

CULTURAL AND RECREATIONAL CENTERS: HOW THEY INFLUENCE WHERE HOUSING IS BUILT

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Abstract .—Known for its cultural attractions, extensive recreational activities, and intrinsic natural beauty, Berkshire County on the western edge of Massachusetts, has seen a housing boom in recent years. This paper examines whether the cultural attractions in Berkshire County have had a significant effect on the location of new single-family residential development, using building permit issuances by each municipality as a proxy variable for new development. The study also designates three localities as cultural centers, assigning one center per geographic subregion. One hypothesis of the research is that new development is heaviest in the communities surrounding the cultural centers and radiates outward. The regression results indicate there is a significant relationship between a shorter driving time to the center and the amount of permits issued. Additionally, the southern subregion appears to be preferred for new construction.

1.0 INTRODUCTION

Massachusetts' Berkshire County, situated on the border with New York, is geographically diverse. It is bordered on the west and east by mountain ranges and has numerous lakes and rivers in the central valley where the major north-south artery, Route 7, is located. Interstate 90 runs east-west through the southern section of the county. The county has 32 municipalities including two cities, Pittsfield and North Adams. Pittsfield, which is nearly 3 hours by car from Boston, is the county seat for government, finance, and industry. North Adams has the distinction of being Massachusetts's smallest city with a population of 14,681. Nearly 64 percent of the housing units

throughout the county are classified as single-family dwellings (Berkshire Regional Planning Commission, 2003).

Single-family dwellings are the subject of investigation in this study. Specifically, what factors provide the greatest marginal benefit, making one location more attractive than another for the construction of new single-family dwellings?

A tension exists between the attractions of rural life and the amenities most people consider necessary. New residents are often either second-home owners or urban/suburban refugees seeking to locate away from cities and, to a lesser extent, homogenized suburban areas. One hypothesis of this study is that tourism to recreational and cultural attractions, an increasingly important staple of the local economy, is a significant force behind new single-family residential development. This study measures the amount of new single-family development through the number of building permits issued per year by each municipality.

A second hypothesis is that the number of permits issued is directly proportional to each municipality's distance from the nearest cultural center (in terms of driving time). A "cultural center" is defined here as a community that contains significant cultural and/or recreational resources (ranging from concert halls to ski resorts) that draw tourists. While there are such attractions in all corners of the county, I propose three principle cultural centers: Williamstown in the northern subregion of the county, Lenox in the central subregion, and Great Barrington in the southern subregion (Fig. 1). This analysis will examine each cultural center's influence on the location of new single-family residences in the county. It should be noted that these cultural centers also provide significant employment opportunities but that distilling their effects on new housing development is beyond the scope of this paper.

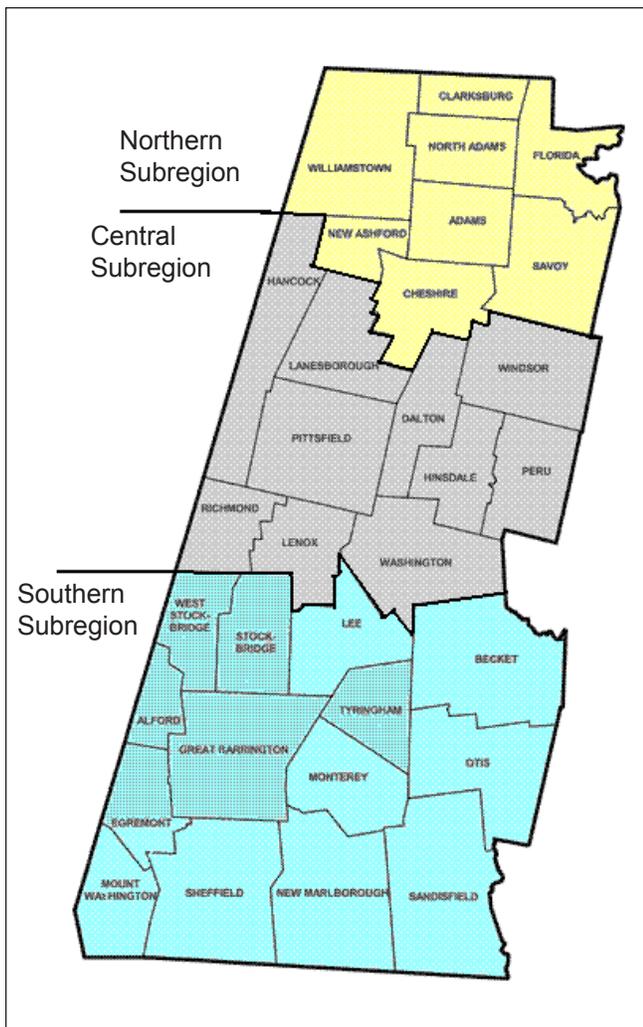


Figure 1.—Map of Berkshire County. Cultural Centers are located in Williamstown (north subregion), Lenox (middle subregion), and Great Barrington (southern subregion).

2.0 OVERVIEW OF THE COUNTY

The vast majority of Berkshire County has a decidedly bucolic character, with a population of approximately 132,000 people spread over 931 square miles (approximately 142 people per square mile). However, in the past few years there has been a significant housing boom, mirroring trends across the nation. Nearly two-thirds of the new permits for single-family residential structures issued in the county between 1995 and 2005 were issued in just 3 years: 2003, 2004, and 2005. Furthermore, there appears to be a concentration of development in the southern subregion of the county. But just what draws new residents to a county with a dearth of high paying jobs and relatively sparse infrastructure?

According to the Berkshire Visitors Bureau, Berkshire County is “America’s Premier Cultural Resort” offering abundant recreational and cultural attractions. Mount Greylock, the state’s highest peak, along with Wahconah, Ashley, and Bash-Bish Falls, offer pristine natural mountain scenery. Onota, Pontoosuc, Laurel Lake, Otis Reservoir, and the Stockbridge Bowl are just a few of the hydrological attractions. The Ashuwillticook bike trail runs 11.2 miles between Lanesborough and Adams. The Jiminy Peak, Bousquet, and Butternut ski areas welcome visitors from around the world in winter months. Nature preserves, such as Sheep Hill in Williamstown and The Massachusetts Audubon Society’s 1300-acre Pleasant Valley Sanctuary in Lenox, along with myriad state forests and local parks, provide endless opportunities for recreation. The Appalachian Trail, which runs from Maine to Georgia, crosses sections of the county. Museums, such as the Massachusetts Museum of Contemporary Art, The Clark Art Institute, and The Williams College Museum of Art are all located in the northern subregion, as is the Williamstown Theater Festival. The central subregion is host to The Mount, Arrowhead, Shakespeare & Company, and world-renowned Tanglewood, among other attractions. The southern subregion includes the bustling downtown of Great Barrington, The Berkshire Theater Festival, Simon’s Rock College, Berkshire Botanical Gardens and the Mahaiwe performing arts center.

Throughout the county, residents and industry recognize the necessity of both preserving open space and woodlands and, as some development is requisite to a healthy economy, promoting sustainable growth. Indeed, there is evidence that local companies and service industries are following environmentally friendly practices, such as purchasing comestibles from the Berkshire Grown Co-op or installing a wind turbine. Organizations such as the Williamstown Rural Lands Foundation, Berkshire Natural Resources Council, and the Housatonic River Initiative are just a few of the many groups working toward the common goal of sustainability and preservation. The Berkshire County Regional Issues Committee recently advocated for communities to adopt the Scenic Mountains Act legislation, which would limit development in pristine mountain areas.

3.0 LITERATURE REVIEW

The “gravity model” of economic analysis is built on the theory that people, goods, and commerce, are generally drawn to population centers and that closer and/or larger population centers provide a stronger “pull.” In this type of analysis, distance is a key variable. Prior research has generally not used the gravity model to analyze the impacts of recreational and cultural tourism on residential development.

Carrion-Flores and Irwin (2004) investigated residential development and the factors affecting it in a suburban area of Ohio near Cleveland. They use spatial statistics to obtain the distance variable “mean to nearest neighbor.” While their study focuses principally on sprawl and land-use conversion rates, several facets are applicable to the present study. They found that residential development has become increasingly fragmented and dispersed in their study area. Similarly, my previous research (Fedoryshyn, 2006), found that the majority of new residential development in Berkshire County is taking place in the more rural communities.

Guo (2004) used the gravity model in his investigation of the effects of cultural differences (including variables such as religion, language, and GNP) on the foreign trade between nations, particularly China and the United States, Guo denoted “DISTANCE” as the distance between the “geographical centers of gravity of the *i*th and *j*th countries” (p. 788). The model also accounts for two nations being adjacent to each other with a dummy variable “ADJACENT”. Guo (2004) concluded that having similar language(s), religion(s), etc. are a boon to trade between nations.

Lee and Pace (2005) examined the influence of distance on retail sales. Like the present research, they measured how distance affects human behavior on a *small* scale in contrast with the majority of gravity analysis-based research which looks at national or multinational scales. Lee and Pace’s distance variable also takes into account how distance is representative of marginal benefits (in terms of potential dollar amount).

4.0 EMPIRICAL MODEL

This study uses the number of building permits issued by each municipality as a proxy for the number of new homes constructed. In general, people may build homes in a particular locale because of proximity to public service bundles, transportation, and potential or actual employment opportunities. Berkshire County is atypical in several respects, however. In the county, there is a substantial market for second homes and second-home buyers often do not need or want amenities like schools and highways. Further, many residents move to Berkshire County to distance themselves from what Carrion-Flores and Irwin call “urban disamenities” like overcrowding or noise. The Berkshires are also distinguished by the abundant cultural and recreational opportunities available to residents and tourists alike, and the region therefore tends to attract residents who value natural beauty, country-like settings, and cultural attractions.

In economics, the gravity model is considered “the workhorse for studies on the pattern of trade and the influence of transportation costs” (Brun et al., 2005, p. 99). And according to Lee and Pace (2005, p. 55) the gravity model “incorporates space via a distance variable.” The distance variable in the present study is driving time to the nearest cultural center. In theory, the farther away in terms of driving time one is from a cultural center, the less likely they are to build a home there; in mathematical terms, a proportional change in building permits is dependent on a proportional change in distance from the nearest cultural center.

Each municipality exports patrons and money, on the positive side, and traffic on the negative to the nearest cultural center. The number of permits issued is therefore described in this function:

$$\# \text{ of permits issued} = f(\text{driving time, population, median income, year dummy, southregiondummy, northregion dummy})$$

This function is similar to the one that Guo (2004) developed using a distance variable along with language, religion, and others. As Guo’s variables

represent the factors that could attract new trading partners to a particular country, the variables in this function for this study represent the factors that can make a community more desirable to people seeking to construct new single-family residences. Furthermore, this model takes into account the elasticity of a cultural center's power to attract new residents. The closer people live to one of these centers, the more likely they are to visit; in other words, there is an increase in the marginal benefit of building a new single-family home near a cultural center.

The primary data for this study is the number of single-family, new construction, residential building permits issued by each of the 32 municipalities in Berkshire County between 1995 and 2005. The distance variable is the driving time from the municipal hall (representing an average distance from any point in the municipality) to the municipal hall of the nearest cultural center. All driving distances were acquired from Mapquest.com. This is more accurate than simply using the raw geographic distance (i.e. miles) because of the varied terrain found throughout the county. For example, it might take just as long to get through 3 miles of Berkshire County's mountainous terrain as it would to go 10 miles in a place with flat terrain.

Cultural centers will not survive economically without sufficient patronage and municipalities cannot provide public services without funds collected through taxes. In the Berkshires, proximity to cultural centers seems to make near and adjacent communities more attractive to potential new residents. While the overall gain in utility from living within a practical driving time is beyond the scope of this paper, I did attempt to construct a model that takes this relationship into account, using a gravity model as a linear regression.

$$Y_{permits} = x_1mintime + x_2dummyyear + x_3inc + x_4popden + x_5dummysouth + x_6dummysouth + u$$

Where:

$Y_{permits}$ = The number of permits issued in each municipality by year, 1995-2005

$Mintime$ = The minimum driving time from a municipality to the nearest cultural center

$DummyYear$ = Distinguishes pre- and post-2003 data

Inc = The median income for each municipality

$Popden$ = The population density of each municipality (found by dividing the raw population by the amount of land, in square miles)

$DummyNorth$ = Indicates northern subregion data

$DummySouth$ = Indicates southern subregion data

u = The error term

The standard application of the gravity model contains a representation of GDP, population, and a variable representing distance. For the above model tries to account for "trade" between a town and the nearest cultural center, the standard variables must be adjusted. Median household income therefore substitutes for GDP, population of the municipality (from the Massachusetts Government Databank) is used for population, and driving time to the nearest cultural center substitutes for distance.

Three dummy variables are also included.

$DummyYear$ separates the building permit data into two categories: a zero (0) if the observation is prior to 2003 or a one (1) if the observation is from 2003 onward. This controls for the marked rise in residential building permits from 2003 onward. The second dummy variable, $DummyNorth$ distills out municipalities that are in the northern subregion of the county so that a zero (0) denotes that the observation is not from the northern subregion and a one (1) denotes that it is. Lastly, $DummySouth$ is the converse of $DummyNorth$, where a one (1) denotes a community in the southern subregion. $DummyNorth$ and $DummySouth$ are necessary for several reasons. Since we have named three principle cultural centers in the county (Williamstown, Lenox, and Great Barrington), the chance that one subregion is having more of an effect than another must be distilled out. Thus I have separated the draw of the northern versus the southern sections of the county. Communities that receive zeroes for $DummyNorth$ and $DummySouth$ are from the central subregion.

Table 1 gives the descriptive statistics of the variables including mean, extrema, and standard deviation. The dummy variables all have extremes of 1 and 0 since there are only two choices for each observation. The mean of PopDen (population density) is only about 140 (140 people per square mile) because the county is so rural.

5.0 RESULTS

Out of 352 building permits issues in Berkshire County between 1995 and 2005, over two-thirds (73 percent) were issued in 2003, 2004, or 2005. Also, only 25 percent of the building permits were issued in the northern subregion while about 44 percent were in the southern subregion. The mean of the median incomes in the entire region was \$25,814. All variables were found to be significant to $<.001$ (see Table 2). The standardized coefficients support this paper's hypotheses, namely that new single family home construction is clustered around recreational and cultural attractions and that the number of new homes

in each community is directly proportional to the distance of that community from the region's cultural center.

The only unexpected finding was the relationship between existing population and the number of new building permits in a community. It may be that larger communities had a greater percentage increase in permit issuances, thus skewing this variable. Median income also seems to have a negative effect on the new permits issued in a community; it may be that these variables are indirectly related land if less expensive in municipalities with lower median incomes.

As expected, new residents are more strongly attracted to municipalities with high population densities presumably because many people still want to be close to public service bundles. As expected, the southern subregion with its many year-round cultural and recreational opportunities is the most popular for new home construction. At the same time, the northern

Table 1.—Descriptive statistics (N = 352)

Variable	Mean	Minimum	Maximum	Standard deviation
No. of starts	9.92	0	77	9.54
Mintime (in minutes)	20.03	1.2/41.0	41.0	10.91
DummyYear	.27	0	1	.44
Inc (Median household income in thousands of \$)	25.81	16.4	50.2	7.79
PopDen (people per square mile)	140.50	5.99	1087.8	218.64
DummyNorth	.25	0	1	.43
DummySouth	.43	0	1	.50

Table 2.—Coefficient estimates

Variable	Beta coefficient	T-Stat	Significance
Mintime	-.172	-4.760	.000
DummyYear	4.58	6.453	.000
Inc	-.433	-7.984	.000
Popden	.022	11.342	.000
DummyNorth	-6.99	-6.282	.000
DummySouth	4.21	4.979	.000
Constant	20.16	10.235	.000

N= 352; R-Squared= .541

subregion had the lowest number of new home permits, perhaps because of the lower availability of buildable land, jobs, and cultural activities. The mintime variable also has an inverse relationship with the number of new home permits, confirming that the further a municipality is from a cultural center, the less desirable it is as a place to build a new single-family home.

The beta coefficient estimates in Table 2 describe the influence of each variable on the number of permits issued in a municipality. For example, an increase of one minute in driving time to a cultural center (variable mintime) is associated with a 17 percent decrease in the number of new permits issued in a municipality. Thus, as one gets further from a cultural center, there tend to be fewer new, single-family homes.

6.0 CONCLUSIONS

As Brun et al. (2005) suggest, “distance is not dead.” That is, despite all the advances in modern transportation and technology, distance still drives people’s settlement patterns. In Berkshire County, there is a significant relationship between a municipality’s distance to a cultural center and the number of new single-family residential building permits issued in the municipality. This study successfully used the gravity model of economic analysis to examine settlement patterns by substituting local building permits for international trade in commodities.

Given the results, I failed to reject the null hypothesis that proximity to a cultural center is directly related to new, single-family residential development; in other words, new single-family residential development is concentrated in municipalities with the shortest driving distances to regional cultural centers. An r-square of .54 indicates that this analysis explains roughly 54 percent of the reason that people decide to build single family houses in a specific municipality.

In addition, this study found that from 1995-2005, development was concentrated in the southern subregion of Berkshire County where nearly 44

percent of the new residential permits were issued. The draws there are large, rural communities, relatively inexpensive and expansive tracts of land, and cultural centers.

Carrion-Flores and Irwin investigated the relationship between sprawl, “leap-frog” development, and new residential development. I share many of their conclusions. People build new homes in rural areas at least in part to get away from urban disamenities – what Carrion-Flores (2004) has called “flight from blight” (p. 899) – yet there is also a desire to be near *something*. This research has found that proximity to nearby cultural centers, existing population density, and a location in the southern subregion of Berkshire County are three of the principle factors that determine where someone is most likely to construct a single family home.

7.0 CITATIONS

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