

SENIOR THESIS

PAY OFFS OR TRADE OFFS:  
THE EFFECTS OF HISTORICAL PROPERTY DESIGNATION IN NEW JERSEY

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**ABSTRACT:** This study analyzes the effect of historic designation on property values using propensity score matching. We begin with a dataset of municipalities that received a letter of eligibility for historic designation from the State of New Jersey. Because only some of the municipalities ultimately apply for and receive the designation (i.e., the treatment), we use propensity score matching on the treatment to identify comparison groups of municipalities from the group of eligibles. This process identifies 6 municipalities in 3 groups. Using a differences-in-differences design, we then compare real prices for properties in treated and untreated municipalities before and after historic designation for properties within the historic districts and properties outside of the districts. We find that historic designation decreases real prices for properties within the historic district by 18.2%, but raises prices outside the district by 4.4%.

## **I. Introduction**

Historic property designation has been hailed as an effective means of protecting the historic character of neighborhoods; however, such preservation efforts are also associated with additional costs to homeowners and local governments. As a result, it is unclear whether there is an overall positive or negative effect as a result of such preservation activity. For example, government protection, the prestige of a historical designation, and access to federal tax credits could raise residential property prices.

However, the financial burdens of restoration or maintenance costs, as well as restrictions on the use of the property, could instead cause property values to fall. If state and local governments face significant expenses to rehabilitate these sites, these costs could increase property taxes and lower property values. Costs for municipalities may also rise because historic designation protects sites from demolition in all federally-funded projects and because urban/town planning and policy decisions must consider the impact on the historic district.

Thus, a better understanding of the net effect of historic designations is valuable. To analyze the effect of historical designation, this study uses propensity score matching to estimate the effect of historical designation on property price changes in New Jersey. We begin with a dataset of municipalities that received a letter of eligibility for historic designation from the State of New Jersey. Because only some of the municipalities ultimately apply for and receive the designation (i.e., the treatment), we use propensity score matching on the treatment to identify comparison groups of municipalities from the group of eligibles. Using a differences-in-differences design, we then compare real prices for properties in treated and untreated municipalities before and after historic designation for properties within the historic districts and properties outside of the districts.

## Pay Offs or Trade Offs: The Effects of Historical Property Designation in New Jersey

History and law make New Jersey an attractive candidate for studies of the effect of historical designation. New Jersey's Municipal Land Use Law allows designation at the municipal, state, and/or national level for historically significant landmarks, individual properties, and entire districts. The State uses several criteria to evaluate a site's eligibility. Generally, the site or structure must be over 50 years old and emphasize an important time period. Designations are typically made on homes of historical figures, locations of key events, architecturally significant properties, or archeological sites. In the case of the designation of an entire district, properties can be classified as "contributing" if the property itself is considered historic or "non-contributing" if the property does not meet the designation criteria, but is located within the geographic area of the district.

While listing a property on the national or NJ State Register does not automatically place restrictions on the actions of private property owners, homeowners of contributing properties may be restricted in the alteration, construction, renovation, or demolition of their properties as a result of local ordinances or municipal zoning laws (NJHPO/OSP 1996). While 190 out of 566 municipalities in New Jersey have historic preservation ordinances, the degree of authority granted to these local commissions varies across municipalities.

New Jersey's rich history adds to the interest in historic designations. As one of the original thirteen colonies, the State is closely tied to the founding and development of our nation. Due to its central location between the key cities of New York City and Philadelphia, the State is home to a wealth of historic treasures that date back as far as the colonial period. Thus, a large number of districts throughout the State meet the requirements for historic designation. Additionally, because New Jersey is the most densely populated state, it is likely that many of these districts will contain a large sample of residential properties to include in the study. Finally,

with one of the highest tax burdens in the nation, New Jersey homeowners may be especially incentivized to participate in preservation activities because of the tax benefits involved.

Although a number of studies in have associated historical designations with positive economic benefits, it remains unclear whether or not the benefits of designating a property in New Jersey outweigh the costs.

## **II. Literature Review**

While there have been previous studies on the economic effects on historical designations, the effect of historic designations specifically in New Jersey has received little attention in the literature. A well-known study by Rypkema (1997) examined property values in local historic districts in five cities in Indiana between 1980 and 1995. The districts selected for the study had been established long enough for the impact on property values to be measurable. Of these districts, four were residential in nature, while one was both residential and commercial. The study used house sale data within the fifteen-year time frame to calculate the average yearly sales price trend for the historic districts which was then compared to the average yearly sales price trend of the entire city where district was located. The study demonstrated that local historic districts did not adversely affect real estate values since house prices in these districts appreciated at an equal or faster rate than house prices for non-designated areas within the same cities.

Although the five cities included in the study differed in size, location within the state, and condition of the local real estate market, these findings were consistent for all studied districts. However, one key limitation of this study was the small samples of annual house sales per district. Because of the small samples, the raw data does not provide an accurate picture of

the changes that occur over time, thus the study relied on average yearly sales price trends to make appropriate comparisons. More importantly, the design is not able to capture the effect of historical designation on properties outside the historic district, nor is it able to isolate the effect of historic designation (as separate from the property price effects of agglomerations of historical structures that do not have historical designation).

Following Rypkema's study, a report by Leithe and Tigue (1999) summarized four separate studies on historic designation in four different cities in the state of Georgia with similar study designs and time frames. The first study on Tifton, GA found that the sample of property values for locally designated historic neighborhoods increased by almost 11% on average, while the sample for non-designated neighborhoods only grew at an average around 9% between the years of 1983 and 1996. The sample of property values from the city's downtown area, which was both locally and nationally designated, grew at an even greater average rate of approximately 13% during this time. In this study design, it is unclear whether the non-designated neighborhoods were historic or eligible for a designation. In the second study, the value of the sample of properties in designated neighborhoods in Rome, GA rose 10% more than the value of non-designated neighborhoods from 1980 to 1986. In a study of Athens, GA, the average assessed value for a sample of properties in the districts with national and local designation grew by almost 48% compared with an increase of 34% for the three non-designated neighborhoods. Finally, in Savannah, GA, three neighborhoods with similar characteristics were compared: the two neighborhoods within the nationally-listed Savannah Historic District experienced price appreciation of 603% and 279%, respectively, while the neighborhood not listed on the national register only appreciated 15% from 1974 to 1997.

A number of other studies have focused on the external effects of historic designation by comparing individual historical districts with neighboring non-historic districts. As emphasized by Coulson and Leichenko (2001), such a design does not allow researchers to observe whether there are internal effects of the designation on contributing properties and non-contributing properties that fall within the same historic district since the benefits of designation are granted to the entire neighborhood. Thus, in order to quantify both the external and internal effects more accurately, Coulson and Leichenko (2001) used tax-appraisal data from a sample houses in central Abilene, Texas, rather than entire neighborhoods. The selection of Abilene as the study area is noteworthy because the city conferred designations on individual houses, so that house-to-house effects were able to be observed. Out of 7,600 properties included in the study, 160 houses were designated as historic on the local level. In the study, the team demonstrated the presence of positive externalities and found that the effect of historical designation can be substantial for both contributing and non-contributing properties within the same neighborhood. The team also proved that the internal and external benefits of higher property values outweighed the costs of granting tax breaks to homeowners for the city of Abilene. Yet, this study cannot be considered a complete measure of the net economic benefits of historic designation since it did not estimate the costs of designation faced by homeowners.

A follow-up study (Leichenko et al, 2001) expanded on previous work by increasing the scope of the study from one city to a set of nine Texas cities. In six of these cities, residential properties within historic neighborhoods were compared with properties located in comparable neighborhoods in the same city. In cities, such as Abilene and Nacogdoches, where properties were designated individually, comparable properties were selected from the same or similar neighborhoods. For Forth Worth, where historic properties were located both inside and outside

of historic districts, the team used property value data for the entire city. The results of this study were consistent with previous findings that historic designation is typically associated with higher average property values. Specifically, the study found that this increase accounted for 5-20% of the total property value. However, the results also suggested that the type of historic designation – local, state, or national designation – had a mixed effect on housing values. This suggested that the conditions in local housing markets and differences in local historic zoning guidelines within each city determined whether a national or state designation had significant effects on top of the effects of a local designation.

A later study by Coulson and Lahr (2005) also used individual house appreciation rates to reduce the bias from comparing average property values in designated neighborhoods to those in undesignated neighborhoods. Their study compared appraisal property data from six historic neighborhoods with property data from five non-historic neighborhoods in Memphis, Tennessee during the years of 1998 and 2002. Except for one neighborhood that was considered too unique to have a direct comparison, the historic neighborhoods of this study were matched with non-historic neighborhoods based on factors such as income level and level of house prices. As expected, by controlling for intrinsic house characteristics, the team found that properties in historical neighborhoods had higher price appreciation rates than properties in similar neighborhoods. Interestingly, they also found that new properties located in historic districts benefitted from a location in a historic district either as much as or more than older properties.

Narwold et al. (2008) presents additional evidence for the presence of positive externalities due to historic designation on individual properties. Through a sample of 1,953 house sale transactions from 2000 to 2006, this study examined the effects of designating individual houses in San Diego, California as a result of the Mills Act. The study found that

houses with the designation received a 16% price premium over similar houses located within the same neighborhood. Because this premium exceeded the capitalized value of the tax benefit associated with designation, the authors of the study speculated that there was a quality difference in historic houses that was not captured by the hedonic price model or that homebuyers in this area were willing to pay such a premium for a historically designated house.

A study by Cebula (2009) provided an update to the report of Leithe and Tigue (1999) by applying the hedonic pricing model to the housing market of the Savannah Historic Landmark District in Savannah, Georgia using data from 2000 to 2005. The study sample included actual market transactions from 2,888 single-family homes, of which 591 were located within the historic district. Similar to the earlier studies of Georgia, this study determined that properties that were national historic landmarks had a 1.7% premium over non-designated properties, while properties located within a historic district received an average price premium of 20-21% compared with Savannah properties outside of the historic district.

The latest study of the effect of historic preservation on property values in the state of New Jersey has recently been completed by Lahr and Listokin (2014). The team studied New Jersey municipalities between the years of 2000 and 2008 through a two-stage least squares hedonic regression, corrected for spatial autocorrelation. The team found that the New Jersey municipalities with state-registered historic districts were less likely to raise taxes than municipalities without historic districts (rate of 0.0078% vs the NJ mean of 2.51%). However, the team also found contrary results. According to their study, municipalities with a local historic ordinance were associated with house price changes that were 8.7% lower than those without local historic ordinances. The unknown reasons for this negative effect plus the general lack of



significant findings in this study suggest the need to study historic preservation effects in New Jersey further.

Two additional studies examine the effects of historical preservation outside of the U.S. In one of the largest studies of this kind, Shipley (2000) examined sales history data on 208 properties and compared average value trends of individually designated properties and properties within historic districts with overall average value trends for fourteen communities in Ontario, Canada. The study did not find a negative impact on property values. Since 74% of “heritage properties” studied performed at the average level or better than overall market trends, Shipley argued that there was a strong market for heritage properties and that the heritage property values were generally resistant to economic downturns. However, as with other studies, the study design was limited because of a low number of sales transactions during the study period. While the team corrected for this problem by expanding the number of communities included in the study, it is uncertain whether this solution truly compensated for having small sample sizes.

In a more recent study, Ahlfeldt, Holman, and Wendland (2012) studied the effects of designation status on house sale prices in England between 1995 and 2010. In a two-part study, the team used spatial hedonic property analysis, as well as a series of interviews and questionnaires, to gather a complete picture of the value of “conservation areas”. One key drawback of the quantitative portion of the study is that the data set refers to all of the properties within two postal codes, not individual properties, so that the study is not able to account for repeated sales of the same property. Still, given the available data, the team found a price premium of 23.1% for properties located within designated conservation areas and 16.5% for these areas before the designation status. The team attributed these high values to intrinsic

property characteristics and the prime locations associated with conservation areas, rather than to the designation itself. Furthermore, the team found that this price premium was highest in suburban locations and tended to increase with the size of the conservation area and the time elapsed since the designation. As expected, the price premium was the highest in the center of the conservation area and fell as the distance from the center of the conservation area increased, becoming statistically indistinguishable from 0 at 500 meters away from the center of the conservation area.

### **III. Description of Study Design and Procedure**

The main econometric challenge in testing the effects of historical designations is that designation is not assigned randomly. For a district to be eligible for the designation, it must contain contributing structures that are at least 50 years old and have been maintained to reflect the time period of significance. However, the presence of such well-maintained structures may be correlated with underlying factors within the district, such as income levels, house prices, or population density. Thus, a comparison between districts that receive the designation and all other districts is not appropriate and will result in biased estimates. In addition, eligible historic locations may differ in ways that make some historic locations more likely to receive historic designation. If these characteristics also predict future property price appreciation, uncontrolled analyses may wrongly attribute property price increases to historic designation. For example, if higher income historic districts are more likely to receive historic designation and higher income districts show higher price appreciation, we may wrongly attribute property price increases to historic designation. To reduce this potential bias in our analysis, this study calculates propensity

scores to match historic districts with and without designations into similar groupings before comparing house prices.

This study focuses on historic districts that are primarily residential in nature and have received designation from the State of New Jersey between 2005 and 2009. During this time period, 31 districts received an opinion or certification of eligibility. Of these 31, nine districts received a designation. To control for the underlying characteristics that may influence whether a particular historic area receives designation, we collected data on characteristics of the 31 municipalities (Table 1) and ran a probit analysis using data on average house prices (*Avg\_house\_price*), violent (*Violent\_rate*) and non-violent crime rates (*Nonviolent\_rate*), population density (*Pop\_density*), percentage of white residents (*Pct\_white*), and the year of designation (*Desig\_year*) to predict designation status for each district (Table 2). We then used this analysis to calculate the predicted probability (or propensity score) for historic designation for each of the municipalities. Once these scores were calculated, we matched designated districts (i.e. treated) with non-designated districts (i.e. untreated) with similar propensity scores, resulting in six municipalities within three comparison groups (Table 3). The proximity of the scores within each group demonstrates that the districts that received the designation were not more likely to receive the designation than those that did not.

Using house price transaction data from those six municipalities for 2002 – 2011 (Table 4), we then tested the effect of designation on residential properties by examining rates of house prices before and after designation using a difference-in-difference approach. In addition to comparing real price changes between transactions that occurred inside and outside of historic districts (*Histdist*), we compared differences between transactions that occurred within treated

and un-treated municipalities (*Treatment*) both before and after the designation is conferred (*Desig\_Treat*) (Tables 5 & 6).

#### IV. Description of Data and Sources

The New Jersey Historic Preservation Office supplied the data on eligibility for historic designation, historic designation, and the year of designation. Municipal-level data used to calculate propensity scores – percentage of white residents (*Pct\_white*) and population density (*Pop\_density*) – was collected from the 2000 Census. Average house sale price (*Avg\_house\_price*) for the year 2004 for each municipality was obtained from the New Jersey Department of the Treasury<sup>1</sup>, while data on violent crime rates (*Violent\_rate*) and nonviolent crime rates (*Nonviolent\_rate*) were collected from the NJ State Police Uniform Crime Report from 2004.<sup>2</sup> Finally, we used the groupings that resulted from the propensity score matching to create the variables, *Group2* and *Group3*. The variable, *Group2*, takes on a value of “1” if the transaction occurs within the municipalities of the second group. Similarly, the variable, *Group3*, has a value of “1” for all transactions that occur in the municipalities of the third group.

The data on property transactions in New Jersey between the years of 2002 and 2011 were obtained from an Open Public Records Request to the New Jersey Government Records Access Unit of the Department of the Treasury. We used this data set to create variables in our analysis of the effects of historic designation: verified sales prices (*Price*), year that the structure was built (*Built*), square footage of living space (*Space*), and the year of the transaction (*Sale*). To account for inflation, we created the variable, *R\_sales*, by converting the verified sales prices into real prices in 2009 dollars using the GDP deflator. In addition, we created dummy variables

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<sup>1,2</sup> We use the year 2004 for this data because it is the latest year available prior to a historical designation.

for each year of sales data (*Year1 - Year10*). For example, the variable, *Year1*, takes on a value of “1” for all sales that occurred in the year 2002 and “0” for any other year. We also created dummy variables for type of property (*Class*) and whether the property is a condominium (*Condo*). The dummy variable, *Class*, takes on a value of “1” if the property is an empty lot, “2” if the property is residential, “3” if the property is a farm, and “4” if the property is used for commercial or industrial purposes. The other dummy variable, *Condo*, takes on a value of “1” if the sold property is a condominium and “0” if the property is not.

By comparing the list of addresses within the historic districts with the transaction data for the entire municipality, we created a series of dummy variables. The first dummy variable, *Treatment*, takes on a value of “1” for the entire municipality if the district within the municipality has received a historical designation and a “0” if the district is only eligible for a designation. The variable, *Desig*, takes on a value of “1” if the transaction occurs in the year that the treatment district within the comparison group received the designation or any year after, and “0” if it is another year. The variable, *Desig\_treat*, has a value of “1” if the property is both located within a municipality with a designated district and was sold after the designation was conferred. Finally, the variable, *Histdist*, takes on a value of “1” if the property is located within the boundaries of the historical district and “0” if it is outside of the historical district. If the property is located in a non-designated district, this variable will only take on a value of “0”.

There were a total of 41,425 property transactions in the six municipalities from 2002 to 2011; however, we did not include all of these observations in our data set. Although the data from the NJ Department of the Treasury was extracted from sales deeds, there were a number of observations with omitted variables. The most prevalent omissions were year that the structure was built and the square footage of the structure. In addition, there were a number of transactions

in which the property was sold for much less than the assessed value (e.g. a \$125,000 home sold for \$1). We suspect that the majority of these transactions occurred between members of the same family, such as property being passed from a parent to their child. Thus, in order for our study to capture market prices, we also dropped all observations in which the property sold for less than 25% of its total assessed value. After these two adjustments, the total number of observations in our data set fell from 41,425 to 30,366.

## V. Results: Propensity Matching

Between the years of 2005 and 2009, The New Jersey Historical Preservation Office notified municipalities in New Jersey that 31 residential historic districts were eligible for designation. As part of our preliminary analysis, we collected data on characteristics of the municipalities in which these historic districts were located. Table 1 reports the means, standard deviations, and number of observations for the key municipal-level variables. To minimize selection bias in our analysis of the effect of historical designation, we ran a probit analysis and created propensity scores to reflect the probability of each district receiving designation given the characteristics of the municipality. We then paired designated and non-designated districts based on these propensity scores.

Table 2 reports the marginal effects from a probit analysis of receiving the historical designation (i.e., *Dist\_dum*) on the characteristic variables from Table 1. Average house price within the municipality (*Avg\_house\_price*) is positively and significantly associated with the historic district receiving the designation ( $p = 0.001$ ). Thus, a \$1,000 increase in the average house price for a municipality with a historic district raises the probability of that district

receiving a designation by 0.137%. The percentage of white residents in the municipality (*Pct\_white*) is also positively and significantly associated with receiving the designation ( $p = 0.03$ ). Therefore, a one percentage point increase in the population of white residents in the municipality increases the district's likelihood of designation by 2.7%. The non-violent crime rate is negatively and significantly associated with receiving the designation ( $p = 0.03$ ). An additional non-violent crime per 1,000 populations in the municipality reduces the probability of the designation by 2.986%. The significance of these variables reinforces the presence of non-random selection bias in the designation process and the need for a municipal-level analysis before comparisons can be made between historic districts.

Table 3 shows the three pairings and propensity scores for the six municipalities selected for analysis. The first group is comprised of Flanders Historic District in Mount Olive Township (Morris County) and Stockton Street Historic District in Hightstown Borough (Mercer County). The second group contains Middlebush Village Historic District in Franklin Township (Somerset County) and Marlboro Village Historic District in Marlboro Township (Monmouth County). The last group is Succasunna Historic District in Roxbury Township (Morris County) and Lebanon Historic District in Lebanon Borough (Hunterdon County). The propensity scores in each of the groups are within 1 percentage point of each other. This proximity ensures that our analysis makes appropriate comparisons between historic districts with similar probabilities of receiving the designation.

## **VI. Results: Effect of Historical Designation**

We collected complete records for 30,366 arm's length property sales transactions from the State of New Jersey for these six municipalities from 2002 to 2011. Of these transactions,

27,342 are transactions on residential properties. Table 4 shows these observations sorted by *Treatment* and *Histdist* and reports means, standard deviations, and number of observations for each group. We find that house transaction prices within historic districts are only slightly higher in treated municipalities (\$370,115) than untreated municipalities (\$356,303). In contrast, house transaction prices outside of the historic district are considerably higher in the untreated municipalities (\$429,595) than in the treated municipalities (\$325,829). In total, house transaction prices are generally higher for properties in untreated districts (\$428,716) than for properties in treated districts (\$326,103).

Because the effects of designation differed for properties inside of the historic district (compared to outside of the historic district), we ran separate regressions for the transactions inside and outside of the historic district. We also limited our analysis to transactions of properties classified as residential (*Class* = 2) as there were few non-residential transactions within the historic districts. Table 5 shows the regression results for transactions that occurred within the historic districts, while Table 6 shows the results for transactions outside of the historic districts.

For transactions within the historic districts, we find that real house prices fall significantly by \$78,583 within the designated districts after the designation is conferred (*Desig\_treat*,  $p = 0.02$ ) relative to the undesignated districts. This change reflects an 18.2% decrease in price and it suggests that the restrictions associated with designation reduce willingness to pay for property within the historic districts. For transactions outside of the district, real house prices rise significantly by \$19,019 in treated municipalities after the district is designated (*Desig\_treat*,  $p < 0.001$ ) relative to untreated municipalities. This change reflects a 4.4% increase in price and it suggests that designation of the historic district has a positive net amenity value for residential properties outside the historic district. While properties inside the



district also receive this amenity value, only properties outside of the historic district avoid the costs of development restrictions.

This \$19,019 increase in property prices outside of the historic district caused by designation masks considerable heterogeneity across housing types. Table 7 summarizes these results. From Table 7, we see that transaction prices for existing construction non-condominium residential units outside of the historic district show no effect from designation. By contrast, prices for existing construction condominium residential units outside the historic district increase after designation rise by \$6,931 ( $p = 0.03$ ). For new construction, we see significantly larger effects. Prices for new construction non-condominium residential units outside the historic district increase after designation by \$21,891 ( $p = 0.02$ ) and prices for new construction condominium residential units increase by \$42,083 ( $p = 0.03$ ). Some of the rise in condominium prices following designation likely follows from supply constraints; our analysis shows that probability of a condominium sale falls by about 13 percent ( $p = 0.001$ ) following designation (not reported).

The square footage of the house (*Space*) is significantly and positively associated with real house prices both inside and outside of the historic district ( $p < 0.001$  for both). This effect is slightly higher for transactions outside of the district. While a one square foot increase in the size of the house increased its selling price by \$100 within the historic district, an additional square foot raised selling prices outside of the district by \$127. In addition, the year that the house was built (*Built*) demonstrates a positive effect on real house prices both inside and outside of the districts; however, this effect is only significant for transactions inside of the district ( $p = 0.07$ ). Within the historic districts, a house that is one year newer will sell for \$285 more.

For all transactions within the historic district, the designation status of the historic district (*Treatment*) is only positively and significantly associated with real house prices for

transactions that occurred in the designated district of the third group ( $p = 0.002$ ). Thus, a property sale within the Lebanon Historic District is associated with a \$76,887 increase in real sales price. For transactions outside of the historic district, *Treatment* is negatively and significantly associated with real house prices. In general, house prices are \$85,665 lower in the municipalities with designated historic districts (Hightstown, Franklin, and Lebanon) compared to municipalities with the non-designated districts (Mount Olive, Marlboro, and Roxbury).

For the total transactions, house prices show a general upward trend from 2002 to 2007, but a fall from 2007 to 2011. In fact, house prices fall below their 2002 level in real terms (2009 dollars) in 2010 for properties both inside and outside of the historic districts. Furthermore, real house prices rise and fall by a significantly higher amount within the historic districts (*Year 5* and *Year10*). In 2006, real house prices rose by \$83,412 outside of the historic districts and \$145,380 for properties within the historic districts. Yet in 2011, real house prices fell by \$21,738 outside of the historic districts, but fell by \$69,601 within the historic districts. This suggests that the real house prices within the historic districts grew more dramatically during the housing bubble in the United States, but were also more adversely affected once the bubble collapsed. This makes sense because the supply of historic houses is more constrained than the supply of non-historic houses.

## VII. Conclusion

Historic designations are a means of protecting historically significant landmarks, properties, and entire districts; however, many homeowners applying for such designations also seek financial benefits that accompany the heightened character of an area, such as higher property price appreciation rates. Yet, it is unclear whether such price appreciation manifests once the designation has been conferred on historic districts in the State of New Jersey. Because

there is a nonrandom selection problem present when analyzing historic designations, we used propensity score matching to pair municipalities with historic districts that received a designation to municipalities with non-designated historic districts that are eligible for a designation. Once we matched districts into similar groupings, we tested for the effect of historical designations through a difference-in-difference study design.

Our results suggest that historic designation results an 18% decrease in real house prices for properties within the districts, but a 4% increase in real house prices for properties outside of the district. Therefore, it is possible that designations in New Jersey serve as a signal of increased maintenance or repair costs to potential homeowners and increased regulation of changes to the property, more than a symbol of prestige. However, properties outside of the historic district are not typically associated with these additional costs, so the increase in price for these properties could be attributed to the perceived increase in the amenity value of the area.

In examining the increase in real house prices for properties within the district, we discover heterogeneity between condominium and non-condominium properties. While designation does not have an effect on existing non-condominium residential properties, it increases the real price of an existing condominium. Additionally, there are significant positive effects of designation on new residential properties. Following designation there is a \$21,891 increase in real prices of new houses, but a \$42,082 increase for condominium properties. Because of the probability of a condominium sale falls by approximately 13% following designation, we attribute the rise in condo prices at least in part to supply constraints in the condominium market.

Our results suggest three areas of further study. First, additional variables on property characteristics, such as number of bedrooms, number of bathrooms, lot acreage, or location

relative to the historic district could provide better controls and further develop our understanding of the factors that drive real price change. While square footage of living space was significant across all groupings, the year that the structure was built was only significant within the historic districts and in one of the groups outside of the historic districts. Second, more detailed GIS data for the transactions would allow us to infer the relation between distance from the historic district and the effect of historic designation. With additional property characteristics coupled with geographic information system (GIS) data, it would be possible to observe differences associated with greater real price appreciation for houses within the districts, outside of the districts, and throughout the municipality. For instance, we suspect that condominium prices show larger responses to historical designation because they are more likely located near the historic district than non-condominium residential units.

Third, the supply constraints in the condominium market may be related to effects of historic designation. Based on our results, historic designations are associated with higher real prices, but fewer transactions on condominiums. However, the reason for this is unclear. It is possible that designation could result in additional challenges for condominium builders in the form of increased local regulations. Therefore, additional research and testing would be necessary to determine the cause of the supply constraints in the condominium market.

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**Table 1: Summary of Municipal-Level Housing Characteristic Variables**

Variable	Mean	Std Dev	n
<i>Avg_house_price</i>	346.8552	241.2765	31
<i>Desig_year</i>	2006.871	1.521883	31
<i>Pct_white</i>	83.47742	21.7655	31
<i>Pop_density</i>	2528.268	3248.264	31
<i>Violent_rate</i>	2.954839	4.946503	31
<i>Nonviolent_rate</i>	21.72258	16.35134	31
<i>Dist_dum</i>	0.2903226	0.4614144	31

*Avg\_house\_price*: average house sale price for municipality in 2004 (in thousands of dollars)

Source: NJ Department of the Treasury, Division of Taxation

*Desig\_year*: year that the district receives designation or eligibility status

*Dist\_dum*: dummy variable = 1 if designated, 0 if non-designated

Source: New Jersey Historic Preservation Office

*Pct\_white*: percentage of white residents within the municipality in 2000

*Pop\_density*: population density within the municipality in 2000

Source: 2000 Census

*Violent\_rate*: number of violent crimes per 1,000 within the municipality in 2004

*Nonviolent\_rate*: number of nonviolent crimes per 1,000 within the municipality in 2004

Source: New Jersey State Police 2004 Uniform Crime Report

**Table 2: Probit Analysis of Receiving Historical Designation**

<i>Dist_dum</i>	dF/dx
<i>Avg_house_price</i>	0.0013703*** (0.0004322)
<i>Pct_white</i>	0.02702** (0.0118804)
<i>Nonviolent_rate</i>	-0.029865** (0.0105011)
<i>Violent_rate</i>	0.08827* (0.058219)
<i>Pop_density</i>	0.0001144 (0.0000632)
<i>Desig_year</i>	-0.0079067 (0.0517836)
Pseudo R <sup>2</sup>	0.4044

Dependent variable: *Dist\_dum* = 1 if district receives the designation, 0 if district did not  
 Parameter estimates are marginal effects to the district receiving the designation.  
 Robust standard errors are in parentheses.

\* = significant at the 0.1 level

\*\* = significant at the 0.05 level

\*\*\* = significant at the 0.01 level

**Table 3: Comparison Pairings and Propensity Scores**

<b>Group</b>	<b>District Name</b>	<b>County</b>	<b>Municipality</b>	<b>Treatment</b>	<b>Propensity Score</b>
1	Flanders HD	Morris	Mount Olive Township	Non-designated	0.1270251
	Stockton Street HD	Mercer	Hightstown Borough	Designated	0.1280624
2	Middlebush Village HD	Somerset	Franklin Township	Designated	0.1936521
	Marlboro Village HD	Monmouth	Marlboro Township	Non-designated	0.2044802
3	Succasunna HD	Morris	Roxbury Township	Non-designated	0.2182073
	Lebanon HD	Hunterdon	Lebanon Borough	Designated	0.2274764

Propensity score = probability of district receiving designation status



**Table 4: Summary of Sales Transaction Data**

	<i>Treatment</i>	<i>Histdist</i>		
		0	1	Total
Residential Transactions ( <i>Class</i> = 2)	0	429,594.8 (222,910.5) n = 12,938	356,303 (154,410.4) n = 157	428,716.1 (222,353.4) n = 13,095
	1	325,829 (325,416.3) n = 14,159	370,115.1 (139,857.3) n = 88	326,103.3 (324,612.3) n = 14,247
	Total	361,264.1 (149,204.5) n = 27,097	361,264.1 (149,204.5) n = 245	375,248 (284,974.3) n = 27,342
Total Transactions ( <i>Class</i> = 1 - 4)	0	487,725.7 (946,362.9) n = 14,309	376,618.8 (200,374.7) n = 174	486,390.8 (940,993.3) n = 14,483
	1	425,158.1 (1,602,971) n = 15791	372,298.3 (140,052) n = 92	424,851.9 (1,598,361) n = 15,883
	Total	454,901.6 (1,332,174) n = 30,100	375,124.5 (181,524) n = 266	454,202.7 (1,326,455) n = 30,366

Standard deviations are in parentheses.

*Class*: dummy = 1 if located in empty lot, 2 if residential, 3 if farm, 4 if commercial/industrial

*Histdist*: dummy = 1 if property within historic district, 0 if outside of historic district

*Treatment*: dummy = 1 if district received designation, 0 if district did not (for entire municipality)

**Table 5: Regression Analysis – Within the Historic Districts**

<i>Real_price</i>	Total	Group 1	Group 2	Group 3
<i>Built</i>	285.2162* (157.5498)	989.8485*** (279.7636)	-271.313 (771.4294)	-21.5366 (122.4306)
<i>Space</i>	99.60387*** (16.00747)	94.71858*** (18.32605)	155.8809* (82.73585)	55.35435*** (15.15289)
<i>Treatment</i>	19206.07 (23250.68)	-73497.4 (63813.11)	9337.14 (74802.46)	76886.76*** (24539.17)
<i>Desig_treat</i>	-78582.5** (33662.45)	11822.64 (72545.47)	-51347.9 (100204.9)	-27816.7 (38683.94)
<i>Group2</i>	-19368.9 (28710.83)			
<i>Group3</i>	12030.92 (20289.17)			
<i>Year2</i>	18710.5 (29540.32)	47682.15 (40969.22)	-73323.4 (101559.2)	70186.3** (33555.16)
<i>Year3</i>	75816.44*** (25331.93)	130442.1*** (36617.93)	7832.69 (119121)	54988.34** (26332.54)
<i>Year4</i>	78354.78** (35503.65)	120273.2** (45984.39)	-73968.9 (118819.2)	125556.7** (52173.24)
<i>Year5</i>	145379.5*** (32271.66)	197623.1*** (38273.08)	20575.91 (116412.7)	158445.6*** (28013.2)
<i>Year6</i>	113861.9*** (28099.84)	144437*** (43814.13)	43016.08 (122478.7)	139337*** (49628.63)
<i>Year7</i>	8474.763 (30071.82)	69352.08 (49002.2)	-140723 (136037.8)	39544.21 (34292.62)
<i>Year8</i>	46672.91 (37043.17)	86033.09* (51178.32)	-81911 (122015.8)	45381.53 (39802.04)
<i>Year9</i>	-6933.17 (31299.2)	14938.15 (53040.39)	-42445.1 (122327.2)	-11378.9 (36774.92)
<i>Year10</i>	-69601.5* (38175.65)	-50558.6 (32774.23)		-51348.3 (45211.25)
R <sup>2</sup>	0.3623	0.6713	0.3531	0.4408
n	241	84	48	109

Robust standard errors are in parentheses.

\* = significant at the 0.1 level

\*\* = significant at the 0.05 level

\*\*\* = significant at the 0.01 level

**Table 6: Regression Analysis – Outside of the Historic Districts**

<i>Real_price</i>	Total	Group 1	Group 2	Group 3
<i>Built</i>	9.421514 (7.815217)	687.3301*** (53.53346)	6.551826 (9.432255)	1.826819 (3.383023)
<i>Space</i>	126.7575*** (9.766003)	138.5472*** (2.047053)	120.1459*** (12.31894)	140.9957*** (2.692833)
<i>Treatment</i>	-85664.7*** (6673.603)	-45117.9*** (4191.626)	-101442*** (10900.39)	-38911.5*** (7176.135)
<i>Desig_treat</i>	19019.74*** (4665.887)	12029.22** (5214.319)	23943.9** (9707.41)	13714.46 (11746.47)
<i>Group2</i>	49504.8*** (3476.894)			
<i>Group3</i>	3954.825 (3725.798)			
<i>Year2</i>	17278.37 (12461.91)	22123.48*** (3712.4)	11851.74 (21482.78)	27719*** (4371.594)
<i>Year3</i>	40781.1*** (12554.18)	59116.36*** (4074.306)	30259.34 (21386.05)	55118.81*** (5020.93)
<i>Year4</i>	73835.36*** (12463.25)	82853.4*** (4120.592)	66869.97*** (21186.44)	90494.13*** (4877.002)
<i>Year5</i>	111104.1*** (12602.97)	118763.1*** (4492.799)	104026.7*** (20908.33)	123213.3*** (4968.323)
<i>Year6</i>	86160.47*** (11158.99)	100093*** (4544.71)	73417.68*** (20866.36)	96694.73*** (6335.259)
<i>Year7</i>	58999.17*** (11475.63)	64444.36*** (4992.455)	46994.56** (21464.67)	69673.7*** (6757.121)
<i>Year8</i>	21613.7* (11461.11)	28430.09*** (5102.327)	12247.07 (21361.49)	24938.03*** (5960.543)
<i>Year9</i>	-1026.81 (11196.83)	-5213.27 (4370.875)	-10686.3 (20916.03)	16120.51*** (5495.352)
<i>Year10</i>	-17651.2 (11126.64)	-21586.4*** (5758.271)	-25787.8 (20718.3)	-12052.1** (5689.196)
R <sup>2</sup>	0.2374	0.7936	0.1897	0.6238
n	24,384	4,570	15,752	4,062

Robust standard errors are in parentheses.

\* = significant at the 0.1 level

\*\* = significant at the 0.05 level

\*\*\* = significant at the 0.01 level

**Table 7: Regression Results – Changes in Sales Price from Designation by Unit Age (Existing versus New) and Unit Type (Condominium versus Non-Condominiums)**

	<i>Existing</i>	<i>New</i>
<i>Condo</i>	6,931.044** (3,174.641)  R <sup>2</sup> = 0.5853 n = 6,453	42,082.73* (24,274.62)  R <sup>2</sup> = 0.7764 n = 325
<i>Non-condo</i>	-960.0702 (10,024.77)  R <sup>2</sup> = 0.1269 n = 14,434	21,891.97** (9,656.269)  R <sup>2</sup> = 0.7750 n = 2,550

*Condo*: dummy = 1 if transaction occurred on condo, 0 if transaction did not

*Non-condo*: dummy = 1 if transaction occurred on non-condo property, 0 if transaction did not

*Existing*: dummy = 1 if property was built prior to 2002, 0 if not

*New*: dummy = 1 if property was built in 2002 or after, 0 if not

Robust standard errors are in parentheses.

\* = significant at the 0.1 level

\*\* = significant at the 0.05 level

\*\*\* = significant at the 0.01 level