



4-1-2016

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Recommended Citation

Lu, Han 16 (2016) "The Impact of the Constitution Trail on Adjacent Residential Property Values," *The Park Place Economist*: Vol. 24

Available at: <https://digitalcommons.iwu.edu/parkplace/vol24/iss1/16>

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The Impact of the Constitution Trail on Adjacent Residential Property Values

Abstract

What this research intends to find will be beneficial for various groups. Knowing how the Constitution Trail is impacting the adjacent property values is important for the city-planning department, because for future expansions and potential new trail projects, they will be able to make better use of land spaces to work with property owners as well as gaining necessary supports from the public. For property owners and renters, they will have a more clear understanding of how their properties are affected by the trails.

Keywords

community impact, economic impact, Constitution Trail, Bloomington-Normal, Central Illinois, property values, city planning

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I. Introduction

As one of their responsibilities, city governments try to establish various infrastructure projects and public goods to benefit the local community. The Constitution Trail is a multi-purpose linear greenway that runs through the twin cities of Bloomington and Normal, Illinois and was established by the respective municipal governments. The existence of Constitution Trail provides various benefits for the surrounding community, such as fitness and exercise, recreation, transportation and cultural activities. Ford (2009) reported that during Halloween season, some portions of the trail were decorated as “Haunted Trails”, serving as a part of public cultural welfare. Moreover, Lindsey (2004) argued that besides the direct functions, the trail is also generating positive externalities, such as the visual enjoyment and the desirable environmental effects.

The Constitution Trail was built on the old paths of railroads, which were abandoned in the early 1980s. Hugh Atwood, a member of the Bloomington City Council, proposed the idea of building a trail on the pathway of the railroad, which had its grand opening on May 6, 1989, with the length of 4.3 miles (Brief History). As Ford (2009) reported, over the last decades of expansion the trail currently has multiple branches, with a total coverage of 37 miles.

Even with the various benefits the trail provides, it is still controversial whether the trail is desirable for adjacent property owners. Racca (2006) in her research presented the opposing opinions, which expressed that a recreational trail is causing negative impacts on nearby houses, including loss of privacy, increase of noise level and higher crime rate. Some property owners have argued that having a trail nearby is hurting the value of their residential properties, as their backyards can be seen by the bikers and pedestrians.

Of course, the economic welfare the trail is

providing covers multiple aspects of the community, including increased health level due to exercising and benefits to the environment from the trees, etc. This research will only be investigating the impact of the Constitution Trail on the adjacent resident property values. The study questions this paper attempts to answer are: Is the impact of the Constitution Trail on adjacent residential properties positive or negative? How much do the values of properties change in dollar terms as a function of their distances to the Constitution Trail? Learning the answers to these questions will help settle down the argument whether nearby property values are hurt, and to what extend. Knowing the effects on property values in dollar terms will help property owners to conduct more accurate valuation of their houses.

What this research intends to find will be beneficial for various groups. Knowing how the Constitution Trail is impacting the adjacent property values is important for the city-planning department, because for future expansions and potential new trail projects, they will be able to make better use of land spaces to work with property owners as well as gaining necessary supports from the public. For property owners and renters, they will have a more clear understanding of how their properties are affected by the trails.

II. Data

The data this study will be analyzing, which are aggregated by the McLean County Planning Commission, include information of 12,066 properties sold in the Bloomington-Normal area from 1980 to 2013. Characteristics of the properties reported in the data include sale price, distance to trail, total square footage, number of rooms, with a total of 65 variables. Most of the variables are categorical such as exterior condition and garage type. To compare houses sold in different years with different inflation levels, sale prices were transformed into 2013 dollar terms,

which will provide readers with a clearer understanding of the values of the houses. The Housing Price Index (HPI) of Illinois was used for the transformation, which was obtained from the Federal Reserve Economic Data (FRED) database.

Figure 1 reports the price of the houses in terms of 2013 dollar values. The average house value is \$171,478, while the maximum value is \$622,830 and the minimum is only \$7,537. There are 5,712 houses with values between one hundred thousand and two hundred thousand, which account for the majority of the properties. Figure 2 reports the proximity distribution of the houses to the Constitution Trail. There are 3,645 properties that are within 1000 feet of the trail and 3994 properties are between 1000 and 2000 feet from the trail. This information helps amplify the magnitude of this study, as the data indicates that the average distance to the trail of the houses is only 1,761 feet, which is roughly 0.33 miles. As can be seen in the graph, the majority of the houses being studied are within 2,000 feet of the trail. The furthest house has a proximity of 5,408 feet, which equals to approximately a mile, while the closest is only 26 feet away from the trail.

When considering purchasing a house, the size is one of the most important features buyers care about. Figure 3 shows the size distribution of the houses. As can be seen, most of the houses are between 1,500 and 2,500 square feet. The average size of the properties is 1,742 square feet. The quantitative descriptions of the houses provided by the dataset serve as aids for readers to be more familiar with the research subject of this study.

The advantage of the dataset is that it contains a large sample size. The weakness of the dataset is that some of the observations are missing critical information, such as sale price and square footage. These invalid entries are meaningless for investigating the relationship between distance to the trail and sale price of properties.

III. Methodology

The goal of this study is evaluating how the proximity to the Constitution Trail of a house is impacting its value. Linear regression using Ordinary Least Square (OLS) method will be employed, which is conducted through the statistics analytical software Eviews.

The linear regression model of this study is:

$$\text{House Price} = a + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \dots + \alpha_n X_n + \varepsilon.$$

This model is able to indicate through the coefficients how each feature of a house is affecting the sale price. The X s are the variables that determine the value of a house, such as size and distance to the trail. The alphas are the coefficients of the variables, which indicate the degree of linear association. In this study, the distance to trail is the independent variable, while the house price is the dependent variable. All other features of a house will be controlled variables, while insignificant variables indicated by the regression output will be dropped.

OLS regression is one of the most common data analytical methods for economic research. This method is able to provide a clear numerical answer to the research question, which asks how much the value of a house increases (or decreases) as it is closer to the Constitution Trail.

IV. Literature Review

Rosen (1974) defined hedonic pricing as a model that identifies the implicit prices of differentiated products, which are determined by both the internal characteristics of the products and other external factors that contribute to the price differentiation. This model is widely utilized in the study of economics, as applied economists frequently work on assessing the social welfare of public functions, which will likely not have an explicit price, but determined by various internal and external factors.

The seminal theory of this research is established by Kelvin Lancaster. In his journal "A New Approach to Consumer Theory", Lancaster (1966) established the theory that consumer behavior is determined by a list of characteristics that goods possess. Quoting Lancaster, "The good, per se, does not give utility to the consumer; it possesses characteristics, and these characteristics give rise to utilities". The concept identified in this research serves as the stepping-stone for the later development of the hedonic pricing model.

Eight years later, Sherwin Rosen (1974) published research "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition", in which he brought Lancaster's concept of product differentiation forward and developed the hedonic pricing model for product valuation. In this study, Rosen

presented the price of a good in the form of a vector collection of characteristics, while each and every one of them contributes to the price. The established valuation equation is in the form of $p(z) = p(z_1, z_2, z_3, \dots, z_n)$, where $p(z)$ denotes the price of a product and z_1 to z_n denotes the list of defining features of the product. This theory is the predecessor of the hedonic pricing model used in this study.

The hedonic pricing model has been employed by many scholars in their research. Glenn Blomquist (1974) used hedonic pricing to assess the impact of electric utility power plant on the property values in the nearby area. This is one of the first studies that utilized hedonic pricing model to evaluate housing prices. Blomquist (1974) found that electric power plants have a negative effect on nearby property values. A minimum distance of 11,500 feet is required in order to make the power plant irrelevant to the prices of the property.

Correll et al. (1978) are the first scholars that employed hedonic pricing model to evaluate the effect of an urban greenway on adjacent property values. In a study about housing prices in Boulder, Colorado, they found that the houses in an urban area would have a decrease of 5.4 million dollars in values collectively if there had not been a greenway through the city. Moreover, the finding indicated that for every foot away from the greenway in distance, the value of the house would decrease by 4.2 dollars. Clearly, this study suggests that urban greenways have a positive impact on the adjacent property values.

In a more recent publication, Lindsey et al. (2004) conducted a similar study of how the Indianapolis Greenway Systems affect property values in Indianapolis, Indiana. From 1999 to 2006, 9,348 property transactions in Indianapolis were studied. This finding indicates that while most of the greenways have a positive influence on property values, others may have minimum to no effect.

Compared to previous studies on similar subjects, the advantage of this research is that the sample size is large. As mentioned in previous sections, the data contains 9,528 property transactions. However, a weakness of this study is that the research focus is rather narrow, which only analyzes how the trail is affecting adjacent property values.

V. Results & Analysis

This section will focus on discussing the pre-

liminary data manipulation and analyzing the regression results of the hedonic pricing model.

Before the regression was conducted on the variables, a series of data manipulation were done to ensure the reliability of the regression. The first step was to determine the qualification of each observation. The original dataset of this study contained many invalid entries, for instance, some housing transaction observations did not include a sale price, which made the entry meaningless for the test. After cleaning up the dataset, the last step was to transform the nominal sale prices into real sale prices.

Initially, over 60 variables were presented in the original dataset. However, after rounds of eliminations of insignificant variables, 16 variables were left in the hedonic pricing model to determine the real value of a house. These variables and their coefficients will not be discussed in this paper, as the focus of this project is how a house's proximity to the trail impacts its value.

As can be seen from Table 4, the coefficient of the dummy variable for houses between 500 and 1000 feet from the trail and the coefficient of the dummy variable for houses between 1000 and 1500 feet from the trail are -2060.812 and -3681.069, respectively. (The dummy variables for houses over 1500 feet away from the trail were shown to be insignificant, therefore these houses were used as the reference group in this case). The difference between the coefficients is 1620.248, which can be interpreted as such; for two identical houses, the one that is located between 500 and 1000 feet from the trail would be 1620.248 dollars more expensive than the one located between 1000 and 1500 feet away from the trail. The adjusted R-squared value of this regression is 0.733, which suggests that the model is able to explain 73.3 percent of the variations.

It is necessary to clarify why the houses within 500 feet from the trail is excluded from the analysis. Historically, The Alton Railroad that charted in 1847 passed through Bloomington-Normal area, which was later removed and its sites were used to construct the Constitution Trail (Brief History). During the years the railroad passed through town, some houses were constructed near the railroad for convenience purposes. The condition of these aged houses are generally not as good as the ones that were constructed more recently, which caused the fact that the average value of the houses that are within 500 feet from the trail is lower than other houses in different

areas of the community. Therefore, the analysis focused on comparison of the houses that are in between 500 and 1000 feet and the ones in between 1000 and 1500 feet from the trail.

VI. Conclusion

The goal of this study was to determine how the Constitution Trail is impacting the adjacent residential property values. The findings indicate that the trail is making a positive impact on the residential properties, as a house located between 500 and 1000 feet from the trail would be 1620.248 dollars more expensive than an identical one located between 1000 and 1500 feet away from the trail.

Compared to previous studies, the result of this research is consistent with the findings of other similar projects. However, as a result of the unique railroad situation in this scenario, the increase in value of a house per unit distance closer to the trail cannot be determined. In other studies mentioned in the literature review section, the urban greenways were constructed to incorporate into the city, whereas in this research the city was expanded from the already existed railroad stations, which later turned into greenways. The methodology of the studies were consistent, which was linear regression based on hedonic pricing model.

The findings of this research provide some helpful information to the urban planning department as well as property owners. As mentioned in previous sections, there are opposing voices against the Constitution Trail arguing that the trail is causing noises, loss of privacy, and potential dangers to nearby properties. The finding of this empirical study is able to present to the community numerically how exactly the Constitution Trail is affecting adjacent properties, which will help advocate future expansions of the trail as well as calm the opposing opinions.

This project can be taken beyond the existing findings. One of the potential future research direction is to distinguish between being near to the entrance of the trail and being near to the pathway of the trail, and evaluating the different impacts that may have on the values of adjacent properties. The result of such research will serve as a better guidance for future expansions as well as property valuations.

Appendix

Figure 1.

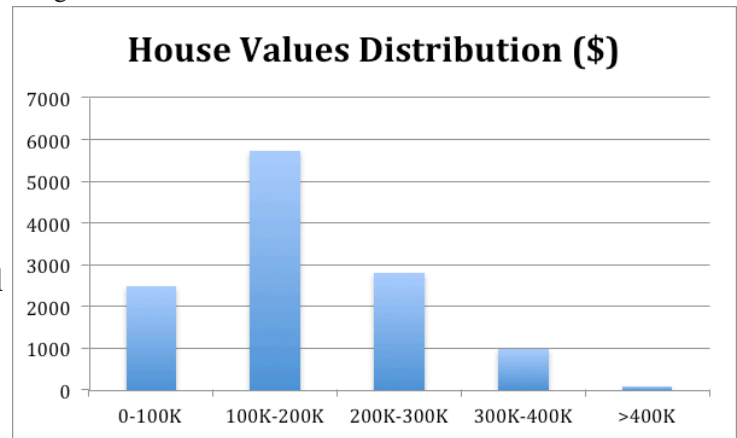


Figure 2

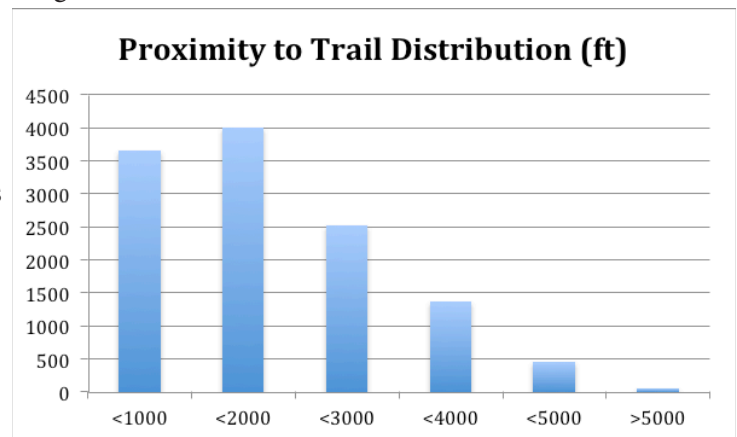


Figure 3

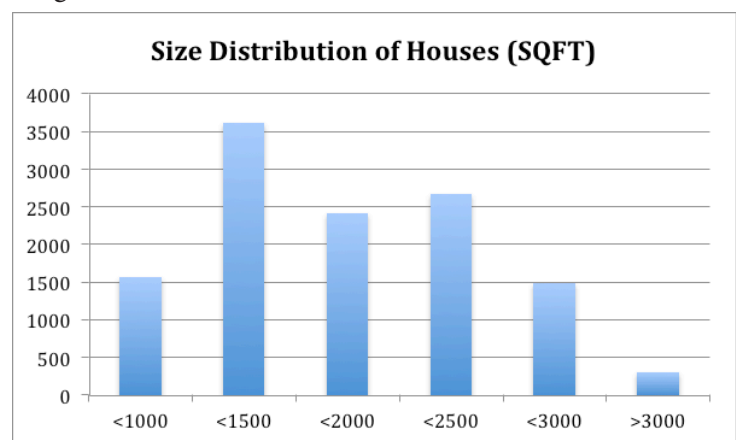


Table 4

Dependent Variable: Property Value	
500-1000 ft	-2060.821* (-1.9441)
1000-1500 ft	-3681.069*** (-3.1491)
Adj. R-Squared	0.7329

Areas. University of Delaware, Delaware Center for Transportation Working Paper 188.

Rosen, S. (1974). Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition. *Journal Of Political Economy*, 82(1), 34-55.

References

All-Transactions House Price Index for Illinois. (n.d.). Retrieved September 24, 2015, from <https://research.stlouisfed.org/fred2/series/ILSTHPI>

Ann Ford, M. (2009, October 15). Haunted trail to start this weekend. *Pantagraph, The* (Bloomington, IL).

Ann Ford, M. (2009, October 15). Constitution Trail set to mark 25 years. *Pantagraph, The* (Bloomington, IL).

Blomquist, Glenn. 1974. "The Effect of Electric Utility Power Plant Location on Area Property Value." *Land Economics* 50 (Feb.): 97-100.

Brief History. (n.d.). Retrieved September 9, 2015, from <http://www.constitutiontrail.org/history.html>

Correll, M. R., Lillydahl J. H., & Singell, L. D. (1978). The effects of greenbelts on residential property values: some findings on the political economy of open space. *Land Economics*, 54(2), 207-218.

Karadeniz, D. 2008. The Impact of the Little Miami Scenic Trail on Single Family Residential Property Values (Unpublished Master's Thesis). University of Cincinnati School of Planning.

Lancaster, Kelvin J. "A New Approach to Consumer Theory." *J.P.E.* 74 (April 1966): 132-56

Lindsey, G., J. Man, S. Payton, and K. Dickson. 2004. "Property values, recreation values, and urban greenways." *Journal of Park and Recreation Administration*. 22, no. 93: 69-90.

Racca, D. and A. Dhanju. 2006. Property Value/Desirability Effects of Bike Paths Adjacent to Residential