

Part 3: Placemaking Valuation Methods

THORSNES (2002) FOUND THAT BUILDING LOTS THAT WERE LOCATED FACING PRESERVED FORESTLAND SOLD FOR \$5,800 TO \$8,400 MORE THAN THOSE LOTS THAT DID NOT. LE GOFFE (2000) FOUND THAT LIVESTOCK FARMING ACTIVITIES LED TO LOWER RENTAL PRICES FOR COTTAGES, WHILE GRASSLAND WAS ASSOCIATED WITH HIGHER VALUES. LEGGETT AND BOCKSTAEEL (2000) FOUND THAT WATER AND WATER QUALITY AFFECTED WATERFRONT HOMES; BEING NEAR WATER POSITIVELY IMPACTED VALUES, WHILE HIGHER CONCENTRATIONS OF POLLUTANTS NEGATIVELY AFFECTED VALUES. BENSON ET AL. (1998) TOOK THEIR STUDY A STEP FURTHER—INSTEAD OF ESTIMATING VALUES BASED ON OCEAN VIEWS, THEY ALSO SPECIFIED THE QUALITY OF THE VIEW. ACCORDINGLY, THEY FOUND THAT DISTANCE FROM THE OCEAN AND VIEW QUALITY WERE RELATED TO HOME VALUE, BUT AT DIFFERENT LEVELS BASED ON QUALITY.

For this study, the values of placemaking features were estimated using the hedonic pricing method (HPM), which prescribes that a house's value is based on its many structural and locational attributes. Structural attributes include, but are not limited to, the number of bedrooms and bathrooms, square footage, porches and decks, and number of stories. Locational attributes often include parks, schools, forests, water and views. A robust HPM model will include as many attributes as possible to accurately estimate the value of each of the features associated with the house (Luttik, 2000), and allows one to compare rents or values based on housing characteristics (Malpezzi and Vandell, 2002). Such comparisons can be made for differing units in the same place, or for the same types of units across different places. The regression coefficients that are estimated from the HPM model represent the implicit prices of housing attributes (Malpezzi and Vandell, 2002).

Over time, HPMs have evolved from striving to find a firm theoretical ground, to understanding the effects of omitted variables and functional form, to designing a model that serves a specific purpose (e.g., estimating the value of an ocean view) (Malpezzi and Vandell, 2002). In an extensive review, Malpezzi and Vandell (2002) found that the

seminal works of Lancaster (1966) and Rosen (1974) focused not so specifically on goods, but rather on the *characteristics* of goods. This distinction is what provides the framework for hedonic pricing, particularly with regard to housing. In other words, a house's value is the sum of its many structural and locational attributes' values.

As the HPM has evolved, additional housing, neighborhood and proximity-related attributes have become available for use in HPM models. This advancement in the availability of attributes is due, in part, to geographic information systems (GIS) (Kong et al., 2007) and to better, more detailed, data collections. Instead of simply decomposing the value of each housing attribute, one can now determine how much the value of a park, forest, farm, water or a nice view is accounted for in housing values. Cheshire and Sheppard (1995) compared various models, some without amenity features and some with. Those models that included both land and neighborhood amenities—a more “complete model”—generated more robust estimates of the effects of housing attributes. The result of including as many housing and locational features as possible and, thus, having a more fully specified model, has broadened the applicability of hedonic pricing methods to various research questions.



The HPM has been used extensively to estimate several housing feature values. Luttik (2000) found that houses with both a garden and facing bodies of water were priced 28% higher than those that lacked these features. Similar price premiums were found for a house that overlooked water (8%–10%), open space (6%–12%) and attractive landscaping (5%–12%). Tyrväinen (1997) found that apartments located near urban forests, water and wooded recreation areas also had higher values. Thorsnes (2002) found that building lots that were located facing preserved forestland sold for \$5,800 to \$8,400 more than those lots that did not. Le Goffe (2000) found that livestock farming activities led to lower rental prices for cottages, while grassland was associated with higher values. Leggett and Bockstael (2000) found that water and water quality affected waterfront homes; being near water positively impacted values, while higher concentrations of pollutants negatively affected values. Benson et al. (1998) took their study a step further—instead of estimating values based on ocean views, they also specified the quality of the view. Accordingly, they found that distance from the ocean and view quality were related to home value, but at different levels based on quality. In other words, closer and unobstructed ocean views were related to higher values than farther spaced, partially obstructed views. Pardew et al. (1986) found that a government-provided sewer hookup accounted

for roughly one half of a parcel's value in a rural Nevada community. Commercial real estate values have also been examined using the HPM. A CoStar study found that green building certifications contributed to higher building values for commercial properties. A LEED-certified building was priced at \$24.14 more per square foot, while EnergyStar status provided an additional \$13.99 per square foot.²¹

The value of many other features have been estimated using HPM: The value of remoteness (Sengupta and Osgood, 2003), the effects of airport noise, school quality, transport and crime (Nelson, 1979), and urban cultural amenities (Clark and Kahn, 1988) were all found to have a significant effect on property value. As with any model, there are limitations and assumptions in HPMs. Matters of functional form, specification and estimation bias are covered by Milon et al. (1984), Sheppard (1999), Leggett and Bockstael (2000) and Cheshire and Sheppard (1995).²²

Similar to Cheshire and Sheppard (1995), Geoghegan et al. (1997) and Cho et al. (2006), this study estimates the values of several locational attributes, while holding constant structural features. Many of the locational attributes are classified as community characteristics, or more aptly, placemaking features. The measurements of several of these features were obtained using GIS and through data transformation, which allowed the inclusion of many variables that were not traditionally available in public databases or attainable through surveys. Thus, using the HPM, the value of placemaking features was estimated using the vast hedonic literature as a guide, while simultaneously generating new estimates for features not typically measured in past studies.

21. CoStar Group, "CoStar Green Study": <http://www.CoStar.com/Partners/CoStar-Green-Study.pdf>.

22. These references are intended for academic audiences.

Part 4: Data and Estimation

WE ARE MORE INTERESTED IN PROPERTY ATTRIBUTES THAT ARE RELATED TO PROXIMITY FEATURES AND NEARBY BUSINESS ESTABLISHMENTS THAN STRUCTURAL ATTRIBUTES, SUCH AS NUMBER OF BEDROOMS, SQUARE FEET, ETC. (YET WE STILL DISCUSS THESE FACTORS IN THE RESULTS PART). THE DISTANCES FROM SOLD HOMES TO SUCH FEATURES AS PARKS, SCHOOLS, RIVERS, LAKES, ETC. AND ESTABLISHMENTS WERE OBTAINED USING GIS. SEVERAL DISTANCES THAT COULD BE CONSIDERED “WALKABLE” WERE CALCULATED FOR SPECIFIED BUSINESS ESTABLISHMENTS. THE WALKABLE INTERVALS THAT WERE CALCULATED OBTAINED ARE: WITHIN A QUARTER-MILE, A QUARTER-MILE TO A HALF-MILE; A HALF-MILE TO A MILE; AND A MILE TO ONE-AND-A-HALF MILES. THESE INTERVALS, AND THE BUSINESSES INCLUDED IN THIS CALCULATION, WERE GENERALLY INFORMED BY METHODS USED BY WALKSCORE.

One objective of this study is to explain property values based on placemaking attributes. To achieve this objective, the sale price of homes in Lansing, Traverse City and Royal Oak from 2000 to 2010 was collected to determine what a homebuyer paid for a given property. The sale price, combined with assessor data, as well as other data sources for locational and community attributes, was used to construct a hedonic model. By using the sale price of homes that sold rather than assessed values, we assume that this price is an accurate representation of what the market (a collection of homebuyers, in this case) valued, in terms of property features, nearby amenities, and proximity to businesses and other institutions, during the study period.

Accounting for Workforce and Affordable Housing in Hedonic Pricing

Contrasting workforce housing and market rate housing, particularly through placemaking attributes, is another objective of this study. Workforce housing is an important factor in the economic sustainability of regions. By definition, workforce housing is housing between 60%–120% of area median income which, itself, varies across

the reference communities.²³ More importantly, the definition of affordable housing, which is used in this study, is subject to interest rates, since they are based on what a person or household at a certain income level can afford when applying for a mortgage.

To demarcate the home prices and attributes data into three category sets based on the definition of affordable housing used above, the following approach was taken: 1) Compile a list of all homes sold in the reference city between 2000 and 2010; 2) Of all property sold in the reference city between 2000 and 2010, extract homes from the list at prices below the high end of affordable housing for the workforce; and 3) Of all property sold in the reference city between 2000 and 2010, extract homes from the list at prices below the low end of affordable housing for the workforce.

For the purpose of this report, Category 1 represents all homes sold that data sources report as having one or more bedrooms. Category 2 represents all properties (with reported bedrooms) that are affordable by members of the workforce in the city, according to HUD definitions. Category 3, which includes homes affordable to households and

23. See U.S. Department of Housing and Urban Development, Income Limits: <http://www.huduser.org/portal/datasets/il.html>.

individuals at lower incomes, is included to explore whether or not less expensive housing was subject to unique market structure during the study period. Our analysis centers primarily on comparing Category 1 results to Category 2 results (that is, all housing versus workforce housing), while noting comparisons between Categories 2 and 3, where applicable. The maximum home price of these categories varies from city to city.

An investigation of interest rates on June 6, 2011, revealed offers for Federal Housing Administration (FHA) 30-year fixed interest rate mortgages of between 4.25% and 4.38%, with zero points for those with a fair credit rating (scores from 660–699). Non-FHA mortgage rates ranged from 4.5% to 5.1% with zero points. Associated fees ranged from \$0 to \$2,400.²⁴ For the purpose of selecting Categories 1–3 above, we assumed that the homebuyer had 20% for the down payment, and financed the remainder, with no need for primary mortgage insurance (PMI). We also assumed that zero points and zero fees were paid. Finally, we assumed an FHA loan at a rate of 4.5% (a bit higher than those posted on June 6 for FHA loans, but at the low end of private loans). This was considered an average “best case” mortgage for a home purchaser, and thus highlights properties a prospective homeowner of median family income could afford with the traditional down payment percentages and meeting the recommended guidelines of income-to-home debt ratios. Obviously, a higher interest rate would have meant that a homebuyer could not afford to purchase as expensive a home. Other variations could have occurred depending on credit score, other recurring debts and fees paid, as well as the total down payment amount (e.g., they were able to purchase a home under the FHA loan guidelines, and they did so with as little as 3.5% down).

24. Google Advisor, Mortgages Overview: <https://www.google.com/advisor/home>.

The maximum ratio allowed by FHA for total mortgage payments (including all interest, taxes, insurance, etc.) can be no more than 29% of a homebuyer’s gross monthly income. The maximum ratio when including all debt payments (such as car, student loans, credit cards, etc.) can be no more than 41% of the gross monthly income.²⁵ HUD defines affordable housing as that which is not more than 30% of a household’s gross income. For this study, we use the 30% rate for home purchases and make the assumption that purchasers had other recurring debt totaling no greater than 11% of their gross income and, therefore, did not include this in our calculation.

We were not able to identify whether or not rent controls were in place for sold properties. Also, we did not identify properties that benefitted from Renaissance Zones incentives. Finally, we were not able to denote foreclosures in our dataset and, thus, cannot control for this factor.

Study Area

Three separate analyses, based on the affordability categories above, were performed for each case city in Michigan. See Figure 1 and Table 1 for a complete breakdown of these cities.

Lansing, MI

Our first case study, Lansing (see Figure 2), is the largest city by both population and area, with 114,297 people (as of the 2010 census) and 36 square miles (of land), giving it a population density of 3,175 people per square mile. Michigan’s capital city was once typified as a traditional manufacturing city. Lately, the City has made strides in attracting and growing entrepreneurs, boosting its finance and real estate sectors and nourishing a bioeconomy, and has grown as a major insurance center. It is also a regional healthcare destination and it neighbors Michigan

25. FHA Requirements, “Debt Ratios”: http://www.fha.com/fha_requirements_debt.cfm.

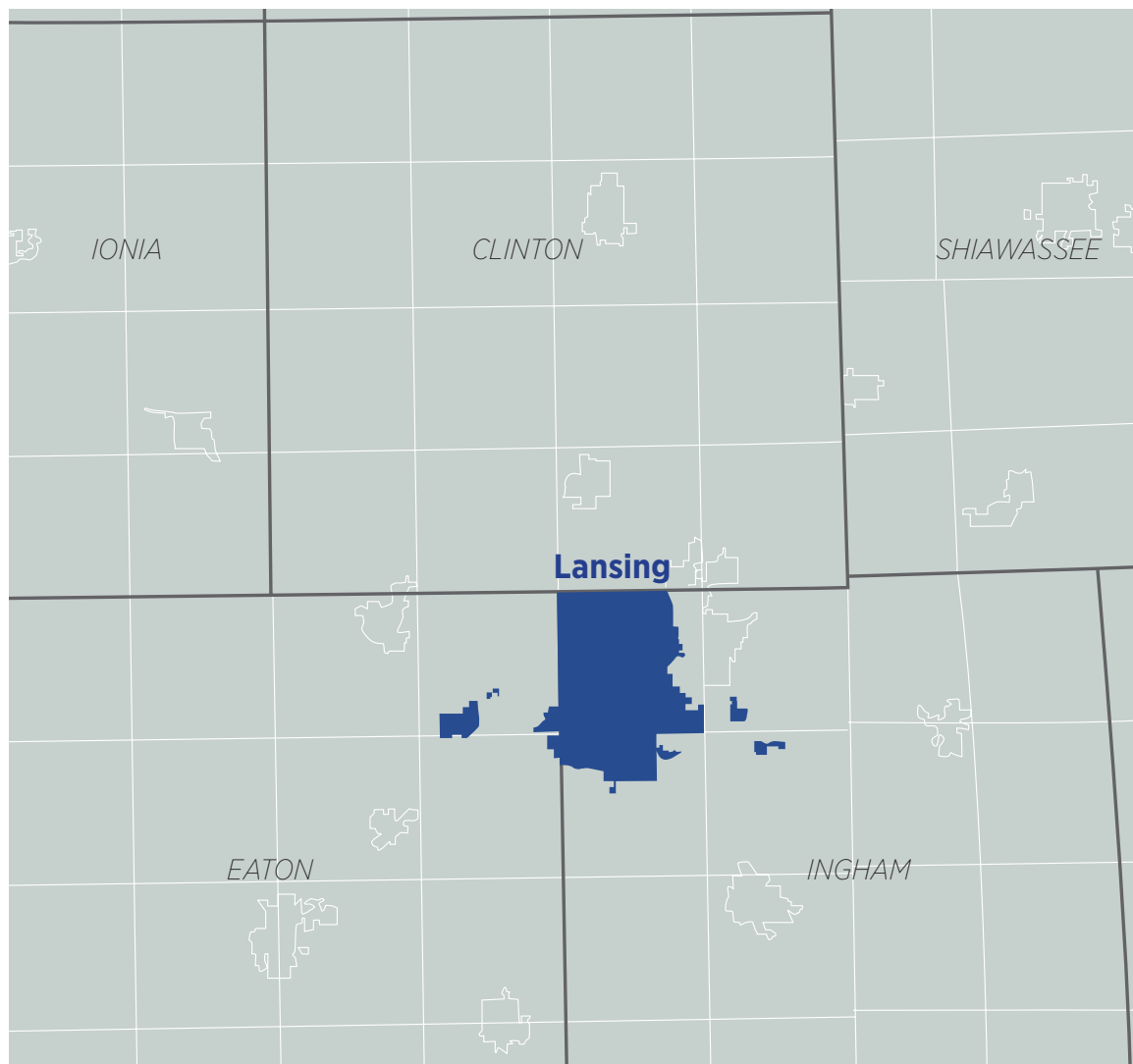
Table 1: Category Classifications

City	Category	Housing Type	Range of Housing Prices for Sold Properties	Properties (with # of Bedrooms Listed) in Category
Lansing	1	All Sold Properties with Bedrooms	\$500 – \$1,188,250	3,334
	2	Workforce	<\$179,000	3,234
	3	Affordable	<\$89,000	1,808
Traverse City	1	All Sold Properties with Bedrooms	\$25,000 – \$2,900,000	1,212
	2	Workforce	<\$210,000	915
	3	Affordable	<\$105,000	204
Royal Oak	1	All Sold Properties with Bedrooms	\$20,000 – \$844,120	7,112
	2	Workforce	<\$295,000	6,649
	3	Affordable	<\$147,000	1,572

Figure 1: Map of Case Study Cities in Michigan



Figure 2: Map of Lansing, MI



State University. The City still retains several key manufacturing industries alongside some emerging biotechnology firms. Most of the neighborhoods within the City are fully built and each have varying housing and design characteristics.

Lansing's median household income for 2009 was \$35,774.

Lansing's median household income for 2009 was \$35,774.²⁶ Accordingly, we investigated what would have been affordable to households making from \$21,464.40 to \$42,928.80 (60%–120% of the median household income). Given the above assumptions of a household allocating no more than 30% of gross income, a person of median family income in Lansing could afford to pay \$536.61 per month on the 60% median income side, and \$1,073.22 per month on the

26. U.S. Census Bureau, American Community Survey, "2009 One-Year Estimates Data Release": http://www.census.gov/acs/www/data_documentation/2009_release/.



Old Town in Lansing.

120% median income side in mortgage/taxes/insurance payments.

On the high side, a household with a maximum monthly payment of \$1,073.22, an interest rate of 4.5% and 20% down, could afford a home of about \$179,500 (\$35,900 down, a mortgage of \$143,600, with \$4,011 in annual taxes for a primary residence²⁷), with an estimated total housing payment (including tax and insurance) of around \$1,061.85.²⁸ On the low side, a household with a maximum monthly payment of \$536.31, an interest rate of 4.5% and a 20% down payment could afford a home of about \$89,000 (\$17,800 down, a mortgage of \$71,200, and \$2,081 in annual taxes for a primary residence²⁹), with an estimated total housing payment (including tax and insurance) of around \$534.18.³⁰

27. According to estimates from the Michigan Department of Treasury, "Property Tax Estimator": <https://treas-secure.state.mi.us/ptestimator/PTEstimator.asp>.

28. FHA Mortgage Calculator: <http://www.fha.com/calculator/afford.cfm>.

29. According to estimates from the Michigan Department of Treasury, "Property Tax Estimator": <https://treas-secure.state.mi.us/ptestimator/PTEstimator.asp>.

30. FHA Mortgage Calculator: <http://www.fha.com/calculator/afford.cfm>.

Traverse City, MI

Traverse City is nestled on Grand Traverse Bay in the northwestern region of the Lower Peninsula (see Figure 3). The Traverse City region has grown considerably in population over the past 10 years, with Grand Traverse County's population growing approximately 12% from 2000 to 2010. Traverse City is the smallest case study city, with an area of only 8.4 square miles (of land) and a population of 14,674 people. The population density of the City is 1,743 people per square mile, which makes it the least dense case study city. Traverse City is a regional business, healthcare and tourism hub. It relies heavily on tourism, by virtue of being located on Lake Michigan, along with natural resource industries (agriculture, timber, mining and fishing). The City is famous for its annual Cherry Festival, its many orchards, and its Great Lakes-related recreation activities. Traverse City offers a sharp contrast to Lansing, in terms of population, area, industry and housing characteristics.

Traverse City's median household income for 2009 was \$39,327.³¹ We determined what was affordable to households

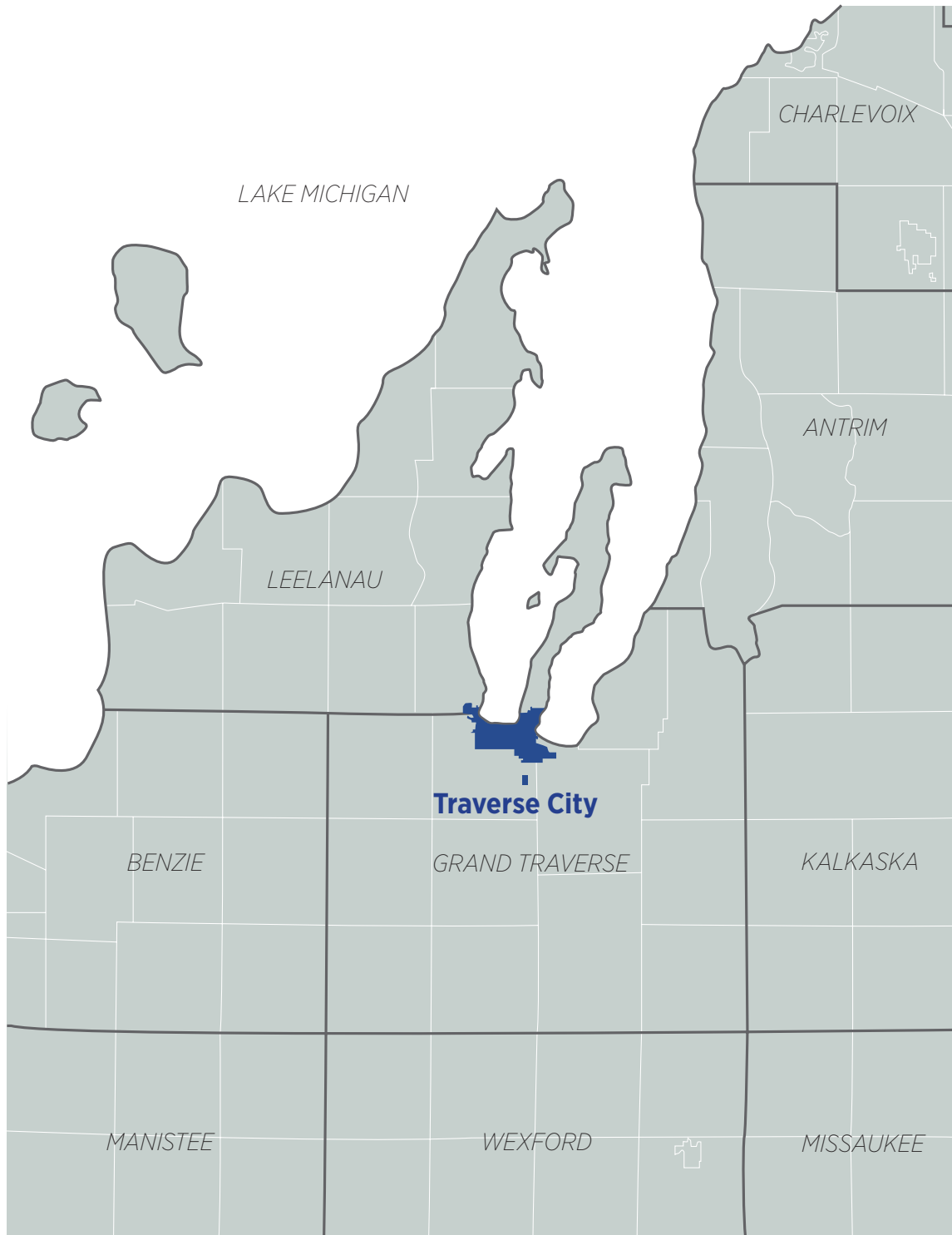
Traverse City's median household income for 2009 was \$39,327.

making from \$23,596.20 to \$47,192.40 (60%–120% of the median household income). Given the above assumptions of no more than a 30% share of gross income, a person of median family income in Traverse City could afford to pay \$589.91 per month on the 60% median income side, and \$1,179.81 per month on the 120% median income side in mortgage/taxes/insurance payments.

On the high side, a household with a maximum allowable monthly payment of \$1,179.81, an interest rate of 4.5% and 20% down, could afford a home of about \$210,000 (\$42,000 down, a mortgage of \$168,000, with \$3,834 in annual taxes for a

31. City-data.com, 2011 Onboard Informatics.

Figure 3: Map of Traverse City, MI



primary residence³²), with an estimated total housing payment (including tax and insurance) of around \$1,170.73.³³ On the low side, a household with a maximum allowable monthly payment of \$589.91, an interest rate of 4.5% and 20% down could afford a home of about \$105,000 (\$21,000 down, a mortgage of \$84,000, with \$1,917 in annual taxes for a primary residence³⁴), with an estimated total housing payment (including tax and insurance) of around \$585.37.³⁵

Royal Oak, MI

Royal Oak is an inner-ring suburb of Detroit and is located in Oakland County (see Figure 4). As of the 2010 census, it had 57,236 people and an area of 11.8 square miles, which gives the City 4,850.5 people

per square mile and makes it the densest case study city. It abuts the City of Ferndale, which borders Detroit, the state's most

Royal Oak's median household income for 2009 was \$54,754.

populous city. Royal Oak is known to feature many placemaking attributes, some of which relate to its proximity to Detroit. The City's mix of boutique stores, varied housing, and bars and restaurants, combined with its cultural events, make it a quintessentially eclectic city.

Royal Oak's median household income for 2009 was \$54,754.³⁶ We calculated what was affordable to households making from \$32,852.40 to \$65,704.8 (60%–120% of the median household income).

32. According to estimates from the Michigan Department of Treasury, "Property Tax Estimator": <https://treas-secure.state.mi.us/ptestimator/PTEstimator.asp>.

33. FHA Mortgage Calculator: http://www.fha.com/calculator_afford.cfm.

34. According to estimates from the Michigan Department of Treasury, "Property Tax Estimator": <https://treas-secure.state.mi.us/ptestimator/PTEstimator.asp>.

35. FHA Mortgage Calculator: http://www.fha.com/calculator_afford.cfm.

36. City-data.com, 2011 Onboard Informatics, "Royal Oak, MI": <http://www.city-data.com/real-estate/ROYAL-OAK-MI-48067.html>.



Restaurant in downtown Royal Oak.

Given the above assumptions of no more than a 30% share of gross income, a person of median family income in Royal Oak could afford to pay \$821.31 per month on the 60% median income side, and \$1,642.62 per month on the 120% median income side in mortgage/taxes/insurance payments.

On the high side, a household with a maximum allowable monthly payment of \$1,642.62, an interest rate of 4.5% and 20% down, could afford a home of about \$295,000 (\$59,000 down, a mortgage of \$236,000, with \$5,323 in annual taxes for a primary residence³⁷), with an estimated total housing payment (including tax and insurance) of around \$1,639.36.³⁸ On the low side, a household with a maximum monthly payment of \$821.31, an interest rate of 4.5% and 20% down could afford a home of about \$147,000 (\$29,400 down, a mortgage of \$117,600, with \$2,653 in annual taxes for a primary residence³⁹), with an estimated total housing payment (including tax and insurance) of around \$816.95.⁴⁰

37. According to estimates from the Michigan Department of Treasury, "Property Tax Estimator": <https://treas-secure.state.mi.us/ptestimator/PTEstimator.asp>.

38. FHA Mortgage Calculator: http://www.fha.com/calculator_afford.cfm.

39. According to estimates from the Michigan Department of Treasury, "Property Tax Estimator": <https://treas-secure.state.mi.us/ptestimator/PTEstimator.asp>.

40. FHA Mortgage Calculator: http://www.fha.com/calculator_afford.cfm.

Figure 4: Map of Royal Oak, MI



Estimation Technique

The hedonic pricing method was utilized to derive values for housing and placemaking characteristics in Lansing, Traverse City and Royal Oak. Following Geoghegan et al. (1997), and others, the hedonic pricing method utilized in this report is: $SP_i = \alpha + ST\beta + N\gamma + P\tau + E\rho + \varepsilon$, where SP is a vector of home sale price in the i th year, ST is a vector of several structural and temporal (season

and year of sale) characteristics, N is a vector of neighborhood attributes, P is a vector of proximity (obtained using GIS) features and E is a vector of nearby business establishments (also obtained using GIS). α , β , γ , τ and ρ are the parameter coefficients and ε is the error term.

For each city, an ordinary least squares (OLS) regression was performed. The dependent

variable is the sale price of residential properties. Properties that sold more than once during the 10-year period were not removed or treated differently. Thus, multiple sale prices may be examined for a single property. The independent variables are the property's attributes. Using these variables, the model explains the variation in sale price based on the property's many attributes, which include placemaking features, structural features, proximity to amenities, etc. The model yields coefficients that reflect the marginal dollar contribution of a unit increase in a specific attribute. For example, it could be found that for each additional 100 feet closer a home is to a restaurant, \$50 is added to the sale price.

Because several observations (sold homes) had missing data attributes, the regression was restricted to observations for which there was comprehensive information. The regression for each city produced results based on similar property attributes and other features, which appear in Table 5 in Appendix A. However, since the three models are not identically specified (i.e. have different numbers and measures of independent variables) across the three cities, the results are not statistically comparable. In other words, we cannot say with any level of certainty that a property's being closer to a restaurant in Traverse City makes it more valuable than a comparable one in Lansing. Therefore, any interpretation of the result *between* cities should be done so loosely and anecdotally.

We are more interested in property attributes that are related to proximity features and nearby business establishments than structural attributes, such as number of bedrooms, square feet, etc. (yet we still discuss these factors in the Results part). The distances from sold homes to such features as parks, schools, rivers, lakes

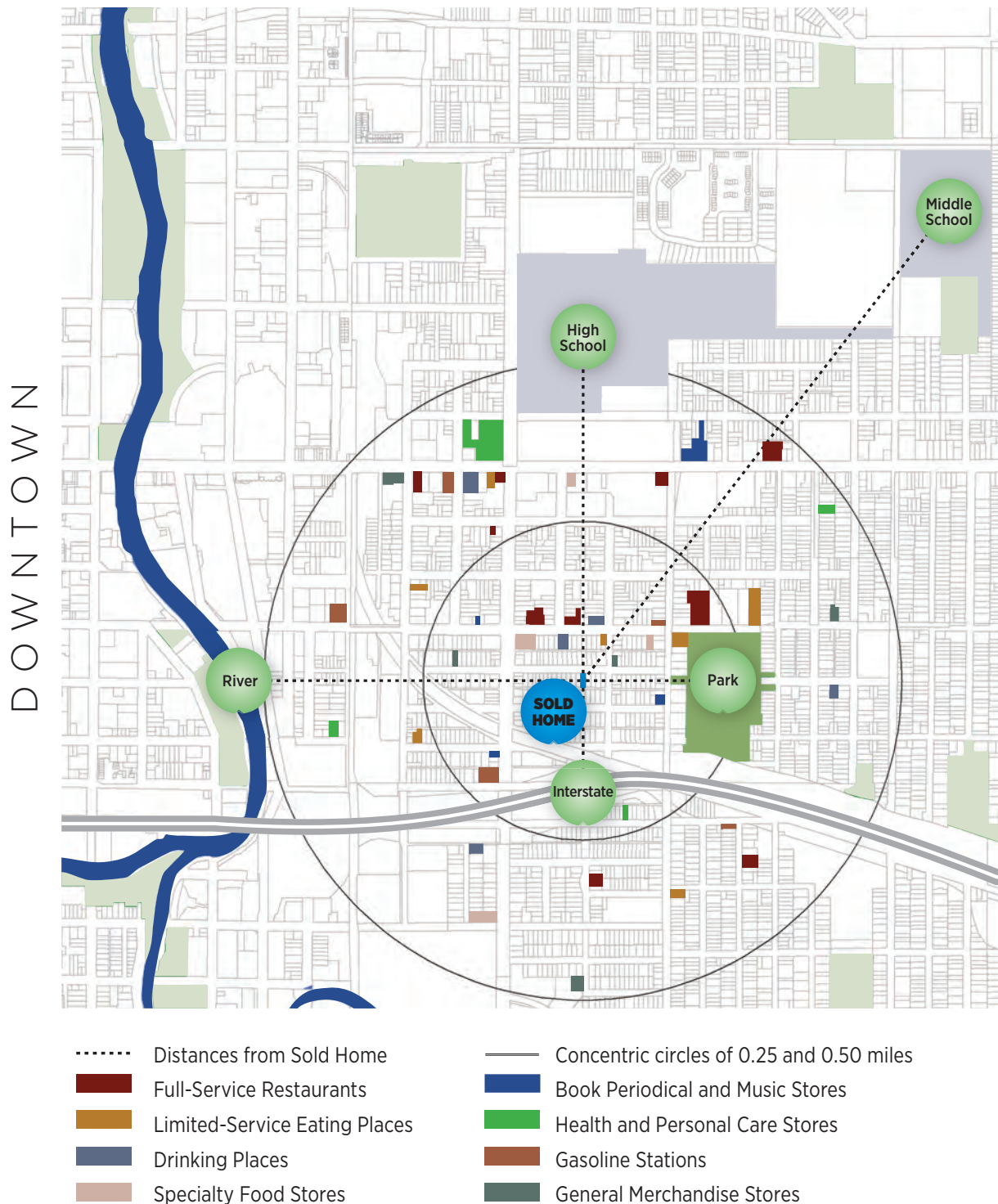
and establishments were obtained using GIS. Several distances that could be considered “walkable” were calculated for specified business establishments. The walkable intervals that were used to calculate proximity are: Within a quarter-mile, a quarter-mile to a half-mile; a half-mile to a mile; and a mile to one-and-a-half miles. These intervals, and the businesses included in this calculation, were generally informed by methods used by Walkscore.⁴¹ Figure 5 illustrates some of the distances and features included in the HPM model used in this study.

To obtain hedonic estimates for these features, we controlled for several structural attributes that also affect a home's value. These control variables were included to allow for full specification of the models. Without including these factors, the parameter estimates for placemaking and place-based features would be biased. The control variables include such things as number of bedrooms and bathrooms, presence or absence of a front porch, exterior siding material, home heating method, and many more. Tables 6, 7 and 8 in Appendix B list all of the variables used in the analysis. The regressions ran for Categories 1, 2 and 3 used the same sets of variables.

In general, a positive coefficient for a variable indicates that it adds value to a home's sale price, which implies that it improves the municipality's tax base and indirectly provides other community benefits. A negative coefficient indicates the opposite, meaning that that attribute detracts from the price, and implicitly, the tax base. Variables (or factors) found to be statistically insignificant indicate that such attributes are statistically no different from zero.

41. See Walkscore: <http://www.walkscore.com/methodology.shtml>. Walkscore assigns the highest possible points when amenities (stores, schools, restaurants, etc.) are within a quarter-mile of a home address.

Figure 5: Concept Map of Hedonic Pricing Method



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

Note: This map is for illustrative purposes only. The features and establishments shown are not meant to represent any specific community or city.

Part 5: Results

PROPERTIES LOCATED CLOSER TO RIVERS WERE TYPICALLY SOLD FOR MORE, AT LEAST FOR CATEGORIES 1 AND 2. EACH FOOT CLOSER TO A RIVER ADDED ALMOST \$9 AND \$5, RESPECTIVELY. FOR EACH FOOT CLOSER TO A LAKE, HOMES IN CATEGORY 1 WERE SOLD FOR AN ADDITIONAL \$7.77. LAKES WERE INSIGNIFICANT FOR THE OTHER PROPERTY CATEGORIES. FOR CATEGORY 3 PROPERTIES, EACH ADDITIONAL FOOT CLOSER A SOLD HOME WAS TO A PARK SUBTRACTED \$11.05 FROM ITS PRICE. THIS MAY BE RELATED TO CRIME AND SAFETY, SINCE WHEN THE DISTANCE WAS SQUARED, THE VALUE BECAME POSITIVE, INDICATING THAT THERE WAS A NON-LINEAR RELATIONSHIP BETWEEN HOME VALUES AND DISTANCE TO PARKS. IN OTHER WORDS, BEING CLOSE TO A PARK WAS VALUABLE—JUST NOT TOO CLOSE, IN SOME INSTANCES.

In this part, findings are presented for each city. Although placemaking features are the focus of this part, the control variables are also discussed. It is essential that, when interpreting the results, the reader understand the context of the hedonic price estimates. Each statistically significant variable—most of which are reported in this part—must be interpreted in the context of all else being equal. To illustrate, picture two identical homes: They have the same number of bedrooms, bathrooms, square footage and stories, and are located the same distance from schools, parks and other amenities. The only difference between the homes, however, is that one does not have a garage. Thus, the hedonic price for the variable garage can be interpreted as: The presence of a garage adds \$ x to the home with a garage, where x is the value that having a garage adds to a property, all else being equal. The same is true for all of the other features used in the analysis.

The full regression output can be found in Tables 9, 10 and 11 in Appendix C. Also recall that Category 1 refers to all sold properties (with bedrooms listed in the source data), Category 2 refers to workforce homes and Category 3 refers to affordable homes, with the designation of each Category defined in the previous part. These categories were defined in order to explain how specific placemaking attributes contribute value to each of the defined property types. Ultimately, we are trying to determine if, for example, a grocery store adds more marginal value to workforce housing (Category 2) than, say all categories of housing (Category 1).

Results for Lansing, MI

Three regressions were run for properties sold in the City of Lansing. The first regression was for all properties with bedrooms reported in the data source (Category 1). The second was for all properties with bedrooms reported, under the

Table 2: Category Breakdowns for Lansing, MI

Category	Housing Type	Range of Housing Prices for Sold Properties
1	All Sold Properties with Bedrooms	\$500 - \$1,188,250
2	Workforce	<\$179,000
3	Affordable	<\$89,000

price of \$179,000 (Category 2). The third was for all properties with bedrooms reported, under the price of \$89,000 (Category 3) (see Table 2 for information on these three categories). Some of the independent variables included in the model were year of sale, parcel size, age, number of bedrooms, garage size, pool size, number of fireplaces and number of stories. Also included were neighborhood characteristics, such as location in a neighborhood enterprise or renaissance zone, crime statistics and median household income. A set of distance variables captured proximity to nearby assets, such as interstates, rivers, lakes, parks, trails, airports, downtown, major corridors, institutions, schools and a variety of businesses and services. For a full list of variables, see Tables 5–11 in the Appendices.

For the Category 1 model, the adjusted R-squared is 0.733. For Category 2, it is 0.698, and for Category 3 0.364. This indicates that 73.3%, 69.8% and 36.4% of the variance of home sale prices in Lansing (in

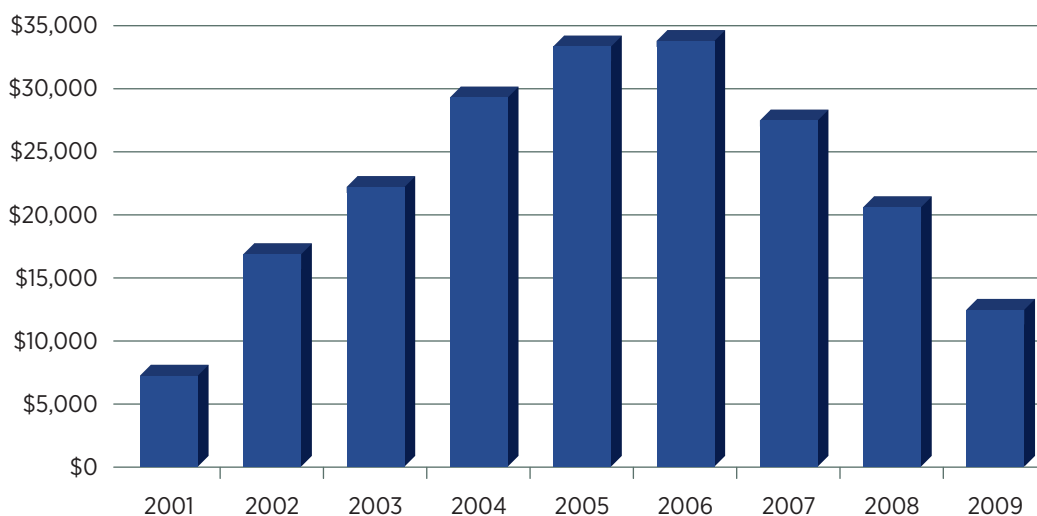
each category) are explained by the independent variables in the models for Categories 1, 2 and 3, respectively (see Tables 9–11 in Appendix C).

The regression results will now be discussed in more detail. More attention will be given to all properties and properties that fit the workforce housing description in this part. Some comparisons are made to findings from the affordable housing model. All of these results can be found in Tables 9–11 in Appendix C.

Control Variables

Property values in Lansing peaked in 2006 at \$33,735 for Category 1 and \$31,334 for Category 2, compared to year 2000 prices. In other words, homes sold for \$33,735 and \$31,334, respectively, more than in 2000, all else being equal (see Figure 6). Sale prices were highest in the summer months in each category. These estimates track well with what happened in the real estate market and based on seasonality, according to feedback provided by representatives

Figure 6: Lansing Category 1 Home Sale Prices Compared to Year 2000 Prices



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

from the Michigan Association of Realtors during an advisory team meeting. Therefore, these findings reflect what was observed in reality.

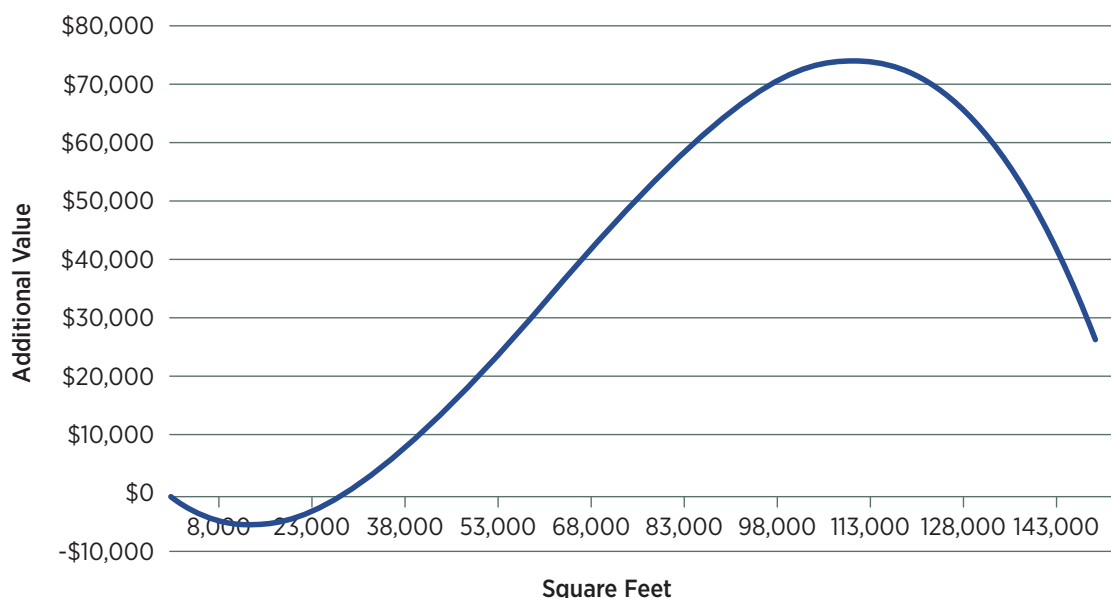
In Category 1, parcel size, total home square footage, number of bedrooms and number of full bathrooms all added to property value, all else being equal. The number of full bathrooms added value to Category 2 properties. Number of bedrooms, however, was insignificant for both Categories 2 and 3. Property age (year the home was built subtracted from 2010) was significant for all price scenarios, indicating that older homes that sold, tended to be worth more. There appeared to be a non-linear relationship between price and parcel size and floor space. Consequently, Figure 7 illustrates that, as a Category 1 parcel's total area increases in size, price was expected to decrease until about 0.3 acres (13,500 square feet). At this size, prices began to rise and became positive at roughly 0.6

acres (28,500 square feet). The price peaked at about 2.5 acres, at which point having this much land began to detract value (as observed through sale price). The average property size of sold homes in Lansing was 8,451 square feet (approximately 0.20 acres).

Figure 8 shows that for each additional square foot (in floor space), sale price increased gradually until about 6,000 square feet, at which point value began to increase more rapidly. For each additional square foot of floor space, a home's price increased by \$46. Category 2 homes saw a similar increase (\$45), while Category 3 realized the greatest value of having extra space (\$69).

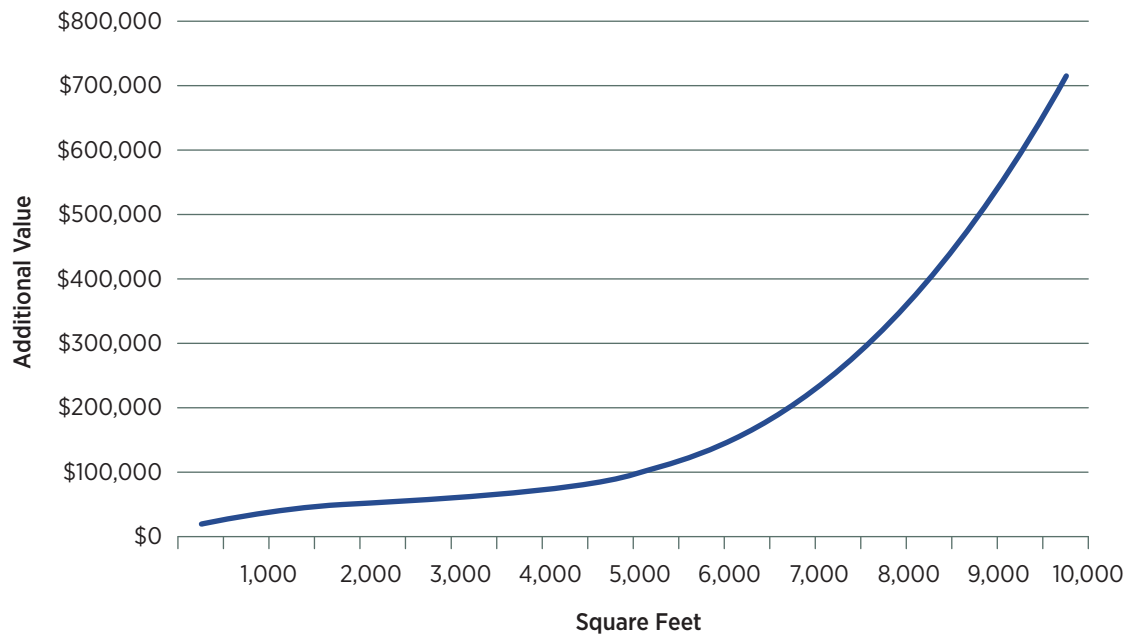
Heating fuel and home exterior type were also analyzed. For heating fuel types, the only statistically significant factor among all properties and workforce housing was steam (relative to electricity) for Category 1. For Category 3 homes,

Figure 7: Value of Each Additional Square Foot of Parcel Area for Category 1 Properties in Lansing



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

Figure 8: Value of Each Additional Square Foot of Floor Space for Category 1 Properties in Lansing



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

coal, gas and oil detracted from a home's value when compared to those heated by electricity. House exterior types were measured against aluminum. For Category 1, asbestos and asphalt reduced price, while brick added to it. For Categories 1 and 2, a brick exterior was associated with an additional \$6,000 or so. While for Category 3, a brick exterior was associated with an additional \$12,121 in value.

Basement square footage, porches and decks, garage size and number of fireplaces were each associated with higher sale prices in all property Categories. For example, each additional square foot of basement space added an additional \$11.73 of value to a home in Category 1. Each additional square foot of garage area could add anywhere from \$12.54 (Category 3) to \$29.76 (Category 1) to a home's sale price, all else being equal.

Several neighborhood characteristics were also examined. Category 1 and 2 properties that were sold in a Neighborhood Enterprise Zone (NEZ) tended to sell for less. The NEZs were enacted in 1992 in Michigan to provide incentives to local units of government to develop and rehabilitate residential housing.⁴² Homes were probably less valuable in these zones due to prolonged blight and other socio-economic hardships. Properties that sold in Renaissance Zones, on the other hand, were valued more. Developed in 1996, Renaissance Zones are geographic areas that exempt businesses and residents from paying certain State taxes.⁴³

42. See the Michigan Economic Development Corporation, "Neighborhood Enterprise Zone (NEZ)": <http://www.michiganadvantage.org/cm/files/Fact-Sheets/NeighborhoodEnterpriseZone.pdf>.

43. See Michigan Economic Development Corporation, "Geographic Renaissance Zones": <http://www.michiganadvantage.org/cm/files/Fact-Sheets/GeographicRenaissanceZones.pdf>.

In each of the three models, the number of property crimes that occurred within a half-mile of a given property was statistically insignificant. The number of violent crimes had a negative effect on Categories 2 and 3. It was insignificant for Category 1. As expected, the median household income of the block group in which a property was located was positively associated with home prices in all three models.

Racial diversity was associated with lower sale prices for Categories 1 and 2. Racial homogeneity was a dominant attribute of society's housing paradigms as communities were oftentimes easily categorized along distinct ethnic lines (Potter, 1989). The effects of these policies are still seen today. Studies have found that there are lower home values in places with high concentrations of minority populations (Macpherson and Sirmans, 2001). However, home values are not the only method by which to measure the value of diversity. Turner and Rawlings (2009) highlight many benefits of diversity, including community openness, potential for better schooling outcomes and relationships, cultural sensitivity and many others. Also, many Michigan cities were segregated—sometimes intentionally, other times not—by political boundaries (Darden et al., 1987).

Educational attainment was linked to higher sale prices. For instance, for every 1% increase in the population age 25 and older with a graduate or professional degree, a home was valued \$1,506 more, for Category 1 properties. Category 2 properties sold for \$651 more. Adelaja et al. (2009) found that places with a higher percentage of the population with at least a bachelor's degree tended to grow in population. Glaeser and Saiz (2003) similarly found that because educated cities grow more quickly than comparable cities with less human capital, education levels had a positive impact on housing price growth at the metropolitan level.

Age diversity and the number of children age 5 to 17 in the surrounding area showed no significant effect. Further investigation into previous research reveals little to explain the relationship between age diversity, the number of children in an area and property values and why this was found to be insignificant.

Two categories of placemaking variables were identified and utilized in this analysis: 1) Proximity variables, which describe distance to key green, economic and market assets; and 2) Variables related to types of nearby walkable businesses, such as retail, grocery, eating and drinking establishments, and other types of destinations.

Proximity Features

The distances from various features, such as interstates, rivers, lakes, parks, airports, downtown and others, to sold properties were computed using geographic information systems (GIS). It was hypothesized that several of these place-based features would have a positive impact on home sale prices. Likewise, it was also possible that they could have a negative effect. In the regression output, positive coefficients indicate decreasing value, whereas negative ones indicate increasing value as one moves farther away from the property.

Only sold properties in Category 2 were statistically significant when examining proximity to the nearest interstate. For every foot closer to an interstate, properties in this category were worth \$4.28 less, all else being equal. Properties located closer to rivers were typically sold for more, at least

Educational attainment was linked to higher sale prices. For instance, for every 1% increase in the population age 25 and older with a graduate or professional degree, a home was valued \$1,506 more, for Category 1 properties. Category 2 properties sold for \$651 more.



The Michigan State Capitol building in Lansing.

for Categories 1 and 2. Each foot closer to a river added almost \$9 and \$5, respectively. For each foot closer to a lake, homes in Category 1 were sold for an additional \$7.77. Lakes were insignificant for the other property categories. For Category 3 properties, each additional foot closer a sold home was to a park subtracted \$11.05 from its price. This negative effect may be related to crime, safety and park activities. However, there appears to be a non-linear relationship between sale price and distance. When the distance measure was squared, the marginal value became positive, indicating that being close to a park was valuable—just not too close. Figure 9 illustrates this relationship. For each additional foot farther from the park, value increases up to 530 feet, providing a \$2,928 premium. From there, each additional foot farther away from a park begins to marginally detract from the sale price. Likewise, being inside the 530-foot mark tends to correlate with lower marginal values.

For each foot closer to the Lansing Capital Region International Airport, a sold home was worth anywhere between \$3.60 (Category 1)

and \$3.98 (Category 2) more. Homes that sold close to downtown Lansing were worth considerably more than those that were not. In Category 1, for each foot closer to downtown, a home's sale value increased by \$20.59; \$11.87 for Category 2; and \$8.23 for Category 3. However, properties that sold closer to Old Town and Michigan Avenue were not associated

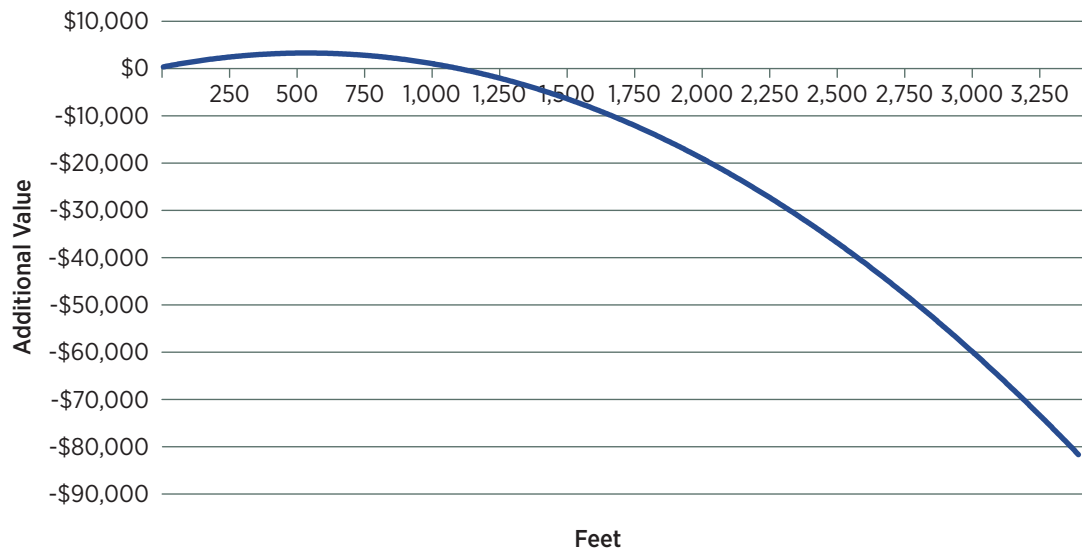
with higher sale prices for Categories 1 and 2.

These distances were insignificant for Category 3. While Old Town and Michigan Avenue may be “up and coming” and popular destinations for shopping, socializing and visiting, it is possible that the hedonic prices in these areas were estimated to be lower, due to higher-than-average concentrations of poor housing stock, and due to struggling with problems of the past, such as blight and abandoned commercial or industrial buildings.

On the other hand, homes that sold close to Michigan State University experienced positive benefits. For each foot closer to MSU, a sold home was worth \$5.19 (Category 1) and \$5.59 (Category 2) more. Similar results were observed for middle schools (grades 6–8). For each foot closer to a middle school, a sold home was valued at an additional \$1.46 (Category 1) and \$1.34 (Category 2). For high schools, the same was true for Category 1 (\$1.61). But not for Category 3, where for each additional foot closer to a high school, the home's sale value decreased by \$2.72. Proximity to elementary schools, however, was found to be statistically insignificant for all categories.

Homes that sold close to downtown Lansing were worth considerably more than those that were not. In Category 1, for each foot closer to downtown, a home's sale value increased by \$20.59; \$11.87 for Category 2; and \$8.23 for Category 3.

Figure 9: Value of Each Additional Foot Farther from Parks for Category 3 Properties in Lansing



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

Figure 10 illustrates the marginal value of living closer to some of the various placemaking attributes discussed directly above for Category 1. Based on the results, the greatest marginal value was realized when living closer to Downtown Lansing. Living close to a river, lake, MSU, the airport and schools also had positive marginal effects.

Nearby Walkable Retail, Eating and Drinking and Other Establishments

Using Dun and Bradstreet National Establishment Time Series (NETS) data, this subsection examines whether having a given number of business establishments within a quarter-mile, half-mile, one mile or 1½ miles affects property values. The model uses several distance ranges (¼ mile, ¼ mile–½ mile, ½ mile–1 mile, and 1 mile–1½ miles). This was done for several types of business establishments.

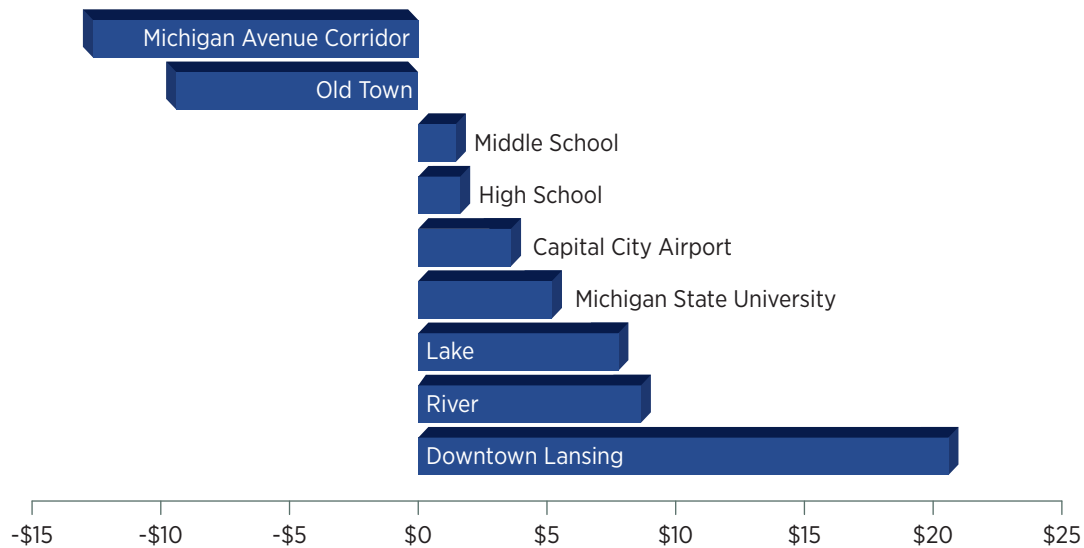
For Categories 1 and 2, the number of motor vehicle and parts dealers nearby had a negative effect on

property prices. Generally, homes that were located a mile to 1.5 miles away from these types of businesses were worth anywhere from a few hundred dollars to more than \$1,000 more than those that were located less than one mile from them.

The number of furniture and home furnishing stores were statistically insignificant, as related to the sale price of Categories 1 and 2 properties. However, Category 3 homes prices were affected by them. For each additional establishment located between a quarter- and a half-mile, Category 3 prices decreased by about \$2,700.

Interesting findings were uncovered for grocery stores. The number of grocery stores within a quarter-mile and a half-mile detracted from both Category 1 and 2 property prices. The number of stores between a mile and 1.5 miles also detracted from Category 3 property values. However, for each additional specialty food store within a quarter-mile of Category 1 properties, sale prices tended to

Figure 10: Marginal Value of Living Closer to Various Placemaking Attributes in Lansing



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

be \$5,161 more. Specialty stores had no effect on the other property categories. The prevalence of beer, wine and liquor stores was associated with lower home prices for Category 2 and 3 (within a quarter-mile). Lastly, for each additional health and personal care store between a quarter- and a half-mile, a Category 2 property's sale price was expected to increase by \$2,207. Oddly, the number of nearby gasoline stations had a positive effect on Category 3 properties. For each additional gas station located a quarter-mile from Category 3 properties, its price was expected to increase by \$4,033.

Clothing and clothing accessories stores had no statistical effect on any of the property categories. Sporting goods, hobby and musical instrument stores, however, did have positive effects on all three categories. The impacts were observed primarily for those stores that were located within a half- to 1.5 miles. Book, periodical and music stores between a half-mile and a mile were associated with positive sale

prices for Category 1. However, when these stores were more than a mile away, they tended to detract from property prices. A greater number of general merchandise stores within a half-mile to a mile away from Category 1 properties subtracted from home values. Conversely, a greater number of these establishments between a quarter- and a half-mile from Category 3 properties was associated with higher sale values. Miscellaneous store retailers tended to have negative property effects across the board. The number of performing arts companies within a quarter-mile of Category 3 properties was associated with higher home prices. However, for all other categories, the effect was insignificant. The number of spectator sports establishments, on the other hand, was associated with negative home prices for all property categories.

Additionally, the number of promoters of performance arts, sports and similar events were associated with sizable positive property price

adjustments. For each additional business of this type located a quarter-mile from Category 1 properties, home prices were expected to increase by more than \$12,000. Similarly, the same effects were seen for Category 2, but not to that degree. These businesses appeared to have no effect on Category 3 properties. Conversely, greater numbers of amusement parks and arcades at each of the distance categories were associated with negative property values across the property types. However, the prevalence of other amusement and recreation industries was associated with positive property sale values for Categories 1 and 3.

For each full-service restaurant within a quarter-mile of Category 1 properties, a home's value was expected to be an additional \$3,449. However, this amount changed to -\$2,437 for Category 3 properties. This measure was insignificant for Category 2. The number of limited-service eating places was positively associated with home values across all of the defined property categories, but at varying distances. The number of nearby drinking place establishments was found to be negatively associated with home values for both Categories 1 and 3. Lastly, the number of nearby religious organizations contributed positively to Category 2 properties when located within a quarter-mile to a half-mile, and half-mile to a mile ranges.

Nearby commercial property had a sizable impact on home prices. For instance, for each additional percentage of commercial property square footage within a half-mile of a Category 1 residence, its sale price was higher by more than \$7,000. The same was true for nearby residential property—but not to the same extent as commercial property. However, places of high job concentration tended to slightly devalue homes. For each

additional employed person within a mile, home prices tended to be \$1.20 lower. This may seem contradictory; but areas with high concentrations of commercial floor space may not actually employ that many people. Furthermore, people could have been employed at places that were not necessarily classified as commercial. Major job centers, such as a hospitals or manufacturing plants, may employ a lot of people, but are not considered a commercial land use.

This concludes our summary of findings for the City of Lansing. We now turn our attention to Traverse City, which has different housing, community, neighborhood and economic characteristics that distinguish it, and the results, from that of Lansing. Generally, property sale prices were higher in Traverse City. Also, since a different dataset was utilized, the control variables and placemaking features examined in Traverse City differed slightly than what was utilized for the analysis of Lansing.

Results for Traverse City, MI

Three separate regressions were also run for Traverse City. The first included all properties that sold between 2000 and 2010; these were the Category 1 properties. The second included properties (Category 2) that sold for less than \$210,000. Finally, the third included all properties that sold for less than \$105,000, or Category 3 properties. Any properties that did not indicate number of bedrooms were excluded from this analysis. The Category 1 model examined 1,212 cases (sold properties); Category 2 had 915 cases; and the Category 3 model had 204 cases. The results appear to be statistically compelling. The adjusted R-squared for the Category 1 model is 0.831, indicating that 83.1% of the variance in the dependent variable (sale price) was explained by the independent

variables (property and place attributes). For Categories 2 and 3, the adjusted R-squared is 0.972 and 0.987, respectively (see Table 3).

Control Variables

For Categories 1 and 2, pre-recession home prices peaked in 2010 and 2005, respectively, when compared to year 2000 prices. A Category 1 home that sold in 2010 was worth \$71,497 more than in 2000, and a Category 2 home that sold in 2005 was worth \$29,995 more than in 2000, all else being equal (see Figure 11). Adjusting for seasonality, home prices tended to be lower in the fall, winter and spring months for all three property categories, when compared to the summer months. In other words, homes sold at higher prices in the summer.

Parcel square footage was positive for both Categories 1 and 2. To illustrate, for each additional square foot of parcel area in these Categories, they were priced \$2.32 and \$0.74 more, respectively. However, Figure 12 illustrates that there was a non-linear relationship between price and parcel, meaning that at some point, having too much property detracts from value. Concerning the age of a home, for Category 1, an older home was associated with less value. The square footage of a structure added value to each property type. For each additional square foot, Category 1, 2 and 3 homes were worth \$128, \$139 and \$53 more, respectively. Garage space added value to Category 2 homes, but was insignificant for the other categories. The number of fireplaces added enormous value to Category 1 properties



Traverse City Film Festival in Traverse City.

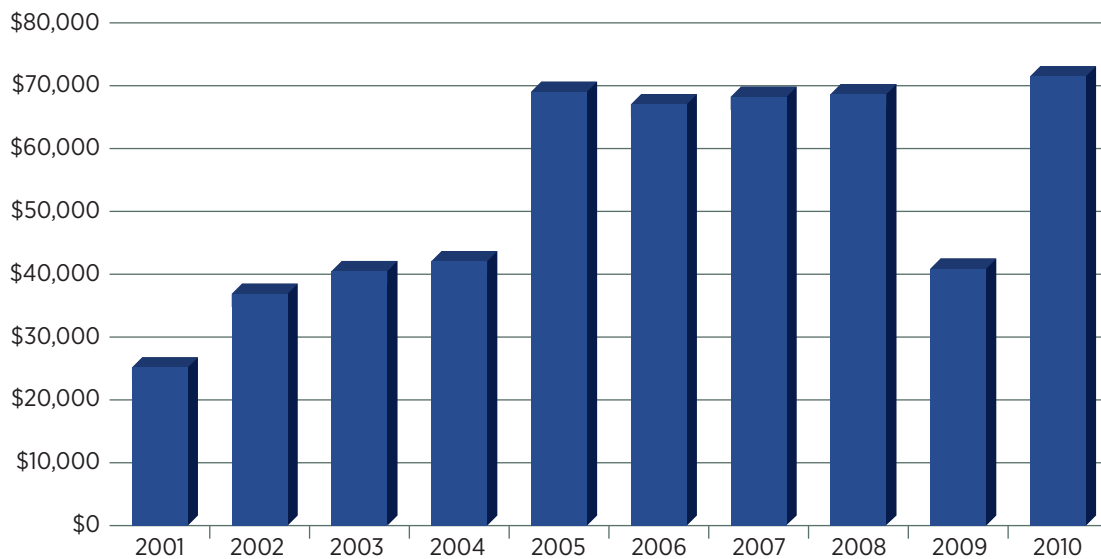
(\$22,264 for each additional one) and moderate value to Category 2 properties (\$3,694 for each additional fireplace). Fireplaces did not have any statistically significant effect on Category 3 property prices.

Concerning bedrooms, bathrooms and half-bathrooms, bedrooms had the greatest positive effect on sale price. For each bedroom, a home in Category 1 was expected to be worth an additional \$54,784. However, since this estimate seemed high, there might not be a linear relationship between bedrooms and value, and if we consider this relationship non-linear, estimating the number of bedrooms cubed showed that additional bedrooms added value at a decreasing rate (i.e., each added bedroom was worth less than the last). Similarly, this was true of full bathrooms for Category 1 properties. The number of half-baths was insignificant for Categories 1 and 2, yet they added considerable value for Category 3 homes. For home exteriors, no materials were found to add value when compared to aluminum. However, block, brick

Table 3: Category Breakdowns for Traverse City, MI

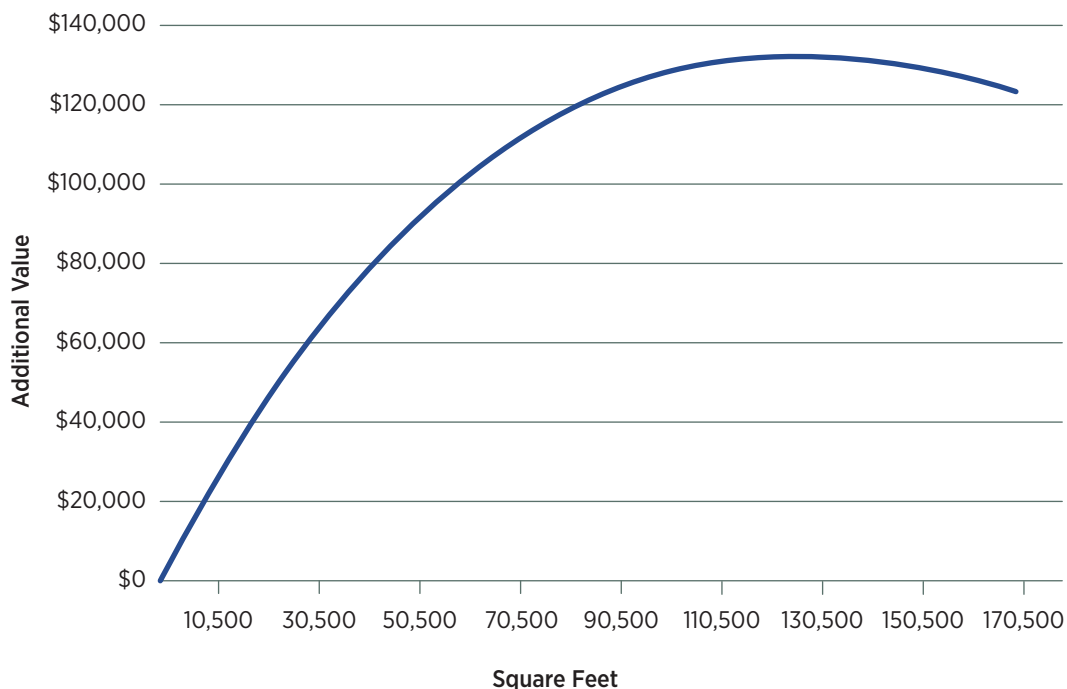
Category	Housing Type	Range of Housing Prices for Sold Properties
1	All Sold Properties with Bedrooms	\$25,000 - \$2,900,000
2	Workforce	<\$210,000
3	Affordable	<\$105,000

Figure 11: Traverse City Category 1 Average Home Sale Prices Compared to Year 2000 Prices



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

Figure 12: Value of Each Additional Square Foot of Parcel Area for Category 1 Properties in Traverse City



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

and vinyl were associated with lower values than aluminum across different property categories.

Category 1 and 3 properties tended to sell for more when located in higher income block groups. For instance, for each additional \$1 increase in median household income, homes in these categories were expected to be worth \$1.77 and \$2.18 more, respectively. In other words, increasing surrounding affluence translated into higher home values—an unsurprising, but reinforcing, finding. Correspondingly, the percentage of poverty in a census tract was associated with lower home values, particularly for Category 1 properties. The percentage of the population with an associate's or a bachelor's degree tended to positively impact home values, while those with a graduate or a professional degree negatively impacted home prices in Category 1.

Proximity Features

Distance to rivers and lakes did not have considerable effects on Traverse City property sale prices. This might be due to the location of these features and the small geographical area of the City. Parks tended to be negatively associated with home value for Category 2 properties, but had no significant effect on the others. Similar to Lansing, however, there was once again a non-linear relationship between sale price and distance to parks. In Traverse City, the distance of a nearby park translates into a much higher premium than what was observed in Lansing. For each additional foot farther from a park, value increases up until about 1,500 feet, providing a \$29,368 premium. Beyond this distance, value begins to decline. Also, a house that sold inside of the 1,500 mark had less of a premium associated with its distance to a park. Figure 13 illustrates this function.

Category 2 properties located closer to the airport tended to be less valuable. For each

additional foot closer to the airport, these properties sold for \$39 less. One of the most significant, but unsurprising, findings was that homes located close to Lake Michigan tended to sell for more. For each additional foot closer to Lake Michigan, homes in Category 1 were worth \$24

more. However, Category 2 homes tended to be affected negatively on this measure (-\$6). A home's proximity to schools and institutions of higher learning was statistically insignificant.

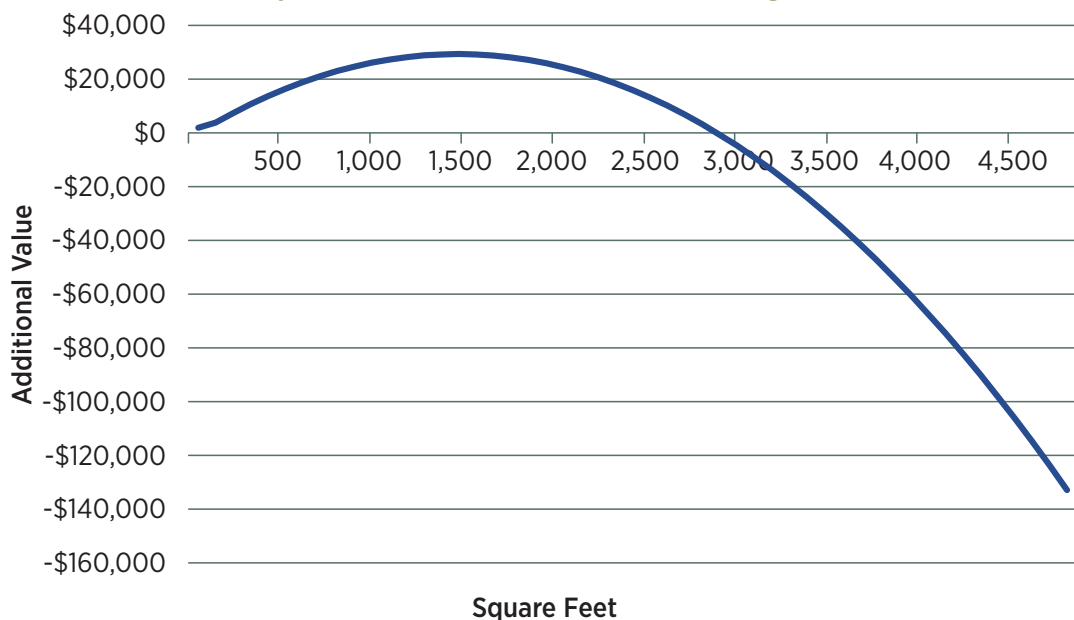
Nearby Walkable Retail, Eating and Drinking and Other Establishments

Using the NETS data, this subsection examines whether having a given number of business establishments within a quarter-mile, half-mile, one mile or 1.5 miles affects property values. The model used several distance ranges ($\frac{1}{4}$ mile, $\frac{1}{4}$ mile– $\frac{1}{2}$ mile, $\frac{1}{2}$ mile–1 mile, and 1 mile–1 $\frac{1}{2}$ miles). This was done for several types of establishments, including motor vehicle and parts dealers, electronics and appliance stores, eating and drinking establishments, gas stations, and many more.

The number of motor vehicles and parts dealers within a half-mile to a mile of Category 1 properties had a positive effect on home sale prices. The same was true for Category 2 properties when located a quarter-mile to a half-mile away. However, a higher number of these establishments next to Category 3 properties had an adverse effect on prices. The number of nearby furniture and home furnishings stores for Category 1 properties had a positive effect on values when located between a half-mile and 1.5 miles away. Conversely, the prevalence of electronics and appliance stores generally had a negative relationship

One of the most significant, but unsurprising, findings was that homes located close to Lake Michigan tended to sell for more. For each additional foot closer to Lake Michigan, homes in Category 1 were worth \$24 more.

Figure 13: Value of Each Additional Foot Farther from Parks for Category 3 Properties in Traverse City



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

with Category 1 property prices, while having a positive effect on Category 2 property values when between a quarter-mile and a half-mile away.

The number of nearby building material, garden equipment and supply dealers had wide-ranging negative effects on Categories 1 and 3. However, it added value for Category 2 housing when located at various distances. The number of grocery stores within a quarter-mile to a mile had a significant impact on Category 1 prices. For instance, for each additional grocery store within a half-mile to a mile of a property, the price of a home was expected to increase by \$15,978. Health and personal care stores tended to add value when located within a quarter-mile of a home. On the other hand, specialty stores were negatively associated with home prices when located within a quarter-mile of Category 1 properties. They were found to be insignificant for the other categories. The prevalence of beer, wine and liquor stores was

associated with negative and positive sale prices for Category 2 and Category 3 housing, respectively.

The number of clothing and clothing accessory stores located within a quarter-mile of Category 1 properties had a significant and sizable impact. For each additional store within a quarter-mile, a home's value was expected to be higher by \$12,102. The same was true for Category 2 housing, but by only \$8,786. For Category 3, proximity to these stores added \$5,682 when between a half-mile and a mile. Proximity to general merchandise stores had a positive effect on Categories 1 and 3, and a negative effect on Category 2 properties. The same was true for miscellaneous store retailers.

The number of nearby performing arts companies had no significant effect on Category 1 properties. Category 2 housing was negatively influenced, whereas Category 3 was positively influenced.

The number of nearby promoters of arts, sports and other events related negatively to Category 1 properties and positively to Category 2 and 3 properties. The incidence of nearby amusement parks and arcades tended to add value to Categories 1 and 3. For each additional establishment of this type within a quarter-mile to a half-mile equated to an additional \$25,049 to home sale price among Category 1 properties. Gambling establishments were found to be statistically insignificant to all property types at all distance measures.

The number of nearby full-service restaurants was associated with lower prices for Category 3 properties. The number of limited-service eating places was only significant for Category 2, and they tended to be associated with lower property prices at any distance over a quarter-mile. Prevalence of bars also tended to be associated with lower values in all three property categories and at various distances.

The number of churches or religious organizations was associated with lower prices for Category 1 properties, but was positively associated with Category 3 values at a quarter-mile to a half-mile distance. For each additional religious organization within this distance, sale price was expected to be higher by \$9,771.

Lastly, as an overall measure, the total number of businesses located within a mile of Category 1 properties tended to be associated with lower values. On the other hand, however, more employed people within a mile tended to benefit property prices. Such results may point to the nature of business and employment in Traverse City, whereby many retail businesses are concentrated in the central business district, but may not employ as many people as some of the

larger industries in the surrounding areas, such as the Munson Medical Center and the Grand Traverse Mall.

Results for Royal Oak, MI

Again, three separate regressions were run for the City of Royal Oak. There were 7,112 cases in Category 1 (all properties with bedrooms), 6,649 in Category 2 (\$295,000 and lower) and 1,572 in Category 3 (\$147,000 and lower). For Categories 1–3, the adjusted R-squared values were 0.952; 0.974; and 0.981, respectively. These statistics mean that 95.2%, 97.4% and 98.1% of the variance in sale price can be explained by various control, neighborhood and placemaking features (see Table 4).

Control Variables

The peak selling price of properties in Royal Oak (compared to year 2000 prices) occurred sooner than in the other two case study cities. For Category 1 properties, prices peaked in 2004, meaning that a home that sold in this year was worth \$46,496 more than in 2000 (see Figure 14), all else being equal. Category 2 housing prices peaked in the same year at a value of \$38,257, while Category 3 home prices peaked in 2006. Following these peaks, marginal prices gradually declined until they become negative (for Categories 1 and 2) and remain barely positive for Category 3, by 2010 (compared to year 2000 prices). Similar to the other cities, and consistent with real estate trends, homes tended to sell for less in the non-summer

More employed people within a mile tended to benefit property prices. Such results may point to the nature of business and employment in Traverse City, whereby many retail businesses are concentrated in the central business district, but may not employ as many people as some of the larger industries in the surrounding areas, such as the Munson Medical Center and the Grand Traverse Mall.

Table 4: Category Breakdowns for Royal Oak, MI

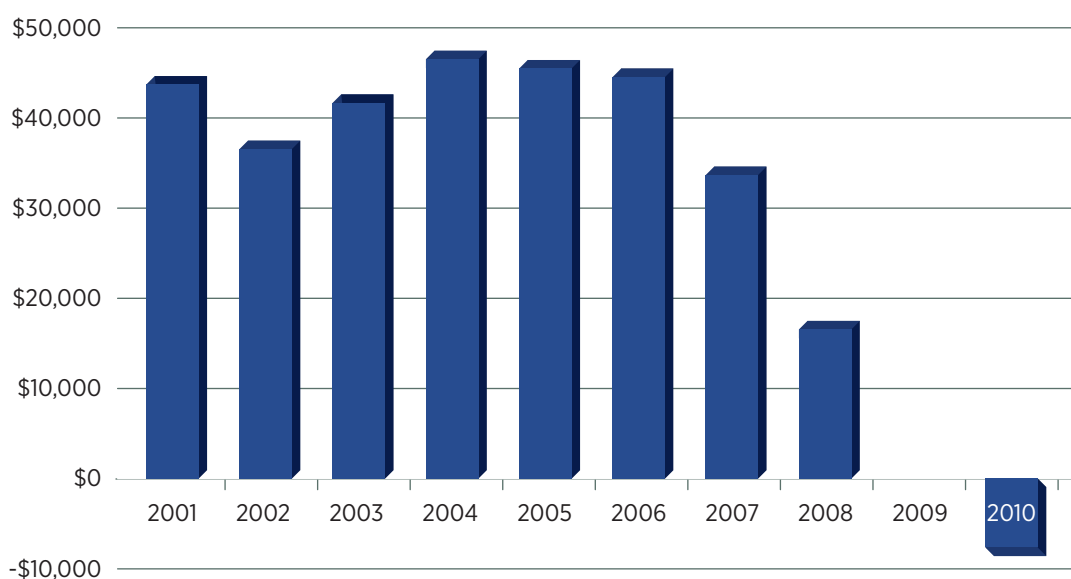
Category	Housing Type	Range of Housing Prices for Sold Properties
1	All Sold Properties with Bedrooms	\$20,000 - \$844,120
2	Workforce	<\$295,000
3	Affordable	<\$147,000

months. Sales in the winter months reduced prices (compared to summer month sales) by anywhere between \$3,563 (Category 3) to \$6,543 (Category 1).

The total parcel size, measured in square feet, was found to be positively related to home prices for all three property categories. It had the highest effect (\$2.94 for each additional square foot) on Category 1. Figure 15 shows the non-linear relationship between parcel size and price. For each additional square foot of property, prices increased rapidly until about 59,000 square feet (1.35 acres). After this point, having more property tended to detract from value. Similarly,

the size of the home, also measured in square feet, had positive effects on each of the property categories. For each additional square foot of a Category 1, 2 and 3 property, it would be worth \$45, \$185 and \$163 more, respectively. Based on these findings, larger home sizes were more valuable to Category 3 properties. Once again, since there was a non-linear relationship between price and floor space, Figure 16 illustrates this function. Having more square footage added to property value until about 7,500 square feet, at which point having more space began to detract from the sale price.

Figure 14: Royal Oak Category 1 Average Home Sale Prices Compared to Year 2000 Prices



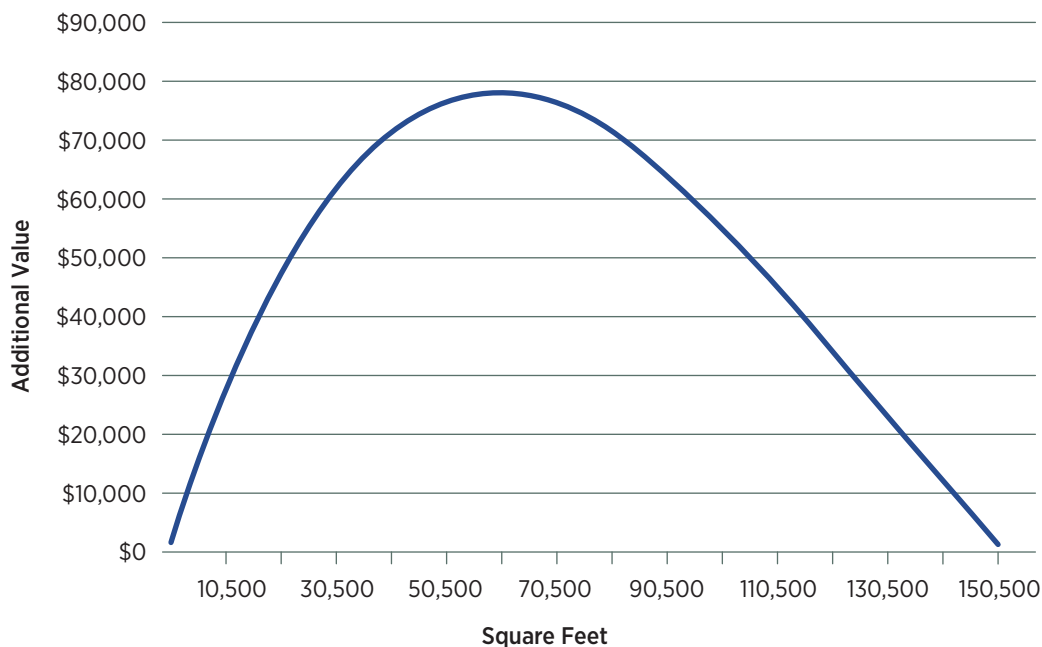
Source: Figure created by the Land Policy Institute, Michigan State University, 2012.
Note: Year 2009 is statistically insignificant and, thus, no different from zero.

Similar to Traverse City, the age of a home in Royal Oak was found to be negatively associated with home value, but only for Category 1. For each additional year of age, a home in this category would be worth \$84 less. For each additional bedroom, a Category 1 home was found to be worth an additional \$14,129. Bedrooms were not significant for the other property categories. The total number of full-baths added value to Categories 1 and 2, but was not significant for Category 3. The total number of half-baths added value to Categories 1 and 2, but not to Category 3. Lastly, the presence of a garage added value to all three property-type categories. For instance, the presence of a garage at a Category 1 home added \$18,857 to its sale price (this garage measure—presence or absence—is different from the floor area measure used for Lansing and Traverse City).

The median household income of the block group was found to be insignificantly related to sale price. Using a measure for income diversity, there was an association to high home values. However, home values were negatively associated with racial diversity. When significant, this was consistent across the three Michigan case study cities. Unsurprisingly, a high concentration of poverty in the census tract where a home sold was also associated with lower home sale prices.

For each additional 1% of the population with a bachelor's degree, Category 1 home values were \$883 higher. For a graduate or professional degree, this value increased to \$1,341. In other words, higher home values were associated with an educated and more affluent population, which is consistent with expectations.

Figure 15: Value of Each Additional Square Foot of Parcel Area for Category 1 Properties in Royal Oak



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

In Royal Oak, a higher percentage of the population with an associate's degree or higher was associated with greater home values. The percentage of surrounding population having an associate's degree positively affected Category 2 prices, whereas having a bachelor's, graduate or professional degree positively affected Categories 1 and 2. To illustrate, for each additional 1% of the population with a bachelor's degree, Category 1 home values were \$883 higher. For a graduate or professional degree, this value increased to \$1,341. In other words, higher home values were associated with an educated and more affluent population, which is consistent with expectations.

Proximity Features

A home's proximity to rivers, lakes and parks was found to be an insignificant factor for home sale

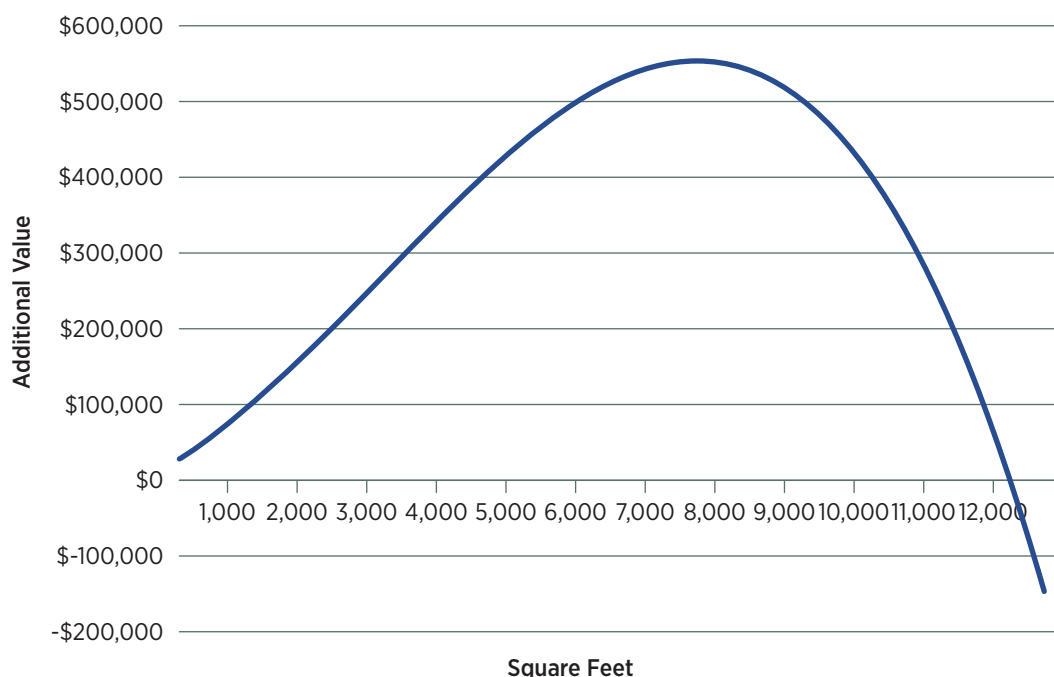
prices. This finding was not surprising considering the geography of the City and the high level of urbanity it exhibits. Royal Oak does not contain a river or a lake within its city limits.

Category 1 and 2 properties sold for less when located close to an elementary school. For each foot closer to a school, a home was expected to be worth \$3 less. However, Category 3 homes tended to be worth a bit more when situated close to high schools. For each additional foot closer to a high school, homes in this category sold for \$2.47 more.

Nearby Walkable Retail, Eating and Drinking and Other Establishments

The number of nearby furniture and home furnishing stores had positive impacts on home prices in at least one distance group for all three property types. For example, each additional

Figure 16: Value of Each Additional Square Foot of Floor Space for Category 1 Properties in Royal Oak



Source: Figure created by the Land Policy Institute, Michigan State University, 2012.

store within a quarter- to a half-mile added \$2,738 to a Category 1 home's sale price. Moving on to electronics and appliance stores, however, showed that the number of these establishments was insignificant when it came to Categories 1 and 3, but had a negative effect on Category 2 housing. The prevalence of building materials, garden equipment and supply dealers also had a negative effect on Category 1 and 2 properties.

The number of grocery stores had a negative effect on Category 1 home prices when they were located closer than a quarter-mile to this type of home. Their prevalence had a positive effect on Category 2 sale prices at a quarter-mile to a half-mile and a mile to 1.5 miles intervals. Their incidence also positively affected the price of Category 1 properties when located between a quarter-mile and a half-mile away. For Category 3, they had a negative effect at a half-mile or greater. The number of specialty food stores had a positive effect on Category 2 properties at a quarter-mile to half-mile range. Conversely, they had a negative effect on Category 1 properties when located more than a mile away.

In general, the nearby prevalence of beer, wine and liquor stores was found to positively affect sale prices for Category 1 properties, but only when located more than a quarter-mile away. On the other hand, the number of health and personal care stores was found to negatively affect prices when located within a quarter-mile. At other distances, values were statistically insignificant. The incidence of nearby gas stations had negative effects on Category 1 and 2 homes at all distances. The coefficients became less negative as distance increased. Regardless, living anywhere within 1.5 miles of a gas station generally had a negative effect on home values, all else being equal.

The number of clothing and clothing accessories stores located less than a quarter-mile from Category 1 properties had a positive effect on home values. For each additional store within this distance, home values were expected to increase by \$1,462. However, these establishments had a negative effect on Category 2 properties at the mile to 1.5 miles range. The nearby prevalence of sporting goods, hobby and musical instrument establishments had positive price effects on Categories 1 and 2, at varying distances. Having a greater number of book, periodical and music stores nearby had positive effects on Category 1 properties when located more than a quarter-mile away, but exhibited a negative effect on Category 3 housing when located between a quarter-mile and a half-mile away. The number of general merchandise stores had a negative effect on each property category at a quarter-mile to a half-mile range. They also had a negative effect on Category 3 housing when located closer than a quarter-mile.

The number of nearby performing arts companies had a negative effect on property prices across all property types and at varying distances. However, the prevalence of spectator sports establishments near Category 1 and 2 properties generally had a positive effect. The number of nearby establishments that promoted performing arts and other similar events had a negative effect on Category 1 properties anywhere between a quarter-mile and a mile. However, they did positively affect Category 3 properties when located between a half-mile and a mile. The incidence of amusement parks tended to detract from sale price for Categories 1 and 2. The number of nearby churches or religious organizations tended to only negatively affect Category 2 housing. Other estimates were statistically insignificant.

Greater numbers of nearby full-service restaurants typically boosted sale prices in Royal Oak. Category 2 properties experienced the greatest benefit when located between a quarter-mile and a mile away. However, when homes were located more than a mile away from these establishments, their sale price tended to diminish. The number of limited-service eating places located near homes had positive effects on each of the three property types, but value only tended to accrue at the half-mile distance. The number of drinking places, or bars, near properties had a substantially negative effect on Categories 1 and 2; as the distance between bars and property becomes greater, coefficients move closer to zero.

Lastly, as an overall measure of business activity near residential properties, the number of businesses located within a mile was included. The coefficients were negative for both Category 1 and 2 properties. This would suggest that sale prices were lower in places where there was a high concentration of businesses. That the proximity to some types of establishments was found to be valuable for all three categories of homes in the results above suggests that there were more, and less, desirable establishments



Business area in Royal Oak, MI.

to live near. There was no way to measure the quality of products, façade and services of nearby businesses, so this possibility cannot be known. The number of employed people nearby had no statistically significant effect on home sale prices.

Greater numbers of nearby full-service restaurants typically boosted sale prices in Royal Oak. Category 2 properties experienced the greatest benefit when located between a quarter-mile and a mile away.

Part 6: Discussion

GIVEN THE DATA AVAILABILITY AND RIGOR OF THE ANALYSIS, WE ARE VERY SATISFIED WITH THE RESULTS. NOT ONLY DID THE MODELS EXHIBIT WHAT REALTORS SAID THEY WOULD EXPECT, BUT THE MODELS ALSO FURTHER PROVIDED ESTIMATES FOR FEATURES THAT OTHER MODELS HAD NOT TAKEN INTO CONSIDERATION. WE CONSIDER THIS BOTH AN ACHIEVEMENT AND AN OPPORTUNITY FOR MODEL SPECIFICATION IMPROVEMENT, INCORPORATING OTHER FEATURES, AND EXECUTING OTHER TYPES OF ANALYSES TO UNCOVER OTHER PLACEMAKING VALUE PREMIUMS.

Since the models for each case study city were specified differently—they used different sets of variables—it is imprudent to directly compare the results between the cities. However, we can still say that there are some apparent differences in the findings between the cities, which may be partly explained by various factors. One noteworthy difference, for example, is that the sale price of homes was affected by the age of the home, but that effect differed across the case areas. Why were older properties more highly valued in Lansing than in Traverse City and Royal Oak? Since the models were not specified the same, some of the factors contributing to this difference in price may be related to those missing variables. On the other hand, maybe not. Perhaps, due to its geography, housing market and economy, Lansing's older properties that sold had more valuable features by way of placemaking, design or location. In any event, there were several factors that contributed to a property's sale price, and it is probable that not all of them were accounted for.

Placemaking Features that Added Value

Since placemaking and real estate-related placemaking attributes are the focus of this study, the discussion of the results focuses on those factors. That being said, several other interesting findings were observed. Home prices tended to peak (relative to year 2000) sometime between 2001 and 2010, although that peak occurred in different years for each city, based on the national

recession and slow-down of the real estate market. Older (rather than newer) homes tended to sell for more in Lansing, but not in Traverse City and Royal Oak. Perhaps “character” or build quality had something to do with this price premium. Overall, each additional bedroom contributed additional value to properties in every case study, but not consistently across all property types. Overall, the basic—or control—features of a property conformed to what was found in previous hedonic pricing studies. That is, bedrooms, bathrooms, fireplaces and garages add value to a home. Where the cities differed, however, was in how placemaking features added, or in some cases detracted, from property values.

In Lansing, property crimes did not significantly affect home prices, but violent crimes did for Category 2 and 3 properties. When and where a property crime occurred may be less predictable than where areas of violent crimes commonly occur. The after-effects of violent crime tend to linger in communities after they are committed and this could be reflected in home prices. These findings emphasize the importance of safety. The surrounding median household income of properties in Lansing and Traverse City was found to positively influence sale prices, while it was insignificant in Royal Oak. Racially diverse areas tended to have lower property values in Lansing and Royal Oak, wherein Traverse City, only Category 3 properties were affected. Similarly,

nearby poverty also negatively affected home values, which might have something to do with higher proportions of minority populations in the two cities where it was significant. There is often a significant link between poverty and high concentrations of minority populations (Anderson, 1964). In summary, safety, affluence and diversity were important factors that had some bearing on home sale prices.

As can be seen in the Results part, properties in each city were affected differently by nearby amenities and business establishments. Again, we must reiterate that we cannot say with certainty that there were significant differences in placemaking attribute impacts across cities, because each model was specified differently. Therefore, there might be unexamined placemaking—or other—features that explain such findings. On the other hand, there are considerable differences in the types of cities we examined. Recalling the section above, each city is different from another in terms of geography, economy, neighborhoods, etc. Thus, the differences in placemaking attributes are still worth discussing.

Properties that sold in Lansing situated close to rivers tended to be worth more than those that were not. Yet, rivers had no significant effect on homes that sold in Traverse City and Royal Oak. One reason for this difference might be due to both the size and prevalence of rivers in these communities. In Lansing, the Red Cedar and Grand Rivers are both large and offer several recreational opportunities via open space and trails. In Traverse City, the Boardman River runs a relatively short distance from Boardman Lake to Lake Michigan and the nature of the land during its course is a mix of some industrial, residential and commercial. Royal Oak does not have a river.



Traverse City is the only case study city that has a considerable inland lake within its city limits and, statistically, it had no effect on home sale prices from 2000 to 2010. Access to the lake is limited. However, properties closer to Lake Michigan tended to sell for more than those located farther away. There is clearly a price premium for living close to Lake Michigan. In Lansing, homes tended to sell for more when located next to a lake.

Concerning parks, the differences between cities were varied. Proximity to parks had no significant impact on home prices in Royal Oak. There were generally negative effects for Category 2 and 3 properties in Traverse City and Lansing, respectively. However, there appeared to be a non-linear relationship between sale price and distance to parks. Being within or beyond 530 feet for Lansing and 1,500 feet for Traverse City equated to lower marginal values than at those distances. In other words, homes located within walking distance of a park tended to be valued more than those farther away. At the same time however, being too close to a park was also associated with a lower marginal value, which may relate to noise, crowds or crime.

In Lansing, properties that were located closer to Michigan State University sold for more than those located farther away.

In Lansing, properties located closer to the airport tended to sell for a higher price. Yet in Traverse City, the opposite was true.

There might be unobserved neighborhood factors that contributed to these differences. Royal Oak does not have an airport.

Being closer to downtown, or the central business district, had positive price effects in Lansing, but not in Royal Oak. This measure was not computed for Traverse City. This finding indicates that the downtown had a significant impact on Lansing properties, but that it had no distinguishable effects on Royal Oak properties, perhaps because of the small area of the City. In Lansing, properties that were located closer to Michigan State University sold for more than those located farther away. Furthermore, Category 2 properties benefited more from this close proximity. Homes affordable to the workforce tended to value their closeness to the university. The same can be said about this category and the airport. In Traverse City, there was no significant effect to being closer to Northwestern Michigan College.

The effects of nearby public schools were not consistent across the three cities. In Lansing, there was no price premium for homes that sold close to elementary schools. But for middle and high schools, there was a small increase in home prices when located closer to these types of schools. This was true for Category 1 properties in Lansing. For Category 2, there was only a premium for middle schools. Finally, a home being closer to a high school tended to detract value from Category 3 properties. In Royal Oak, being closer to an elementary school was associated with lower home sale prices for Categories 1 and 2. Category 3 properties, however,

tended to sell for higher prices when located near a high school. These findings were difficult to explain. There could be several neighborhood factors and school conditions that affected these differences. It should also be noted that in many instances, “neighborhood” schools might not actually serve those, or all of those, who live nearby.

Rather than discuss each and every establishment type and its varying distances for each of the three cities, we will focus on six establishments: grocery stores, specialty food stores, book, periodical and music stores, and bars and full-service and limited-service restaurants. Results can be compared directly in Tables 9–11 in Appendix C.

The number of nearby grocery stores tended to affect properties in each city differently. In Lansing, not a single property category’s value was positively influenced by the number of nearby grocery stores, at varying distances. There may be several factors that explain this, which are discussed in the Part on Recommendations on page 63. In Traverse City, the number of nearby grocery stores only negatively affected Category 3 properties when located closer than a quarter-mile. Conversely, their prevalence tended to positively affect prices for Category 1 properties when they were found between a quarter-mile and a mile. In Royal Oak, the number of grocery stores located closer than a quarter-mile to a home had a negative price impact for Category 1 properties. However, home prices were more positive when there was a greater number between a quarter-mile and a half-mile. Category 2 property values benefitted from having a greater number of grocery stores nearby, whereas Category 3 properties were negatively affected by a greater number of stores at the half-mile distance and greater.

Similar results were found for specialty food stores. In Lansing, the number of these stores within a quarter-mile of Category 1 properties added significantly to home sale prices. Yet, in Traverse City the number of stores within a quarter-mile greatly detracted from prices (for Category 1), while in Royal Oak, Category 1 properties were negatively affected at the mile to 1.5 miles range, and Category 2 properties were positively influenced at the quarter-mile to half-mile range. Similar to grocery stores, the size, location and condition of the store probably had effects on home prices that were not observed through this analysis. Distance was an important factor. While homebuyers might want to live within a walkable distance of grocery or specialty food stores, if there were negative perceptions of the store or if the store itself was in “bad shape,” then properties might sell for higher when they were a bit farther away—perhaps still walkable, but “not in my backyard,” per se. Again, this issue is discussed in the Recommendations part and deserves more attention.

The number of nearby book, periodical and music stores negatively affected home prices for all three property categories in Lansing when located more than a mile from the property. However, the prevalence of such stores between a half-mile and a mile had a positive effect on Category 1 properties. In Traverse City, the only affected housing category was Category 3 and it was negatively affected when such establishments were located closer than a quarter-mile. In Royal Oak, Category 2 home prices were not affected by these types of establishments. Category 1 property prices were positively influenced when a greater number of such businesses were located more than a quarter-mile away. Category 3 properties in Royal Oak were negatively affected when located between a quarter-mile and a half-mile away. While we discuss this type of business establishment here, instead of say clothing or clothing accessories

stores, similar trends were observed across the property categories and cities. Again, it was difficult to explain why these results were found due to a lack of qualitative data on business establishments.

Finally, we turn our attention to eating and drinking establishments. Bars and restaurants are commonly cited as being essential

placemaking elements, especially for attracting and retaining talent workers who are interested in a vibrant nightlife, good food and all-around opportunities to have fun and socialize. There exists a potent relationship between these establishments and housing—walkability. Being able to walk or bike to these places, or easily access them via transit, is another oft-cited component of placemaking.

Full-service restaurants positively affected home sale prices of Category 1 properties in Lansing. Category 2 properties were not affected and Category 3 properties generally saw home prices decrease the closer the concentration of these businesses were to the property. In Traverse City, only Category 3 properties were affected by the number of nearby full-service restaurants, but only when located closer than a quarter-mile. In Royal Oak, the impact of the number of nearby restaurants was positive. Category 1 and 2 property prices were positively affected by the number of nearby restaurants when located anywhere between a quarter-mile to a half-mile (Category 1) or anywhere between a quarter-mile and a mile (Category 2). For Category 1 properties, negative effects were observed with a greater number of such businesses more than a mile away. For limited-service restaurants, in no property category at no

Bars and restaurants are commonly cited as being essential placemaking elements, especially for attracting and retaining talent workers who are interested in a vibrant nightlife, good food and all-around opportunities to have fun and socialize.

distance was a negative effect observed. In other words, a greater number of these establishments nearby tended to contribute positively to the home's sale price.

In Traverse City, the opposite was true—but only for Category 2 properties, whereby greater numbers of these businesses nearby tended to detract from home value. In Royal Oak, all three property categories were positively affected, but only at a distance interval of a half-mile or greater. Finally, the number of bars within a quarter-mile of Category 1 and Category 3 properties in Lansing tended to detract from home prices. No other distances were significant. In Traverse City, the prevalence of nearby bars had gravely negative effects on all three property types. In Royal Oak, the same was true except that Category 3 properties were not affected. Based on these findings, bars located close to homes could be more of a liability than an asset.

Differences between Property Categories

One of the stated purposes of this report is to better understand the relationship between placemaking and non-market rate housing. Since the data utilized in this study do not indicate whether a sold property was purchased by a workforce household or one that qualifies for affordable housing credits, it was necessary to analyze homes based on affordability categories. There are many instances when, for example, a Category 1 home price is significantly affected by a placemaking attribute and a Category 2 or 3 home is not. There could be several explanations for this. One has to do with neighborhood effects. There is a possibility (and in many times) the reality that nearby homes are similar. In real estate, “comps”—or comparables—is a measure of home sale price comparability. It is assumed that when a home is listed for sale, nearby homes that are similar will have sold for a similar price. While “comps” were

not featured in our model, a pattern of similar housing in a neighborhood, which is close to stores and parks and other features, will likely experience positive or negative effects compared to homes in dissimilar areas. For example, Category 1 homes, which may be clustered in a neighborhood, have positive benefits associated with a public park. Yet, a cluster of Category 3 homes may not realize the same value of having that park nearby.

Another reason why placemaking effects vary across Categories could be due to the models themselves. A smaller number of properties are analyzed in Categories 2 and 3 and could, therefore, be affected by statistical issues, such as degrees of freedom and model inefficiencies. Finally, it is possible that there are external things (not modeled) that influence housing prices across categories. These are captured in the error term.

Limitations and Explanations

Even though some community features that are commonly referred to as a component of placemaking, such as a walkable distance to a park or grocery store were found to negatively affect property value, that does not necessarily mean that there was a causal relationship occurring. It could be that, while parks added to sale prices, there were some parks—or a concentration of parks—that tended to detract from sale prices, whether due to crime, condition or noise. Furthermore, considering that Michigan has been lagging a bit behind in adopting placemaking and other planning and design practices, such features might not yet positively affect home values. This conclusion, therefore, would lead us to recommend that further research attempt to understand why certain features add value to properties.

Since this study utilizes parcel-level data, there were some limitations introduced by having to rely on aggregated data sources for certain characteristics.

Placemaking is an imprecise concept to many audiences. It has to do with sense of place, the physical and built environment, buildings, parks, a mix of land uses, smart growth and other concepts.

Census tract and block group data provided community and neighborhood characteristics, but they might also be too large, geographically, in that they did not provide enough local information. For example, the percentage of population in poverty in a census tract typically detracted from home values in our case study cities. There could, however, be a considerable difference in poverty rates from one

block to the next that could affect home values that could not be accounted for in this model. The same could be true for the measure of median household income in a block group.

Some of the home price breaks used to define workforce and affordable housing might seem high. For instance, the maximum home sale price for workforce properties in Royal Oak was \$295,000, which was high compared to the other cities and places throughout the state. Since we were only examining sold properties within the city limits of the three case study cities, we were not able to capture where some segments of the workforce might actually live—outside of the city. It was plausible that the workforce could not afford property within the city limits of the examined cities. We recognize this limitation and recommend that future studies examine regional home sales and control for homes that sold in cities, villages and townships.

Placemaking is an imprecise concept to many audiences. It has to do with sense of place, the physical and built environment, buildings, parks, a mix of land uses, smart growth and other concepts. While this study focuses on the real estate components of placemaking, there are still other factors that need to be modeled, but are not

available in a usable data format. For instance, quality of place is important information, but is difficult—if not impossible—to gauge using the methods presented in this report. Sense of place among residents would provide much-needed information about neighborhoods and the homes in them, but again, is difficult to model given the chosen framework.

Finally, as with any statistical model, there are limitations regarding the accuracy and predictive power of home values. First and foremost, is the matter of causation versus correlation. Recalling that our model's chief aim was to estimate values of placemaking features, it was important to identify those elements on top of the other features that affect home value. While there is a degree of certainty in the results, it cannot be said that, for example, a home's proximity to a school caused its value to increase or decrease. There was merely a strong correlation between a property's sale price and that feature. That is why when examining each coefficient, it is necessary to realize that it is in the context of "all else being equal," or "all else held constant," meaning that we are examining these factors amongst many other factors. Also, analysis at such a small scale—the parcel level—can be hampered by data availability limitations. For each case city, we did our best to obtain comprehensive data that would further aid in model development.

Given the data availability and rigor of the analysis, we are very satisfied with the results. Not only did the models exhibit what Realtors said they would expect, but the models also further provided estimates for features that other models had not taken into consideration. We consider this both an achievement and an opportunity for model specification improvement, incorporating other features, and executing other types of analyses to uncover other placemaking value premiums.

Part 7: Recommendations

BASED ON THE RESULTS PART PRESENTED PREVIOUSLY, THIS PART MAKES RECOMMENDATIONS FOR FURTHER RESEARCH, IMPROVED DATA COLLECTION AND APPLYING FINDINGS TO COMMUNITIES.

1. **S**ome land uses mix well with residential neighborhoods, and some do not—it seemed to be different for different cities. For example, specialty stores had no property value impacts in Lansing; had negative effects in Traverse City; and had positive impacts in Royal Oak. Therefore, a community's vision and goals should really be considered in master plans, zoning and placemaking. On the other hand, the values of the people that cities want to attract to their communities should also be considered.
2. Further research about the type and quality of grocery stores (and other establishments) within close proximity is needed, because there could be different impacts. Recall that we did not consider chain, size or “quality” of nearby grocery stores. National chains could have different property value impacts than locally owned grocery stores. Similarly, size (floor space), parking lot size and traffic congestion could have effects as well.
3. Further research is also needed on specific building characteristics and households. Green building characteristics, energy efficiency improvements, commute types, race, educational attainment and other data would greatly inform future analysis. Much of these data are either not available or aggregated at higher geographic levels, such as block group and census tract. Further research is also needed on why different impacts were observed at some distances and not others and at various price points in the categories of properties. Additionally, other placemaking elements should be included, such as public spaces, arts and culture and non-motorized transportation enhancements
4. Only examining Michigan cities did not paint the full picture of placemaking and its value contributions, because a) Placemaking was, and still is, not prevalent in Michigan cities; b) New placemaking activities may not yet show a positive impact if implemented recently; and c) Placemaking was examined from a strictly local sense. Having an understanding of how placemaking contributes across a region would be beneficial information.
5. Conducting analysis that translates positive placemaking effects into community economic impacts and property tax revenue impacts would illustrate the community-based benefits of placemaking. These results would help local and regional governments better understand the effects of placemaking at a larger scale.



6. Based on survey results, an education or training program detailing the nuances and benefits of placemaking would be beneficial for bankers, developers and local officials.
7. Recall, 88% of surveyed bankers said that loan assistance programs, public financing, tax credits, grants or other supplemental funding that reduce development costs factor into favorable lending terms. To the same degree, things like expedited permitting or development fast-track approval that reduces a project's timeline would make lending decisions easier. All parties need to seriously take into account the many incentives and time-prolonging factors that affect placemaking developments. In fact, there is currently research underway that attempts to identify programs or mechanisms that can “de-risk” development projects. The idea that when placemaking projects (or progressive developments, as coined by Chris Leinberger) are less risky to the many placemakers, they are viewed more favorably and can, thus, have a positive impact sooner, rather than later.

There is currently research underway that attempts to identify programs or mechanisms that can “de-risk” development projects. The idea that when placemaking projects are less risky to the many placemakers, they are viewed more favorably and can, thus, have a positive impact sooner, rather than later.