

Chapter 8

MUSEUMS IN THE NEIGHBORHOOD: THE LOCAL ECONOMIC IMPACT OF MUSEUMS

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8.1 Introduction¹

While there is no official census of museums in the United States, the American Association of Museums estimates that there are approximately 17,500 museums² across the country. To put this in perspective, the number of museums in the United States is almost exactly equal to the number (17,619) of public high schools³ (public schools that offer a curriculum for the 12th grade) in the country.

Like public high schools, museums serve a variety of missions that include education as a central component. Like public high schools museums are extremely diverse, ranging from small local institutions that serve a neighborhood or a modest group of patrons numbering a few hundred, to large, well-funded organizations that serve hundreds of thousands of people each year. Like public high schools, there are museums that emphasize the arts, museums that emphasize science and technology, as well as many general interest museums.

It is true that far fewer museums are funded by the local public sector. It is also true that restricting attention to the set of persons who attend each type of institution, the average time spent per year within the institution is much greater for schools than for museums so that the impact on each participating individual is likely to be greater for schools. On the other hand, museums are called upon to complement schools and play an increasing role in the provision of specialized curriculum, particularly in arts education where many smaller communities may rely heavily on local museums.

Despite the arguably important role in providing educational services, and generally affecting the quality of life in communities, museums have received very little attention from economists. The EconLit bibliographic database yields 58,046 references to research on schools, with 425 references to schools and houses and 145 that address in some way the impact of schools on house prices. In this sense, economists seem intent on developing a better understanding of the impacts of schools on the communities and neighborhoods where they operate. The situation is much different for museums. EconLit identifies only 550 references to research on museums, and only 11 of these have anything to do with housing. The number of research papers that address museums and house prices: zero. It seems reasonable to say that economists have developed (or at least published) almost nothing that directly evaluates or measures the impact of museums on the attractiveness of the neighborhoods where they are located.

This is surprising since many authors appear to assume that analysis of the impact of museums (or the arts, more generally) on house prices is something that, while difficult or even problematic, occurs with

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²To qualify as a museum, the organization must maintain and present a group of objects, must employ some person in a curatorial role, and must be open to the public at least 120 days per year.

³National Center for Educational Statistics, Core of Common Data

some frequency. Thus Frey (1997) notes that the values attributed to a cultural object can also be derived from the higher rents, house and land prices that people are prepared to pay. Similarly (though more critically) McCarthy, Ondaatje, Zakaras & Brooks (2004) assert that methods used in studies include hedonic approaches that estimate how proximity to the arts affects housing values (an indicator of the desirability of the arts to the population). While some of these analyses might be prepared and circulate as private consultants reports, there appear to be none (or very few) that have appeared in the published economics literature. While the works referred to discuss analysis of impacts on house prices as a technique for evaluating the impacts of culture, they do not cite actual studies that carry this out.

One of the very few published papers to attempt an empirical examination of the impact of some aspect of culture on house prices is Florida & Mellander (2010). This study does not use the presence or expansion of a specific cultural amenity, but rather considers the ability of the “Bohemian-Gay Index” to explain cross-sectional variation in overall house prices for 331 US metropolitan regions in 2000. While the study is commendable for at least undertaking the analysis (rather than assuming that it *could* be done), there are a variety of problems with the evidence presented. The study focuses upon the relative explanatory power of the index without considering the potential endogeneity between the house prices and the value of the index. A more satisfactory approach would be to focus on a specific cultural amenity, and to estimate whether an increase in the availability of that amenity is associated with an increase in house prices. Even such an analysis of differences would not fully address the endogeneity problem, but it would present a more convincing evaluation of the relationship between culture and house prices.

There are several studies that pursue an alternative type of hedonic analysis looking at the impacts of culture, museums, libraries, etc. on wages. In this approach, the cultural organization is conceived of as making the community more attractive so that the local supply of labor is large and workers accept a reduction in wages in order to remain living in the community. Thus Clark & Kahn (1988) estimate the impact of cultural amenities on wages and find evidence that museums, along with several other cultural amenities, are associated with lower wages. In contrast, however, Schmidt & Courant (2006) find that neither museums nor several other measures of cultural activity have a significant impact on wages.

There are two problems with looking for the localized impact of museums through analysis of wage determination in labor markets. The first is that for all but the largest museums, the impact of the institution on the labor market may be modest and difficult to detect. While a museum may have a significant impact on a neighborhood or portion of a city, attracting residents to the neighborhood, providing educational services, helping to build social capital for the groups who reside in that part of the community, it may not affect a large enough portion of the total labor force to perturb wages in a way that can be reliably detected in noisy data.

The second problem with this approach is that it may not be what we would expect to observe given our theoretical understanding of the impacts of quality of life or non-market goods and services and how they affect property and labor markets. Consider the following observations motivated by the approach of Rosen (1979) and Roback (1982) and applied by many analysts since. Initially in a given community the households can all achieve a welfare level of V . There are several price vectors consistent with this welfare level. Higher rents or property values must in general be offset by higher wages. Similarly for firms in the community, they must realize a given rate of profit in equilibrium (zero profit in competitive equilibrium, for example). Again several prices are consistent with this. Higher costs for space, or rents, must be compensated for by lower costs for labor, or wages. For the community there is only a single pair of prices (w, r) that is consistent with both equilibrium for households and equilibrium for firms.

Now suppose that a museum opens that provides non-market services for the households. This might be true if the museum is available free of charge, but even if the museum charges an admission fee its operation as a not-for-profit enterprise and its provision of educational opportunities for children might generate a variety of public benefits that increase the welfare of households in the neighborhood of the museum. This shifts the household welfare line up to \hat{V} as indicated in figure 8.1, with the vertical shift indicating the additional amount each household is willing to pay because of the new (or expanded) museum. This results

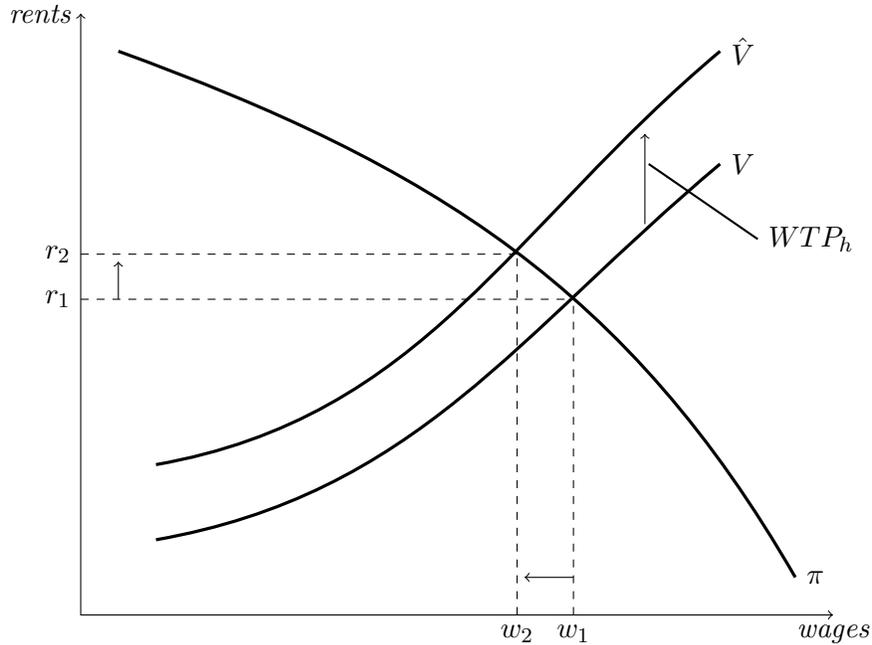


Figure 8.1: Museum impacts households

in a new equilibrium (w_2, r_2) with higher land values and lower wage rates. While economists have perhaps been negligent in their analysis of the impact on property values, at least this suggests that the impact on wage rates could possibly be a reasonable alternative approach. There is a difficulty with this argument, however. It assumes that the museum has no impact on firm profitability. Many economists have argued, however, that such impacts are indeed possible. For example, Florida (2002) argues that culturally rich cities and neighborhoods attract creative workers that help ensure the success of enterprises located there. Lucas (1988) argues and Rauch (1993) estimates that an increase in the education level of an urban area increases the marginal productivity of all factors of production, not only labor. If museums play a role in providing educational services to residents then it is not difficult to imagine that a strong museum sector could have an impact on firm profitability.

A new or expanded museum might then generate an impact as illustrated in figure 8.2. Here the museum generates two effects. As before, it provides an external public benefit to households who are now willing to pay higher rents and accept lower wages in order to reside in what they see as a more attractive neighborhood. Furthermore, firms are now able (and willing) to pay higher wages, higher property rents, or both and still achieve the constant profit level π . This puts upward pressure on both property values and wages. As a result, if the museum has an impact on both firm profitability (through producing or attracting a more skilled labor force) and on household welfare (by providing entertainment, social capital and education) then there is an unambiguous impact on property values (they increase) but an ambiguous impact on wage rates. They may either increase or decrease depending on elasticity of substitution in consumption between housing and leisure, in production between labor and space, and the impacts on household utility and firm profitability of the new or expanded museum. This indicates that if economists want to evaluate the neighborhood impact of museums (and if they accept the Rosen-Roback framework as reasonable) then the preferred approach would be via analysis of the property market.

In this paper, we undertake such an analysis by focusing on four communities where new museums have been established or an existing museum was expanded significantly. For each city we collect data on property transactions including prices and structure characteristics including location spanning a time period that includes transactions before and after the museum opened or expanded. Using these data we endeavor to answer the question: do museums appear to have a beneficial impact on their neighborhoods?

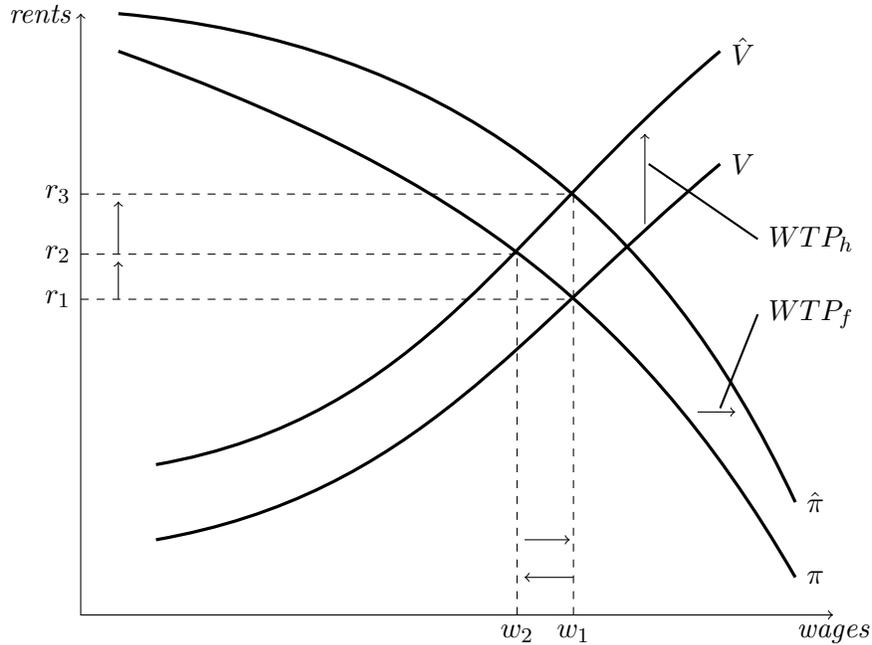


Figure 8.2: Museum impacts households and firms

If so, how large is this impact, and how far does it extend? Finally, we consider some implications of our findings for the financial sustainability of museums and the role that such institutions might play as part of a set of policies intended to promote community development.

The next section provides brief descriptions of the four communities and museums that are the focus of this paper. The section after that describes the data collected and presents some simple descriptive statistics. This is followed by a section presenting and discussing the estimates, which in turn is followed by the conclusion.

8.2 Case Study Communities

We have chosen four cities that present a range of population sizes and some variation in economic circumstances, although each city has been subject to a process of industrial decline and loss of employment in manufacturing that had played the central role in their local economies. This process of decline has proceeded at differing speeds in each city over the past 25 to 75 years.

8.2.1 Kenosha, Wisconsin

Kenosha is located in the southeastern corner of Wisconsin and while it is a free-standing city it is part of the larger Chicago CMSA. It is 50 miles from Chicago and had an estimated 2006 population of 96,240. Kenosha was birthplace, in 1916, of Nash motors and the former location of large manufacturing facilities for Nash and its eventual successor, American Motors. These facilities were subsequently absorbed and operated by Renault for a brief period before being purchased by Chrysler in 1987, closed and demolished in 1989. Kenosha's largest employer now is Abbot Laboratories. The lakefront site of the old automobile assembly plants has been extensively redeveloped with housing, a park and walking paths, and is the location of the new Kenosha Public Museum, which opened in 2000. While our analysis focuses on the impacts of this opening, further developments are taking place. A new Civil War Museum was completed and fully opened in 2008.

8.2.2 Toledo, Ohio

Located at the western edge of Lake Erie and bordering Michigan on the north, Toledo is the fourth largest city in Ohio, and has a current population of just over 700,000 persons in the metro area. Automobile manufacturing and automobile parts manufacturing have been important industries in Toledo. The Willys-Overland Corporation was headquartered in Toledo until 1953. The Jeep vehicles that originated with Willys were made in Toledo beginning in 1941 and continue to be manufactured in the city. Glass and glass product manufacturing have also been an important component of the local economy and firms such as Owens-Corning, Owens-Illinois and Libbey Glass all had their origins in Toledo. The largest employer now is the University of Toledo. The Toledo Museum of Art was founded by Edward Libbey (founder of Libbey Glass) in 1901 and moved to its present location in 1912. In part because of its historical connection to the Libbey family, the museum has an extensive collection of glass objects. A major capital campaign raised funds for the design and construction of a new glass pavilion that opened across the street from the existing museum to display the glass collection, provide classes and demonstrations of art glass production and to present new works of art in glass. The new glass pavilion opened in 2006.

8.2.3 Beacon, New York

Beacon is located on the east bank of the Hudson River about 60 miles north of Manhattan and 30 miles south of Poughkeepsie. It is across the river from Newburgh, New York. The 2000 census identified the population of Beacon as 13,808 and current estimates suggest a population in 2008 of about 16000. The city was an important manufacturing center in the colonial period. In the 19th century it was a major center of hat-making in the US. Despite river, rail and interstate highway transport access, Beacon experienced industrial decline and closures throughout the last three decades of the 20th century, so that by the late 1990s nearly 80 percent of Beacons factory and commercial spaces were vacant.

The Dia Art Foundation is based in New York City. It was founded in 1974 and has one of the world's premier collections of art from the 1960s and 1970s. Dia purchased a former factory owned by Nabisco in Beacon, and renovated the space as a museum to present significant portions of the Foundation's collection. The Dia:Beacon Riggio Galleries museum opened in 2003.

8.2.4 North Adams, Massachusetts

North Adams is located near the northwest corner of Massachusetts about 90 miles from Boston. First settled in the mid-18th century, it was officially incorporated in 1878 as it grew in response to the opening of the Hoosac Tunnel that provided rail travel under the Hoosac range linking the Hudson River watershed in western Massachusetts with the Connecticut River watershed of central Massachusetts as well as the greater Boston area. The Hoosac tunnel was the second longest transportation tunnel in the world when it was completed, and remains the longest rail or auto tunnel in the eastern United States. The improved transportation made North Adams an important manufacturing and mill town in the late 19th and early 20th centuries. The population of North Adams peaked at nearly 30,000 in 1900 and declined every decade of the 20th century. The 2000 population was 14,681 and is estimated to be approximately 15,000 in 2008.

North Adams was home to a diverse range of industries including shoe manufacture, iron works, manufacture of mill machinery, and cloth printing. The Arnold Print Works prospered in North Adams producing printed cloth for the Union Army during the civil war and continuing until it failed during the 1930s. In 1942 the site was purchased by Sprague Electric, which operated at the site manufacturing electronic components and high tech equipment for the military and space program as well as commercial customers. At its peak Sprague employed over 4000, but the firm lost business, faced protracted labor disputes, and eventually closed in 1985.

After several years of continued decline in North Adams, a group of Williams College faculty and the director of the Williams College Museum of Art expressed interest in obtaining closed factory space in North Adams to be used for the display of large scale art works. At the same time, a small number of

working artists began to acquire warehouse space in the city to use for studio and live-work space. The city government of North Adams eventually joined with these groups to seek state funding for environmental site remediation and construction of a museum of contemporary art to be located in the campus of buildings that had previously been the Arnold Print Works and Sprague Electric Company. Through a combination of private fundraising and provision of \$25 million of support from the state government, the Massachusetts Museum of Contemporary Art (MASS MoCA) was opened in May of 1999. The museum is one of the largest spaces for display of contemporary art in the world. It maintains no permanent collection but instead commissions new works from artists. The works are displayed for periods ranging from six months to two years and then become property of the artists. The museum attracts approximately 110,000 visitors per year to North Adams.

8.3 Data

The central data on individual house sales including price, date of sale, address or geographic location, and other structure and lot characteristics were obtained directly from local property tax assessors offices. The advantage of using these data (over alternative sources such as MLS data or data sources such as the American Housing Survey) is that they contain the property address so that the exact location can be determined, they include all property transactions, and they are available at modest or zero cost under open public records laws. Note that while in some communities the assessors data do not include all recorded deed transactions, the communities we study do include all transactions. We do not use assessors estimates of structure value but instead use the agreed transaction price, and we use only those transactions that are coded as or appear to be arms length transactions (excluding, for example, transactions whose price is \$1 or \$100).

There are some disadvantages to using these data. Unlike AHS data, we do not have exactly the same set of structure and lot characteristics in each community. There is less uniformity across assessors offices concerning the accuracy of data entry, correction of errors, or incorporation of new information when structures are modified or new features added. Unlike MLS data we have no information about the time on the market or other indicators of the nature of the bargaining process from which the observed transaction price has emerged. There is less uniformity in coding the data concerning such features as condition of structure or style or type of structure so that it is not clear how comparable a particular quality rating is in each city or whether each office would agree on the style label to apply to a home. For the most important features like price, date of sale, location, lotsize, total living area and age of structure, however, there is general agreement on measurement and the comprehensive coverage of the data we have obtained seems more important than the difficulties associated with use of the information.

Table 8.1: Descriptive statistics for Toledo and Kenosha

	Toledo				Kenosha			
	μ	σ	Min	Max	μ	σ	Min	Max
Real price	103590	102336	7277	7210962	90307	43221	7388	977403
Sq Ft Living Area	1545.03	738.01	0	12874	1422.09	519.14	324	10661
Rooms/Bedrooms	6.31	1.78	0	23	3.06	0.86	1	9
Lotsize	11280.84	37137.96	0	3288562	0.17	0.10	0.02	3.23
Distance to CBD	8426.99	4282.65	527.68	17999.34	3.55	1.90	0.18	11.13
Real price of gasoline	0.87	0.14	0.68	1.49	0.94	0.20	0.68	1.49
Sold after museum	0.04	0.19	0	1	0.47	0.50	0	1
Distance to Museum (Pre)	7231.90	4055.14	0	19842.24	2.15	2.41	0	11.80
Distance to Museum (Post)	273.30	1544.32	0	19507.75	1.90	2.47	0	10.93
Distance to Museum	7505.20	3856.96	197.23	19842.24	4.05	1.94	0.45	11.80
Age at sale	54.73	30.52	1	182	46.70	30.29	1	170
Year Built	1916.06	239.43	0	2005	1952.87	29.92	1837	2006
Baths	1.50	0.70	0	9	1.57	0.62	0	11
Pct Black	13.43	21.07	0.06	95.94				
Pct Hispanic	4.53	4.12	0.70	37.26				
Fireplaces								
Observations	137657				18458			
Other indicator variables:								
	Four classes of height of structure				Three classes of height of structure			
	Seven classes of type of exterior wall covering				Sixteen classes of house style			
	Four classes of type of garage				Five classes of proximity to lake shore			
	Eight classes of land use type				Four classes of land use			
	Five classes of quality of construction				Presence of central air conditioning			
					Absence of garage			

Table 8.2: Descriptive statistics for Beacon and North Adams

	Beacon				North Adams			
	μ	σ	Min	Max	μ	σ	Min	Max
Real price	1092	548	124	6926	61120	48904	6525	1344847
Sq Ft Living Area	1600.51	671.71	528	5644	1915.72	932.88	532	6891
Rooms/Bedrooms	2.91	1.03	1	9	8.18	3.89	0	27
Lotsize	21727.66	214547.00	435.60	9291348.00	33707.90	497290.30	1197.9	1.74E+07
Distance to CBD	2136.09	1565.87	21.40	5764.58				
Real price of gasoline	0.84	0.10	0.68	1.02	0.82	0.07	0.68	1.11
Sold after museum	0.22	0.41	0	1	0.46	0.50	0	1
Distance to Museum (Pre)	682.82	626.55	1	1960.91	290.60	379.64	1	1536.02
Distance to Museum (Post)	196.52	450.16	1	1959.93	227.18	345.82	1	1647.27
Distance to Museum	878.35	573.12	38.19	1960.91	516.78	364.15	51.82	1647.27
Age at sale	50.50	40.66	1	279	85.53	38.83	1	241
Year Built	1950.61	40.88	1720	2004	1912.04	38.39	1760	2003
Baths	2.11	0.96	0	12	1.76	0.96	0	8
Pct Black								
Pct Hispanic								
Fireplaces					0.24	0.52	0	4
Observations	2322				1240			
Other indicator variables:	Five classes of height of structure				Three classes of style for multi-family dwellings			
	Three classes of types of exterior wall covering				Six classes of condition of structure			
	Eleven classes of house style				Nine classes of type of heating in house			
	Nine classes of local government jurisdiction				Four classes of types of fuel used for heating			
	Three classes of types of fuel used for heating				Presence of central air conditioning			
	Located within Beacon school district							

Tables 8.1 and 8.2 present descriptive statistics for the samples used for estimation of impacts in Toledo, Kenosha, Beacon and North Adams. For the most part these are self-explanatory but a few remarks are in order. Toledo and Kenosha are much larger cities than Beacon or North Adams, and the samples are correspondingly larger. This will have an impact on the precision with which impacts in each city can be measured, with smaller samples generally offering less precise estimates. It should also be noted that the larger cities have larger staff in their assessors offices, and this permits greater specialization in data cleanup and presentation. Toledo, for example, makes their entire data base with GIS viewer available on DVD for a very modest cost.

All house prices are adjusted relative to the house price index available from the US Federal Housing Finance Agency (FHFA). Toledo has an index calculated for the metro area. There is an FHFA index for Kenosha County and Lake County used for Kenosha. Beacon is part of the Poughkeepsie-Newburgh metro area and the index for this area is used for Beacon. North Adams is part of the Pittsfield MSA and the FHFA index for Pittsfield is used to adjust North Adams prices.

8.4 Estimation

Our approach to estimating the hedonic model, including the impact of the opening or expansion of the museum, is similar in each city. For each city we estimate a hedonic model of the form:

$$\ln\left(\frac{P}{i}\right) = \beta_0 + \sum_i \beta_i \cdot \ln(x_i) + \sum_j \delta_j \cdot x_j + \beta_m \cdot \delta_{post} + \beta_{pre} \cdot \ln(d_{pre}) + \beta_{post} \cdot \ln(d_{post}) \quad (8.1)$$

(hedonic for other characteristics) (determines the impact of the museum)

Where:

- P = sales price of the property
- i = house price index for local housing market
- β_0 = constant
- β_i = parameter for quantifiable characteristic
- x_i = quantifiable characteristic
- δ_j = parameter for dichotomous characteristic
- x_j = dichotomous characteristic
- β_m = impact of museum for properties adjacent to museum
- δ_{post} = 1 if sale occurs after museum built or expanded, 0 otherwise
- β_{pre} = impact of distance from museum location prior to museum
- d_{pre} = distance from museum if sale occurs before museum built, 1 otherwise
- β_{post} = impact of distance from museum location after museum built
- d_{post} = distance from museum for sales after museum built, 1 otherwise

The β and δ variables are all parameters to be estimated. The variables x_i measure the property characteristics that are quantifiable, such as total living area, number of rooms, and age. The variables x_j refer to dichotomous indicators of structure characteristics. The variable d_{pre} refers to the distance from the museum, with the actual distance set to 1 (the logarithm of which is zero) for properties that sold after the museum was opened. Similarly, the variable d_{post} is the actual distance from the museum for properties that sold after the museum opened, and 1 for those that sold before the opening.

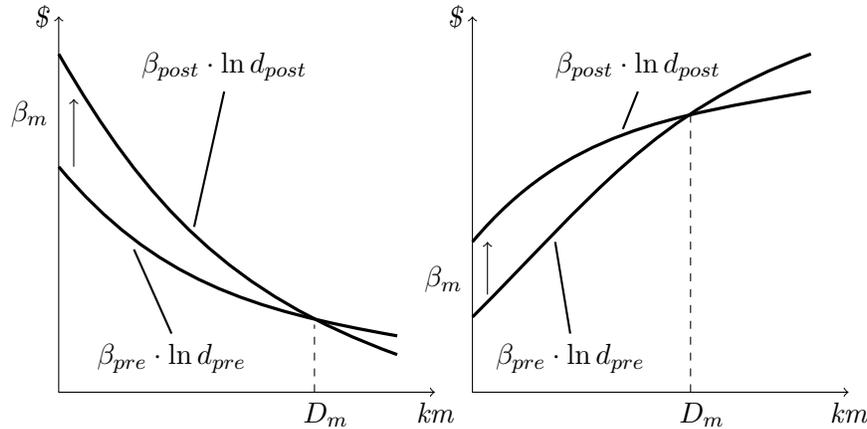


Figure 8.3: Estimating the impact of museums on neighborhoods

The last three terms of equation (8.1) are of central importance in measuring the localized impact of museums in the neighborhood. Figure 8.3 illustrates. In both panels there are two lines, indicating the impact on house prices as we consider properties that are more distant from the location of the museum. In each case the line that is lower at distance zero is the relationship that holds before the museum opens, estimated by and the upper line represents the relationship that holds after the museum opens, estimated by. The vertical distance between the lines at the vertical axis intercept is determined by the value of β_m , and represents the impact on house prices for properties that are adjacent to the museum location.

In the left panel we see a situation in which house values tend to decline as we move away from the location of the museum. In the figure this is true both before and after the museum opens, and could represent a situation where the neighborhood that will eventually be the location of the museum was relatively attractive by comparison with other locations in the city before the museum opens. Opening the museum makes it even more attractive.

In the right panel is illustrated an example where in general house prices increase for properties more distant from the museum location. Again, this is true both prior to and after the opening of the museum. This might be true when the museum is located in a neighborhood that is troubled in other ways and those disadvantages are not fully compensated by the presence of the museum.

In both panels the two curves intersect at distance D_m . This indicates the maximum extent of positive influence on house prices. It may well happen that the entire urban area is contained within the area that is positively affected. Alternatively, the distance D_m may identify a location within the urban area.

Table 8.3 presents the estimates for selected parameters of the hedonic price functions obtained using data from each of the four cities. The table does not report parameter estimates for the various dichotomous indicators of structure characteristics. These vary somewhat from city to city and are not central to the argument and questions addressed here. The logarithmic structure of the estimated hedonic implies that for all variables except the ‘‘Museum Change’’ variable (m), the estimated parameters can be interpreted as elasticities of real house price with respect to the characteristic. The museum change variable can be interpreted as the percentage change in house price for a structure located adjacent to the new or expanded museum that is attributable to the museums opening.

With reference to figure 8.3, Toledo fits the model of the image in the left hand panel, Kenosha and North Adams are similar to the situation illustrated in the right hand panel, and Beacon is intermediate with house values increasing with distance from the museum before the museum is built and decreasing afterwards.

Most of the estimated parameters are of the expected signs. The museum change effect is not statistically significant in North Adams. This may be due to the noisy conditions in the local housing market, the small sample size, or simply because the museum has had less impact on properties in the city. Anecdotal

Table 8.3: Estimated parameters of hedonic price functions

Variable	Toledo	Kenosha	Beacon	North Adams
Total Living Area	0.6581*** <i>0.009</i>	0.5345*** <i>0.015</i>	0.3972*** <i>0.040</i>	0.3901*** <i>0.077</i>
Rooms/Bedrooms	-0.1444*** <i>0.012</i>	0.0084 <i>0.012</i>	0.1186*** <i>0.032</i>	-0.0922 <i>0.093</i>
Lotsize	0.0719*** <i>0.004</i>	0.0140 <i>0.009</i>	0.1099*** <i>0.017</i>	0.0549** <i>0.023</i>
Distance to CBD	0.2236*** <i>0.008</i>	-0.0568** <i>0.027</i>	0.0321* <i>0.017</i>	
Price of gasoline	1.0225*** <i>0.011</i>	0.1609*** <i>0.014</i>	0.2029** <i>0.081</i>	0.3419* <i>0.182</i>
Museum Change	0.3801*** <i>0.111</i>	0.2349*** <i>0.015</i>	0.5088*** <i>0.130</i>	0.2140 <i>0.275</i>
Pre museum distance	-0.0342*** <i>0.008</i>	0.3778*** <i>0.033</i>	0.0025 <i>0.019</i>	0.0896*** <i>0.034</i>
Post museum distance	-0.0721*** <i>0.014</i>	0.1819*** <i>0.032</i>	-0.0552** <i>0.023</i>	0.0499 <i>0.035</i>
Age	0.7465*** <i>0.004</i>	0.3498*** <i>0.010</i>	0.0750** <i>0.031</i>	0.2336*** <i>0.044</i>
Year Built	44.9644*** <i>0.301</i>	22.7775*** <i>0.747</i>	6.8601*** <i>1.611</i>	10.8657*** <i>1.656</i>
Baths	0.2841*** <i>0.007</i>	0.0839*** <i>0.010</i>	-0.0346 <i>0.029</i>	0.0174 <i>0.058</i>
Extent of impact	22.7 km	3.3 km	6.7 km	0.72 km
Observations	134501	17818	2301	1232
R^2	0.602	0.452	0.529	0.336
Root MSE	0.529	0.314	0.355	0.494

evidence, consisting of the high level of redevelopment in the area near the museum, suggests otherwise. This remains an area for further study.

One thing we can say is that it is in fact possible to estimate the impact on property values that appears to be associated with the opening or expansion of a museum. For properties nearest the museum values appear to increase between 20 and 50 percent. This effect tapers off as we move away from the museum.

These estimated impacts are consistent with the predictions of the Rosen-Roback framework discussed above. Museums in the neighborhood are important sources of public benefits. This improvement in the quality of life generates a move to a new equilibrium in which property values are increased. This may be due to both the benefits realized by households, and to benefits realized by firms through availability of a more productive, educated, or creative workforce.

8.5 Implications and Conclusion

The first implication of this analysis is that museums do appear to be having a positive impact on the quality of life in neighborhoods. This is the most reasonable interpretation of the associated increase in property values. This observation may, in turn, be raised by museums as an argument for public support of the institution. If they are generating these rents for the community, it seems only reasonable to facilitate their capture of a portion of the rents in order that they be sustained and made economically viable.

There are a variety of mechanisms that might be used to achieve this. If property tax structures permit, an estimate of the increase in value of properties could be incorporated into tax assessments and a portion of the gain taxed away in support of the museum. The few tax-supported museums in the US (such as the St. Louis art museum) could be viewed in this way. Even in situations where property taxes cannot be used in this way, an estimate of the gain could be used either as an argument made privately to the homeowners to solicit donations or to the local government to make revenues available from some other source.

Finally, it must be acknowledged that while economists might view these results with interest, many museums will view them with mixed feelings at best and alarm at worst. The interpretation will be that as generators of higher property values, they themselves are partly to blame for what they see as gentrification of their neighborhoods.

What can be noted from the analysis presented above is that museums are clearly producing something valuable for their neighborhoods. This is not a problem, it is desirable. Whenever something valuable is produced, there will be competitive processes that arise between consumers who seek access to it. The challenge is to design mechanisms that help make equitable sharing of these benefits more certain. This may involve making provisions for affordable housing in the neighborhoods, or encouraging museums to pursue other types of outreach to less accessible neighborhoods. The creation of the valuable improvement in the quality of life is desirable. The economic and political challenge is to share the benefits.

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