The Impact of Tacoma/ Pierce County Habitat for Humanity on Neighborhood Property Values

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Abstract

This paper attempts to quantify the impact of Tacoma/ Pierce County Habitat for Humanity on Pierce County, WA by looking at changes in the sale prices of residential properties in the neighborhoods in which Habitat for Humanity builds. Changes in price that occur for property sales located within 1000 feet of the Habitat for Humanity properties are compared with the magnitude of price changes in the rest of the census tract. This method controls for unobservable aspects of the neighborhoods that would impact housing values. This study does not provide any statistically significant evidence that supports the claim that Tacoma/ Pierce County Habitat for Humanity has an impact on residential property values. However, we do find statistically significant evidence of negative price changes for nearby residential properties during the time that Tacoma /Pierce County Habitat for Humanity is doing construction in the neighborhood. This change in price is suspected to be an externality of construction or a negative signal produced by the presence of Habitat for Humanity.

I. Introduction

Habitat for Humanity International (HFHI) is a well-known nonprofit organization that provides affordable housing and is internationally recognized their work towards fulfilling their mission to put God's love into action and bring people together to build homes, communities, and hope ("Our Mission"). Founded on Christian values in 1976 by Millard Fuller, HFHI has grown to have 1,500 affiliates in the United States and more than 500 affiliates in other countries. As of the end of 2010, Habitat for Humanity International has built 400,000 houses around the world, serving more than two million people ("Habitat for Humanity Fact Sheet"). In addition to constructing houses, HFHI has a Government Relations and Advocacy team responsible for monitoring housing-related public policy and advocating for policy choices that increase access to decent, affordable housing ("Habitat for Humanity Fact Sheet").

HFHI has a comprehensive program for providing low-income families with affordable housing. First, a family must go through a thorough application process to assess their need for better housing and their ability to pay on a mortgage. Representatives from the affiliate assess the applicant's financial status, learn about their family situation, and make a visit to the place where the applicant is currently living. During the home visit, the representative looks for issues that make the location an unsafe and unhealthy place to live, including characteristics such as lead-based paint, poor plumbing, mold, poor construction, and lack of neighborhood safety.

Once an applicant is deemed eligible for a Habitat for Humanity home, the future homeowner must commit to attend classes about financial planning and other housing matters to prepare for the responsibilities of homeownership. These classes are either offered directly through the affiliate or through partner nonprofits such as Goodwill.

In addition to taking these classes, the future homeowner must commit to complete a given number of "sweat equity" hours. Sweat equity hours are fulfilled by volunteering for the local Habitat for Humanity affiliate by working on the construction of his or her own home, another home, or volunteering at the Habitat for Humanity affiliate's office or Restore, a store that sells donated new and used construction and home goods. In certain cases, volunteers can donate their volunteer hours to a homeowner in need. At the Tacoma/Pierce County Habitat for Humanity (TPC HFH) affiliate, for example, the number of required sweat equity hours is 500. Provisions are made for single parents who cannot take time off work and for those who have other extenuating circumstances, such as disabilities.

Upon receiving the house, the Habitat for Humanity homeowner is given a zero-interest mortgage, with monthly payments of no greater than 30% of the homeowner's income. This loan is funded and given by the local Habitat for Humanity affiliate. The Habitat for Humanity affiliate receives the money to fund the loans from corporate donors, private donors and government programs.

Like all other houses, a Habitat for Humanity house must abide by all city building codes and pass inspections before an occupancy permit is given. As seen in the homeownership process, the Habitat for Humanity organization is unique in the way it acts as the construction crew and the bank. The organization takes on all the roles involved in building a house and equipping the homeowner to own a home.

For a family receiving a Habitat for Humanity house, the experience can be life -changing. The benefits the individual incurs by owning and living in a Habitat for Humanity home are abundant. First of all, the health condition of the homeowner may improve, especially if the individual is moving from a place with problems such as mold. By receiving an affordable mortgage, the homeowner can build their wealth. Other benefits may be less obvious. Potential benefits of homeownership include higher educational performance of children in the family due to increased stability, higher household

participation in civic affairs, less welfare dependency, and lower community crime rates ("Homeownership Benefits"). Some of these benefits can be classified as externalities, or spillover effects, of homeownership. An externality is a benefit or cost inflicted on an individual or group that is not one of the participants in the market. The decrease in crime rate, for example, is a benefit enjoyed by the entire community, not just the person owning the home.

The existence of externalities, positive and negative, results in an outcome that is not socially optimal in the market. If there are negative externalities, the good or service is over-produced in the market and if there are positive externalities, the good or service is under-produced. To correct for this, parties attempt to internalize the costs of the externality. Taxing an activity that produces a negative externality or subsidizing an activity that produces a positive externality are examples of ways to internalize the cost. However, it is usually not clear what price to put on the externality, therefore the correct tax or subsidy is not easily determined and the market is never fully at its most efficient state.

In this study, I design a natural experiment in Pierce County, Washington to estimate the effects on the valuation of residential properties neighboring the affordable housing built by Tacoma/Pierce County Habitat for Humanity. The data used in this natural experiment was obtained from the Pierce County Assessor's Office. Using a hedonic housing price model and difference–in–difference estimation techniques, a model is tested to show if construction by TPC HFH has produced externalities on the neighborhoods in Pierce County. If they exist, these externalities, negative or positive, could potentially be seen in the changes of neighboring property values.

Affordable Housing in Pierce County, Washington

Pierce County is located about 35 miles south of Seattle and includes the cities of Tacoma, Lakewood, Gig Harbor, Fife, DuPont, Puyallup, and Sumner. There is a need for affordable housing in Pierce County. According to the American Community Survey (ACS) in 2006, 11.5%, of residents or

about 85,914 residents in Pierce County lived below the federally defined poverty threshold. This is an increase from the 2000 census, when the Pierce County poverty rate was 10.5% ("Pierce County Facts - Poverty"). Among the population of Pierce County living in poverty, the percentage owning a home dropped from 24.6% in 2000 to 17% in 2006 ("Low Income Owner Occupied Housing"). As seen by these statistics, there is an unmet need for housing in Pierce County.

Numerous nonprofit and government groups have stepped in to provide affordable housing for Pierce County residents. Of these groups, Tacoma/Pierce County Habitat for Humanity is one of the most well-known[1]. TPC HFH has a strong presence in Pierce County. Six individuals who had a passion for service and compassion on the low-income population of the county founded the TPC Habitat for Humanity affiliate in 1985. Since 1985, the affiliate has been working hard to address the housing needs of its constituents.

Over the years, TPC HFH has built almost 200 houses in Pierce County with the dedication of volunteers and funds from generous individuals, companies, and the government ("Where We Build - Tacoma."). Instead of constructing houses scattered around all areas of Pierce County, TPC HFH has mostly built houses in clusters. Table I shows the dates of construction and the locations of some of these developments. TPC HFH's work at the Salishan development in Tacoma will not be part of this study because it is difficult to isolate the impact TPC HFH makes on the surrounding property values from the effects of the other groups that contributed to the construction of the Salishan neighborhood.

Theory

There are reasons why the provision of affordable housing has fallen into the hands of nonprofit institutions, such as government and market failure.

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[1] See Appendix I for information on other affordable housing groups in Pierce County

Although the government does play a role in the provision of affordable housing, asymmetric information has caused government failure. In this situation of asymmetric information, the supplier, the government, lacks information about the consumers, those demanding the housing. One government organization or agency cannot fully address the housing problem because there are many local characteristics of the neighborhoods and population to be considered when deciding the best way to provide the needed housing. It takes local organizations to assess the best way to meet the housing needs of a community.

Nonprofits also function as a first line of defense in addressing the need for affordable housing. People concerned with an economic or social problem, such as lack of affordable housing, can begin to respond immediately without having to convince a majority of the citizens that problem deserves a larger response (Salamon 15). Response to housing issues at a local level is more efficient than taking the time to lobby for the cause at a federal or state level and waiting for the issue to capture the attention of the government. Even if a local affordable housing issue did reach the federal government, local action towards a solution would be more expedient than dealing with the time delays of the federal government.

Another reason why the provision of affordable housing is largely carried out by nonprofits is because of market failure. Not everyone who needs a house can afford to pay the market price as seen in Figure 1. Shelter is a human necessity so there is a need for someone to step in and correct the problem. Nonprofits can use government funding, private donations from individuals who support the cause and receive tax benefits, and inexpensive or free labor from volunteers and staff whose incentives align with the mission of the organization. Nonprofits are subject to the non-distribution constraint, meaning that the profit motive cannot be relied on to drive efficient performance. Any profit accumulated in that year must be channeled back into the mission of the organization, instead of being

distributed to the owners (Salamon 11). The nonprofits are there to serve the needs of the community, not to make a fortune for the staff of the organization.

There are many reasons why the presence of TPC HFH construction in a neighborhood would generate positive externalities seen in an increase in property values. For example, potential neighborhood benefits could result if Tacoma/Pierce County Habitat for Humanity is developing homes in areas that are filled with vacant or distressed properties. Building a new house in the neighborhood would improve the appearance of the area and increase homebuyer's desire to live in that neighborhood. If the Tacoma/Pierce County Habitat for Humanity property is attractive and well-maintained, the homebuyer's willingness to pay may increase if being surrounded by attractive properties is important to them. TPC HFH is providing a benefit to the homeowner but is also providing a benefit to the neighborhood in this case by causing the property values and quantity of houses demanded to rise, as seen in Figure 2.

Tacoma/Pierce County Habitat for Humanity's work is also building social capital in the community. The construction of Tacoma/Pierce County Habitat for Humanity properties often brings neighbors and homeowners together, building trust and cooperation. If six TPC HFH properties are all being built adjacent to each other, the families occupying the TPC HFH houses will have a common bond from the start and help create community in that neighborhood. If a neighbor living in a non-Habitat for Humanity house sees a TPC HFH constructions site next door, he is more likely to get involved in the construction of the houses than if the site were located twenty miles from his house. Since the future Tacoma/Pierce County Habitat for Humanity homeowners are required to contribute sweat equity hours, they are likely to be on site and have the chance to meet neighbors and other TPC HFH families long before the move-in date.

This paper continues with a review of the recent research regarding the impact of affordable housing on neighboring property values. The third section describes the methodology that will be employed in constructing a model to test for the impact of Tacoma/Pierce County Habitat for Humanity on Pierce County's housing values. Following that, I discuss the data and the variables that will be used in the hedonic pricing model. Then, I will discuss the findings from the data regressions and draw conclusions about the contributions my research can make to the understanding of neighborhood spillover effects from the development of Habitat for Humanity housing.

II. Review of Previous Literature

There is no clear yes or no answer to the question of affordable housing's impact on surrounding housing values. Even after forty years and several studies on the spillover effects of affordable housing on surrounding housing values, there are more unanswered questions about the relationship between affordable housing and property values now than ever before (Nguyen 23).

Nguyen (2005) examined 17 studies that attempted to quantify the effect of affordable housing on neighboring property values but concluded there is not a definitive answer. How affordable housing impacts property values in a particular area is subject to a variety of factors including how the affordable housing is managed, the quality of the housing, the demographics of the surrounding neighborhood, and the concentration of the housing. She did not consider studies that focused on affordable housing for seniors, the disabled, or other specific populations.

Nguyen found several problems in the studies she reviewed that possibly impacted the results each researcher obtained. The first issue she identified was the use of the term "affordable housing". The Department of Housing and Urban Development (HUD) provides the most conventional definition: Housing is affordable if a household pays no more than thirty percent of its annual income on housing

(Nguyen 17). This definition is still broad, considering that households from any income level that pay more than thirty percent of their income, even if by choice, would not be living in affordable housing. Many of the studies did not make the effort to define affordable housing or make reference to the HUD's definition. To address this definitional issue, other terms for affordable housing have been suggested, such as low-income housing or below-market.

Previous studies of the effects of affordable, or low-income, housing on property values have shown additional problems. In the econometric models, a common approach has been to identify the changes in property values within a particular neighborhood. However, defining the boundaries of the neighborhood is not an easy task. Neighborhood boundaries were often delineated by the investigator's judgment of neighborhood similarities; the inclusion or exclusion of one block could significantly impact the outcome of the study (Nguyen 18). A problem Nguyen encountered when reviewing the studies was that it is difficult to compare studies that look at different housing programs because of the unique nature of each program. These differences could arise from the geographic and demographic differences in the location of the housing or in the use of the term "affordable housing." Additionally, early studies have been criticized for not providing information on trends in housing prices over time (Nguyen 18). The studies tend to be cross-sectional and may just be capturing the existing trends in housing prices instead of the effects of the affordable housing.

Nguyen classifies the group of studies conducted from the late 1990s until the mid-2000s as "Second-Wave Studies" (18). These studies share a couple important characteristics: the use of Geographic Information Systems (GIS) and multiple regression of hedonic price models. The development of GIS technology has allowed more exact spatial analysis. The multiple regression techniques used in Second-Wave Studies were better able to control for factors that influence the relationship between affordable housing and nearby property values including demographics, quality of

housing, characteristics of the neighborhood, housing sales cycle, and type of affordable housing program (Nguyen 18).

The review of hedonic housing price models led Nguyen to conclude that "...property values can be detrimentally affected by proximally located affordable housing, but that there are ways to reduce the chance of this occurring" (19). The suggested measures include ensuring the affordable housing unit is of quality design, well managed, compatible with the host neighborhood, and not concentrated among other affordable housing. Different types of affordable housing affect property values differently, such as rehabilitated, new construction, and existing housing (Nguyen 19). It is shown that well-maintained affordable housing can conceivably raise property values in neighborhoods, especially in neighborhoods with abandoned homes and neglected, physically deteriorating properties (Nguyen 21).

Ellen and Voicu (2006) were not included in Nguyen's review of affordable housing studies but compared the spillover effects of nonprofit housing in New York City using a difference-in-difference specification of a hedonic regression model. The model they construct explains the sale price of a property as a function of its structural characteristics and its neighborhood surroundings. They compare prices of properties within 1000 feet of the subsidized housing projects with prices of properties that are further away but in the same census tract. They test whether the value of properties within 1000 feet increases more rapidly than properties further away. By taking this approach, some of the systematic differences between the neighborhoods are removed and the specific effects of the subsidized housing addition can be isolated (Ellen and Voicu 21). They conclude that nonprofit housing projects generate significant, positive spillover effects.

Funderburg and MacDonald (2010) in Polk County, Iowa conducted another similar study on the neighborhood property valuation effects from construction of low-income housing. The approach they use is similar to that of Ellen and Voicu, with a difference-in-difference hedonic price model. They

compare property values of homes within half a mile radius of the low-income housing to properties with matching characteristics further away. This study comes to different conclusions than Ellen and Voicu's research in New York. Funderburg and MacDonald found that concentrating low-income housing has negative consequences on neighboring property values, with as much as a two to four percent slower rate of growth in property value (1752).

To remedy the negative consequences of subsidized housing, Funderburg and MacDonald suggest that the low-income population be less concentrated and more mixed with the neighborhood. They make the point that the income of the host neighborhood plays a large role in how the housing market reacts to the addition of low-income housing. In wealthy neighborhoods, adding low-income housing is expected to negatively impact surrounding housing values while in middle-income neighborhoods the impact is expected to be less severe. In low-income neighborhoods, the impacts are ambiguous. It is unpredictable how existing residents will perceive the addition of the new residents; their opinion depends largely on the quality of the housing (Funderburg 1747).

These two additional studies that were not included in Nguyen's review of research on how affordable housing impacts property values in surrounding neighborhoods are still consistent with her conclusions. The Iowa study and the New York study support her claim that there is not a clear yes or no answer to the question about whether the presence of affordable housing in a neighborhood lowers neighborhood property values. There are too many other variables present, such as demographics and characteristic of the new construction, to have one clear-cut answer.

III. Methodology

The main goal of this paper is to assess whether projects developed by Tacoma/Pierce County Habitat for Humanity generate spillover effects that can be seen by changes in the valuation of neighborhood property values. We will determine if there are spillover effects by looking at the behavior of housing values in the neighborhoods surrounding the TPC HFH houses.

The basic methodology depends on a hedonic regression model that explains the sale price of a property as a function of the property's structural characteristics and the location of the property. The hedonic model is used to compare sale prices of properties within 1000 feet of the TPC HFH housing sites to the prices of comparable properties that are further away but still located within the same census tract. The change in the property sale price is compared before, after, and during completion of the TPC HFH's project. The key question is whether the values of the properties within 1000 feet of a Tacoma/Pierce County Habitat for Humanity development change at a different rate than the values of properties in the same census tract beyond the 1000-foot radius. Controlling for the local neighborhood characteristics isolates the impact of the Tacoma/Pierce County Habitat for Humanity's presence in the neighborhood from the impact of other changes occurring across neighborhoods in Pierce County.

A regression model of the sale price of a property can be shown as follows:

$$\text{Ln (Sale Price)} = \alpha + \beta_1 (\text{Improvement Value}) + \beta_2 (\text{Land Acres}) + \beta_3 (\text{Census Tract}) + \beta_4 (\text{During Habitat}) + \beta_5 (\text{Post Habitat}) + \beta_6 (\text{Habitat Zone}) + \beta_{7\text{-}19} (\text{Year 1998-2011}) + \beta_{20} (\text{Single Family Home}) + \varepsilon$$

where ln (Sale Price) is the natural logarithm of the sale price of the tax parcel adjusted using 2010 as the base year, Improvement Value is the assessed value of the building on the tax parcel in 2010 dollars, Land Acres is the size of the tax parcel, Census Tract is an dummy variable to account for a series of census tract specific fixed effects, controlling for unobserved time invariant features of different neighborhoods, Habitat Zone is a dummy variable indicating whether the tax parcel is within the 1000-

foot radius of the Tacoma/Pierce County Habitat for Humanity property, Dummies 1998-2011 is a series of dummy variables indicating the year of the tax parcel was sold, During Habitat is a dummy variable indicating if the tax parcel was sold during the time TPC HFH was doing construction in the area, Post Habitat is a dummy variable indicating if the tax parcel was sold after Tacoma/Pierce County Habitat for Humanity finished construction in the area, and Single Family Home is a dummy variable indicating whether the tax parcel contained a single family residence or if it is another type of residential property such as a condo or a duplex.

The coefficients to be estimated are α and $\beta_{1\text{-}20}$, and ε is the error term. The coefficients can be interpreted as the percentage change in price associated with additional unit of the independent variable since the model in the log-linear form. The coefficients on the dummy variables can be interpreted as the percentage difference in sale price between properties with the characteristic and properties without it.

The main variable of interest in this model is Habitat Zone, which captures the impact of proximity to Habitat for Humanity properties, and the During and Post Habitat variables, showing when the property transaction occurred relative to Tacoma/Pierce County Habitat for Humanity's construction. We interact the Habitat Zone variable with the During Habitat and Post Habitat variables to see the change in property sale price associated with the coincidence of these two events.

IV. Summary of Data

To construct the model outlined in the previous section data was obtained from the Pierce County Assessor-Treasurer's website, describing all residential property transactions. The compiled dataset indicates the date the sale of the tax parcel occurred, the size of the tax parcel in acres, the 2010 assessed value of the buildings on the tax parcel, whether or not the tax parcel is located within 1000 feet of a Tacoma/Pierce County Habitat for Humanity property, the type of residential property, the

amount the tax parcel was sold for adjusted to base year 2010, and if the sale of the tax parcel occurred before, during, or after Tacoma/Pierce County Habitat for Humanity completed construction on their nearby properties.

Through the Tacoma/Pierce County Habitat for Humanity website and one of the founders of the affiliate, I obtained information regarding the projects Tacoma/Pierce County Habitat for Humanity completed, including the addresses of the properties and the dates the construction occurred.

GIS techniques were used to construct the 1000-foot radius around the properties and identify tax parcels located within the same census tract as a Tacoma/Pierce County Habitat for Humanity property and those located within 1000 feet of a Tacoma/Pierce County Habitat for Humanity property.

The dataset has a total of 9,436 observations. Of these observations, 1,306 are sales of residential tax parcels within 1000 feet of a Tacoma/Pierce County Habitat for Humanity property and the remaining are sales of tax parcels located within census tracts containing Tacoma/Pierce County Habitat for Humanity properties from 1997 through 2011. There are 9 census tracts containing Tacoma/Pierce County Habitat for Humanity properties used in this study. Details on the locations of the Tacoma/Pierce County Habitat for Humanity properties and the census tract they are located in are detailed in Appendix II-IV and Table I.

V. Results

The results from multiple regression determining the adjusted sale price of the residential properties, using logarithmically transformed data as the dependent variable, are presented in Table III. The fit of the equation is not strong and but all of the coefficients on the significant variables fit our expectations.

The most significant determinants of the sale price of the residential property appear to be the land acreage, the assessed value of the building, the type of residential property, and the year the residential property was sold. The coefficients on the variables indicating that the property was located in either census tract 62500 or 62100 are negative and significant, providing statistically significant evidence that being located in one of these census tracts decreased the value that the residential property sold for. The coefficient on the variable indicating that the property was located in census tract 62802 is statistically significant and positive. There is statistically significant evidence that being located in this census tract increases the value of a residential property.

By looking at the variables for the years, we observe a large percentage increases in the sale price of the residential properties occurred most recently in 2006. This large increase in sale price corresponds with the housing bubble. We see that the percentage increases in sale price were less in the following years when the housing market bubble burst and the United States entered recession.

The coefficient on the variable indicating that the residential property is a single family home instead of another type of residential property is statistically significant and has the negative sign that was expected. The other types of residential properties in the dataset were properties that would be larger than single family homes, such as apartment buildings or condominium complexes. Holding all other variables constant, being a single family home will decrease the adjusted sale price of a residential property by about 28%.

The overall fit of the model is not important to this study; the significance of certain variable coefficients is. A coefficient of interest is the coefficient on the variable that indicates whether or not a property is located within 1000 feet of a Tacoma/Pierce County Habitat for Humanity development. However, the coefficient on this variable is not significant at the 5% level so we cannot say that this is statistically significant evidence for anything. This negative sign on the coefficient could have occurred

by chance. If it were statistically significant, we would gain some information about the housing price trends where Tacoma/Pierce County Habitat for Humanity typically builds. The negative sign would show that Tacoma/Pierce County Habitat for Humanity is building in areas of declining housing values, but we cannot make this conclusion from this study.

Another variable of interest is the interaction term that indicates that a residential property was located outside of the 1000-foot radius around a TPC HFH property and was sold after TPC HFH completed construction in the area. To see if TPC HFH produced externalities, we want to compare this variable to the interaction term that indicates a residential property was located inside the 1000-foot radius around a TPC HFH property and was sold after TPC HFH completed construction in the area. However, neither of these coefficients are statistically significant so we cannot draw any conclusions from them. We have no statistically significant evidence that TPC HFH impacts the value of houses before and after construction.

The last variable of interest in this study is the interaction term between whether or not the residential property was located inside of the 1000-foot radius and whether it was sold during the time when TPC HFH was constructing their properties in the area. The coefficient on the term indicating that the property was inside the 1000-foot radius and sold during TPC HFH's construction phase is statistically significant. There is statistically significant evidence that being located within 1000 feet of a TPC HFH property when construction is occurring will decrease the sale value of a residential property by 14.5%. This suggests that people may find it less desirable to live in a neighborhood where Tacoma/Pierce County Habitat for Humanity is constructing a house.

IV. Conclusion and Suggestions for Further Research

There are a couple reasons why the statistically coefficient on the variable indicating that the property was sold during TPC HFH's construction phase and located within 1000 feet of the construction. The first reason could be that homebuyers are willing to pay less for a house that is near a construction zone. Construction zones create more noise and traffic in the neighborhood and these could potentially negatively impact housing prices. This decrease in housing price would be an externality of construction.

Another reason that housing values may drop while TPC HFH is doing construction in the neighborhood may be that TPC HFH is sending a signal to potential homebuyers that the neighborhood needs help. By being in the neighborhood, TPC HFH could be providing information to homebuyers about the quality of the neighborhood. TPC HFH would normally be able to afford land that is in less expensive areas of the city. The families moving into the TPC HFH home will be low-income families, so homebuyers may assume the rest of the neighborhood is full of low-income residents. Low-income areas are generally associated with high crime rates and other undesirable living conditions. If potential homebuyers interpret the presence of TPC HFH in this way, their desire to purchase a home in that neighborhood will decrease.

There are opportunities to continue this research to see if TPC is really sending a negative signal to homebuyers or if we are seeing an externality of construction in general. We could examine studies that look at changes in neighborhood values from construction, studies that do not specify who is doing the construction. Also, we could use a radius around the TPC HFH houses that is different than 1000 feet and see if our results change. We could also look at the impact other Habitat for Humanity affiliates in different counties have on housing prices in their area.

This study has identified a signal that is being sent during construction, either from the construction itself or from TPC HFH being visible to the neighborhood. We were not able to quantify any externalities from TPC HFH by comparing property values before and after constructing.

Figure 1. Unmet Need in the Housing Market

Within a given county, city, or country, there is initial housing market equilibrium at E_0. If the total number of households in an area is defined as Q_n, the total housing need in an area is Q_n since housing is a necessity. At E_0, the market equilibrium, there is an unmet demand for housing equal to the difference between Q_0 and Q_n. If society wants all households to have housing, the gap between Q_0 and Q_n needs to be eliminated. This can be done in two ways. Policies can be implemented to increase demand for housing. This can be done through housing vouchers or housing allowances. An increase in demand results in an equilibrium at E_2. Policies and organizations can also lessen the gap by increasing supply. This can be accomplished through making more land available, provision of subsidies, and tax benefits to nonprofit and government organizations that provide housing. This supply increase results in equilibrium E_1. The quantity of housing supplied at each of these new equilibriums is Q_n. An increase in supply lowered the price and an increase in demand raised the price. These two approaches can be used in combination with each other to achieve the desired impact on the housing market.

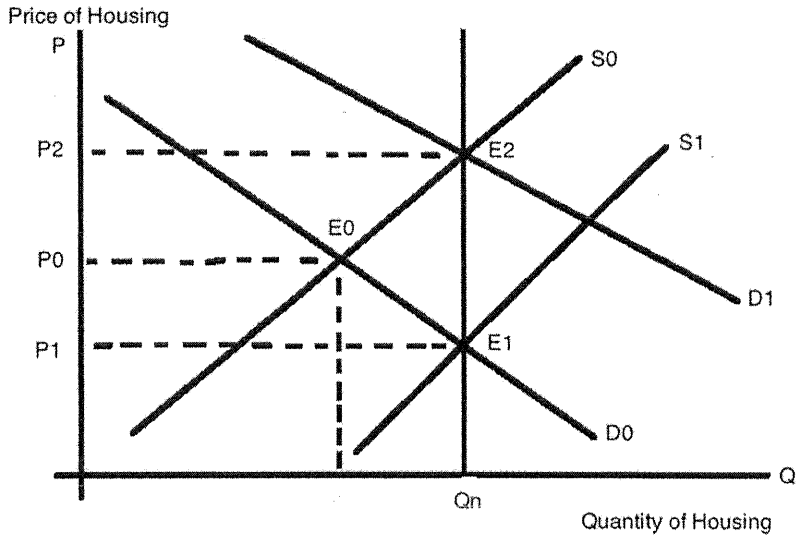


Figure 2. Externalities in the Housing Market

As seen in Figure 2, the initial equilibrium in the market for housing is at E_0 where marginal private benefit (MPB) (or demand) intersects marginal private cost (MPC), which corresponds with a price P_1 and quantity Q_1. However, if there are external benefits from housing, marginal social benefit (MSB) exceeds MPB. The socially optimal equilibrium is at E_1. The externality creates the case for housing production beyond the private profit maximizing level (E_0).

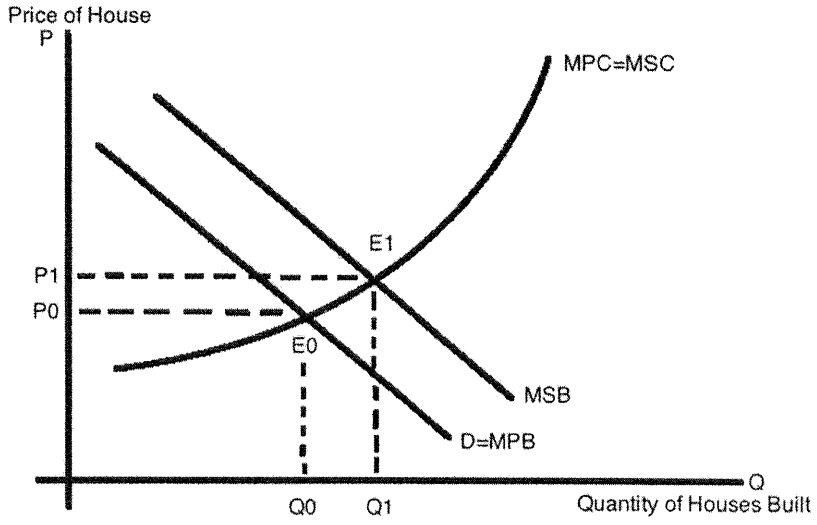


Table I: Tacoma-Pierce County Habitat for Humanity Construction

Location	Number of Houses	Dates of Construction	Census Tract Number
S 25th and J St.	2	January-June 2003	61700
M and 64th St.	3	June 2002-March 2003	63300
S 22th and State St.	4	September 2001	61700
S I St and S 27th St.	4	April 2002 - May 2002	61700
1303 S Trafton St	5	June 1997-April 1999	61200
S 60th and S Stevens	5	June 2004-January 2005	62802
35th and Portland Ave.	6	January 2000-February 2001	62100
1425 53rd St.	7	June 2000- March 2001	62500
E 48th and Portland Ave (Reynolds Park)	14	January 2007-March 2009	62300
S 34th and Jane Russell Way	16	June 2003-September 2004	62801
S G St and E 57th St. (McKinley Court)	16	June 2005-November 2005	63200

Table II: Description of Variables

Variable	Description	Unit	Mean	Standard Deviation
Log (Adjusted Sale Price)	Logarithm of the sale price of the property, price adjusted using 2010 as base year	U.S Dollars		
Improvement Value	Value of Building (Assesses in Previous Year)	U.S Dollars (2010)	86924.67	83664.33
Land Acres	Size of the Tax Parcel	Acres	0.16	0.23
Dummy Variables 1998-2011	Years 1997-2011	1 if sold in the year, 0 otherwise	N/A	N/A
Single Family Home	Type of Residential Property	1 if a single family home, 0 otherwise	N/A	N/A
Census Tract	Census Tract Indicator (9 Tracts represented)	Integer to indicate each different Census Tract	N/A	N/A
Habitat Zone	Dummy for if the tax parcel is located within 1000 feet of a HFH home	1 if located within 1000 ft, 0 otherwise	N/A	N/A
During	Dummy for if the sale of the tax parcel occurred during the time HFH was doing construction in the neighborhood	1 if tax parcel was sold during HFH's construction phase, 0 otherwise	N/A	N/A
PostHabitat	Dummy for if the sale of the tax parcel occurred after construction of the neighborhood's HFH properties was completed	1 if sold after HFH's construction, 0 otherwise	N/A	N/A

Regression Results

Coefficients:	Estimate	Std. Error	t stat.	p-value	Significance Level
(Intercept)	1.16E+01	4.37E-02	265.941	2.00E-16	***
Land Acres	5.28E-01	2.99E-02	17.638	2.00E-16	***
Single Family Home	-2.80E-01	2.55E-02	-10.987	2.00E-16	***
Improvement Value	1.46E-06	8.16E-08	17.846	2.00E-16	***
Census Tract 61700	-1.33E-01	3.13E-02	-4.257	2.10E-05	***
Cenusus Tract 62801	-1.10E-02	3.68E-02	-0.299	0.76477	
Census Tract 62500	-8.13E-02	2.66E-02	-3.056	0.00225	**
Census Tract 62802	6.62E-02	3.48E-02	1.901	0.05736	.
Census Tract 63200	3.02E-02	3.34E-02	0.905	0.36557	
Census Tract 63300	3.90E-03	2.90E-02	0.134	0.89311	
Census Tract 62100	-2.55E-01	3.30E-02	-7.739	1.10E-14	***
Cenus Tract 62300	2.21E-03	3.64E-02	0.061	0.95153	
Located inside of HabitatZone	-3.83E-02	3.21E-02	-1.194	0.23232	
Year1998	2.08E-02	3.40E-02	0.612	0.54025	
Year1999	8.49E-02	3.28E-02	2.59	0.00961	**
Year2000	1.07E-01	3.34E-02	3.2	0.00138	**
Year2001	8.84E-02	3.42E-02	2.586	0.00973	**
Year2002	1.45E-01	3.67E-02	3.962	7.48E-05	***
Year2003	2.40E-01	3.86E-02	6.224	5.06E-10	***
Year2004	3.94E-01	3.92E-02	10.052	2.00E-16	***
Year2005	4.85E-01	4.13E-02	11.754	2.00E-16	***
Year2006	9.91E-01	4.32E-02	22.936	2.00E-16	***
Year2007	6.20E-01	4.88E-02	12.718	2.00E-16	***
Year2008	5.47E-01	5.34E-02	10.236	2.00E-16	***
Year2009	5.86E-01	5.54E-02	10.573	2.00E-16	***
Year2010	2.99E-01	6.22E-02	4.807	1.55E-06	***
Year2011	1.93E-01	6.83E-02	2.823	0.00477	**
Outside of HabitatZone and sold after HFH completed construction	-2.63E-02	2.80E-02	-0.937	0.34864	
Inside of HabitatZone and sold after HFH completed construction	-3.02E-03	4.60E-02	-0.066	0.94761	
Ouside of HabitatZone and sold during HFH contruction phase	9.37E-04	2.88E-02	0.032	0.97409	
Inside of Habitat Zone and sold during HFH construction phase	-1.45E-01	6.87E-02	-2.105	0.03535	*

Key for Significance Levels:	
.	0.05
*	0.01
**	0.001
***	0

Appendix I

There are numerous organizations in Pierce County Washington who contribute to the provision of affordable housing for low-income residents. Some of these organizations include Habitat for Humanity, Tacoma Housing Authority, Homeownership Center of Tacoma, Intercommunity Mercy Housing, Korean Women's Association, Tacoma Rescue Mission, Catholic Community Services, Metropolitan Development Council, and Puyallup Tribal Authority. Differences in funding, mission, targeted group, and affiliation differentiate these organizations from each other.

Tacoma Housing Authority (THA) is one of the primary providers of affordable housing in Pierce County. Their mission states: "THA provides high quality, stable, and sustainable housing and supportive services to people in need. It does this in ways that help them become self sufficient, that strengthen communities and that use its public and private resources efficiently and effectively" ("Tacoma Housing Authority | Vision, Mission Statement and Values"). THA is a municipal corporation governed by a board of commissioners chosen by the City of Tacoma Mayor. Funding comes from rents, fees earned from administering programs, subsidies from the government, developer fees, and private and public grants. They have no tax authority. In Tacoma, THA or related tax-credit partnerships own about 1400 housing units ("Tacoma Housing Authority | Fast Facts").

Several organizations have the mission to provide a more than just housing, such as the Korean Women's Association (KWA). As seen in their mission statement, "...to provide multi-cultural, multi-lingual social and human services to people in need", the

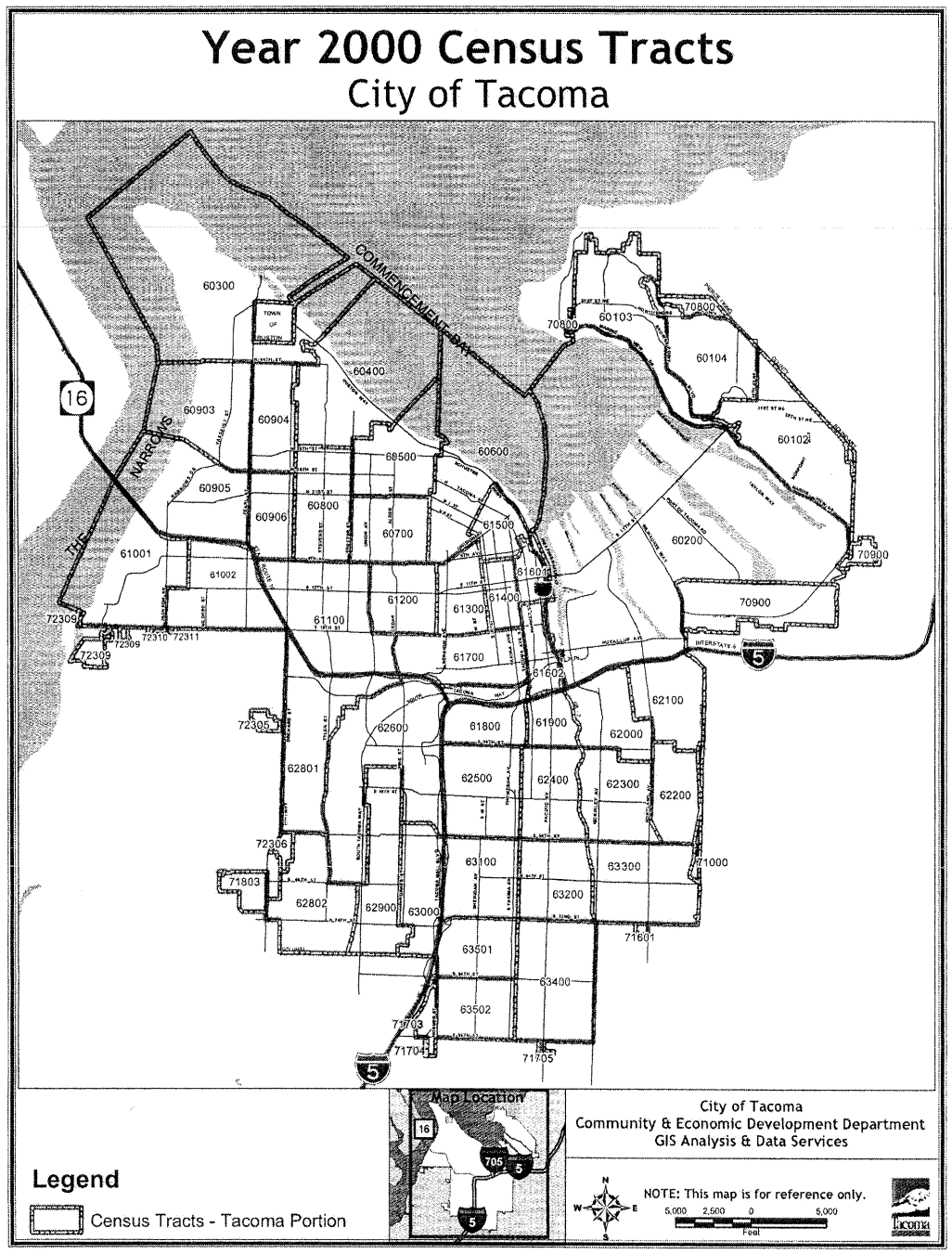
KWA supports affordable housing, schools, Asian cultural centers, and voting leagues ("Korean Women's Association Our Mission"). Housing is one of the main areas in which they serve, but their mission is really to help the Korean community in anyway possible. They own over 200 units of affordable housing in Pierce and King County ("Korean Women's Association Fast Facts").

Other groups, like Habitat for Humanity and the Homeownership Center of Tacoma, make providing affordable housing their main mission. The Homeownership Center of Tacoma is a nonprofit organization founded in 1993 with the goal of fostering neighborhood revitalization through homeownership ("Homeownership Center of Tacoma - Welcome"). They do this through building new homes, renovating existing homes, and providing affordable loan programs. In their program, they connect the potential homeowner with a local bank to obtain a standard 30-year fixed interest rate loan. Then, the homeowner can obtain a second loan through the Homeownership Center with zero interest to make up the difference between the purchase price of the home and the amount the purchaser was able to finance from the first mortgage lender ("HCT - Program Overview").

The providers of affordable housing in Pierce County each host their own housing developments but they also collaborate on larger projects. One of the projects that combined the efforts of Tacoma Housing Authority, Korean Women's Association, and Tacoma/Pierce County Habitat for Humanity is the Salishan neighborhood, located near Portland Avenue in eastern Tacoma. It is a development of affordable and market rate rental units, single-family homes, new underground infrastructure, and parks.

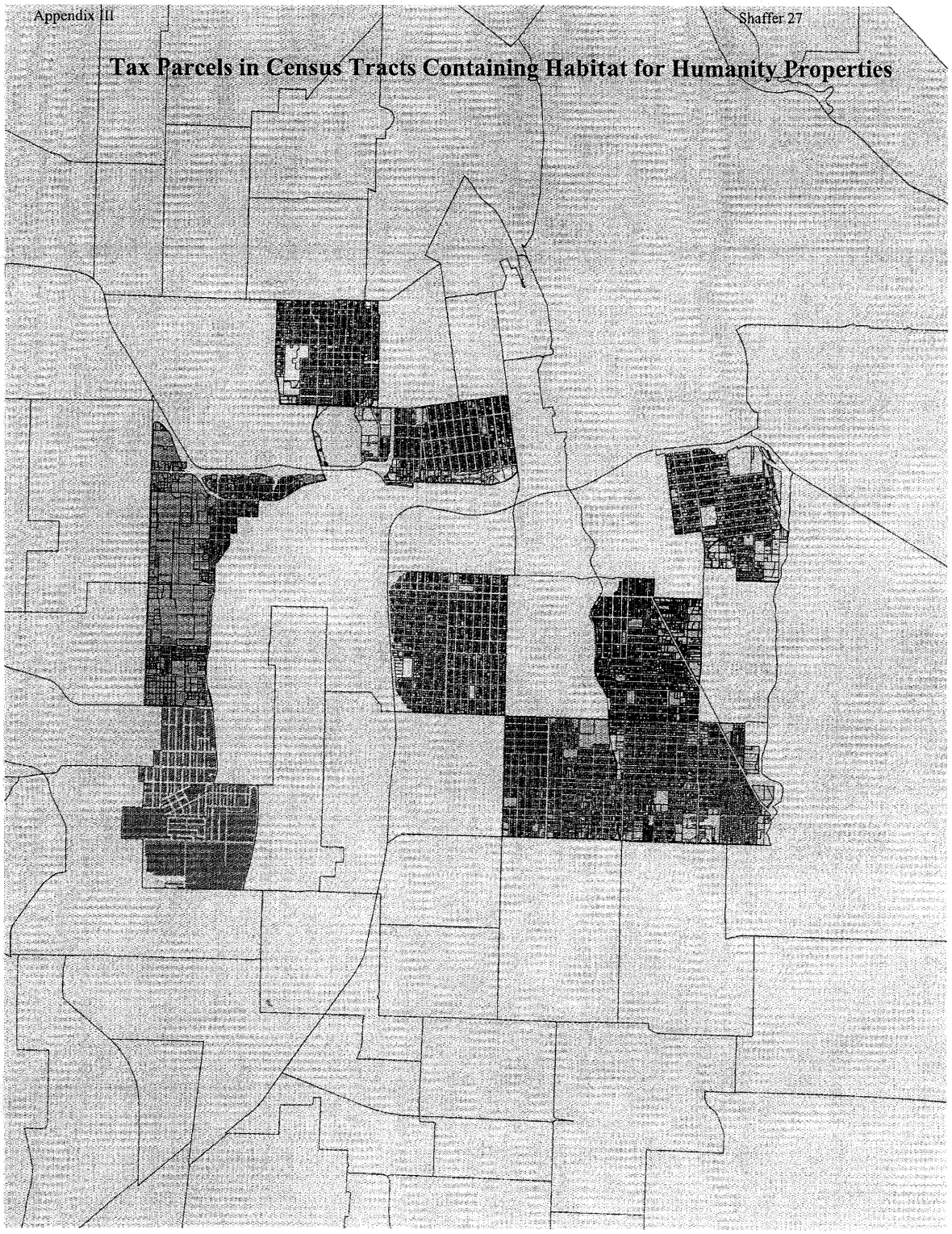
Construction on the Salishan community began in 2004 and ended in January 2011. Overall, Salishan has 1278 new housing units (Tacoma Housing Authority | Salishan Overall Unit Mix").

As seen by the examples above, many groups in Pierce County are working towards a common goal of increasing homeownership among the population group with the lowest incomes. No matter where their funding comes from or their religious or cultural affiliation, these groups all work towards to goal of providing affordable housing and increasing homeownership.

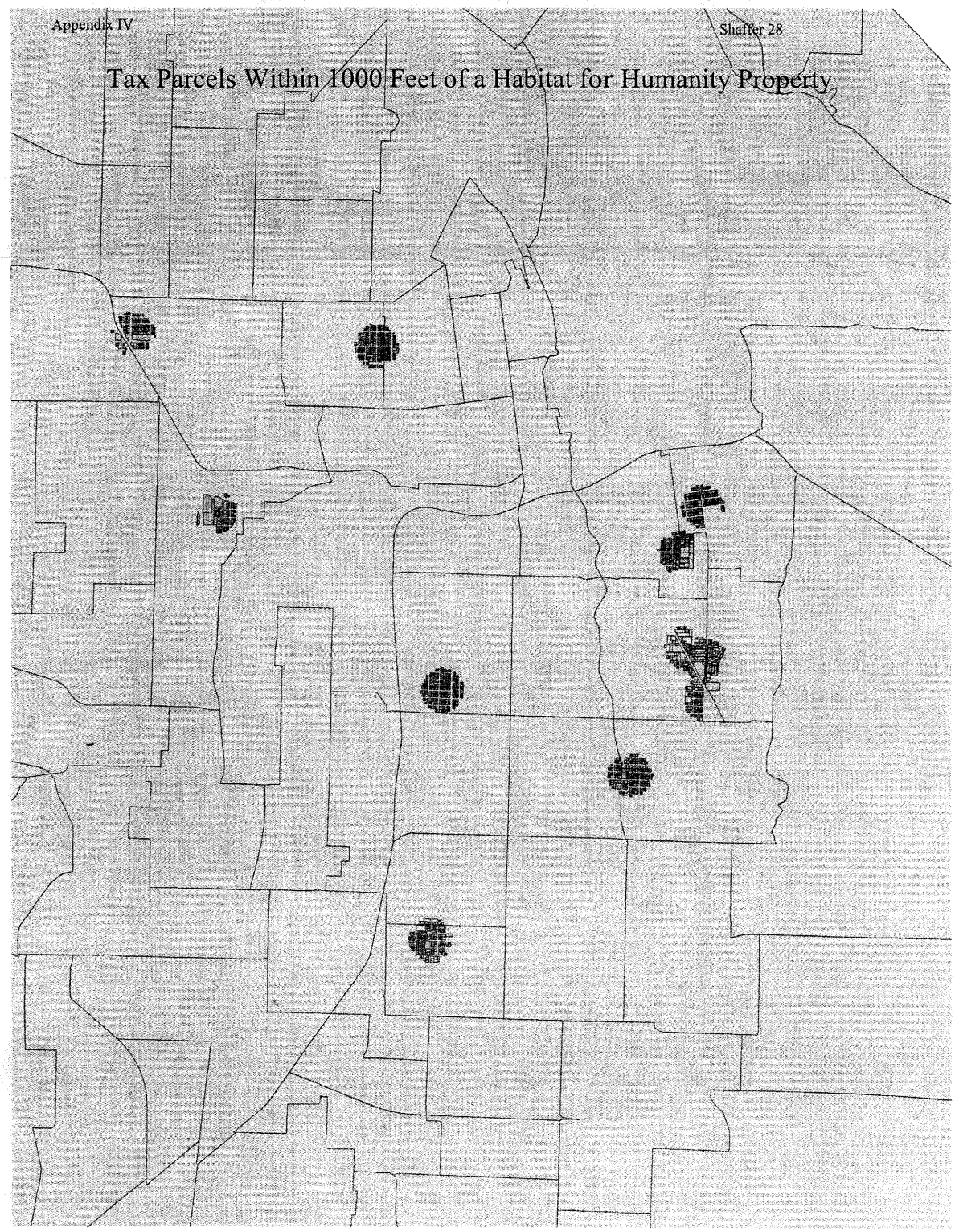


Plot Date: 1\26\06 File Name: \\geobase-win\pdsshare\pdsshr4\census\census00\ct.mxd

Tax Parcels in Census Tracts Containing Habitat for Humanity Properties



Tax Parcels Within 1000 Feet of a Habitat for Humanity Property



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