ECONOMIC IMPACTS OF PROPERTY TAX-FORECLOSURE AUCTIONS IN INGHAM COUNTY, MICHIGAN

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BY

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Front cover photo of the 2014 Ingham County Tax Auction courtesy of the Ingham County Treasurer's Office.

Executive Summary

SINCE 2006, THE INGHAM COUNTY TREASURER'S OFFICE HAS BEEN UTILIZING THE LAND BANK FAST TRACK AUTHORITY AND PROPERTY TAX-FORECLOSURE AUCTION PROGRAMS TO ADDRESS FORECLOSURE, ABANDONMENT AND BLIGHT IN NEIGHBORHOODS IN THE CITY OF LANSING AND THROUGHOUT THE REGION. THE GOAL OF THESE PROGRAMS IS TO IMPROVE THE SURROUNDING COMMUNITY, EITHER THROUGH A SOLID TAX BASE FOR PUBLIC SERVICES OR HIGHER QUALITY OF LIFE IN RESIDENTIAL NEIGHBORHOODS, OR BOTH.

Since 2006, the Ingham County Treasurer's Office has been utilizing the Property Tax-Foreclosure Auction and Land Bank Fast Track Authority programs to address foreclosure, abandonment and blight in neighborhoods in the City of Lansing and throughout the region. The goal of these programs is to improve the surrounding community, either through a solid tax base for public services or higher quality of life in residential neighborhoods, or both. The Treasurer's Office sought to identify and quantify the impacts of local land use policies to discover whether goals, and an improvement in public welfare, are being achieved. During 2012, a study to estimate the economic impacts of Land Bank activities was conducted by the Michigan State University (MSU) Land Policy Institute (LPI), in partnership with the Ingham County Land Bank (Borowy et al., 2013). During 2014, a new study was conducted by MSU, in partnership with the Ingham County Treasurer's Office, to perform a similar economic impact analysis of the County's property tax auction sales, the results of which are provided in this report.

This study used three main methods for evaluating the impact of the Tax Auction process. First, the research team endeavored to evaluate the relationship between tax auction property sales, renovations and properties prices in Ingham County neighborhoods between 2008 and 2014.

729 Princeton was a house that was sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

The results showed that, while the sale of tax-foreclosed properties appeared to be negatively related to subsequent market sales within 500 feet, this relationship is not statistically significant at the 90% level. However, it does appear that the renovation of tax auction properties by the new owners has positive economic benefits for the neighborhood by increasing property prices, all else remaining equal.

Second, an economic impact analysis was utilized to understand the effects of home rehabilitation efforts, demolition, new construction, and lawn and landscaping maintenance on tax-foreclosed parcels. This analysis relied upon IMPLAN to evaluate the direct, indirect and induced economic impacts for employment, labor income, property-type income and value of output for the region

as a result of expenditures related to tax auction properties. Total spending during the period from 2006 through 2014 was $2,331,442, which led to total estimated direct and indirect economic impacts of $2,981,543. This estimated impact suggests a 1.28:1 leveraging of spending, meaning that for each $1 spent, $1.28 was added to the regional economy. Tax auction spending was also estimated to have resulted in a total of 21 direct and indirect jobs.

Third, the study included a basic assessment of the rates of reversion to tax foreclosure for the Land Bank and Tax Auction properties. While none of the Land Bank renovated properties have reverted to tax foreclosure, a percentage of Tax Auction properties has reverted each year. Since 2010, this percentage has been less than 10% of properties annually.

It should be noted that the Ingham County property tax auction is atypical of many tax auction programs. First, in following statute and fully accounting for the true auction cost of the foreclosure process, Ingham County tends to sell properties with greater potential for improvement in the auction; in particular, the second auction reserves more challenging properties for intervention from the Land Bank. In this way, the Land Bank and Tax Auction work in tandem for optimal results. Second, Ingham County works with Cap Fund Title to make warranty deeds available on almost every property sold at auction; this strategy helps to improve the auction quality by reducing the risk of clouded title, where a lien or other encumbrance could impair a new owner's right to transfer the property free and clear of other interests. Through these policies, Ingham County is able to minimize sales that lead to further blight, foreclosure reversion and/or legal challenges.

Due to differences in how the Land Bank and Tax Auction studies were conducted, it is not possible to make a direct comparison between their impacts. For instance, the time frame for these two studies varied slightly, from 2006–2012 for the Land Bank study to 2006–2014 for the Tax Auction study, so the comparison factors are not exact. With these limitations in mind, it is interesting to note that whereas the Land Bank sales had a positive relationship to sale price for properties within 500 feet, the tax auction sales had a negative, though statistically insignificant, relationship to sale prices for properties within 500 feet, except where there was a property improvement involving a building permit. Also, the regional economic impact of the Tax Auction process does not appear to have the same magnitude of leverage as the Land Bank, at 1.28:1 versus 1.8:1, respectively. Finally, the reversion rate of properties to tax foreclosure appears to be higher for tax auction sales (8% for 2014) than for Land Bank sales, which is virtually zero.

Ingham County has been using these two community and neighborhood improvement tools, land banking and tax auctions, for the past nine years. This time period is both challenging and opportunistic from an impact assessment standpoint. With the economic recession that began in 2007–08 and the subsequent housing market decline, compounded by substantial foreclosure rates, it is difficult to tease out the impacts of these interventions from market forces. At the same time, this time frame is precisely when tools like these two are most needed.

While a direct comparison of their impacts is not possible, due to the nature of the analysis, some information about the unique attributes of each

program has been discovered, which could lead to improved decision-making in the future. For instance, though the tax auction sales themselves do not have a positive impact on surrounding property prices, the return of these properties to tax rolls and into the hands of owners who will improve them can have positive benefits for the community and neighborhood. Therefore, stipulations that Ingham County places on these tax auction sales (such as the owner occupancy covenant) can help to improve the chances that these properties will not just be purchased, but improved into homes that add value to the neighborhood. In addition, providing foreclosure prevention assistance to the purchasers could help to ensure that more of these properties are kept on the tax rolls, rather than reverting to foreclosure.

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The information provided through this study report will hopefully be beneficial to policy development and strategic planning for the Ingham County Treasurer's Office moving forward.

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Introduction

MICHIGAN COMMUNITIES HAVE A SET OF TOOLS AT THEIR DISPOSAL FOR ADDRESSING THE CHALLENGES OF TAX-FORECLOSURE PROPERTIES AND THE VACANCY AND BLIGHT ASSOCIATED WITH THEM.

Michigan communities have a set of tools at their disposal for addressing the challenges of tax-foreclosure properties and the vacancy and blight associated with them. In this state, if real property taxes are unpaid as of March 31 in the third year of delinquency, a Foreclosing Governmental Unit (FGU), either the County Treasurer or the State Treasurer, forecloses the property and is responsible for disposing of it (Michigan Department of Treasury, 2014). This disposal often consists of an auction sale, where the highest bidder (above a reservation price) acquires the property (Dewar, 2009). If the property fails to sell at auction, it is held by the city or transferred to a land bank, which maintains or alters the property with the aim to increase its value for the community. Land banks may demolish, renovate, sell and/or maintain a property until it can be occupied once again, thus combatting the impacts of blight. While these two tools, auction and land bank, have different conditions and processes, one shared goal is to improve the surrounding community through either a solid tax base for public services and/or a higher quality of housing in residential neighborhoods.

It is important to understand the intended and unintended impacts of local land use policies to discover whether goals, and an improvement in public welfare, are being achieved. One such effort to quantify the economic impacts of land bank activities was conducted by the MSU Land Policy Institute, in partnership with the Ingham County Land Bank, in 2012 (Borowy et al., 2013). This study discovered that there was a positive relationship between Land Bank renovations and nearby property prices in Lansing neighborhoods between 2006 and 2012. In addition, the investments made by the Ingham County Land Bank and its partners leveraged $1.80 in the regional economy for every dollar spent and created 426 direct and indirect jobs associated with their activities. Other studies have assessed the economic impacts of tax-foreclosed properties that have been sold through auctions, as described below.

1224 Michigan was a house that sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

[This study] assesses the economic impact of tax auction sales in Ingham County, MI, from 2008-2013. . . The goal of this report is to provide information useful to the Ingham County Treasurer's Office in the appropriate treatment of tax-foreclosed properties to optimize public benefits and minimize any negative unintended consequences.

This report shares the process and findings of a study conducted by Michigan State University, at the request of the Ingham County Treasurer's Office, to assess the economic impact of tax auction sales in Ingham County, Michigan, from 2008 through 2013, using similar methods to the 2012 Land Bank study. The goal of this report is to provide information useful to the Ingham County Treasurer's Office in the appropriate treatment of tax-foreclosed properties to optimize public benefits and minimize any negative unintended consequences.

Literature Review

THE NATIONAL MORTGAGE CRISIS, WHICH BEGAN TO MANIFEST IN 2007, PROVIDED THE CATALYST FOR THE GLOBAL GREAT RECESSION. AMONG ITS EFFECTS WERE THE PRECIPITOUS DECLINE IN HOUSING PRICES AND HIGH RATES OF RESIDENTIAL FORECLOSURE WITHIN NEARLY EVERY METROPOLITAN AREA IN THE U.S. THIS PUT A SPOTLIGHT ON THE EFFECTS OF FORECLOSURE; IT BECAME APPARENT THAT THE RAMIFICATIONS OF THE PROCESS REACH BEYOND THE CREDITORS AND DEBTORS DIRECTLY INVOLVED. THE PRIMARY NEGATIVE EXTERNALITIES, OR SPILLOVER EFFECTS, INCLUDE LOWERING NEARBY PROPERTY VALUES, REDUCING THE LOCAL PROPERTY TAX BASE, INCREASING CRIME AND DISRUPTING SOCIAL TIES.

309 Kilborn was a house that sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

The national mortgage crisis, which began to manifest in 2007, provided the catalyst for the global Great Recession. Among its effects were a precipitous decline in housing prices and high rates of residential foreclosure within nearly every metropolitan area in the United States (Schuetz et al., 2008). This put a spotlight on the effects of foreclosure; it became apparent that the ramifications of the process reach far beyond the creditors and debtors directly involved. The primary negative externalities, or spillover effects, include lowering nearby property values, reducing the local property tax base, increasing crime and disrupting social ties (Lee 2008). Many studies have focused specifically on the property value effect, which can occur through three channels: 1) Owners of foreclosure properties are less likely to maintain their properties, leading to visible signs of neglect and eventual vacancy-induced crime that may drive away potential buyers of nearby homes; 2) distressed properties are often sold at a discount and, thus, the average price of "comparables" for nearby properties is driven down; and 3) vacancy adds to the local supply of housing units, which puts downward pressure on prices (Schuetz et al., 2008).

In general, there are two types of foreclosure: 1) Mortgage foreclosure, which occurs when a homeowner defaults on home loan payments; and 2) tax foreclosure, which results when a homeowner fails to pay property taxes. Research on the economic and social impacts of foreclosure has long focused on mortgage rather than tax foreclosure. This has been particularly germane, because of the proliferation of subprime mortgages that were defaulted upon en masse after 2007 in an already turbulent market. The negative

Research on the economic and social impacts of foreclosure has long focused on mortgage rather than tax foreclosure.

price effect of a mortgage foreclosure on nearby homes has been estimated at anywhere between 0.9% and 8.7% (Lee, 2008). This number varies based on the stage of the foreclosure (Gerardi et al., 2012), the assumption or lack thereof of linearity in the effect of each additional foreclosure in an area (Been, 2008; Schuetz et al., 2008), the time lag considered (Lin et al., 2009), the use of fixed effects for previous trends in neighborhood property prices (Schuetz et al., 2008), and the distance from the foreclosed property (Mikelbank, 2008).

While there is a wealth of empiricism regarding mortgage foreclosure, there have been relatively few studies of tax foreclosure and, to the best of our knowledge, there has been virtually no comparable research on the subsequent auctioning of tax-foreclosed properties. Furthermore, there are important differences between the two processes. While mortgage default tends to cluster in recessions, tax delinquency is much more chronic in this country. Since the end of World War II, industrial cities have experienced continuous outmigration by wealthier households, leaving behind a tax base of the poorest residents to supply the city's revenue (Accordino and Johnson, 2002). These residents are often much less able to pay the property taxes once borne by wealthier inhabitants. Thus, their properties are much more likely to become tax delinquent, at which point the local county treasurer has the right to evict the residents and auction the properties in order to recoup lost taxes.

There are many other differences between the two processes. Mortgage foreclosure properties are generally considered to have exchange value because banks have recently lent money against them. The opposite is often true for tax delinquent properties, which frequently occur on vacant or abandoned parcels for which there is little market demand. In Detroit, for example, the recession left tens of thousands of these types of properties in the hands of the county treasurer, who was unable to sell a large number of them, even at prices as low as $500 (Hackworth and Nowakowski, 2014). Compared to mortgage foreclosures, tax-foreclosed properties are typically of lower value, have longer police response times, are non-homestead (residential, but not owner-occupied), have a higher statutory tax rate, have a higher assessed value relative to sales price and are delinquent on water bills (Alm et al., 2014).

Of the studies that do attempt to quantify the negative impacts of tax foreclosures and auctions, many are comparative. For example, Whitaker and Fitzpatrick, IV (2012) attempted to disentangle the effects of vacancy (recorded by the U.S. Postal Service), abandonment (proxied by tax delinquency) and mortgage foreclosure on neighboring sale prices. They found that in neighborhoods with low- and medium-poverty levels, an additional tax delinquency within 500 feet reduces a home's sale price between 1.8% and 1.9% per unit, while vacancy means a 1.7% to 2.1% decrease, and mortgage foreclosure has a negative impact of 2.7% to 4.6% per unit.

Thus, tax delinquency has the smallest impact of the three distress measures in wealthier neighborhoods. However, in poor neighborhoods, recent mortgage foreclosures exhibit a marginally positive relationship with nearby sales prices, reflecting selective foreclosures of homes in better conditions, whereas tax delinquent foreclosures decrease home values by 7.6% per unit in high-poverty tracts. Because tax delinquency is heavily concentrated in poor neighborhoods, this per-unit negative effect results in even greater magnification when compared to the effects of other distress factors.

Other studies compare auction sales and land bank interventions by charting which properties revert back to tax delinquency and other forms of distress

in the years following their sale. Dewar (2009) compared the outcomes of tax foreclosures in Genesee and Wayne counties in Michigan. Genesee County, home to the City of Flint, has been lauded for its tax-foreclosure reform, including a strong role for planning and informing homeowners. Wayne County, containing the City of Detroit, has been criticized for its handling of tax foreclosures, which generally focuses on disposing of properties as quickly as possible at minimal prices. From a random sample of foreclosed properties in each city, Dewar found that only 17% of the tax-foreclosed housing in Detroit and 12% in Flint likely became owner-occupied following auction sales. Of vacant properties, less than half in both cities were redeveloped or added to adjacent property after auctioned. In Flint, 23% of the properties were resold within a year; in Detroit, 17% were resold. In contrast, the Land Bank properties of Genesee County fared much better than the properties sold at auction: None of the sampled properties that it acquired returned to foreclosure after sale, and none were resold.

A study in Toledo, OH, from 1993 to 2011 (Hackworth and Nowakowski, 2014) reached similar conclusions: Land Bank properties witnessed higher rates of new development and lower rates of reversion to delinquency when compared to properties sold at auction. In stronger housing markets, as well, tax auctions tend to see this reversion: From 1990 through 1995, nearly one quarter of auctioned properties in Brooklyn, NY, returned to delinquency by 1997 (Collignon, 2000).

Even if land banking only results in demolition of existing structures, it may be preferable to auction sales. A Cleveland, OH, study using data through 2013 found that 6,000 demolitions of distressed properties resulted in $22.6 million in net real estate equity benefits, as well as decreased rates of mortgage-foreclosure in the areas surrounding the demolitions (Griswold et al., 2014).

Studies that compare summary statistics of land bank and auction properties do not control for differences in the types of properties involved in each process and, thus, the results cannot be interpreted to mean that auction sales cause higher rates of reselling and reversion to delinquency. Auction properties enter the system specifically because they have little market value (Hackworth and Nowakowski, 2014), and there is evidence that investors tend to speculate more on properties that have lower values (Immergluck, 2012). Furthermore, auction reserves are often set significantly below the ordinary sale price of a similar property, creating an incentive for speculation that is likely absent in land bank transfers. For example, one Californian investor purchased 90% of all Flint auction properties in 2002, selling 87% of them within a year for more than eight times the price at which he purchased them. The 13% that he did not sell returned to foreclosure with little or no taxes paid, and many of those he did sell also reverted to delinquency, some after subsequent resale (Dewar 2009).

Auction properties enter the system specifically because they have little market value, and there is evidence that investors tend to speculate more on properties that have lower values.

The incentive structure inherent in many tax auctions implies that they offer a short-term solution for cities to dispose of blighted property and temporarily recover lost taxes. In the long run, however, this property is more likely than a land bank property to recreate the same blight and missing revenue. If this pattern is a function of the auction sales themselves, rather than the type of property which is auctioned, then investment in land banks may result in net gains for the local government and community in the long run. If the relevant characteristics of tax-auction properties can be comparatively quantified, more advanced statistical models could better effects of tax-delinquent property auctions.

Ingham County Tax-Foreclosure Auction

THE PROPERTIES OFFERED THROUGH AUCTION HAVE BEEN FORECLOSED FOR NON-PAYMENT OF DELINQUENT REAL PROPERTY TAXES AND/OR SPECIAL ASSESSMENTS. THE PROPERTIES ARE SOLD "AS IS," WITH NO WARRANTIES EITHER EXPRESSED OR IMPLIED.

Ingham County tax-foreclosure auctions are held in compliance with the Michigan General Property Tax Act, more specifically MCL 211.78m, all applicable court decisions and a set of Rules and Regulations, which are provided to all auction participants.

The properties offered through auction have been foreclosed for non-payment of delinquent real property taxes and/or special assessments. The properties are sold "as is," with no warranties either expressed or implied. The Ingham County Treasurer does make a visual inspection of the interior of most improved property, but makes no warranties as to the physical condition of the premises prior to the auction sale. Prospective buyers can view homes in better condition through property open houses. According to State statutes, all prior liens, other than IRS liens, future installments of special assessments, and liens recorded by the State of Michigan or Ingham County pursuant to the Natural Resources and Environmental Protection Act of 1994 ("NREPA"), 1994 PA 451, as amended), are cancelled by Ingham Circuit Court Order. The Treasurer does not guarantee the usability or access to any of these lands. If the local unit of government and the Treasurer deem buildings/properties to be dangerous, public nuisances or hazardous to public health, safety and welfare, they may serve an order of demolition. The Treasurer establishes a reasonable opening bid at the sale to recover the cost of the sale of the parcel or parcels as provided by law, including, where applicable, a performance bond to facilitate and guarantee compliance with any existing demolition order.

This is an interior room of the house at 1224 Michigan, which sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

Prospective bidders at auction sales must register and bring $1,000 cash or certified funds to be eligible to bid. No individual or entity owing forfeited real property taxes to the Treasurer, at the time of closing of the sale, is allowed to purchase a foreclosed property. Ten Percent (10%) of the full purchase price has to be paid on the day of the sale, with the full purchase price paid within 14 days of the date of the auction. The purchase price consists of the final bid price, a 10% auctioneer fee, a $29 per parcel deed preparation fee and, where applicable, a performance bond to facilitate and guarantee compliance with any existing demolition order.

Some parcels available for auction may be subject to a Declaration of Restrictive Covenant(DRC). The DRC will contain as a condition of the sale that the property may not be a rental property, which is a restriction that stays with the property for at least 20 years. Certain parcels of historic value are subject to an additional restriction stating that no demolition, construction, alteration, remodeling or other activity can be undertaken that could affect historically significant exterior features.

A Quit Claim deed pursuant to 1999 PA 123, conveying fee simple title and drafted with the name(s) as entered on the registration, is recorded by the Ingham County Treasurer's Office with the Ingham County Register of Deeds' Office within 30 days from the date of the sale. The Treasurer requests the Register of Deeds to send the recorded deed to the purchaser. It is the purchaser's responsibility to contact the assessor and treasurer of the city, township, or village in which the property is located and file a "Property Transfer Affidavit." The purchaser is solely responsible for covering all title insurance and legal costs. All bidders are responsible for contacting the county, city township or village office to determine if there are any special assessments for future tax years on the properties offered.

The new owner is responsible for the current year summer and winter taxes, including any penalties and fees that become due and payable since the foreclosure hearing circuit court date without any prorating to the seller.

At the first public land sale auction, no sales are allowed for less than the minimum bid price, which is statutorily defined as: 1) All delinquent taxes, interest, penalties and fees due on the property, and 2) the expenses of preparing for and administering the sale. At the second public land sale auction, the Treasurer establishes a reasonable opening bid at the sale to recover the cost of the sale of the parcel or parcels as provided by law. Ingham County is somewhat unique in that opening bids are still relatively high (around $4,000–5,000), because the cost to bring a property to auction are spread over fewer properties, with properties that are unlikely to sell bundled. This strategy ensures that the properties that are auctioned are in fairly good shape, while the blighted properties tend to end up in the Ingham County Land Bank, where they can be demolished and/or renovated.

Between 2008 and 2013, the Ingham County Treasurer's Office sold 338 properties through the property tax-foreclosure auction process. These sales resulted in approximately $3.5 million in revenue for the County and returned these properties to the tax rolls. These revenues are tangible benefits from a municipal service provision standpoint. In addition, some of the properties were demolished, renovated or in other ways improved by the new owner, which can have neighborhood and community benefits. The goal of this study is to analyze these benefits.

These sales resulted in approximately $3.5 million in revenue for the County and returned these properties to the tax rolls.

Study Objectives and Analysis

At the request of the Ingham County Treasurer's Office, the MSU Land Policy Institute, in partnership with faculty and students in the MSU School of Planning, Design and Construction (SPDC); and the MSU Department of Geography, undertook the following activities to objectively and empirically measure the economic impacts of the Ingham County tax auction sale activities:

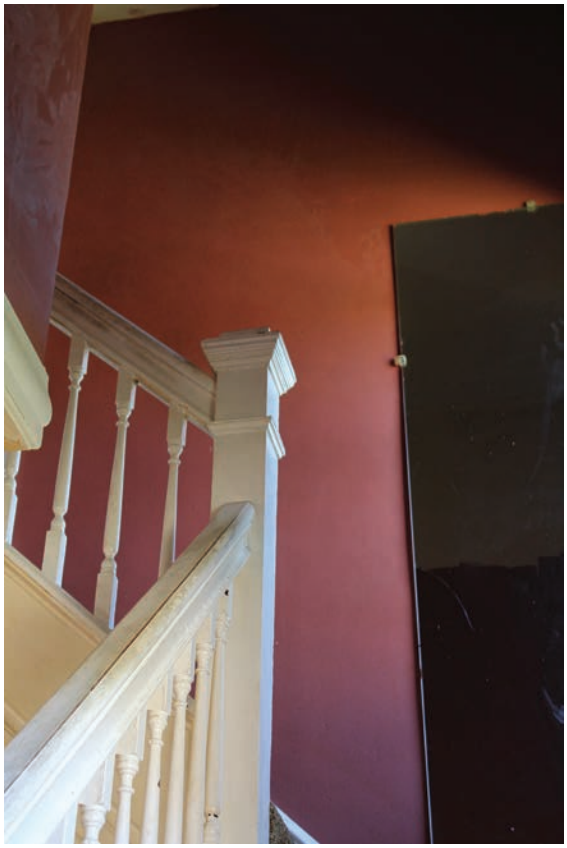
1. Hedonic Property Price Analysis,
2. IMPLAN Economic Impact Assessment, and
3. Tax Foreclosure Reversion Rate Evaluation.

The results from the hedonic, economic impact and reversion rate analyses, taken together, provide a more comprehensive view of the value created and sustained by Ingham County's Tax Auction Program. This information could be used as a strategic decision support tool that can assist the Treasurer in formulating longer-range goals and objectives for neighborhood revitalization.

Hedonic Property Price Analysis

THE LPI AND SPDC RESEARCHERS CONSTRUCTED A VARIETY OF MODELS THAT EXAMINED BEFORE-AND-AFTER IMPACTS OF LAND AUCTION SALES AND IMPROVEMENTS (MAINLY RENOVATIONS AND DEMOLITIONS) USING MULTIVARIATE STATISTICAL ANALYSIS. THE PRIMARY GOAL OF THIS ANALYSIS WAS TO UNDERSTAND AND PROVIDE EMPIRICAL EVIDENCE THAT SHOWS WHETHER TAX AUCTION PROPERTY ACTIVITIES HAVE POSITIVE NEIGHBORHOOD IMPACTS, AS OBSERVED THROUGH NEARBY HOME SALE PRICES.

For the hedonic property price analysis, the Ingham County Treasurer's Office supplied a database of tax auction sales with information about each sold property. This database was modified for merging with additional information from the county equalization records on surrounding properties, parcel data, land use data and socio-economic data from the U.S. Census Bureau.



This is a view of the stairs to the second floor in the house at 309 Kilborn, which sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

The LPI and SPDC researchers constructed a variety of models that examined before-and-after impacts of land auction sales and improvements (mainly renovations and demolitions) using multivariate statistical analysis. The primary goal of this analysis was to understand and provide empirical evidence that shows whether tax auction property activities have positive neighborhood impacts, as observed through nearby home sale prices.

To address the issue of foreclosure and vacancy clustering, the analysis used geographic boundaries (Census block group) to control for influences that neighborhood conditions may already have on properties. For instance, the model can control for income, education, poverty, vacancy and several other socio-economic and demographic characteristics, along with structural attributes of homes (number of bedrooms and bathrooms, age, square footage, etc.) to be able to pinpoint the effects of tax auction properties.

The hedonic pricing method is a multiple regression that explains a home's sale price (or assessed/appraised value) as a function (***f***) of several structural and neighborhood attributes, including but not limited to: Living area (square feet), number of bedrooms, age, number of stories and distance to nearest park, school, freeway, etc. Tax auction data were incorporated along with these attributes, which produces a hedonic estimate—or price tag—associated with those measures. This model can be adjusted to include time (before/after) events and changes. Change in sale price is measured as a function of several factors, modeled in the following form:

(1) SalePrice = f (Structure, Amenities, Neighborhood, SalesYear, Auction Properties)

Similarly, to the 2012 Land Bank Economic Impact Assessment (Borowy et al., 2013), variables representing the activity associated with the tax auction property and its location relative to sold properties were included in the model to test presence and proximity relationships.

STUDY AREA AND DATA

Data on tax-foreclosure auction sales were obtained from the Ingham County Treasurer's Office in May 2014, and data on all county parcels were obtained from the Ingham County Equalization Office in July 2014. The auction database file provided information about each tax-foreclosure auction sale in Ingham County between 2008 and 2013, including the auction year, parcel number, sale date, sale price, annual assessed values, building permits/deeds/rental information and occupancy status. Building permit data provided information about the issue date, the type of renovation (e.g., electrical, plumbing, roofing, addition, demolition, etc.) and, in many cases, the value of the permit project. Table 1 shows the distribution of tax auction properties and permits from 2006 to 2014. In total, 338 residential tax auction properties were sold between 2008 and 2013. About 33% of them subsequently were issued permits for home improvement. Figure 1 displays the distribution of tax auction sales throughout the County.

The property sales data were also obtained from the Ingham County Equalization Office. To clean the dataset, the sales were filtered to exclude any non-residential properties. Also, if a property had been sold multiple times between 2006 and 2014, only the information from the most recent sale was retained. Major sale price outliers were removed from the model to reduce any outlier effects. Records with substantial missing data that would have affected model variables were also removed.

In total, 28,131 residential sales records were in the dataset of sold homes within Ingham County. The distribution of residential sales records from 2006 to 2014 is listed in Table 2.

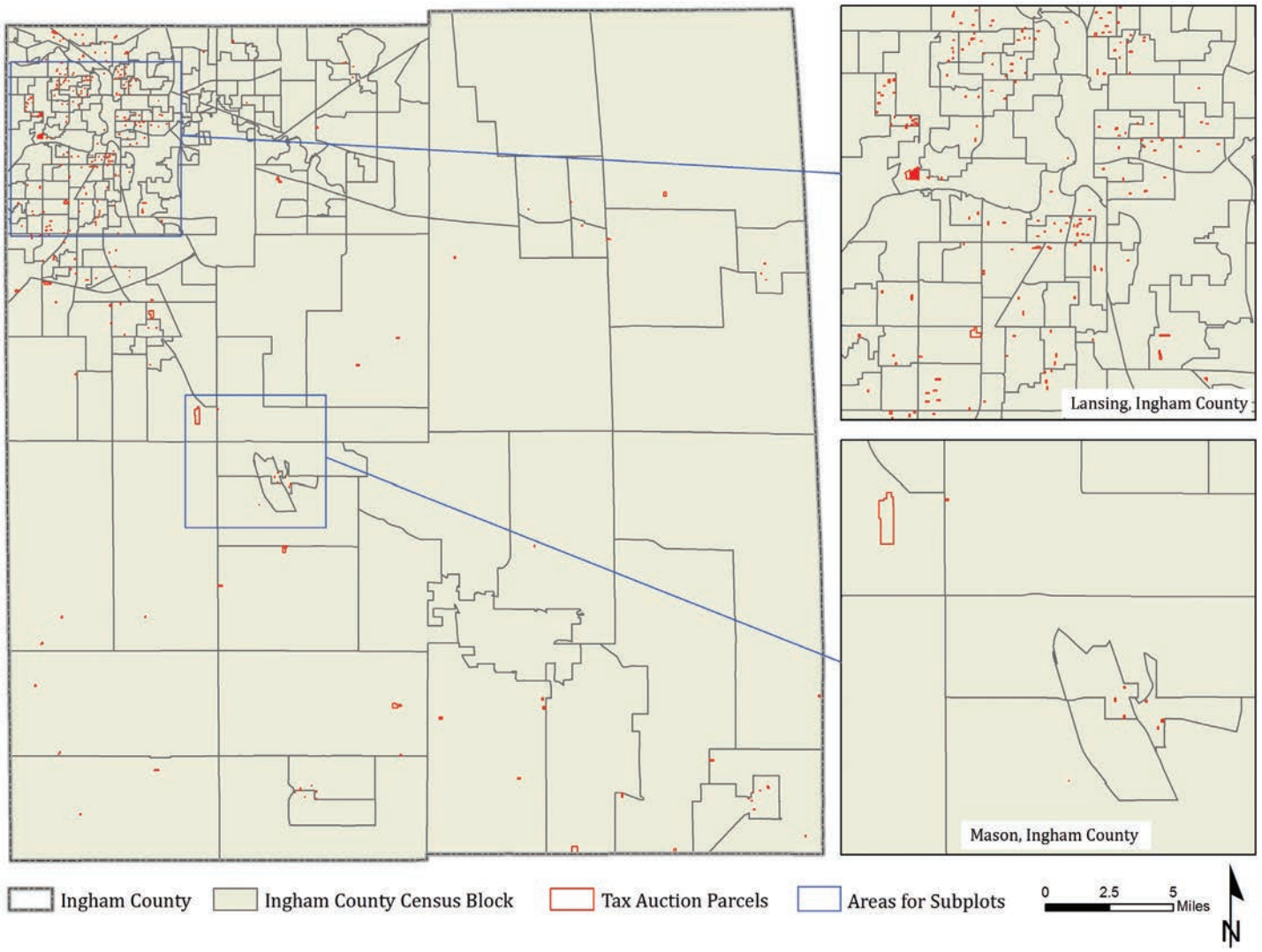
In addition to sale price, the property data included structural factors, such as Parcel Size (***ParcelArea***), square footage (***SquareFt***), number of three-fixture bathrooms (***FullBath***), number

Table 1: Distribution of Tax Auction Properties and Permits – 2006–2014

Year	# of Tax Auction Properties*	# of Permits
2006	-	12
2007	-	8
2008	8	9
2009	11	8
2010	22	6
2011	46	11
2012	140	52
2013	111	88
2014	-	27
Total	388	221

* Data for tax auction sales for 2006–2007 were not included in the database, and a majority of the permits during those years were for demolition. Data for 2014 were also not included due to the timing of the study.
- No data was collected.
Source: School of Planning, Design and Construction; Michigan State University; 2015.

Figure 1: Map of the Distribution of Tax Auction Sales throughout Ingham County – 2008–2014



Source: School of Planning, Design and Construction; Michigan State University; 2015.

of two-fixture bathrooms (***HalfBath***) and Garage Size (***GarageSize***), which are utilized in the hedonic property price analysis.

Since many hedonic property price studies suggest that neighborhood amenities have been shown to have an influence on a home's value, U.S. Census data from 2010 were used to determine the average education level, poverty rate and population size for each Census block group in Ingham County. Each block group was also designated as urban or non-urban to account for variations due to population density. GIS was used to determine the distance in feet from each market sale to the nearest body of water and the nearest public park.

Table 3 provides a description and statistics for these variables.

DELINEATING NEIGHBORHOODS USING GEOGRAPHICALLY WEIGHTED REGRESSION

Location and neighborhood are important factors in real estate prices due to spatial heterogeneity. That is, prices of nearby houses tend to be similar, because they share common local neighborhood factors, such as similar structure and similar

Table 2: Distribution of Residential Sales Records – 2006–2014

Year	# of records	% of records*
2006	2,750	9.8%
2007	2,561	9.1%
2008	2,746	9.8%
2009	3,433	12.2%
2010	3,449	12.3%
2011	3,343	11.9%
2012	4,116	14.6%
2013	4,942	17.6%
2014	791	2.8%
Total	28,131	100%

* Columns may not sum to totals due to rounding.
Source: School of Planning, Design and Construction; Michigan State University; 2015.

Table 3: Descriptions of Variables Used in Hedonic Property Price Analysis

Variable Type	Variable	Description	Mean	Median	Mode	Std. Dev	Minimum	Maximum
Dependent Variable	LastSalePrice	Latest Sales Price ($)	104,974	84,000	20,000	106,966	1,775	2,748,500
House Structure	ParcelArea	Parcel's and Area in Square Feet	32,594	9,008	4,356	124,434	154	3,307,089
	SquareFt	Square Footage of the Residential Building on the Parcel	1,406	1,260	0	663	0	9,576
	FullBath	Number of Bathrooms with Three Fixtures (Full Baths);	1	1	1	1	0	9
	HalfBath	Number of Bathrooms with Two Fixtures (Half Baths);	0	0	0	1	0	6
	GarageSize	Square Footage of the Garage	347	396	0	254	0	2,750
Neighborhood Amenities	Homestead	Percentage for which the Property is Claimed as a Homestead	66	100	100	47	0	100
	DistWater	Distance to the Nearest Body of Water (in Feet)	3,844	3,175	10	3,049	10	24,383
	DistPark	Distance to the Nearest Public Park (in Feet)	3,352	1,600	10	5,170	10	34,078
	Education	Percentage of the Census Block Group Population with an Associate's Degree or Higher	25	23	23	14	1	73
	Poverty	Percentage of Households within the Census Block Group with a Household Income Below the Poverty Line	16	13	1	12	0	99
	Population	Number of Residents in the Census Block Group	1,264	1,182	1,795	451	9	10,345
Urban	Urban	Whether the Neighborhood is Located in Urban Area or Not	0.53	1	1	0.50	0	1

Source: School of Planning, Design and Construction; Michigan State University; 2015.

neighborhood amenities, e.g., socio-economic status, access to parks, water body, shopping, public service facilities, schools, etc. House sales price observations, in many studies, tend to be geo-referenced to account for spatial autocorrelation and general neighborhood characteristics. In order to capture the spatial variation of housing price, various localized modeling techniques have been proposed to capture spatial heterogeneity in housing markets (Huang et al., 2010).

This study utilized a geographically weighted regression (GWR) to test the spatial variations of the relationship between sale price and house attributes.

First, a multi-regression analysis between sales price and house structure characteristics was conducted. The formula for this step is shown in Equation 2. Table 4 provides the results.

$$(2)\ SalesPrice = \beta_0 + \beta_1 ParcelArea + \beta_2 SquareFt + \beta_3 FullBath + \beta_4 HalfBath + \beta_5 GarageSize$$

Next, a GWR model extended on Equation 2 was conducted. Instead of having "fixed" coefficient estimates over space in Equation 2, this model allows the parameter estimates to vary across space and is, therefore, likely to capture the local effects of sales price.

The R^2 (R-squared) in the GWR model is 0.63, which is three times the R^2 (0.19) of the regular regression model (Table 4). This suggests that there was strong spatial autocorrelation among sales prices and different neighborhoods. Figures 2–7 show the spatial distribution of sales price and the coefficient estimates by GWR across Ingham County. These maps show the strong spatial autocorrelations among the sale price and associated house structures across different neighborhoods in Ingham County. The colors in the map represent the price coefficients relative to the standard deviation, or the average.

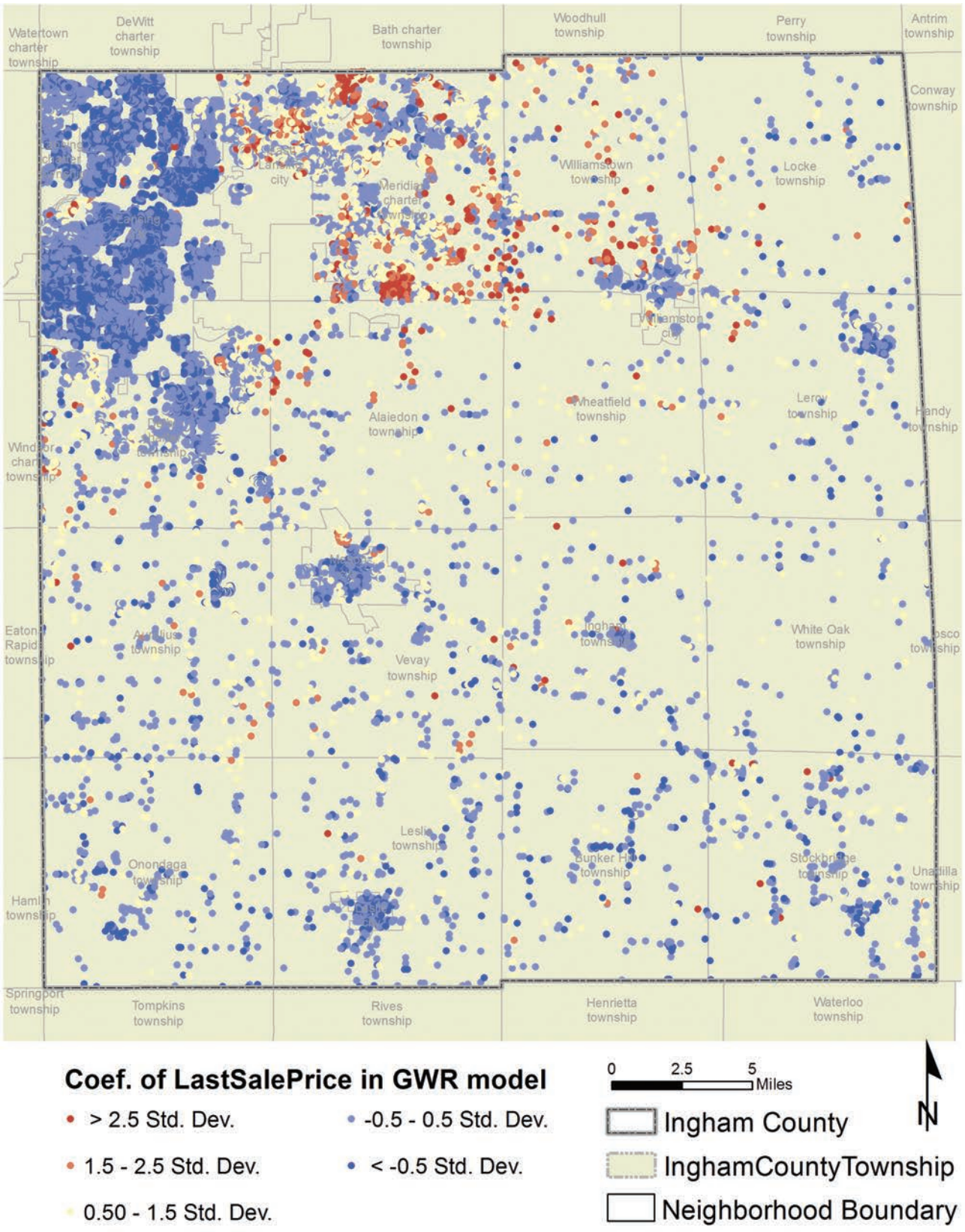
For example, Figure 2 shows that the sale price was relatively low in the Lansing area. In contrast, East Lansing and Okemos had higher prices relative to the mean/average. Figure 3 indicates that the ***ParcelArea*** coefficient has a strong relationship with sale price in high population density areas, e.g., Lansing, but it is relatively weak in most suburban and rural areas. Dwelling size was the major variable in explaining sale price for most hedonic studies. Figure 4 shows that dwelling size had a strong

Table 4: Results of Hedonic Price Analysis on House Structural Variables

Coefficients	Estimate	Std.	Error	T-Value
(Intercept)	-1,243.60	1,380.90	-0.90	0.37
ParcelArea	0.12	0.01	12.28	<0
SquareFt	18.43	1.30	14.19	<0.001
FullBath	21,084.49	1,133.06	18.61	<0.002
HalfBath	16,422.19	1,113.56	14.75	<0.003
GarageSize	34.65	2.03	17.12	<0.004
R-squared	0.19			
Adjusted R-squared	0.19			

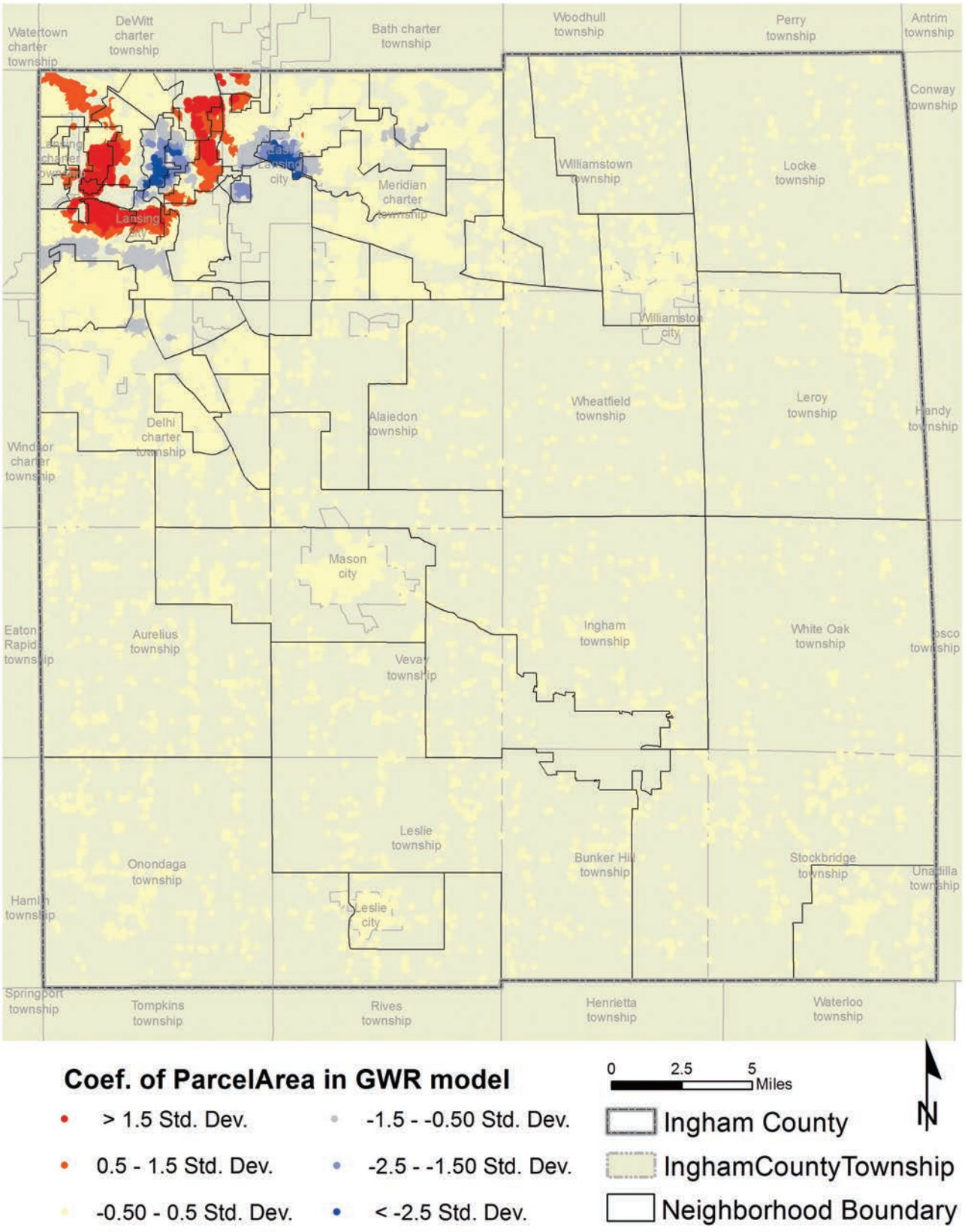
Source: School of Planning, Design and Construction; Michigan State University; 2015.

Figure 2: Map of the Distribution of Sales Price throughout Ingham County – 2006–2014



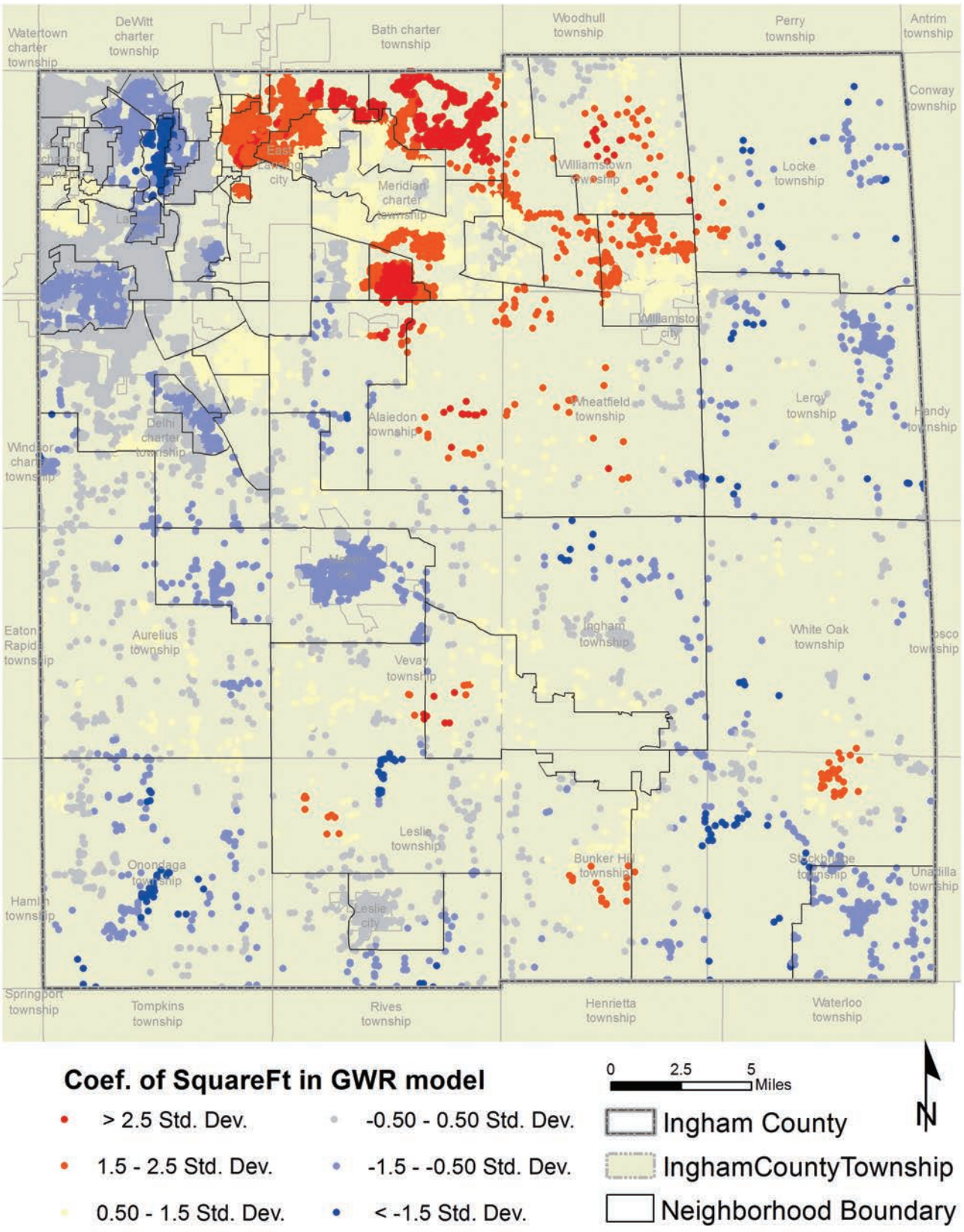
Source: School of Planning, Design and Construction; Michigan State University; 2015.

Figure 3: Map of the Distribution of Parcel Area Coefficient throughout Ingham County – 2006–2014



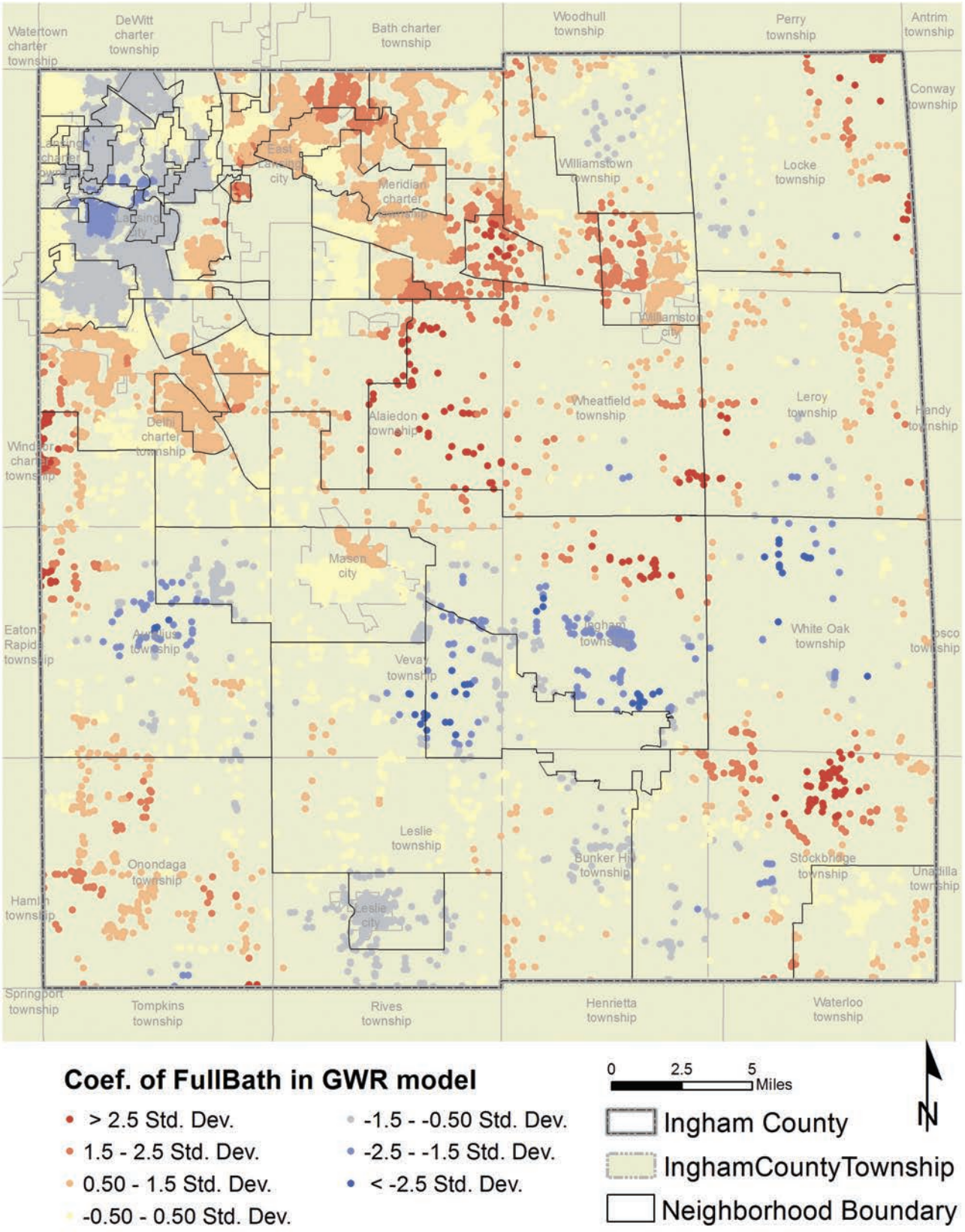
Source: School of Planning, Design and Construction; Michigan State University; 2015.

Figure 4: Map of the Distribution of Floor Area Coefficient throughout Ingham County – 2006–2014



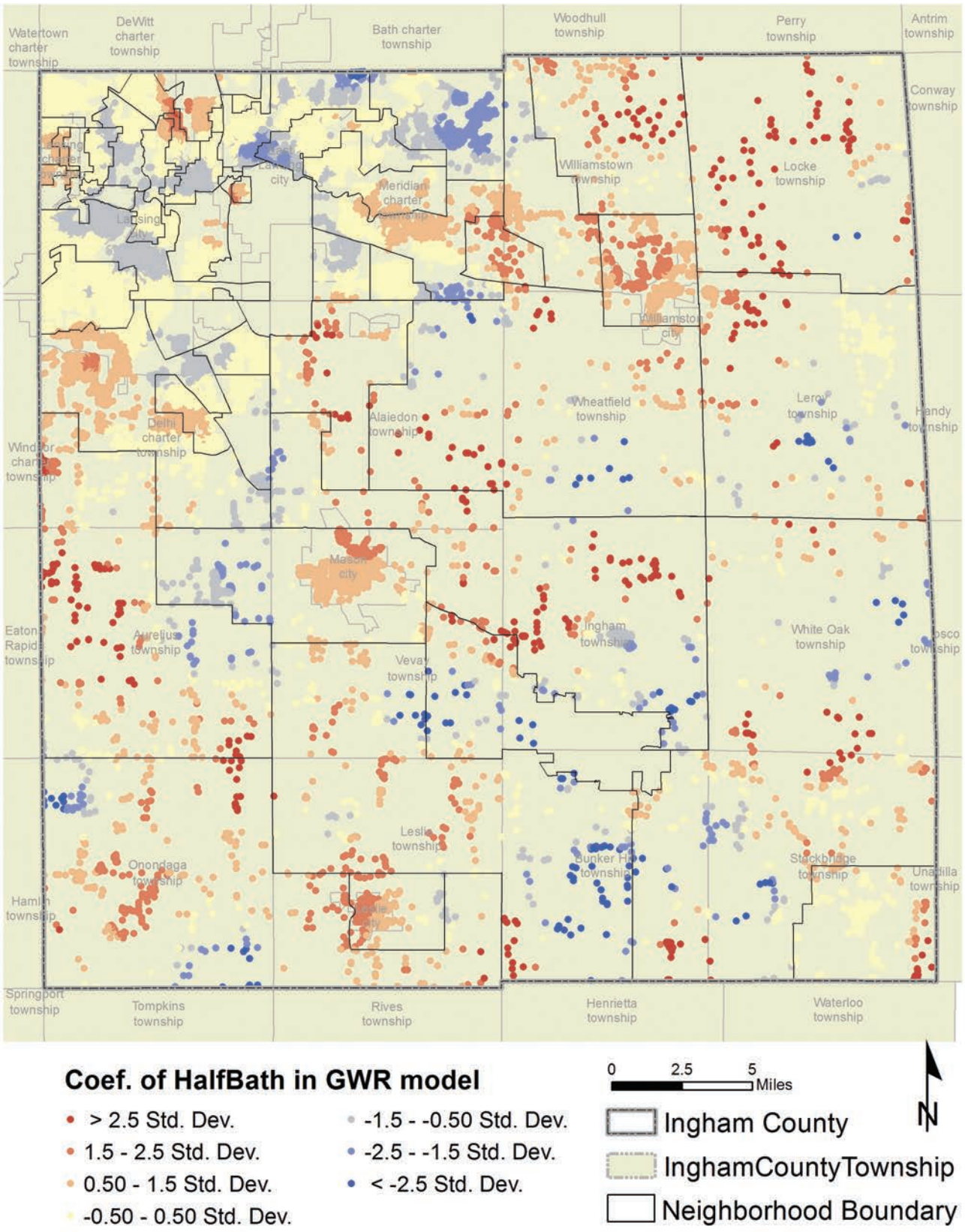
Source: School of Planning, Design and Construction; Michigan State University; 2015.

Figure 5: Map of the Distribution of Full Bathrooms Coefficient throughout Ingham County – 2006–2014



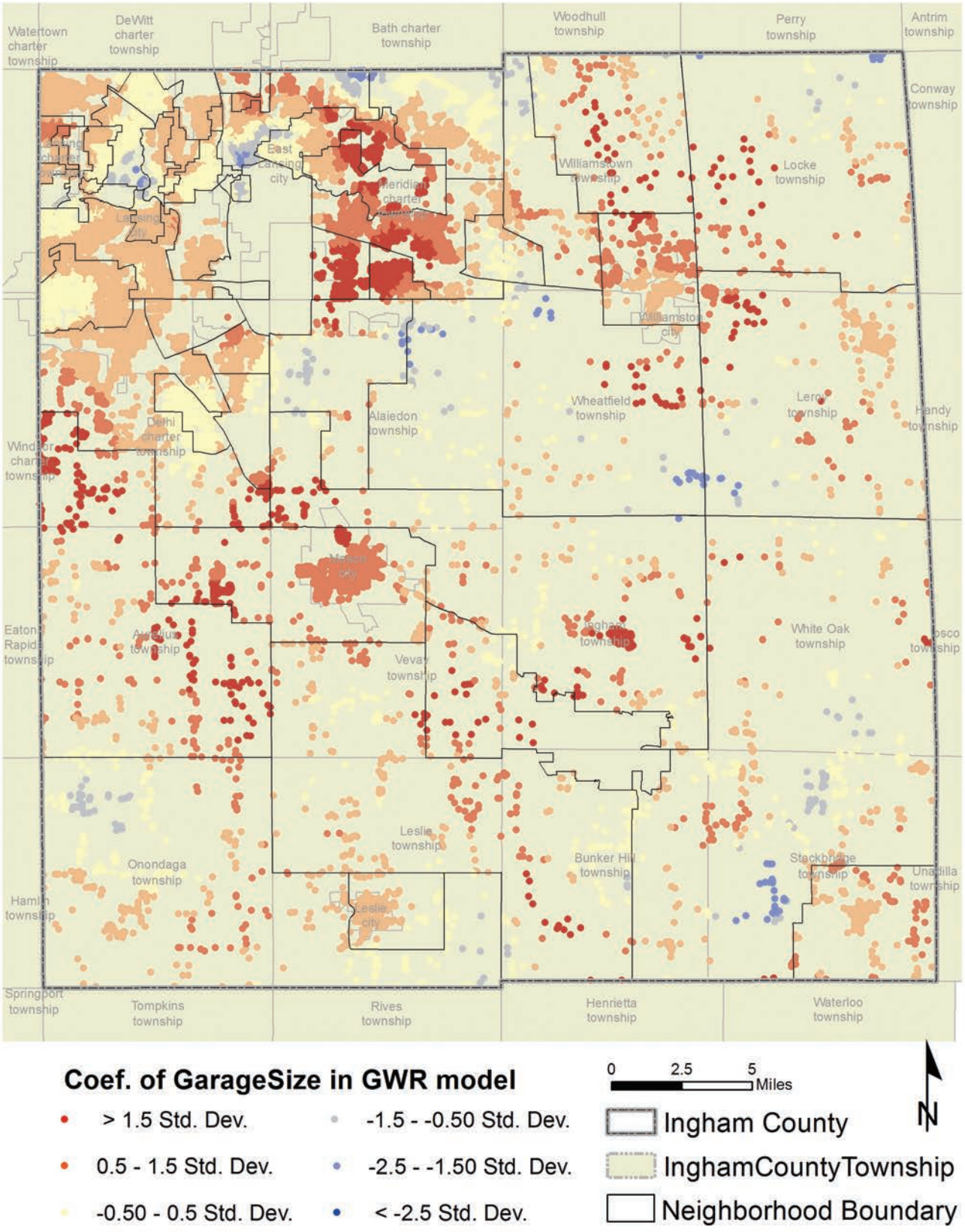
Source: School of Planning, Design and Construction; Michigan State University; 2015.

Figure 6: Map of the Distribution of Half Bathrooms Coefficient throughout Ingham County – 2006–2014



Source: School of Planning, Design and Construction; Michigan State University; 2015.

Figure 7: Map of the Distribution of Garage Size Coefficient throughout Ingham County – 2006–2014



Source: School of Planning, Design and Construction; Michigan State University; 2015.

relationship in explaining the sales price in East Lansing, Okemos and Williamston area, compared to the Lansing, Mason and the majority of rural areas.

Next, a neighborhood boundary was defined based on the spatial distribution of sales price and associated coefficients detected by GWR. Census block group boundary, city/township boundary and some known infrastructure barriers (e.g., highways) were used as references when delineating the neighborhood boundary. The boundary is shown in Figure 8 and it was used to represent the spatial factors in the model for estimating Tax Auction activities and associated home improvement effects.

UNDERSTANDING TAX AUCTION EFFECTS THROUGH HEDONIC PROPERTY PRICE ANALYSIS

This study examined how Tax Auction activities affect nearby housing sale prices. The first model for this analysis is shown in Equation 3.

$$(3)\ SalesPrice = ß_0O + ß_1ParcelArea + ß_2SquareFt + ß_3FullBath + ß_4HalfBath + ß_5GarageSize + ß_6DistWater + ß_7DistPark + ß_8Urban + ß_9Education + ß_{10}Poverty + ß_{11}Population + ß_{12}Homestead + ß_{13}AfterAuction500ft + \sum_{i=14}^{68} ß_i factor(NBRHD) + \sum_{i=69}^{77} ß_i factor(SaleYear)$$

The property sales records within a 500-foot buffer around a tax auction property were selected in this analysis. A dummy variable, ***AfterAuction500ft***, was added to the dataset to indicate whether the property was sold after the nearby tax auction sale took place. See Figure 9 for details.

The neighborhood dummy variables (***NBRHD***) control for characteristics, such as median household income that might affect the incidence of tax auction sales in a given neighborhood, and the year dummy variables (***SaleYear***) control for time trends. Home owner occupancy was determined by using the "principal residence exemption" (***PRE***). If this variable has a value of 100, it means the property received the homestead exemption, meaning it was owner-occupied. If the variable has any value over zero and under 100, the owner lived there, but not all of the home/structure was used for the owner's homestead. This variable was used as a proxy for home ownership versus rental, in the absence of rental data for the properties. The descriptions of other variables in Equation 3 are listed in Table 3.

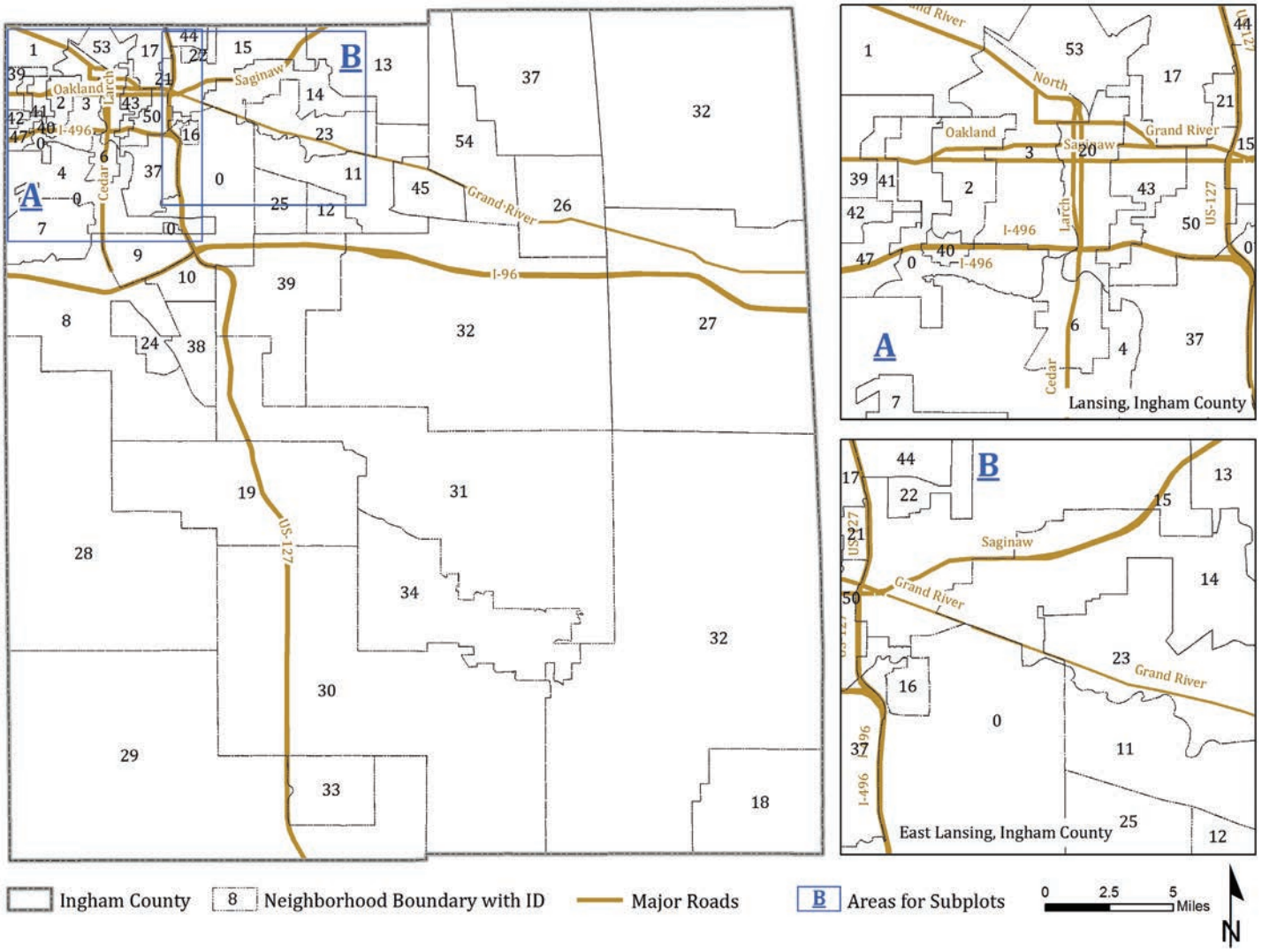
A stepwise regression for Equation 3 was conducted to determine which of the independent variables of interest had a significant relationship to sale price and contributed to the strength of the model.

In total, 7,932 records within 500 feet of a tax auction property were selected in this analysis. The smaller sample size may have caused some problems in specifying the model. First, the variation of number of bathrooms appeared problematic, so the two types, full and half, were aggregated. Second, it was discovered that the removal of the intercept greatly improved the strength of the model.

The results of this model are shown in Table 5.

The results with respect to home and neighborhood variables that are common to hedonic pricing models were consistent with prior analyses. For instance, the regression showed a positive and significant relationship between the sale price and both square footage of the house and number of

Figure 8: Map of the Neighborhood Boundaries Used in Hedonic Property Price Analysis



Source: School of Planning, Design and Construction; Michigan State University; 2015.

bathrooms. Other results were also intuitive, such as the positive and significant relationship between the sale price and garage size.

The variable indicating the homestead value of a market sale property showed that higher homeowner occupancy rates were associated with higher home prices, with a significant coefficient of 140.58. Therefore, for each percentage increase in principal residence exemption, the property price was $140.58 higher, all else remaining equal. This result suggests that having a homeowner living in the property is associated with a higher property price than a situation where the homeowner is not present for a portion of the year or has rented out a portion or all of the property. It is consistent with the Ingham County Land Bank economic impact assessment (Borowy et al. 2013), which showed that being a rental property had a negative relationship to market sale price.

Figure 9: Map of the Property Price Assessment – Ingham County Tax Auction Parcel

Source: Land Policy Institute, Michigan State University, 2015.

Table 5: Results of Regression with Tax Auction Effects

Type	Coefficients	Estimate	Std. Error	T -Value	Pr(>|t|)
Tax Auction Effects	AfterAuction500ft	-1,704.84	1,571.18	-1.09	0.28
House Structure	SquareFt	18.60	1.23	15.15	<0
	Total Bath	4358.67	898.51	4.85	<0
	GarageSize	14.16	1.98	7.15	<0
Neighborhood Amenities	Homestead	140.58	8.95	15.71	<0
	Dis2ParkFR	1.14	0.45	2.52	0.01
	Urban	-5,715.12	3,766.94	-1.52	0.13
	Population	14.33	4.09	3.51	0.001
Spatial Effects: Neighborhood	NBRHD1	51,124.54	5,164.55	9.90	<0
	NBRHD2	38,266.11	4,705.87	8.13	<0
	NBRHD3	40,279.61	4,663.98	8.64	<0
	NBRHD4	52,467.77	4,674.60	11.22	<0
	NBRHD6	33,522.86	4,611.32	7.30	<0
	NBRHD7	48,278.01	4,723.30	10.22	<0
	NBRHD8	58,450.85	3,884.80	15.05	<0
	NBRHD9	41,819.34	6,189.09	6.76	<0
	NBRHD13	63,291.23	4,925.07	12.85	<0
	NBRHD14	111,471.57	4,859.57	22.94	<0
	NBRHD15	104,750.03	7,190.63	14.57	<0
	NBRHD17	28,291.35	9,215.29	3.07	<0
	NBRHD18	43,636.52	4,910.04	8.89	<0
	NBRHD19	59,898.17	5,165.40	11.60	<0
	NBRHD20	36,726.28	4,862.49	7.55	<0
	NBRHD22	89,990.57	16,940.48	5.31	<0
	NBRHD23	134,391.95	5,597.76	24.01	<0
	NBRHD24	72,601	5,861.94	12.39	<0
	NBRHD25	229,341.47	14,826.53	15.47	<0
	NBRHD26	87,972.46	7,746.34	11.36	<0
	NBRHD27	14,075.12	12,913.45	1.09	0.28
	NBRHD28	46,358.07	12,248.47	3.79	0.0001
	NBRHD29	14,265.86	7,124.54	2	0.05
	NBRHD30	37,203.70	13,644.25	2.73	0.01
	NBRHD31	23,769.47	15,612.89	1.52	0.13
	NBRHD32	9,221.74	17,828.37	0.52	0.61
	NBRHD33	44,166.40	5,175.30	8.53	<0
	NBRHD37	58,464.98	6,242.82	9.37	<0
	NBRHD39	46,096.89	5,350.13	8.62	<0
	NBRHD40	31,108.05	9,109.23	3.42	0.001
	NBRHD41	37,066.91	2,789.67	13.29	<0

Table 5: Results of Regression with Tax Auction Effects (cont.)

Type	Coefficients	Estimate	Std. Error	T -Value	Pr(>|t|)
Spatial Effects: Neighborhood	NBRHD42	62,797.44	10,279.11	6.11	<0
	NBRHD43	39,966.40	4,708.81	8.49	<0
	NBRHD44	73,234.12	37,613.15	1.95	0.05
	NBRHD47	29,310.44	36,58.32	8.01	<0
	NBRHD50	41,919.70	4,484.38	9.35	<0
	NBRHD53	40,588.67	51,48.21	7.88	<0
Temporal Effects: Sale Years	SYear2007	-11,229.19	2,169.03	-5.18	<0
	SYear2008	-32,517.29	2,015.81	-16.13	<0
	SYear2009	-40,392.15	1,940.16	-20.82	<0
	SYear2010	-41,002.42	1,991.09	-20.59	<0
	SYear2011	-45,778.19	2,010.88	-22.77	<0
	SYear2012	-45,383.18	2,004.92	-22.64	<0
	SYear2013	-33,571.39	2,237.15	-15.01	<0
	SYear2014	-32,975.52	3,096.70	-10.65	<0
Model Results	R-squared	0.67			
	Adjusted R-squared	0.67			
	F-statistic	305 on 53 and 7,879 DF			

Source: School of Planning, Design and Construction; Michigan State University; 2015.

The stepwise process excluded parcel size, urban, distance to water and education factors from the model due to their insignificance.

This result suggests that the sale of a tax auction property within close proximity has a negative effect on sale price, but the coefficient was insignificant at the 90% level.

Not surprisingly, tax foreclosures and, therefore, tax auction sales, were closely related to time-related variables, like the economy; in particular, the recession and housing market crash that began in 2007 had a large impact on home foreclosures. The findings suggest that it is the presence of a foreclosure property, not the tax auction sale itself, which has a negative relationship to sale price.

Including dummy variables for the different neighborhoods across the county corrects for spatial autocorrelation and showed the drastic difference between home values across neighborhoods. For instance, the coefficients for these variables suggest that home prices in Neighborhood 23 (Okemos) were approximately $97,665 higher than home prices in Neighborhood 20 (encompassing downtown Lansing, east of the river near the Stadium District), all else remaining equal.

The findings suggest that it is the presence of a foreclosure property, not the tax auction sale itself, which has a negative relationship to sale price.

Sale year coefficients roughly reflect what was happening in the housing market during this time period. That is, the negative and significant coefficients on the sale year dummy variables from

2007 through 2014 suggested that prices had been lower than in 2006, the constant variable for this series of dummy variables. However, in 2013, the decline seemed to have been arrested, and property prices were climbing back to where they were in 2006, though slowly.

UNDERSTANDING HOME IMPROVEMENT EFFECTS OF TAX AUCTION PROPERTIES THROUGH HEDONIC PROPERTY PRICE ANALYSIS

To determine the impact of improvement on tax-foreclosure property auctions on neighborhood home prices, only the property sales records within 500-foot buffer around a tax auction property with an issued permit were included in this analysis, which resulted in a sample size of 3,888. A dummy variable, ***AfterPermit500ft***, was added to these records to indicate whether the property was sold after the nearby tax auction was issued a permit.

There were not enough observations to separate the different permit types, so all kinds of renovations were included as one variable.

The hedonic model for this step is shown in Equation 4.

$$(4)\ SalesPrice = ß_0O + ß_1ParcelArea + ß_2SquareFt + ß_3FullBath + ß_4HalfBath + ß_5GarageSize + ß_6DistWater + ß_7DistPark + ß_8Urban + ß_9Education + ß_{10}Poverty + ß_{11}Population + ß_{12}Homestead + ß_{13}AfterPermit500ft + \sum_{i=14}^{68} ß_i factor(NBRHD) + \sum_{i=69}^{78} ß_i factor(SaleYear)$$

Similar to testing the tax auction effects in Equation 3, a stepwise regression model based on Equation 4 was conducted. The result of this model is shown in Table 6.

The coefficient for the key variable, the presence of a tax auction property issued a permit within 500 feet prior to the market sale, is 3,651.10, both positive and significant. Therefore, having a tax auction home nearby that was improved prior to the market sale was associated with a $3,651.10 premium (over having a tax auction home nearby that was improved after the market sale). Recall that this variable is inclusive of all permit types, ranging from small mechanical repairs to demolitions and home additions. One would expect that different types of permit-related improvements would have varying impacts on surrounding property prices, but data limitations restricted the analysis to aggregate results.

Once again, the other variables (square footage, number of bathrooms, neighborhood and sale year) appeared to have explainable coefficients, similar to other regression models.

It should be noted that another regression analysis of the tax auction properties that did not acquire a permit was conducted. The results were similar to the first model analysis in that the coefficient of the ***AfterAuction500ft*** variable, for a sale that took place after a tax auction sale within 500 feet, was still negative and insignificant at the 90% level. However, the coefficient was more negative (-$2,279, rather than -$1,705) and slightly more significant (with a probability value of 0.17, rather than 0.28). Though inconclusive, this result seems to suggest that there may be a negative relationship between tax auction sales of properties that were not improved through permit-required activities and the sale price of surrounding properties.

Table 6: Results of Regression with Permit Issue Date

Type	Coefficients	Estimate	Std. Error	T -Value	Pr(>|t|)
House Improvement Effects	AfterPermit500ft	3,651.1	1,208.22	3.02	0.003
House Structure	SquareFt	17.44	1.36	12.79	<0
	TotalBath	2,828.4	999.34	2.83	0.005
	GarageSize	16.91	2.29	7.40	<0
Neighborhood Amenities	Homestead	164.57	10.19	16.15	<0
Spatial Effects: Neighborhood	NBRHD1	43,535	3,368.02	12.93	<0
	NBRHD2	35,910	2,595.87	13.83	<0
	NBRHD3	31,505	3,003.40	10.49	<0
	NBRHD4	44,288	2,766.08	16.01	<0
	NBRHD6	29,730	2,582.96	11.51	<0
	NBRHD7	40,631	2,930.38	13.87	<0
	NBRHD8	49,887	3,615.31	13.79	<0
	NBRHD9	47,348	5,078.91	9.32	<0
	NBRHD13	52,936	5,948.07	8.90	<0
	NBRHD15	69,156	8,285.03	8.35	<0
	NBRHD17	22,418	8,269.65	2.71	0.007
	NBRHD19	52,994	3,519.86	15.06	<0
	NBRHD20	33,322	2,933.06	11.36	<0
	NBRHD23	154,184	8,112.82	19.01	<0
	NBRHD24	62,919	7,595.66	8.28	<0
	NBRHD26	73,927	8,731.64	8.47	<0
	NBRHD28	41,640	17,279.19	2.41	0.02
	NBRHD29	8,256.6	29,844.40	0.28	0.78
	NBRHD30	42,636	11,504.22	3.71	<0
	NBRHD32	11,779	17,455.76	0.68	0.5
	NBRHD33	38,784	3,564.02	10.88	<0.
	NBRHD37	87,902	29,903.13	2.94	0.003
	NBRHD40	27,709	6,983.98	3.97	<0.
	NBRHD41	41,983	3,343.78	12.56	<0
	NBRHD42	80,721	10,157.26	7.95	<0
	NBRHD43	40,122	2,860.28	14.03	<0
	NBRHD47	33,300	6,879.15	4.84	<0
	NBRHD50	35,167	2,860.77	12.29	<0
	NBRHD53	37,737	5,877.19	6.42	<0

Table 6: Results of Regression with Permit Issue Date (cont.)

Type	Coefficients	Estimate	Std. Error	T -Value	Pr(>|t|)
Temporal Effects: Sales Years	SaleYear 2007	-8,248	2,453.86	-3.36	0
	SaleYear 2008	-29,840	2,245.70	-13.29	<0
	SaleYear 2009	-38,499	2,125.79	-18.11	<0
	SaleYear 2010	-37,199	2,197.17	-16.93	<0
	SaleYear 2011	-40,565	2,200.19	-18.44	<0
	SaleYear 2012	-41,671	2,150.84	-19.37	<0
	SaleYear 2013	-32,022	2,044.37	-15.66	<0
	SaleYear 2014	-29,245	2,863.75	-10.21	<0
Model Results	R-squared	0.75			
	Adjusted R-squared	0.74			
	F-statistic	268.2			
	Degree of Freedom	3,846			

Source: School of Planning, Design and Construction; Michigan State University; 2015.

IMPLAN Economic Impact Assessment

THROUGH INPUT-OUTPUT ANALYSIS, THE DIRECT, INDIRECT AND INDUCED ECONOMIC IMPACTS FOR EMPLOYMENT, LABOR INCOME, PROPERTY-TYPE INCOME AND VALUE OF OUTPUT WERE GENERATED. THIS INFORMATION PERMITS THE INGHAM COUNTY TREASURER'S OFFICE TO DETERMINE THE SYSTEMATIC IMPACTS (DOLLARS FLOWING THROUGH THE ECONOMY) OF MONEY INVESTED IN TAX AUCTION SALE PROPERTIES AND ANSWERS THE QUESTION: HOW MANY JOBS ARE CREATED BY THE ACTIVITIES ASSOCIATED WITH RETURNING THESE PROPERTIES TO THE TAX ROLL?

Through input-output analysis, the direct, indirect and induced economic impacts for employment, labor income, property-type income and value of output were generated. This information permits the Ingham County Treasurer's Office to determine the systematic impacts (dollars flowing through the economy) of money invested in tax auction sale properties and answers the question: How many jobs are created by the activities associated with returning these properties to the tax roll?

Economic impact analysis was utilized to understand the effects of:

1. Home rehabilitation efforts;
2. Demolition;
3. New construction; and
4. Lawn and landscaping maintenance on tax-foreclosed parcels.

This analysis used IMPLAN® (IMpact analysis for PLANning), a complete economic assessment package, including data and software, devised and provided by MIG, Inc. This system provides economic multipliers for impact modeling with resolution down to the Zip code level, and it is used by many government agencies, educational institutions, nonprofit organizations, corporations, and planning and economic development agencies.

1111 Orchard was a house that sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

ECONOMIC IMPACT DATA

Data associated with the economic impact analysis were obtained from the Ingham County Treasurer's Office, the Ingham County Equalization Office and the Ingham County Land Bank.

Data from the Ingham County Treasurer's Office on the tax-foreclosure auction properties included information about the permits that new owners were issued after buying the house. This permit information detailed the date, type of renovation/

construction and, in some cases, the value of the work. The Treasurer's Office also provided estimated administrative costs associated with running the property tax auction.

In addition, data provided by the Ingham County Equalization Office included information on residential building permits issued to all properties in Ingham County between January 2006 and April 2014. This data included the parcel number, address, issue date, permit value, permit category and permit type. Where data on the value of the work for permits associated with tax auction properties did not exist, it was estimated by identifying the median value of permits by category from this broader dataset. This method may overstate the value of the permits for tax auction properties, since it is anticipated that speculators or landlords may spend less to renovate properties than homeowners. These estimated values were checked for accuracy by experts at the Treasurer's Office and the Land Bank.

Tax-foreclosure expense data included total expenditures related to the maintenance of tax-foreclosure properties for each year from 2008 through 2013. These expenses were divided into three categories: 1) Lawn mowing and snow removal; 2) utilities; and 3) building, property maintenance and demolition. These data were provided by the Ingham County Land Bank, which is responsible for maintaining tax auction properties from the date of foreclosure to the date of sale at auction, or until the end of the calendar year if the property does not sell at auction. Most properties that do not sell at auction are turned over to the municipality or the Ingham County Land Bank.

Methods: Regional Economic Impact Analysis

There were three main categories of spending that went into the economic impact analysis of the Ingham County property tax foreclosure auction, including: 1) The actual administrative costs associated with hosting the auction, which are borne by the Ingham County Treasurer's Office; 2) the costs associated with maintaining the properties before they are sold in auction, as well as the unsold properties for the remainder of the calendar year; and 3) the expenditures of tax auction property owners on renovations.

The expenditures are shown in Table 7.

The spending categories associated with these three types of expenditures were matched with industries available for modeling within the IMPLAN framework. The IMPLAN industries used are shown in Table 8.

Next, the multipliers provided by IMPLAN in the specified industries were applied to the categorical annual spending totals. The approximate impacts were calculated at three levels: 1) Direct economic impacts (total economic activity effect of tax auction spending in industries directly related to the activities, such as house construction and renovation, utilities, property and building maintenance, and closing costs, etc.) and indirect economic impacts (the secondary impacts in "backward" and "forward" linked industries as a result of the tax auction spending in primary sectors); 2) total (direct and indirect) job creation impacts; and 3) total value-added impacts (value in goods and services added across industries as a result of spending on Tax Auction activities after accounting for costs).

Table 7: Distribution of Expenditure Data by Ingham County Tax Auction Activities – 2006–2014

Category	Years									Total
	2006	2007	2008	2009	2010	2011	2012	2013	2014	
Administrative Costs (by Ingham County)										
Administrative Costs Associated with Auction and Marketing	-	-	8,000	11,000	22,000	46,000	140,000	111,000	-	338,000
Closing Costs (Owner-Occupancy Covenants)	-	-	-	-	-	-	7,000	5,000	-	12,000
Property Maintenance (by Ingham County)										
Lawn Mowing/ Snow Removal	-	-	1,600	2,200	4,400	9,200	28,000	22,200	-	67,600
Utilities	-	-	2,000	2,750	5,500	11,500	35,000	27,750	-	84,500
Property Improvement (by Owner)										
Closing Costs (Auctioneer's Premium and Recording Fee)	-	-	444	5,241	31,249	37,523	129,323	154,857	-	358,637
Building and Property Maintenance	130,600	4,500	29,000	9,100	14,000	12,000	28,610	29,900	19,616	277,326
New Construction	-	132,994	-	-	-	-	-	60,000	-	192,994
Demolition	15,000	5,000	5,000	5,000	7,400	10,000	22,000	15,000	10,000	94,400
Remodeling (E.G., Roofing, Electrical, Plumbing, Siding, etc.)	17,155	14,570	8,428	5,000	8,285	18,392	174,933	332,907	152,186	731,856
Alteration of Structure (E.G. Addition of Garage, Pole Barn, Porch/Deck, etc.	1,000	1,000	8,500	2,500	-	-	23,900	137,230	-	174,130
Total	163,755	158,064	62,972	42,791	92,834	144,615	588,765	895,844	181,802	**2,331,442**

- No data was collected.

Source: School of Planning, Design and Construction; Michigan State University; 2015.

It is important to note that some assumptions were made about this data that may affect the outcomes. For instance, utility expenditures were lumped together in the dataset; without a clear idea of how much was spent on each utility group, expenditures were assumed to be split evenly between electric, heat and water. However, this is such a small amount of spending that moving money from one utility company type to the next would have little to no effect.

Results: Regional Economic Impact Analysis

Results, shown in Table 9, suggest a measurable economic impact of the tax-foreclosure auction activities on the regional economy. The total estimated direct and indirect economic impacts of spending associated with these properties over the time period from 2006–2014 was $2,981,543. Total spending during this period equaled $2,331,442. This estimated impact suggests a

Table 8: Tax Auction–Related Expenditure Cross Reference to IMPLAN Industry

Expenditure Category	IMPLAN Industry
Administrative Costs (by Ingham County)	
Administrative Costs Associated with Auction and Marketing	Other state and local government enterprises.
Closing Costs (When Buyer Obtains Title Insurance)	Monetary authorities and depository credit intermediation activities.
Property Maintenance (By Ingham County)	
Lawn Mowing and Snow Removal	Services to buildings and dwellings.
Utilities	Natural gas distribution; electric power generation, transmission and distribution; and water, sewage and other treatment and delivery systems
Property Improvement (By Owner)	
Closing Costs (Auctioneer's Premium and Recording Fee	Monetary authorities and depository credit intermediation activities.
Building and Property Maintenance	Maintenance and repair of residential structures; and waste management and remediation services.
New Construction	Construction of other new residential structures.
Demolition	Waste management and remediation services.
Remodeling (e.g., Roofing, Electrical, Plumbing, Siding, etc.)	Maintenance and repair of residential structures.
Alteration of Structure (e.g., Addition of Garage, Pole Barn, Porch/Deck, etc.	Construction of other new residential structures.

Source: School of Planning, Design and Construction; Michigan State University; 2015.

Table 9: Economic Impacts of Ingham County Tax Auction Activities

Impacts	Jobs	Labor Income	Value Added	Output
Direct	12	$675,775	$967,335	$2,076,419
Indirect	5	$192,869	$308,448	$486,134
Induced	4	$143,670	$274,863	$418,989
Total	21	$1,012,314	$1,550,646	$2,981,543

Source: School of Planning, Design and Construction; Michigan State University; 2015.

This estimated impact suggests a 1.28:1 leveraging of spending, meaning that for each $1 spent, $1.28 was added to the regional economy.

1.28:1 leveraging of spending, meaning that for each $1 spent, $1.28 was added to the regional economy. Tax auction spending was also estimated to result in a total of 12 direct jobs and nine jobs from secondary effects.

The total job impact of tax auction spending was estimated at 21 jobs. The total labor income of these investments was, therefore, estimated at $1,012,314. The total estimated value-added impact in the Ingham County area was $1,550,646.

Tax Auction and Land Bank Property Tax Delinquency Reversion Comparison

WHILE LAND BANK INTERVENTION IS VERY DIFFERENT FROM TAX AUCTION SALES IN TERMS OF PROCESSES, THE MAIN GOAL OF THESE EFFORTS IS SIMILAR: RETURNING TAX-FORECLOSED PROPERTIES TO PRIVATE OWNERSHIP AND A USEFUL PURPOSE. TO THIS END, A FOLLOW-UP EXAMINATION WAS CONDUCTED FOR PROPERTIES THAT HAVE BEEN SOLD THROUGH THE LAND BANK AND TAX AUCTION PROCESSES TO DETERMINE THE RATES OF REVERSION TO TAX DELINQUENCY AND FORECLOSURE. . .

While land bank intervention is very different from tax auction sales in terms of processes, the main goal of these efforts is similar: Returning tax-foreclosed properties to private ownership and a useful purpose. To this end, a follow-up examination was conducted for properties that have been sold through the Land Bank and Tax Auction processes to determine the rates of reversion to tax delinquency and foreclosure, similar to the analysis conducted by Dewar (2009) in Genesee and Wayne counties. While the Ingham County Treasurer's Office was unaware of any Land Bank renovated properties that have gone through the tax-foreclosure process, there have historically been a percentage of tax auction properties that have reverted to foreclosure each year (see Table 10). It is interesting to note a substantial decrease in reversion percentages starting in 2010; this decrease was likely due to the transition of the Tax Auction process to the County from the State around 2005–2006, and the beginning of the Ingham County Land Bank around that same time.

This is a backyard view of the house at 734 Princeton, which sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

Table 10: Tax Auction Property Foreclosure Reversions – 2005–2014

Year	Tax Auction Foreclosure Reversions
2005	50%
2006	31%
2007	27%
2008	40%
2009	24%
2010	9%
2011	9%
2012	4%
2013	2%
2014	8%

Source: School of Planning, Design and Construction; Michigan State University; 2015.

Conclusion

FOUR MAIN FINDINGS AROSE FROM THIS ANALYSIS. FIRST, WHILE THE SALE OF TAX-FORECLOSED PROPERTIES APPEARED TO BE NEGATIVELY RELATED TO SUBSEQUENT MARKET SALES WITHIN 500 FEET, THIS RELATIONSHIP WAS NOT STATISTICALLY SIGNIFICANT AT THE 90% LEVEL. SECOND, IT DOES APPEAR THAT THE RENOVATION OF TAX AUCTION PROPERTIES BY THE NEW OWNERS HAS POSITIVE BENEFITS FOR THE NEIGHBORHOOD. THIRD, WHILE THE ESTIMATED ECONOMIC IMPACT ON THE REGIONAL ECONOMY IS POSITIVE, IT DOES NOT APPEAR TO HAVE THE SAME MAGNITUDE OF LEVERAGE IMPACT AS THE LAND BANK, AT 1.28 TO 1 VERSUS 1.8 TO 1, RESPECTIVELY. FOURTH, THE REVERSION RATE OF PROPERTIES TO TAX FORECLOSURE APPEARS TO BE HIGHER FOR TAX AUCTION SALES (8% FOR 2014) THAN FOR LAND BANK SALES, WHICH IS ASSUMED TO BE VIRTUALLY ZERO.

As stated in the introduction of this report, the ultimate goal of the Ingham County property tax-foreclosure auction is to improve the surrounding community, either through a solid tax base for public services or higher quality of housing in residential neighborhoods, or both. It is important to understand the intended and unintended impacts of local land use policies to discover whether goals, and an improvement in public welfare, are being achieved.

Similar to the economic assessment of the Ingham County Land Bank (Borowy et al. 2013), this study sought to evaluate the relationship between tax auction property sales, renovations and properties prices in Ingham County neighborhoods between 2008–2014. Four main findings arose from this analysis. First, while the sale of tax-foreclosed properties appeared to be negatively related to subsequent market sales within 500 feet, this relationship was not statistically significant at the 90% level. Second, it does appear that the renovation of tax auction properties by the new owners had positive benefits for the neighborhood. Third, while the estimated economic impact on the regional economy was positive, it did not appear to have the same magnitude of leverage impact as the Land Bank, at 1.28 to 1 versus 1.8 to 1, respectively. Fourth, the reversion rate of properties to tax foreclosure appeared to be higher for tax auction sales (8% for 2014) than for Land Bank sales, which was assumed to be virtually zero. And yet, the reversion rate for tax auction properties has been lower since 2010, due to more localized management by Ingham County and the introduction of the Land Bank.


This is an interior room of the house at 729 Johnson, which sold at the 2014 Ingham County Tax Auction. Photo by the Ingham County Treasurer's Office.

The actual sale of tax auction properties did not appear to have a positive impact on residential property prices. It is difficult to separate the

impact of these properties being foreclosures, and possibly blighted, from being tax auction sales, particularly during the housing market crash. However, by returning these properties to the tax rolls, auctions can increase and stabilize the tax base for providing public services. The improvement of these tax auction properties by the new owners did appear to have positive benefits for neighborhoods in terms of residential property prices. Furthermore, it appeared that these new owners of tax auction properties had a higher percentage of home improvement permits (33%) than the general population of homeowners during this time frame (22%), though that could be due to the blighted nature of these properties.

Given the parameters of these two analyses, it is not possible to say whether the Land Bank or the Tax Auction activities have had a greater impact, or whether the market by itself, given time, would achieve similar results. However, it is clear that both programs do play a role in neighborhood revitalization, which has been especially important during the economic recession and housing market decline.

. . .It is clear that both programs do play a role in neighborhood revitalization, which has been especially important during the economic recession and housing market decline.

The results of the economic impact analysis show an overall economic impact of nearly $3 million for the Ingham County area economy resulting from the expenditures associated with the tax auction sales. The related tax auction dollars, therefore, had a leverage rate of 1.28 to 1. Both the impact and the leveragability of the tax auction dollars was less than that found in the 2012 Land Bank study ($56.2 million in economic output, with a leverage rate of 1.8 to 1). This difference is partly the result of higher initial expenditures associated with the Land Bank's activities. These enhanced expenditures were made possible by funding from the Neighborhood Stabilization Program, which were not used in the tax-foreclosure auctions. Clearly, a larger investment can lead to a larger benefit, but overall, both programs still added value to the regional economy. It should be noted that the time frame for these two studies varied slightly, from 2006–2012 for the Land Bank study to 2006–2014 for the Tax Auction study, so the comparison parameters are not perfect.

Finally, Land Bank sales appear much less likely to revert to tax foreclosure than properties sold through the tax auction sale. And yet, the reversion rate for tax auction properties has been lower since 2010, due to more localized management by Ingham County. The goal of the program is to have tax-foreclosed properties return to the market and stay there, and clearly the measures that Ingham County has put in place regarding the restrictions on these sales has been largely effective.

It should be noted that the Ingham County property tax auction is atypical of many tax auction programs. First, in following statute and fully accounting for the true auction cost of the foreclosure process, Ingham County tends to sell properties with greater potential for improvement in the auction; in particular at the second auction, reserving more challenging properties for intervention from the Land Bank. In this way, the Tax Auction Program and the Land Bank work in tandem for optimal results. Second, Ingham County works with Cap Fund Title to make warranty deeds available on almost every property sold at auction; this strategy helps to improve the auction quality by reducing the risk of clouded title. Through these policies, Ingham County is able to minimize sales that lead to further blight, foreclosure reversion and/or legal challenges.

While the ultimate goal of the Land Bank and Tax Auction programs in Ingham County is largely the same, they approach this goal from different paths. The Land Bank Program invests substantial funding in the renovation of houses and properties, with clear and substantial dividends to the surrounding neighborhood and community, as shown in the Land Bank study. The Tax Auction Program invests a lesser amount of funding in the process to return these properties to the market and the tax rolls. While it is not a perfect process for property and neighborhood improvement, it does appear to be substantively effective in putting and keeping these properties in the market and tax revenue system, which is beneficial for the community as a whole.

Overall, the communities of Ingham County have a set of tools available to combat property tax foreclosure, abandonment and blight. It is clear that each of the tools described above serves a valuable purpose. Ingham County administrators can hopefully use this information to make informed decisions about where available funds will be invested. The results of this study suggest that investment in Land Bank activities may have greater economic benefits for neighborhood stabilization in the short term. As the housing market continues to improve and progress is made to address blighted and abandoned properties across the county, the need for these greater investments may change, providing an opportunity for an expanded role for the Tax Auction process.

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