward, easily recognizable and have rather direct policy implications.

¹⁰ An assessment was conducted in 2004 with funding support from the Fannie Mae Foundation. The report is called e-City Assessment and was prepared by Jackson State University’s e-City Initiative and authored by Jeffrey S. Lowe. The report is available from the author.

¹¹ For a description of Howard University’s activities see the special issue on Howard & the Community in Howard magazine, Spring 2004, Vol. 12 Number 3.

¹² For an analysis of the evolution of University of Pennsylvania’s initiatives see The 21st Century Urban University: New Roles for Practice and Research, by Judith Rodin. Journal of the American Planning Association. (2005) 71: 237-249.

Is this an idea whose time has come?

The amount of literature that has come about in the recent years on university-community partnership, and the role of a university in the community were clearly not lost on the policymakers at both universities. In the conversations with people directly involved with the university's efforts in their respective communities, it was evident that all were keenly aware of the unhealthy relationship that their respective universities had with the surrounding community. At Howard University, the officials repeatedly reminded me that the university was beginning to be seen as a bad neighbor due to its neglect of several dilapidated properties in the adjacent LeDroit Park neighborhood that it owned. The university made an impression that it tended to act as heavy-handed insular neighbor who had no interest in the well being of the community. At the University of Pennsylvania¹³, in West Philly neighborhood, the issues were similar: blight, dilapidated housing stock, relatively higher rate of crime, and rampant poverty to name a few. The university was again viewed as an island that existed almost "in spite of" rather than with the neighborhood in which interests of the university could intersect with those of the community. The crisis reached its crescendo when a graduate student was murdered near the campus and it precipitated an avalanche of action in the area with a different attitude that was determined not to repeat the mistakes that university had made during "urban renewal programs." Both universities had been active in their community just as several universities across the country had been during the urban renewal programs. Their actions were characterized as heavy-handed, shortsighted, and most importantly "against" the community. Based on their institutional experiences and those of universities nationwide, both universities recognized that the time for a partnership was now. In addition, their respective communities thrived at one time and both boasted of a substantial number of several old style historic homes that are making a comeback in their popularity. The recent decline made their respective relationships evident.

What did the university do?

While it is easy to focus on the specific actions taken by both universities, it is also important to note that actions were context-oriented and since contexts are likely to be different for each university, it only makes sense to discuss them in terms of larger tangible objectives. In cases of both Howard University and the University of Pennsylvania, the universities through their actions reduced investment risk. The investment risk is an important factor in the decision making process of households when purchasing a home¹⁴. It can be argued that declining neighborhoods do not attract investment capital primarily due to fact that they represent higher investment risk. Both universities took actions to demonstrate that not only was there long term institutional commitment towards their respective neighborhoods, but also that the institutions were willing to enter into partnerships with the residents and financial institutions to bear portion of risks themselves. Howard University accomplished this objective through its

¹³ For a detailed description of Penn's initiatives see West Philadelphia Initiatives: A Case Study in Urban Revitalization, by John Kromer and Lucy Kerman. Published by the Office of the President, 100 College Hall, Philadelphia, PA 19104.

¹⁴ See Does Investment Risk Affect the Housing Decisions of Families? By Tracy M. Turner. Economic Inquiry, Vol. 41, No. 4, 675-691

partnerships with several local and national actors such as Fannie Mae, Verizon, Manna, and People's Involvement Corporations (two community development corporations). On the other hand, the partnerships that the University of Pennsylvania has been involved in are not as extensive. The university has been able to finance most of its actions on its own institutional resources at times and leveraging its resources to receive financing from entities such as Fannie Mae and Citizens Bank. The most important part is the recognition by both institutions that by their involvement in the revitalization efforts, the investment risk could be mitigated to pave way for market driven development. An additional point of high importance is that in both cases, university's involvement was not limited to housing. Both institutions have attempted to use the relocation of campus bookstores as anchors to retail development. Through its local purchasing programs, Penn has also used its purchasing power to promote local businesses.

What did the community do?

This question was probably the most elusive one primarily because often communities do not make highly visible and well-documented contributions to such initiatives. The only obvious point was that in both communities the residents had higher expectations from the two institutions. One of the key terms used by a member of LeDroit Park Civic Initiative, a local community development group was that of "optimistic skepticism." This not only created pressures on the institutions to be sensitive to the demands of the community in terms of rental and low-income housing but also helped create an environment where a change in status quo became a common objective. This was especially evident in one of the meetings of LeDroit Park Civic Association.

What did they do together?

On this question the experiences were different for the two cases. While Penn chose a leadership model that put the university at the center of the initiative to act without substantial roles for leaderships from local community, city or private sector, Howard chose to pursue substantial partnerships with leaderships from both the local and private sectors. Howard University Community Association was formed in 1996 with an objective to increase public accessibility to the university initiatives. It holds public meetings normally attended by leaders from the university, local community, and the private sector. Penn elected to restructure portions of the president's office to provide leadership in the initiatives.

Are these developments coincident?

Often some of the best-laid plans fail and some of the worst laid plans have desirable unintended consequences. That makes it very tempting to ask if the successes achieved in both cases have occurred by chance only. Put in another way, is there something very peculiar about these two cases that made them successful in contrast to cases that have not been successful. Both universities have been active in their communities in a relatively comprehensive manner for a little less than ten years. Over the years each community has witnessed substantial growth in housing prices and retail activities. The objectives for both initiatives have been flexibly and yet substantially defined. The plans were laid out in concrete terms for their respective involvements through planning

documents. Since most of the current developments were clearly articulated well in advance, it can be argued that both initiatives have paid off.

Who should worry about financing the initiatives?

While Penn has used most of its own resources for its efforts in West Philly, Howard entered into a series of partnerships that have financed most of the developments in LeDroit Park. The required financing of these initiatives is often beyond the capacity of community development organizations and private sector cannot be expected to bear high investment risk without good foundations. Given the increased demands for services and declining revenues most cities cannot place such initiatives on a high level of priority. Such a context leaves only large institutions such as universities to provide initiatives, necessary planning and mobilization of resources either on its own or through partnerships with various entities. Increasingly, within these communities, universities are seen as potential providers of some of the services that traditionally were the responsibilities of the respective cities. Examples of this can be found in provision of public infrastructure. Penn has expanded the patrol area for its division of safety beyond the campus boundary in addition to providing finances for sidewalk lighting. Howard is similarly involved in partnerships to improve infrastructure for telecommunications and implementing streetscape master plan for the surrounding community.

Conclusion and Policy Insights

The two successful examples of university initiatives that have yielded positive outcomes demonstrate that it is pertinent that universities in general and urban universities in particular see themselves as part of their metropolitan areas. The earlier model of separation between the university campus and its surrounding environment is not only untenable and unproductive, it makes sense for urban universities to be partners with their respective cities and neighboring communities to bring about positive transformation in the surrounding environment of decay and decline. It is immaterial whether the justification comes from enlightened self-interest or a measured response to the needs of urban America, whether it is about becoming good citizens or about improving its relationship with the surrounding communities. While there is no one fixed set of initiatives that will suit the needs of every urban university, a broad realization that time has come for universities to take more active roles that include cooperation, collaboration and partnerships will be a good starting point. To make repeated assessments of such initiatives while maintaining university's commitment to a vibrant community that tackles the issues and challenges facing urban centers while remaining flexible in its responses will further enhance university's relevance.

There are a few general points that emerge from this paper that can be summarized as below. First, universities can reduce the investment risk not only by its presence but also with strategic deployment of its resources in the land and housing markets. This can take

forms of housing rehabilitation, business developments and provision for infrastructure developments to name a few. Second, universities should have a strategic plan in place to positively influence the surrounding area and it must be developed in cooperation and partnership with the neighboring communities. The inputs received from the local citizenry should be adequately addressed that promotes participation in the decision-making process. Third, Such plans should be comprehensive enough to be sensitive to the needs of the community in terms of retail development, security concerns, local purchasing agreements, educational requirements, cooperative arts and cultural activities and community health needs among others. Fourth, universities should monitor their activities on a regular basis. One good example of such monitoring is the Neighborhood Information System maintained by the University of Pennsylvania. Such monitoring not only helps in keeping track of the developments but also helps in building partnerships in the community. Finally and above all, urban universities must realize that they are integral to the future of metropolitan communities and this realization must inform their decisions to act in the surrounding environment in a positive and productive manner that utilizes their assets and expertise to the benefit of larger citizenry.

References

- Brachinger, Hans Wolfgang. (2002) “*Statistical Theory of Hedonic Price Indices*,” DQE Working Paper, No. 1. [Department of Quantitative Economics, University of Freiburg/Fribourg Switzerland](#).
- Cortes, Alvaro. (2002) Dissertation: *The Impact of Urban Universities on Neighborhood Housing Markets: University Activity and Inactivity*. Wayne State University.
- Dillon Jr., John A. (1980) “The Evolution of the American Urban University”, *Urban Education*, Vol. 15, Issue 1, 33-48.
- Howard magazine, Spring 2004, Vol. 12, No. 3.
- Initiative for a Competitive Inner City (ICIC). (2002) *Leveraging Colleges and Universities for Urban Economic Development: An Action Agenda*. Boston: CEOs for Cities.
- Kromer, John and Kerman, Lucy. “*West Philadelphia Initiatives: A Case Study in Urban Revitalization*”, Office of the President, University of Pennsylvania, Philadelphia, PA.
- Mikelbank, Brian A. (2004) “Spatial Analysis of the Relationship between Housing Values and Investments in Transportation Infrastructure”, *Annals of Regional Science* Vol. 38, Issue 4, 705-726.
- Perry, David C. and Wiewel, Wim. Ed.s (2005)*The University as Urban Developer: Case Studies and Analysis*. M. E. Sharpe, Armonk, NY.
- Rodin, Judith. (2005) “*The 21st Century Urban University: New Roles for Practice and Research*”, *Journal of the American Planning Association*. Vol. 71, No. 3, 237-249.
- Severino, Carol. (1996) “The Idea of an Urban University: A History and Rhetoric of Ambivalence and Ambiguity”, *Urban Education*, Vol. 31, Issue 3, 291-313.
- Turner, Tracy M. (2003) “*Does Investment Risk Affect the Housing Decisions of Families?*” *Economic Inquiry*, Vol. 41, Issue 4, 675-691.
- University-based Partnership in Economic Development, (Special issue, Winter 2004) *Economic Development America*. Economic Development Information Coalition. U.S. Department of Commerce.