Neighborhood Institutions and Residential Home Sales: Evaluating the Impact of Property Tax Exemptions*

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In this analysis, we focus on the urban amenities of "neighborhood institutions," which are the myriad government and nonprofit organizations that provide public or quasi-public services to their neighborhoods. One might expect these amenities, such as religious and educational institutions, to always be positive for their respective neighborhoods. However, the net benefit of a neighborhood institution is the weighing of the benefits of the services provided against any costs to the neighborhood. To address the empirical question of whether neighborhood institutions positively impact their surrounding neighborhoods, we utilize property records to identify neighborhood institutions in the City of Milwaukee, Wisconsin. Using these records allows us to identify the exact location and type of each institution. From these data, we construct a regression model of housing sale prices to evaluate the relative economic impact of these institutions on their neighborhoods. Using parcel level data on residential home sales in the City from 2002 to 2016, we match sales with neighborhood institutions in close proximity. Using both a traditional hedonic model and a repeat sales model, we examine the influence of nearby tax-exempt properties on residential home sales. Our preferred results come from the repeat sales model in which close proximity (0m-250m) to educational properties, labor halls, and utilities are associated with lower home sale prices, all else equal. We do not find a correlation between home sale prices and any other type of nearby tax-exempt property, suggesting property tax exemptions have little impact (positive or negative) on surrounding residential home sales.

Keywords: Nonprofits, tax-exemption, house prices

INTRODUCTION

Cities are vibrant and diverse places. A key aspect of this vibrancy is the existence of urban amenities that residents and businesses consume. The modern literature on urban growth suggests that amenities are a key component. Those cities with high urban amenities grow faster than those with lower levels (Carlino and Saiz 2019). In this analysis, we focus on one subset of urban amenities we are calling "neighborhood institutions." These institutions are the myriad government and nonprofit organizations that provide public or quasi-public services to their neighborhoods and beyond. Examples of neighborhood institutions are nearly as diverse as the cities that house them. They range from religious and educational institutions to nonprofit service providers to utilities and railroads. One might expect these amenities to always be positive for their respective neighborhoods; however, this is an empirical question. The net benefit (or cost) of a neighborhood institution is the weighing of the benefits of the services provided against any costs to the neighborhood (congestion being a prime example). This question is relevant for nearly any type of tax-exempt organization, because "the nonprofit sector is overwhelmingly community based and locally operated" (Wolpert 1993, 285).

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To address this empirical question, we utilize property tax exemption records to identify neighborhood institutions in the City of Milwaukee, Wisconsin. Using these records allows us to identify the exact location of each institution as well as the type of institution. From these data, we construct a regression model of housing sale prices to evaluate the relative economic impact of these institutions on their neighborhoods. Using parcel level data on residential home sales in the City from 2002 to 2016, we match sales with the composition of neighborhood institutions in close proximity. We expect those institutions with a positive coefficient to be providing localized benefits that outweigh their costs to the neighborhood. Conversely, a negative sign would indicate that localized costs outweigh localized benefits.

There are multiple literatures interested in research questions similar to the one posed above. Most relevant to our work, however, the nonprofit literature has not fully examined the influence of tax-exempt, nonprofit properties on house sale prices. There are exceptions (Bielefeld et al. 2006) that find various types of nonprofits increase or decrease (depending on type) surrounding house prices. Other literatures in the fields of economics, housing, real estate, and property tax assessment have examined this question, but typically do so in a more piecemeal manner; rather than examining a number of tax exemption types, studies tend to focus on the impact of a single type on surrounding house prices (Thompson, Butters, and Schmitz 2012; Ellen and Voicu 2006). The findings are generally mixed with some exemption types increasing surrounding house prices and others lowering them. Overall, the literature provides a confusing set of predictions given the largely disjointed means of examining the impact of tax-exempt properties.

Our analysis proceeds as follows. First, we review the previous literature on property tax exemptions. We pay special attention to the property tax exemptions of nonprofits as these types of exemptions are of particular relevance for potential changes to government tax policy. Next, we discuss the data and empirical model (both a traditional hedonic model and a repeat sales model) we use to examine the influence of nearby tax-exempt properties. Finally, we present the results of both estimation approaches and explore the implications for policy and future research.

LITERATURE REVIEW

Granting Tax Exemptions to Nonprofits

The Equal Protection Clause, the Contracts Clause, the Commerce Clause, and the First Amendment to the U.S. Constitution allow states to enact tax policies granting exemptions to charitable organizations so long as the legislation is neutrally designed and equally administered (Brody 2007). Dating back to the 18th century, property tax exemptions granted to charitable organizations are enumerated in 17 state constitutions and authorized by the legislatures of another 17 states (Brecher and Calabrese 2015). Rooted in economic theory, nonprofit tax exemptions are typically justified on claims that nonprofits provide important services to individuals who could otherwise not afford them, and such services produce positive externalities that go beyond individual benefits and accrue to improve society as a whole (Brecher and Calabrese 2015). In addition, some have suggested that the nondistribution constraint poses difficulties for nonprofits' abilities to raise capital and therefore may not achieve the same economies of scale as for-profit firms (Steinberg 1998; Frumkin 2002).

Property tax exemptions granted to religious institutions were historically justified by states trying to avoid interfering in the practice of religion to ensure separation of church and state. While some states also provide tax exemptions for benevolent organizations, there is considerable variation among state and local tax laws. Simply receiving a charitable classification under section 501(c)(3) of the Internal Revenue Code does not automatically entitle a charitable organization to a property tax exemption (Brody 2007). Most states require charitable nonprofits to satisfy a multifactor test that reduces government service

provision burden, maintains a level of donated services, and/or requires nonprofits to both own the exempt property and use it for charitable purposes (Brody 2007). In Provena Covenant Medical Center v. Illinois Department of Revenue, 236 Ill. 2d 368, 925 N.E.2d 1131, 339 Ill. December 10 (2010), the Illinois Supreme Court defined 'charity' as that which provides a benefit for an indefinite number of people and conditioned charitable status' as that which relieves some burden and/or provides some benefit to local government(s) foregoing revenue from property taxation (Bernert and Swift 2011). However, the services provided by charitable nonprofits do not necessarily need to match the services that would alternatively be provided by government (Brody 2007). For property used only in part for a charitable purpose, it is most common for states to apportion the owners' property tax liability on the unrelated business use(s) of the property (Brody 2007).

It should be noted, exemptions granted to charitable nonprofit organizations generally constitute a small portion of total tax exemptions with the largest category of tax-exempt property owned by governments (Brody 2007). Nonetheless, the nonprofit property tax exemption has come under scrutiny as an appropriate method of subsidizing certain types of service provision, because the exemption benefit is linked solely to the value of property owned by a nonprofit and bears no relation to the quantity or quality of services provided (Brecher and Calabrese 2015). Such a perverse incentive is economically inefficient as it discourages nonprofits from renting and encourages land and real property ownership that perhaps exceeds optimal levels and/or values (Brecher and Calabrese 2015; Cordes 2012). Others see the exemptions granted to nonprofits as a public subsidy to nonprofit service provision at least in part because exemptions increase the financial resources of recipient nonprofits (Brecher and Calabrese 2015; Brody 2007; Cordes 2012).

Location Decisions of Tax-Exempt Nonprofits

Property ownership by nonprofits tends to cluster in city centers where demand for public expenditures tends to be higher (Brody 2007) and where demographic characteristics match the constituency receiving nonprofit services (McPherson 1983). Such location decisions are also partly motivated by the fact that the property tax exemption effectively downplays the financial effects of location decisions for those nonprofits that own property (Cordes 2012). Bielefeld and Murdoch (2004) found agglomerations of nonprofits based upon industry type that can largely be explained (with some exceptions, of course) by needs and resources within the metropolitan areas served by nonprofits. More specifically, Ellen and Voicu (2006) found that nonprofit housing developers tend to operate in the most disadvantaged neighborhoods and distressed areas of these communities than their for-profit counterparts. In addition, Harrison (2008) found 1) that tax rates are an important locational consideration, as nonprofits more heavily dependent upon donative income are more likely to locate in higher tax states, and 2) charitable organizations with greater proportions of mission-related revenues are more sensitive to the property tax rate. Specifically, nonprofits that compete with for-profits take advantage of tax exemptions by locating in higher tax states; nonprofits more heavily dependent upon service-related revenues are more likely to locate in states with high property taxes (Harrison 2008). Moreover, nonprofits often provide services that are difficult to evaluate to unique or niche constituencies and commensurately use location to enhance their legitimacy to potential clients, donors, and funding agencies (Bielefeld and Murdoch 2004).

While it is certainly plausible to expect nonprofit organizations to avoid direct competition when choosing a community in which to locate and provide services (Baum and Haveman 1997), there are a number of potential benefits to agglomeration economies of nonprofits in a community, including: 1) reduced transportation, communication, and supply acquisition costs due to a shared infrastructure, 2) access to a specialized or otherwise appropriately trained labor force, 3) knowledge spillovers among or-

ganizations, 4) the availability of market signals like service demand and/or production feasibility, and 5) reduced costs to seek out consumers (Bielefeld and Murdoch 2004). However, an important implication of locational self-selection is to make the burden of property tax exemptions unevenly distributed geographically (Brody 2007). Moreover, in cities that are heavily reliant on the property tax, nonprofit property tax exemptions create the need for homeowners and businesses to bear a greater share of the property tax burden (Kenyon and Langley 2011).

Capitalization of Nonprofit Property Tax Exemptions

Theoretically, the influence of tax-exempt properties on surrounding home sale price is tied to the amenities (or lack thereof) these tax-exempt properties provide to their corresponding neighborhood. A number of neighborhood amenities have been found to positively influence surrounding residential properties, including neighborhood parks (Crompton 2005), greenbelts (Asabere and Huffman 2009), and open spaces (Sander, Polansky, and Haight 2010). This is especially likely if the services provided by a nonprofit are beneficial to the surrounding neighborhood and/or the nonprofit provides some prestige value to the neighborhood, driving up demand and prices (Bielefeld et al. 2006). A number of amenities have also been found to negatively influence nearby home prices. These dis-amenities include freight railways (Simons and El Jaouhari 2004), Brownfields (Kaufman and Cloutier 2006), foreclosures (Immergluck and Smith 2006; Schuetz, Been, and Ellen 2008), and property tax delinquency (Carroll and Goodman 2017).

Although focused specifically on housing, Schwartz et al. (2006) suggested that nonprofits gain less than for-profit firms from economizing on construction and maintenance costs, particularly in the provision of housing, because it is a good for which it is difficult to assess quality; therefore, we should expect nonprofits to deliver higher quality housing with fewer hidden deficiencies, and to maintain it more vigilantly, than their private sector counterparts (Hansmann 1987). Overall, the authors suggested that nonprofit organizations are probably more committed to providing housing that generates sustained benefits for the larger community, but they may not always have the capacity to do so (Schwartz et al. 2006). On the other hand, it might also be the case that nonprofits will strive to house more economically disadvantaged tenants, which may dampen neighborhood benefits (Schwartz et al. 2006).

Based upon the extant research, it is most likely the case that many tax-exempt nonprofits produce both amenities and dis-amenities for their surrounding neighborhoods. For example, educational institutions (such as public schools) likely have both aspects. The surrounding neighborhood benefits from having such an organization nearby for myriad reasons. However, such organizations also likely generate intense local parking pressures, traffic around the start and end of the school day, and potential noise and other nuisance factors that would not occur without the organization being located there. In fact, Goetz, Lam, and Heitlinger (1996) found public housing owned and operated by the Minneapolis housing authority, as well as subsidized housing owned by for-profit developers, were both negatively associated with nearby property values. On the other hand, the authors revealed that property values in close proximity to assisted living facilities owned and operated by community-based nonprofits appeared to be higher (Goetz, Lam, and Heitlinger 1996).

Ellen and Voicu (2006) examined more than 300,000 individual sales of 43,000 units of New York City-supported rehabilitation rental housing offered by both nonprofit and for-profit providers during the 1980s and 1990s using difference-in-difference estimation of a hedonic price model to determine the neighborhood spillover effects. The authors found positive spillover effects of large projects (measured by the increased value of properties surrounding the housing projects) undertaken by both nonprofit and for-profit developers over time (Ellen and Voicu 2006). However, the positive spillover effects stemming from nonprofit developers remained stable over time compared to that of for-profit firms, which declined

slightly over time (Ellen and Voicu 2006). These findings are somewhat consistent with prior research that has found affordable housing developed by nonprofit organizations, particularly community-based nonprofits, to be more effective in generating positive neighborhood spillovers than that developed by for-profit developers (O'Regan and Quigley 2000; Walker 1993).

By far the most extensively studied tax-exempt nonprofit property type is religious institutions. Do, Wilber, and Short (1994) found a negative influence of churches on surrounding home prices up to 850 feet away. In a direct rebuttal to Do, Wilber, and Short (1994), Carroll, Clauretie, and Jensen (1996) found a positive relationship between proximity to a church and home prices; specifically, prices decrease at a decreasing rate as the distance from a church increases. However, an important criticism of both of these studies is the failure to control for potential selection bias in the placement of a church. Thompson, Butters, and Schmitz (2012) attempted to remedy this by examining the location of a church for historical reasons rather than any potential endogenous process. They found the introduction of a church to have no influence on surrounding home prices. In the German context, however, Brandt, Maennig, and Richter (2014) found a 4.6 percent premium on condominiums sold within 100 to 200 meters of a religious institution.

The remainder of tax-exempt property types are less studied. Larsen and Coleman (2010) found proximity to cemeteries in Green County, OH unrelated to house prices. Peng and Chiang (2015) found proximity to hospitals in Taipei, Taiwan to be negatively related to house prices; however, the impact was nonlinear: prices rose as distance from the hospital increased, particularly for houses 2 to 3 kilometers from the hospital. Colwell, Dehring, and Lash (2000) found a small negative effect of supportive housing and/or group homes on nearby house prices; however, these results may be driven by the placement of these properties in already depressed neighborhoods. Galster, Tatian, and Pettit (2004) found little support for this negative finding; though, the context of their study (a highly regulated development environment) may be influencing their results.

Most relevant for our analysis is Bielefeld et al. (2006), as they examined many of the previously mentioned property exemption types. Individually, the authors found arts and culture, education, health, religious, and international nonprofits have an overall positive effect on house prices. Environmental, human services, and public benefit nonprofits reduce house prices in aggregate. When combined, the nonprofit sector has a net positive influence on house values. So, with all of these examples in mind, the empirical question is, "Which amenity dominates?" In other words, does the localized benefit of services provided by a nearby exempt property owner outweigh the dis-amenities generated by the operation of the organization?

DATA & METHODOLOGY

Methodology

Consistent with the literature, we specify a log-linear hedonic price model (Rosen 1974) where the natural log of sale price is regressed onto a vector of property and locational characteristics, including the presence of nearby tax-exempt properties. We estimate the following regression:

$$\ln P = \alpha + \beta X + \delta N + \eta_i + \gamma_t + \varepsilon \tag{1}$$

Where $\ln P$ is the natural logarithm of the sale price of a home, N is a vector of home characteristics and $n-1$ dichotomous variables indicating sale month, X is a vector of count variables measuring the prevalence of various tax-exempt properties at various distances from a home, η is zip-code level fixed

effects to control for characteristics of the neighborhood where a sale occurs, γ is year fixed-effects to control for common time effects such as the housing market crash and Great Recession, and ε is the usual error term. A complete description of all variables is provided in Table 1.

In our analysis, we are primarily concerned with the sign and magnitude of δ. Given the review of literature above, we expect no consistent relationship between δ and sale price. For some tax-exempt property types, we hypothesize a positive relationship. For others, we expect a negative relationship. The direction of the coefficient depends upon whether the localized amenities produced using the tax-exempt property outweigh the costs of operating the facility. However, we make no specific prediction about the magnitude of δ. The relationship between distance from the sale and sale price is equally as indeterminate. If the positive or negative amenity is highly localized, we expect the relationship to decline with distance. That is, we expect the magnitude of δ to diminish as distance increases. If a property's amenity effect is not localized, the relationship between distance and sale price is unclear.

City of Milwaukee, Wisconsin

Similar to Carroll and Goodman (2017) and Carroll (2008), this study utilizes parcel-level data of real property from the City of Milwaukee, Wisconsin, which are publicly available from the City's website (www.city.milwaukee.gov). The City of Milwaukee Master Property File (MPROP) is an annual inventory of all real property parcels dating back to 1975. Each parcel of real property is identified by a unique taxkey number. In addition to detailed information pertaining to the property characteristics, the assessed value of each parcel is provided annually. It should be noted that the City of Milwaukee conducts an annual revaluation of its real property and assesses property at 100 percent of fair market value. For each parcel of real property that is tax exempt, the MPROP database provides the value of each property's exemption or what the assessed value of the property would be if it were taxable. This includes 25 discrete categories (inclusive of nonprofit, government, and utility/railroad properties) with numerous sub-categories. Since some of the 25 categories have very small numbers of observations, we aggregate all tax-exempt properties into 10 categories encompassing all exempt parcels except for government-owned property. These include the largest nonprofit exemption categories (i.e. benevolent institutions, colleges and universities, other educational entities, and religious institutions) as well as nonprofit hospitals, properties held for rehabilitation, labor halls, cemeteries, utilities, and railroads. The City of Milwaukee only provides full exemptions for real property, so partial exemptions do not exist in the database.

The MPROP database was merged with a secondary database of all property sales in the City of Milwaukee. Also available on the City's website, this second database identifies real property parcels by the same unique taxkey number that is used in the MPROP database, as well as provides information about the sale date and price of each parcel. This second database, however, only dates back to 2002. For purposes of consistency, we limit our analysis to cover the time period 2002-2016. Between 2002 and 2016, the larger MPROP database contains a total of 2,409,570 observations, which range from a high of 162,421 parcels observed in 2010 to a low of 157,492 properties in 2002. The number of real property parcels changes slightly from year-to-year due to parcels being merged to create larger parcels, as well as parcels being split to create smaller parcels depending on market demand. During this same time, there were a total of 63,662 property sales.[1]

The extent to which the results of this study are generalizable to other urban cities is to be determined by the reader's consideration of the extent to which Milwaukee's real property stock is representative of

1. Some property sales drop out from the final analysis due to missing data pertaining to property characteristics that are necessary to including as controls according to the theoretical hedonic price model underlying this study. Otherwise, we are analyzing the population of residential property sales in the city during this time frame.

Table 1: Variable Descriptions

Variable	Description
Sale price	Inflation-adjusted price paid by purchaser of property; natural log used for analysis
Tax Exemptions	
Benevolent institutions, 0m to 250m	Number of parcels exempt for benevolent institutions within 250 meters.
Cemeteries, 0m to 250m	Number of cemeteries within 250 meters.
Colleges & universities, 0m to 250m	Number of parcels exempt for colleges and universities within 250 meters.
Educational property, 0m to 250m	Number of parcels exempt for educational purposes within 250 meters.
Labor hall, 0m to 250m	Number of parcels exempt for labor halls within 250 meters.
Nonprofit hospitals, 0m to 250m	Number of parcels exempt for nonprofit hospitals within 250 meters.
Railroad property, 0m to 250m	Number of parcels exempt for railroads within 250 meters.
Property held for rehab, 0m to 250m	Number of parcels exempt for rehab purposes within 250 meters.
Religious institutions, 0m to 250m	Number of parcels exempt for religious institutions within 250 meters.
Utility property, 0m to 250m	Number of parcels exempt for utility purposes within 250 meters.
Housing characteristics	
Lot area (1000 sqft)	Size of the parcel in 1000s of square feet
Finished area (1000s sqft)	Size of the finished living space of structure in 1000s of square feet
Property age	Number of years since the structure was built on property
Bedrooms	Number of bedrooms in the structure
Bathrooms	Number of full bathrooms in the structure
Half baths	Number of half bathrooms in the structure
Slab	A dichotomous variable indicating if the structure is of slab construction (1) or not (0)
Fireplace 1	A dichotomous variable indicating if the structure has one fireplace (1) or not (0)
Fireplace 2	A dichotomous variable indicating if the structure has two fireplaces (1) or not (0)
Sale Month	A series of $n-1$ dichotomous variables indicating if the property sale was in the month (1) or not (0); January excluded

that which exists in other urban areas. Kenyon and Langley (2011) noted that a number of cities whose economies were historically dominated by manufacturing have experienced relatively mobile for-profit businesses leave, while colleges, universities, and medical centers with large amounts of fixed capital investments and other immobile production factors tend to stay and consume public services while often not contributing to the tax revenue generated to finance such services. Of course, not all education and healthcare businesses are nonprofits; however, the shift in employment base away from manufacturing can illustrate how a city's industrial mix is becoming more reliant on nonprofits (Kenyon and Langley 2011). And, this is certainly the case in Milwaukee, Wisconsin.

The City of Milwaukee is the largest city in the state of Wisconsin and the fifth largest city in the Midwest region of the U.S. (City of Milwaukee, 2019). With a 2019 population of 581,949, Milwaukee is the 33rd largest city in the U.S. However, the 2019 population is a 0.74 percent decline from Milwaukee's 2010 census population (Bureau of Labor Statistics, 2019). Once a manufacturing hotspot with firms like Miller Brewing and Harley Davidson calling Milwaukee their home, the City has transitioned tremendously over time as the education and health services sector is now the largest source of employment for city residents (City of Milwaukee, 2019). In fact, the top three private sector employers in Milwaukee and its metropolitan region are Aurora Health Care, Ascension Wisconsin, and Froedtert Health (City of Milwaukee, 2019). The value of taxable real property in the City of Milwaukee amounted to $28.3 billion in 2018; of this amount, $15.0 billion or 53 percent of taxable value is residential property (City of Milwaukee, 2019).

Mediating the Effect of Distance

Consistent with the literature, we draw circles around each home sale at various distances and count the number of tax-exempt parcels of any kind within each circle. Similar to Carroll and Goodman (2017) we use five different circular distances: 250, 355, 500, 707, and 1,000 meters from the home sale. At the most basic level, collecting information on the prevalence of tax-exempt parcels within certain distances allows us to examine the influence of such properties "nearby." At the smallest distance, "nearby" is typically on the same block, and we increase this distance up to a kilometer away. Second, we can examine changes in the number of tax-exempt parcels as distance from the home sale increases.[2] As mentioned previously, we are unable to a priori hypothesize the direction and magnitude of influence of tax-exempt parcels, but we nonetheless expect such parcels to be correlated with distance.

We observe property sales in the year they occur, and not all properties sell each year. As such, our data form a pooled cross-section; therefore, we apply the typical remedy, OLS with time (year) fixed effects, and Huber-White standard errors. Sale price, housing characteristics, and neighborhood level variables are measured in the year of the sale. Tax-exempt properties are measured in the assessment year, which is the year before ($t-1$) the year of the sale. An estimation concern is whether there is enough variation in the number of nearby tax-exempt properties for identification of equation 1. If these properties are relatively constant over time, the number of such nearby properties could be measuring some other neighborhood factor. More specific to the analysis at hand, the presence of such properties may have been capitalized into house prices some time ago. One method to eliminate this issue is to estimate Equation 1 in a repeat sales framework, where only the change in the number of nearby tax-exempt properties between two home sales is used to identify changes in sale price. Consistent with the

2. This approach is typical in the distressed property literature. See Immergluck and Smith (2006) or Schuetz et al (2008) as early examples.

literature, we estimate the repeat sales model as follows.

$$\ln\left(\frac{P_t}{P_{t-1}}\right) = \alpha + \delta(N_t - N_{t-1}) + \eta(E_t - E_{t-1}) + \gamma_t + \varepsilon \quad (2)$$

This specification is most similar to Carroll and Goodman (2017) and based on Alm et al. (2016) where the natural log of the ratio of the most recent sale price (P_t) to the previous sale price (P_{t-1}) is a function the difference in the prevalence of tax-exempt properties over the same time period. As such, the change in price is a function of the change in the number of nearby tax-exempt parcels. We also include two variables (η) measuring whether the property gains (or loses) tax-exempt status between the two sales.

RESULTS

Table 2 shows the descriptive statistics for all variables included in our analysis. As can be seen, the mean sale price of residential properties in the City of Milwaukee between 2002 and 2016 was $130,869.70. However, with a range from $100 for vacant land to $2.1 million for a mansion along Lake Drive, and a standard deviation of $78,200.70, there is considerable variation in home sale prices. Table 2 also illustrates the prevalence of tax-exempt nonprofit institutions by each exemption type and distance from home sales. Of course, some sales involve residences with zero tax-exempt properties in close proximity. And, as expected, the circles identifying tax-exempt properties surrounding home sales reflect higher numbers of these neighborhood institution as the distances from home sales increase. At most, there were home sales in the City with 18 different educational properties within 707 meters, as well as with 18 different religious properties located within 1,000 meters of the sale. In fact, the prevalence of educational institutions is such that we see home sales occurring with 15 different educational properties within only 250 meters, which is essentially the same block as the home sale.[3] This certainly follows extant research suggesting schools are a primary consideration of individuals' location decisions and commensurately of home prices.

Figures 1 and 2 show the results of 6 regressions in which the dependent variable is the log of sale price. Specifications 1 through 5 (in Figure 1, descending) regress sale prices on a vector of nearby tax-exempt properties, varying the cumulative distances in each. Specification 6 (Figure 2) introduces distance bands to examine the influence of tax-exempt properties at various distances from the sale. Generally, the results pertaining to the control variables are similar across all specifications.

The results from Figures 1 and 2 indicate a positive and statistically significant relationship between colleges and universities, as well as nonprofit hospitals and house prices at all distances. Importantly, the effect size decreases as the distance increases, suggesting that proximity to the neighborhood amenity is important. Figure 2 reinforces this finding for colleges and universities where the 0 to 250m distance band and the 355m to 500m distance band are both positive and significant. This story is similar with nonprofit hospitals; however, the closest distance bands in model 6 are no different from zero, and the first band to become positive and significant is at 355m to 500m.

Figure 1 also shows there is a uniformly negative relationship at all distances for benevolent organizations, railroad properties, rehab properties, religious properties, and utility properties. Many of these coefficients follow the pattern above where the closest proximity has the strongest effect. This is the case for benevolent institutions and railroad properties; however, both religious institutions and utility properties have a consistently negative relationship as distance bands increase. These differences suggest immediate proximity is important for benevolent and railroad properties but being located anywhere near religious intuitions and utility properties is a dis-amenity.

3. A standard city block in Milwaukee is approximately 100 meters by 160 meters.

Table 2: Summary Statistics

Variable	Mean	Standard Deviation	Mean Percent of Properties	Minimum	Maximum
Sale price	$130,869.70	$78,200.70	–	$100.00	$2,100,000.00
Tax exemptions					
Benevolent institutions, 0-250m	0.0382	0.2309	0.1308%	0	6
Benevolent institutions, 250m-355m	0.0472	0.2646	0.1619%	0	8
Benevolent institutions, 355m-500m	0.0721	0.3181	0.1750%	0	6
Cemeteries, 0-250m	0.0095	0.1009	0.0396%	0	2
Cemeteries, 250m-355m	0.0095	0.1067	0.0426%	0	4
Cemeteries, 355m-500m	0.0121	0.1192	0.0372%	0	4
Colleges, 0-250m	0.0017	0.0480	0.0082%	0	4
Colleges, 250m-355m	0.0029	0.0820	0.0131%	0	9
Colleges, 355m-500m	0.0045	0.1232	0.0156%	0	12
Education Properties in 250m	0.0071	0.1199	0.0254%	0	15
Educational properties, 250m-355m	0.0096	0.1822	0.0361%	0	14
Educational properties, 355m-500m	0.0108	0.1321	0.0264%	0	15
Labor Halls in 250m	0.0025	0.0563	0.0084%	0	3
Labor halls, 250m-355m	0.0036	0.0653	0.0131%	0	2
Labor halls, 355m-500m	0.0047	0.0719	0.0114%	0	2
Nonprofit Hospitals in 250m	0.0042	0.0719	0.0155%	0	3
Nonprofit hospitals, 250m-355m	0.0044	0.0704	0.0153%	0	3
Nonprofit hospitals, 355m-500m	0.0074	0.0947	0.0180%	0	2
Railroad Property in 250m	0.0101	0.1292	0.0375%	0	4
Railroad properties, 250m-355m	0.0117	0.1380	0.0488%	0	5
Railroad properties, 355m-500m	0.0221	0.1901	0.0675%	0	5
Rehab Property in 250m	0.0037	0.1021	0.0100%	0	6
Rehab properties, 250m-355m	0.0044	0.1145	0.0123%	0	6
Rehab properties, 355m-500m	0.0057	0.1267	0.0106%	0	7
Religious Property in 250m	0.1311	0.4207	0.4457%	0	7
Religious properties, 250m-355m	0.1513	0.4565	0.5035%	0	6
Religious properties, 355m-500m	0.2262	0.5653	0.5132%	0	8
Utility Property in 250m	0.0223	0.2037	0.0845%	0	7
Utility properties, 250m-355m	0.0241	0.2003	0.0907%	0	7
Utility properties, 355m-500m	0.0352	0.2429	0.0978%	0	6
Housing characteristics					
Lot area (1000 sqft)	5.7550	2.8168	–	0	85
Finished area (1000s sqft)	1.4980	0.6046	–	0	8.81
Property age	73.2963	25.2301	–	0	186
Bedrooms	3.4841	1.1689	–	0	13
Bathrooms	1.4210	0.5566	–	0	6
Half baths	0.2849	0.4983	–	0	4
Slab	0.0203	0.1411	–	0	1
Fireplace 1	0.1059	0.3077	–	0	1
Fireplace 2	0.0160	0.1254	–	0	1

$N = 41,586$

Figure 1: Hedonic Price Results

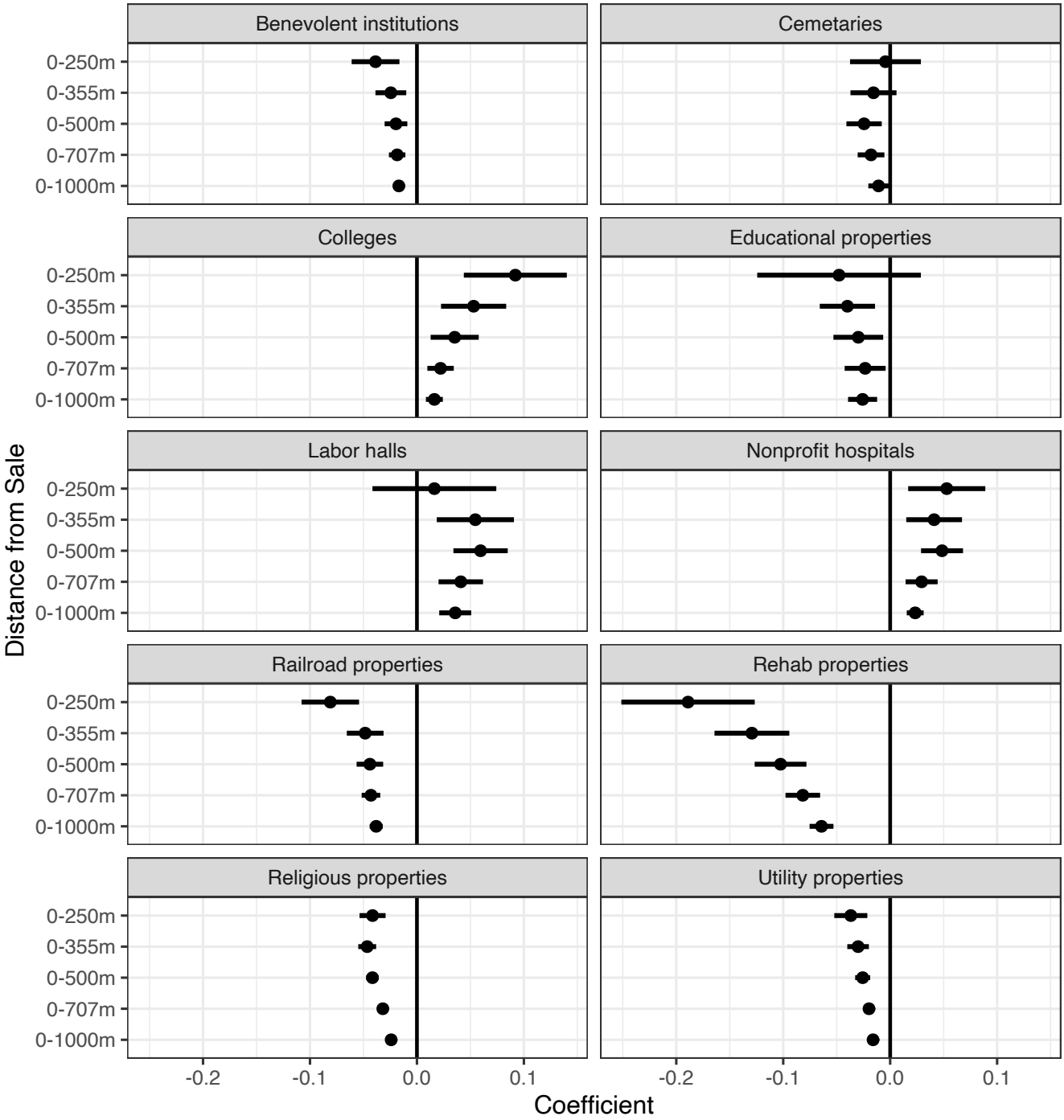
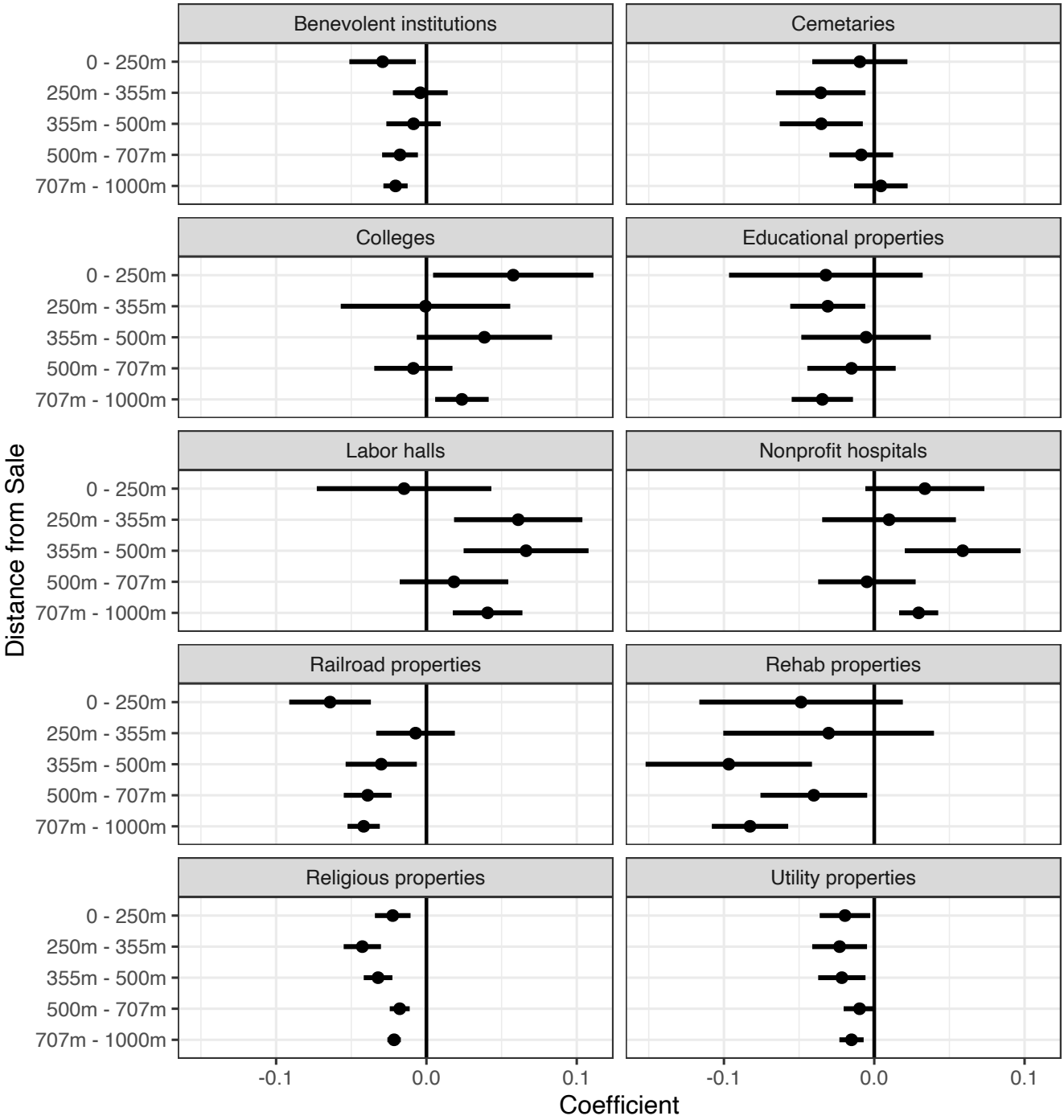


Figure 2: Hedonic Price Results with Distance Bands



The remaining tax-exempt properties exhibit an inconsistent relationship with property values. Labor halls are generally positive; however, the closest proximity band has no relationship. A similar pattern exists for cemeteries and educational properties where exempt properties in closest proximity have no statistically significant relationship; however, as distance increases, a negative relationship forms. These relationships are confirmed with the distance band analysis in Figure 2.[4]

A concern outlined above is that equation 1 does not necessarily consider the change in nearby tax-exempt properties. However, if there are tax-exempt properties in close proximity to a home sale that have existed in the neighborhood for some time (i.e. no change), their inclusion in the model estimation could be measuring some other latent neighborhood characteristic. To address this concern, we estimate equation 2 in a repeat sales framework. This process reduces the number of observations significantly because this estimation technique requires a property be sold at least twice in our 15-year time period. The results from estimating Equation 2 can be found in Figure 3 and 4.

Overall, many of the statistically significant results from Figure 1 disappear in the repeat sales framework results presented in Figure 3. Benevolent institutions, cemeteries, nonprofit hospitals, railroad properties, and rehabilitation properties are no longer influential on home sale prices at any distances. This suggests that the findings in Figure 1 for these types of tax-exempt properties are most likely picking up some latent neighborhood characteristics rather than reflecting the actual influence of the nearby exemption. Also important for our previous analysis, Figure 3 shows that many of the remaining nearby tax-exempt property types flip their signs in the repeat sales framework, further validating our concern that the previous approach is capturing some latent neighborhood effects rather than the true effect of nearby exempt properties.

Of the remaining statistically significant results in Figure 3, they are uniformly negative. Close proximity (0m-250m) to educational properties, labor halls, and utilities are associated with lower home sale prices, all else equal. On average, the addition of a labor hall within 250m of a home sale is associated with approximately a 13 percent decline in sale price. The influence of utility property over the same distance is similar, at a 12 percent decline. The largest effect is educational properties with a nearly 40 percent decline in sale price from each additional tax-exempt property located on the same block. These results make some intuitive sense, however, as all three likely generate some dis-amenity effects, albeit not the same effects.

As explained above, educational properties typically generate localized dis-amenities in the form of traffic and noise. This can often be remedied by being slightly further away from the dis-amenity property, and our results in Figure 3 and 4 suggest this is true. As distance increases, our findings decline to zero, suggesting no effect on sale price beyond 250m. Labor halls and utility properties tend to be more industrial uses that likely generate similar localized dis-amenities, but the negative effects become statistically insignificant beyond 250m. Colleges also have a negative effect; however, only at distances between 250m and 355m, do we see an approximately 18 percent decline in sale price. But, it is unclear why this dis-amenity would only be significant at this distance band and not closer to the sale if proximity is the real driver. Finally, it should be noted that there is no statistically significant effect on sale price of the sale property itself either gaining or losing its property tax exemption.

DISCUSSION & CONCLUSION

Recently, scholars described the state of extant research on the nonprofit sector by noting, "There is very little theoretical work and even less empirical analysis of hypotheses regarding the effects of the property

4. An enumeration of the control variables results is available upon request.

Figure 3: Repeat Sales Results

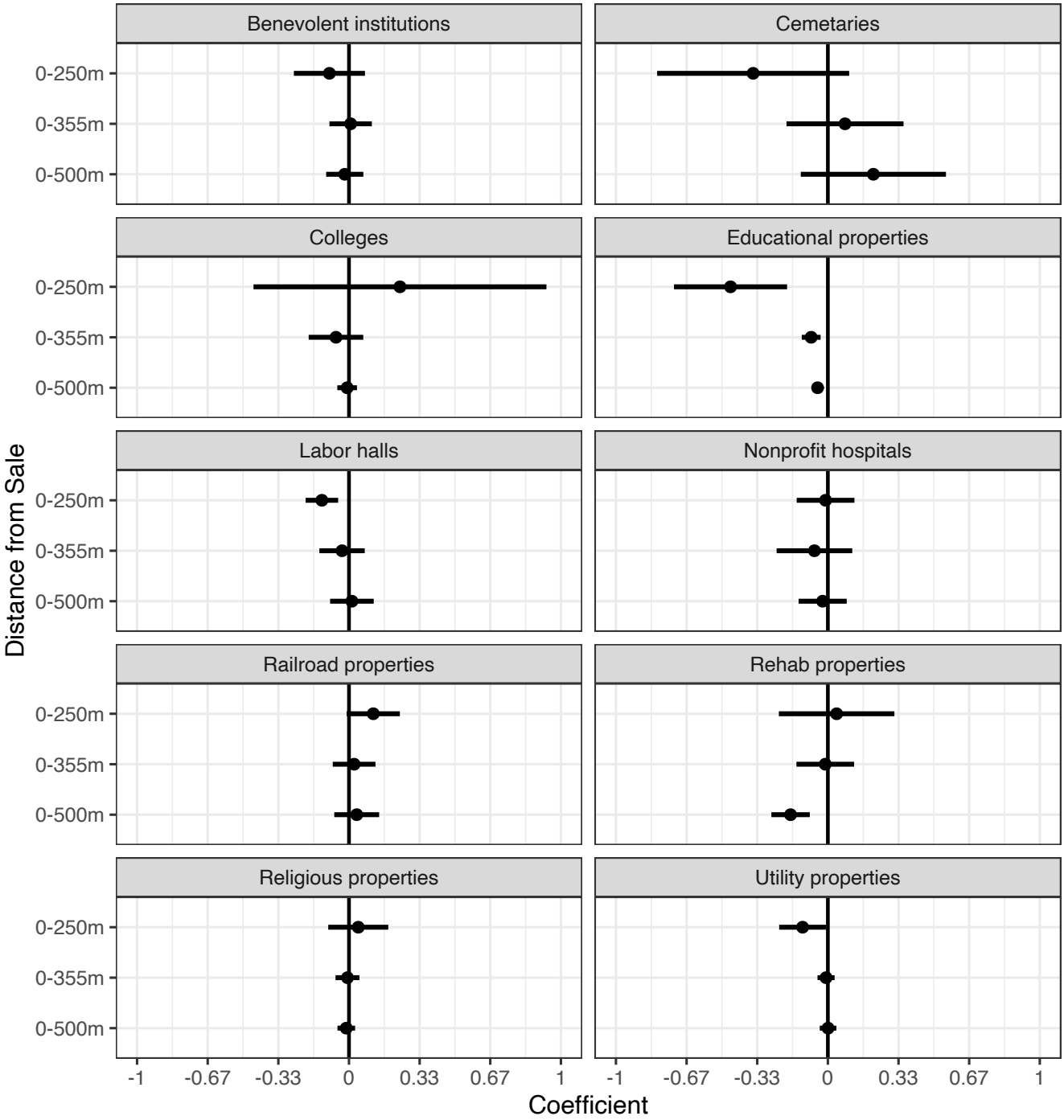
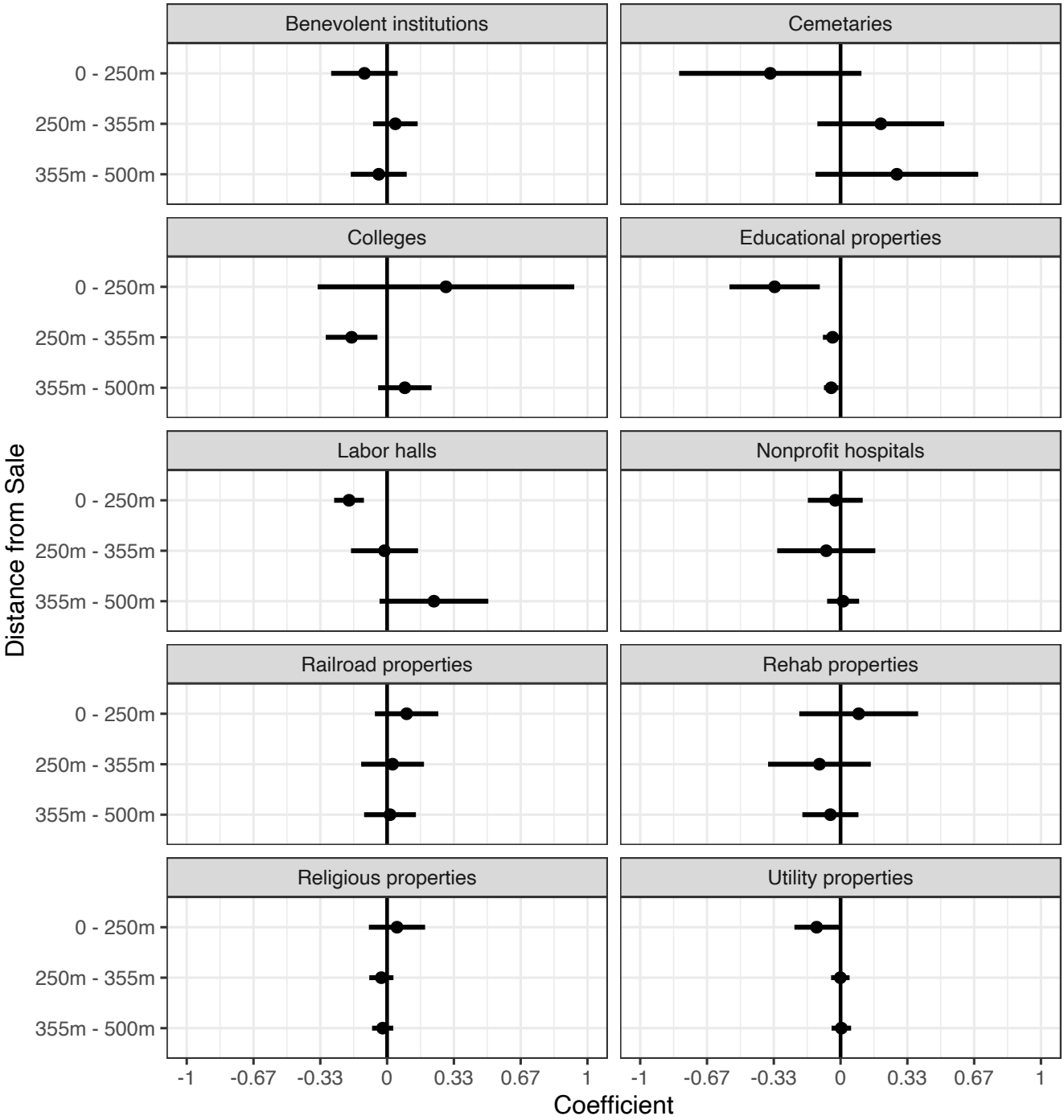


Figure 4: Repeat Sales Results with Distance Bands



tax exemption" (Sjoquist and Stoycheva 2018, 386). In this research, we sought to fill this void in the academic literature by examining the influence of various types of property tax exemptions on nearby home sales. Specifically, we analyzed the population of residential home sales in the City of Milwaukee, Wisconsin from 2002 to 2016 to determine the impact of nearby tax-exempt properties on sale prices. We first estimated a traditional hedonic model and found a positive and statistically significant relationship between colleges and universities, as well as nonprofit hospitals, and house prices at all distances. And, the effect size decreased as the distance increased suggesting that proximity to the neighborhood amenity is important. Conversely, we also found a uniformly negative relationship at all distances for benevolent organizations, railroad properties, rehab properties, religious properties, and utility properties. And, many of these coefficients also followed the same pattern where tax-exempt properties in closest proximity had the strongest effect.

When we estimated the empirical model using the repeat sales framework, however, many of the statistically significant results from the hedonic price model disappeared. Specifically, benevolent institutions, cemeteries, nonprofit hospitals, railroad properties, and rehabilitation properties were no longer influential on home sale prices at any distances. And, of the remaining statistically significant results in the repeat sales framework, they were uniformly negative. Specifically, close proximity (0m-250m) to educational properties, labor halls, and utilities were associated with lower home sale prices, all else equal. This suggests these types of tax-exempt properties likely generate some dis-amenity effects for their surrounding neighborhoods. Finally, we found no statistically significant effect of the sale property itself either gaining or losing its property tax exemption when it comes to the price at which it will likely sell on the housing market.

Limitations

An obvious limitation to this study is that its scope only covers a single city. While we utilized the population of property parcel data during the time period analyzed, and we do not consider the setting of Milwaukee, Wisconsin to be an anomaly, our results might not generalize to all other cities. This single-city approach is appropriate and typical for the type of analysis conducted and presented herein; however, the extent to which the findings from this study are generalizable to other urban cities depends upon the reader's consideration of the extent to which Milwaukee's real property stock is representative of that which exists in other urban areas.

Second, we lose a nontrivial number of observations when we estimate the empirical model using the repeat sales framework, because a home must sell a minimum of two times during the 15-year time period of our study to remain in the analysis using this method. Again, however, we utilize the population of home sales in the city during the time period, so increasing the number of observations that could be included in the repeat sales framework is not possible without adding property sales in another city, which may or may not be comparable due to different legal, economic, and social contexts. More appropriately, it would be interesting to replicate this study in another context for purposes of comparison to see if our results are typical.

Finally, it is possible that property owners with tax-exempt uses intentionally choose neighborhoods to locate in with low property values as a way to minimize their own costs (as land is likely cheaper) or to provide services to lower-income neighborhoods. In either case, the location of some tax-exempt uses could be conditional on nearby sale prices. However, we have little evidence that nonprofits actually engage in these behaviors (see Bielefeld and Murdoch (2004) for more details), and the results of our repeat sales estimation do not support this claim, so our concerns about this self-selection bias are somewhat tempered.

Policy Implications

Despite legislative attempts in some states to abolish property tax exemptions for nonprofits, especially during the aftermath of the Great Recession when state and local governments were severely fiscally strained, such benefits for nonprofits have generally been upheld by state supreme courts and legislatures (Brody 2010). Property tax exemptions are the most widespread and substantial in terms of foregone government revenue among the tax benefits granted to nonprofit organizations (Brecher and Calabrese 2015). Recent estimates suggest local governments forgo roughly 4 to 8 percent of their total property tax revenues each year from exemptions granted to hospitals, universities, and other charitable nonprofits (Kenyon and Langley 2016). More specifically, based upon property assessment values in 23 of the 30 most populous U.S. cities, it has been estimated that nonprofit exemptions cost these municipalities more than $1.5 billion in lost property tax revenue each year (Lipman 2006).

While these specific types of neighborhood institutions likely provide localized benefits for their communities, such benefits are generally not capitalized into property values and may actually diminish the value of real property from the dis-amenities provided with these tax exemptions. More problematic is that property tax exemptions distort the real estate market and potentially lead to an inefficiently high level of property ownership. For example, Cordes (2012) used the 2008 NCCS Core Data file to calculate the predicted probabilities of nonprofit organizations reporting on their IRS form 990 ownership of at least $100,000 in land, buildings, and equipment, which all may be granted exemption from property taxation. He found that nonprofits with mission-supporting services that require large amounts of real property are more likely to own real property and also to experience a higher ratio of property tax savings to total revenue, thereby benefitting more from property tax exemptions than less capital-intensive nonprofits (Cordes 2012). Cordes (2012) notes that to the extent localities are able to increase their property tax rates to offset revenue losses, and property tax incidence can be shifted from owners to tenants in the form of higher rents, non-property-owning nonprofits who are required to pay property taxes also help to subsidize the exemptions granted to nonprofit owners. This further contributes to the distortionary effects on the real estate market of property tax exemptions. The combination of Cordes' and our results provides additional evidence that policymakers may want to revisit the issue of property tax exemptions granted to nonprofit organizations.

Directions for Future Research

There are a number of behavioral responses to tax exemptions that we could expect from nonprofits, including 1) an increase in the quantity and/or quality of goods and services provided, 2) an increase in the quantity of goods and services provided that produce positive externalities, and/or 3) to accommodate more costly production processes (Sjoquist and Stoycheva 2018). Future research might work to quantify the quality of goods and services provided locally to more fully capture the benefits of these properties for their surrounding neighborhoods. This is important because there are a number of potential nonprofits that provide services that could generate localized dis-amenities for their surrounding neighborhoods. Providing intra-type variation in the benefit-cost ratio of non-profit organizations may provide dividends in understanding the role of these organizations in their respective neighborhoods.

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