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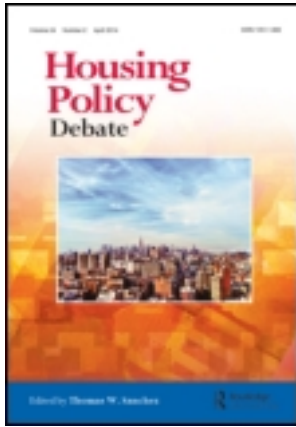# The Impact of Abandoned Properties on Nearby Property Values

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The Impact of Abandoned Properties on Nearby Property Values

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Previous research has shown that housing abandonment contributes to neighborhood decline by depressing nearby property values. However, most past research estimated the impact of abandonment through cross-sectional analysis without controlling for nearby foreclosures or local housing market trends. Therefore, it remains unclear whether abandoned properties reduce nearby property values or whether abandonment is more common in areas with already lower-valued properties. Prior research also has not explored how the duration of abandonment influences nearby property values. Therefore, to extend the current level of understanding of the impact of abandonment, this research examines the impact of abandoned properties on nearby property values in Baltimore, Maryland, from 1991 to 2010 using longitudinal data sets while simultaneously controlling for both nearby foreclosures and local housing market trends. This research finds that as properties are abandoned for longer periods of time, the impact on nearby property values not only increases in magnitude but also is seen increasingly farther away.

Keywords: abandoned property; foreclosure; housing; real estate

Although the ongoing mortgage crisis has brought heightened awareness to foreclosed and abandoned properties nationwide, the problem of housing abandonment is not new. Long before the current mortgage crisis, many large metropolitan areas were grappling with the problems of housing abandonment and neighborhood decline (U.S. General Accounting Office, 1979). This problem, however, is no longer confined to older cities but is spreading to small towns and suburbs across the country, as a result of the recent foreclosure crisis. Many recently abandoned properties are a result of foreclosures, particularly in new suburban developments that have an excess housing supply and in weak housing market areas (Kingsley, Smith, & Price, 2009).

An abandoned property represents a waste of a housing resource. Furthermore, scholars argue that housing abandonment can contribute to neighborhood decline by lowering property values and increasing crime rates (Goetz, Cooper, Thiele, & Lam, 1998; Keenan, Lowe, & Spencer, 1999; Shlay & Whitman, 2006; Skogan, 1990; Spelman, 1993; Sternlieb & Burchell, 1973). Moreover, lowered property values generate lower property taxes. Lost tax revenues means fewer financial resources for local governments to devote

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to public improvement projects and maintenance in neighborhoods and business districts, which further exacerbates the problems associated with housing abandonment (Accordino & Johnson, 2000).

Despite the extent of the housing abandonment problem, research on the housing abandonment and the development of effective policies to address abandoned properties has not been at the forefront of urban research or policymaking in recent years. Traditionally, abandonment has been viewed as an indicator of market failure, a symptom of urban disinvestment, or the result of a neighborhood's life cycle, instead of being viewed as a problem itself (Accordino & Johnson, 2000). This view led to a lack of interest among urban researchers and policymakers whereas it provided justification for them to focus on policies to stimulate market demand and urban investment rather than address the abandoned property problem (Accordino & Johnson, 2000). Consequently, there is a dearth of research on abandonment and very limited empirical evidence regarding the relationship between housing abandonment and neighborhood decline.

This research, therefore, attempts to extend the current level of understanding of the relationship between housing abandonment and neighborhood decline by examining the impact of abandoned residential properties on nearby property values. Specifically, using longitudinal data on housing abandonment and property values in Baltimore, Maryland, from 1991 to 2010, this research examines the impact of abandoned residential properties on nearby property values, depending on how far abandoned properties are located and how long they have been abandoned. I used weighted repeat sales methodology and control for nearby foreclosures and local housing market trends.

The rest of this article is divided into five sections. I begin by defining housing abandonment and examining the extent of housing abandonment in U.S. cities. In the following section, the relevant theories and past empirical studies are discussed. After reviewing the limitations of past research, I present the research objective and research questions. The next section of this article describes the research data and methodology used to answer the research questions followed by research findings. The article concludes with a discussion of the scholarly significance and policy implications of this research.

What Is Housing Abandonment?

One challenge to measure housing abandonment is the lack of a universal definition. What defines a property as abandoned is not consistent (Cohen, 2001; Sternlieb, Burchel, & Paulus, 1972) and the terms *abandoned* and *vacant* are often used interchangeably. The lack of a shared definition of property abandonment often complicates efforts by researchers or government officials to accurately measure the extent of abandoned housing (Pagano & Bowman, 2000). Cities often identify an abandoned property depending on its structural condition and the length of vacancy (Cohen, 2001). For instance, Pagano and Bowman, in their 1998 survey estimating abandoned structures in 60 U.S. cities, found that some cities consider a structure abandoned, and therefore an immediate danger to the public safety or health, if it has been unoccupied for 60 days. Others use 120 or more days as a threshold (Cohen, 2001; Pagano & Bowman, 2000).

Many scholars consider neglected duty of property ownership (e.g., delinquent property taxes or noncompliance with relevant codes) as an indicator of abandonment. Sternlieb, Burchell, Hughes, and James (1974) defined an abandoned building as a residential structure that the owner has removed from the housing stock by neglecting the duty of property ownership regarding functional, financial, and physical maintenance. Hillier, Culhane, Smith, and Tomlin (2003) stated there are three distinct aspects of

abandonment: functional, financial, and physical. Functional abandonment concerns a vacant property that is not suitable for residency, such as one that lacks sealed doors and windows. Financial abandonment happens when an owner stops meeting his or her financial responsibilities, such as making property tax or mortgage payments. Physical abandonment happens when a property is unfit for occupation because the owner neglected to maintain the inside or outside of the residence. Mallach (2006), of the Brookings Institution, considers a property abandoned if the owner has stopped carrying out at least one of significant responsibility of property ownership, causing a property to be vacant or likely to become vacant.

In this research, a property is considered abandoned on the basis of its functional (i.e., inhabitable with boarded up windows and doors) and physical aspects (i.e., showing the signs of neglect). Harding, Rosenblatt, and Yao (2009) stated that the mechanism by which a distressed property influences the value of neighboring properties is largely visual, based on evidence in their empirical study measuring the contagion effect of foreclosed homes on nearby property values. Therefore, the sign of neglect is a major indicator of abandonment. Appropriately, the Baltimore City Building Code defines a property *vacant* if either (a) it is boarded up; or (b) it is unboarded but the conditions are unlivable, severely dilapidated, or inadequately secured with missing doors and windows (U.S. Government Accountability Office, 2011). Baltimore City does not consider mortgage or tax delinquencies as *vacant* and further considers a property *unoccupied* but not *vacant* if it is uninhabited but still livable (U.S. Government Accountability Office, 2011).

What Is the Extent of Housing Abandonment in U.S. Cities?

To date there have been few attempts to count the number of abandoned properties in U.S. cities. Some federal agencies, such as the U.S. Bureau of the Census and the United States Postal Service (USPS), compile data on the number of vacant properties in the United States. Decennial census data identify a unit as vacant if no one is living in it at the time of the survey (U.S. Government Accountability Office, 2011). The USPS defines a vacant address if mail has not been deliverable for 90 days or longer (U.S. Government Accountability Office, 2011). However, it is difficult to use these data to identify unoccupied property that is unsafe or unfit for human habitation or other authorized uses (U.S. Government Accountability Office, 2011). The primary difficulty stems from the lack of accurate methods to identify abandonment. For example, simple exterior inspection methods may not be sufficient to identify actual vacant or abandoned properties (U.S. Government Accountability Office, 2011). However, on the basis of USPS Vacancy data, as of December 31, 2011, 3.25% of the 140 million residential addresses in the United States, totaling 4,556,257 addresses, were identified by the USPS as having been *vacant*.[1] And 73.09% of these 4.56 million vacant residential addresses were identified as having been *vacant* for 12 months or longer (see Note 1). By contrast, the U.S. Census Bureau reports a higher vacancy rate for the same year; according to the 2011 American Housing Survey, there were 10,339,140 nonseasonal vacant housing units in 2011, accounting for roughly 7.85% of U.S. housing stock.[2]

Furthermore, estimates of abandoned properties in U.S. cities vary among studies or across jurisdictions. This is mainly because there is no standardized definition of property abandonment. For instance, Cohen (2001) reported that the number of abandoned housing units in Baltimore is between 12,700 and 42,481; the low number is the city's recent count of vacant units unfit for habitation, whereas the high number is vacant units from

Census 2000. The lack of a shared definition of property abandonment often complicates efforts for researchers or government officials trying to accurately measure the extent of abandoned housing (Pagano & Bowman, 2000). Furthermore, counting abandoned properties is not an easy task. Properties often turn over rapidly and tracking abandoned properties requires a substantial amount of resources and efforts (Pagano & Bowman, 2000).

Although there has not yet been a nationwide attempt to systematically count and track the number of abandoned properties, a number of studies illustrate the extent of the housing abandonment problem. As early as in 1967, Sternlieb and Indik surveyed Newark, New Jersey, and found that 6.74% of the housing units were vacant (Sternlieb & Indik, 1969). The 1979 Comptroller General's Report to the Congress reported that 113 large U.S. cities had housing abandonment problems to some degree; 55 of these cities acknowledged substantial to moderate housing abandonment problems (U.S. General Accounting Office, 1979). This report examined three cities—Philadelphia, Pennsylvania; St. Louis, Missouri; and Detroit, Michigan—and reported that as of 1977, Philadelphia had 21,214 abandoned residential structures and St. Louis had 2,738, and as of 1976, Detroit had 11,684 (U.S. General Accounting Office, 1979).

More recently, Mallach (2006), using the 2000 U.S. Census Bureau data, estimated an average of about 10,000 abandoned residential properties per city in 19 cities with populations more than 100,000. Another survey by Pagano and Bowman (2000) at the Brookings Institution in 2000 found an average of 2.63 abandoned structures for every 1,000 residents in 60 U.S. cities with populations more than 100,000. The cities in the Northeast region reported the highest average number of abandoned structures per 1,000 residents: 7.47 (Pagano & Bowman, 2000). The high average for the Northeast is caused by a few cities with exceptional statistics: Philadelphia with 36.5 abandoned structures per 1,000 residents, and Baltimore with 22.2 abandoned structures per 1,000 residents, for example (Pagano & Bowman, 2000). A newspaper article in 2002 reported more than 15,000 abandoned properties in Detroit even though the city had already demolished more than 28,000 houses since 1989–1990 (Wilgoren, 2002).

The housing abandonment problem is not limited to large cities; many smaller cities and towns across the United States—such as Dayton, Ohio; Durham, North Carolina; Cleveland, Ohio; and Flint, Michigan—are grappling with this problem (Mallach, 2006). The current mortgage foreclosure crisis is exacerbating this problem: Housing abandonment is no longer confined to older, low-income neighborhoods but is spreading to middle-class neighborhoods. The latest Mortgage Bankers Association's delinquency survey data reported that 13.52% of mortgage loans were either delinquent or in the foreclosure process in the third quarter of 2010, which translates to 6.75 million mortgages delinquent or in foreclosure (Mortgage Bankers Association's National Delinquency Survey, 2010). Plus, whereas news about the mortgage crisis often focuses on cities and suburbs, research by the Housing Assistance Council found that foreclosures are at least as prevalent in small towns and rural areas as in cities (Housing Assistance Council, 2009). As home foreclosures continue to spread across the country, this would likely increase the number of abandoned properties, because foreclosures can lead to abandoned properties (Immergluck, 2006). Researchers argue that lengthy and complex foreclosure processes lead to prolonged periods of vacancy, which allow for greater chances of vandalism and of the property falling into disrepair (Immergluck, 2006). Plus, very high foreclosure costs increase the instances in which lenders *walk away* from properties that are of marginal value, which in turn leads to vacancy and abandonment (Apgar, Duda, & Gorey, 2005; Immergluck, 2006).

Why Is Housing Abandonment a Problem?

An abandoned house is a waste of a housing resource. But the problem is not confined to the property alone; abandonment harms local governments and neighborhoods. Abandoned properties can increase costs for local governments that must expend resources to inspect, secure (e.g., install locks and board up doors and windows), and even demolish abandoned properties that pose health or safety hazards (U.S. Government Accountability Office, 2011). For instance, the U.S. Government Accounting Office's November 2011 report on vacant properties stated that Chicago spent about $875,000 to board up 627 properties in 2010, whereas Detroit spent $1.4 million to board up about 6,000 properties in the same year. Baltimore City spends $2 million per year for boarding up and cleaning (U.S. Government Accountability Office, 2011). In addition, abandoned properties require additional police and fire services. In 2008, Baltimore City undertook a detailed study on the cost of police and fire services associated with vacant properties. The study found that the cost of police and fire services per block showed an annual increase of $1,472 for each vacant property (U.S. Government Accountability Office, 2011; Winthrop & Herr, 2009). Besides placing an increased financial burden on local governments, scholars argue that abandoned properties contribute to neighborhood decline by lowering property values and increasing crime rates.

Impact on Neighborhood Crime

Scholars have long agreed that disorder—either physical or social—undermines neighborhood stability and plays a significant role in neighborhood decline (Sampson & Raudenbush, 1999; Skogan, 1990). Social disorganization theory focuses on the relationship between neighborhood social structure, social control, and crime. Scholars of this theory have found a consistent relationship between urban crime and social disorder as measured by the presence of public intoxication, loitering, or selling drugs (Sampson & Raudenbush, 1999). They also have found a consistent relationship between urban crime and physical disorder as measured by the presence of abandoned cars, graffiti, or litter (Sampson & Raudenbush, 1999). Skogan (1990) also argues that physical disorder, such as abandoned properties, not only raises fear of crime among neighborhood residents but also may cause an actual increase in serious crime.

Much of the interest in disorder has stemmed from Wilson and Kelling's broken windows theory. Increased physical incivilities and lack of social control attract more potential offenders to the neighborhood (Wilson & Kelling, 1982). However, general studies show that the direct link between disorder and crime may not be as strong as the broken window theory would suggest, and that disorder may be predicted by the same characteristics as crime itself (Sampson, Morenoff, & Gannon-Rowley, 2002). For example, more recently a number of studies challenged Wilson and Kelling's broken windows theory, arguing that their research found no significant evidence to support broken windows theory (Harcourt & Ludwig, 2006). Taylor (2001), in his longitudinal study on the relationship between disorder and crime or fear of crime in Baltimore neighborhoods, found that although observed disorder generally predicts several violent crimes, there are other stronger predictors for change in crime (e.g., neighborhood exchange value, home ownership, and racial composition).

A few studies have explored the impact of abandoned properties on crime. Spelman (1993) examined 59 abandoned residential properties in a low-income neighborhood in Austin, Texas. Of these buildings, he found that 34% were being used for illegal activities, and of the 41% of abandoned buildings that were unsecured, some 83% were being used

for illegal activities. This study also found that the crime rates on blocks with unsecured abandoned buildings were twice as high as the rates on matched blocks with secured abandoned buildings. Another study on the relationship among foreclosure, vacancy, and crime in Pittsburgh, Pennsylvania, by Cui (2010) also found that violent crime increases by more than 15% when foreclosed homes become vacant. Immergluck and Smith (2006b), who examined the relationship among neighborhood foreclosures and crime, found that higher foreclosure levels contribute to higher levels of violent crime; approximately 2.8 foreclosures per 100 owner-occupied properties in one year leads to an approximately 6.7% increase in neighborhood crime.

Threatening Neighborhood Stability

A neighborhood is stable when its key characteristics remain stable, balancing inflows with outflows, such as when the population is replaced by a similar population and when physical decline is replaced by repairs, maintenance, and renovations (Downs, 1981). Therefore, neighborhood stability requires the constant inflows of similar population and of investment. Housing abandonment can threaten neighborhood stability. For instance, Sternlieb et al. (1974) explained that when landlords invest less on their aging properties because of increased maintenance costs and lowered rents or housing prices as a result of increased housing supply on suburb, these aging properties deteriorate further and can no longer attract similar households. As properties decay further, neighborhoods decline, and some of worst structures end up abandoned. At this stage, relatively more affluent residents move out, threatening neighborhood stability and leading to further disinvestment in residential properties (Sternlieb et al., 1974).

In addition, abandoned properties lower residential satisfaction with the neighborhood, thereby triggering residents' decisions to move out, and eventually threatening neighborhood stability. The residential mobility theory argues that when a household is not satisfied with the characteristics of the house or neighborhood, the household undergoes stress (Quercia & Rohe, 1993). When the stress level becomes too strong, the household chooses to move to another unit or neighborhood. If a household finds the neighborhood condition satisfactory but not the house itself, then the household is likely to remain and improve their housing condition. However, if the household is not satisfied with the neighborhood condition, they are more likely to move out of the neighborhood (Quercia & Rohe, 1993). As for empirical evidence, Ahlbrandt and Cunningham (1979) provided evidence that low satisfaction with neighborhood condition threatens the stability of neighborhood population. Their study found that factors affecting a household's decision to move include neighborhood physical condition and satisfaction with the dwelling unit.

Impact on Housing Market

Skogan (1990) argued that the increased level of crime because of neighborhood physical disorder (e.g., abandoned properties) threatens housing prices and leads to further disinvestment. Skogan stated that increased fear of safety discourages commercial and residential investments, thereby affecting the neighborhood upkeep and property values. All of these undermine residential satisfaction, causing residents to move out, and not only threatening the neighborhood stability but also leading to further disinvestment threatening the housing market (Skogan, 1990).

In fact, studies found that abandonment affects other properties within a neighborhood by lowering property values (Griswold & Norris, 2007; Mikelbank, 2008; Shlay &

Whitman, 2006). Shlay and Whitman, for example, examined the impact of vacant housing units on nearby property values in Philadelphia and found that the presence of a vacant property on a block reduces the value of all the other property by an average of $6,720. This study also estimated the net impact of distance from an abandoned house on nearby properties' sales prices and found that housing closer to abandoned properties had lower prices than property located farther away. For instance, at less than 150 ft from an abandoned property, houses experienced a net loss of value of $7,627, whereas the properties located between 300 and 449 ft from an abandoned house experienced a net loss of value of $3,542.

In another study, Mikelbank (2008) examined the impact of both foreclosures and vacant/abandoned properties in Columbus, Ohio, in 2006, and concluded that for a property located near foreclosed and vacant/abandoned properties, the price value is reduced by an average of $8,600—$4,256 by foreclosed properties and $4,411 by vacant/abandoned properties. Furthermore, this study found that the effects of vacant/abandoned properties are more concentrated than the effects of foreclosed properties; the impact of vacant/abandoned properties on a nearby property is more severe in magnitude within 500 ft but is insignificant beyond 500 ft, whereas the impact of foreclosed properties is less severe in magnitude but is significant out to 1,000 ft (Mikelbank, 2008).

Griswold and Norris (2007), in their study of Flint, Michigan, also found that an additional abandoned structure within 500 ft would reduce the sale price of a property by 2.27%. This study also found that the farther the abandoned property is located, the lower the impact of an additional abandoned structure on nearby property value.

Why Does It Need Scholarly Attention?

Policy Implications

For decades, housing abandonment has been a chronic problem in many U.S. cities, despite efforts to address it. It is inevitable that the recent foreclosure crisis would not only exacerbate the problem but also spread the housing abandonment to small towns and suburbs. Lack of scholarly interest among researchers on this problem has led to limited understanding of how housing abandonment impacts our neighborhoods. Policymakers have been formulating policies that treat housing abandonment as a symptom rather than a problem itself, leading to massive demolition and revitalization programs (Accordino & Johnson, 2000; Blake & Hersh, 2003; Cohen, 2001).

Massive demolition and revitalization programs were also the major approaches Baltimore adopted to deal with its abandoned properties; the city tried demolishing many of its worst structures, refurbishing abandoned properties, raffling the property for $1, and seizing abandoned properties to sell off city-owned properties. Moreover, demolishing abandoned properties is very expensive in Baltimore City because most abandoned properties are row houses (U.S. Government Accountability Office, 2011). Despite these efforts, the number of abandoned houses still continues to rise, and the neighborhoods blighted by abandoned properties continue to experience decline (Blake & Hersh, 2003; Cohen, 2001).

More recently, Baltimore City is focusing its limited resources on rehabilitating houses in neighborhoods with stronger housing markets to maximize the investments. For example, Baltimore City's "Vacants to Value" campaign targets the areas near redevelopment projects in order to generate private developers' interest in rehabilitating some of the blocks (U.S. Government Accountability Office, 2011). With often-constrained government resources, strategically geographic targeting is necessary, not just for Baltimore but for other cities with a large stock of abandoned properties. Therefore, in

order to increase the potential for maximizing government interventions and investments, this research seeks to provide insights regarding which abandoned properties or areas with specific types of abandoned properties the government should concentrate its limited resources on.

Scholarly Contribution

Though there is limited research on the relationship between housing abandonment and neighborhood decline, past studies have demonstrated that housing abandonment lowers nearby property values (Griswold & Norris, 2007; Mikelbank, 2008; Shlay & Whitman, 2006). However, most past research have some limitations. First, earlier researchers did not isolate the effects of abandoned properties sans foreclosure. Many vacancies are related to mortgage foreclosures, especially in recent years, and numerous studies have shown that foreclosures have substantial impacts on nearby property values (Immergluck & Smith, 2006a; Lin, Rosenblatt, & Yao, 2009; Rogers, 2010; Schuetz, Been, & Ellen, 2008). Therefore, without controlling for foreclosures, it may be difficult to measure the impact of only abandonment on nearby property values. Plus, most past researchers estimated the impact of abandonment on nearby property values through cross-sectional analysis. These studies, therefore, assumed that the markets have already fully captured information about nearby abandonment and that the impact of abandonment is fully reflected in nearby property prices. However, studies have shown that it often takes some time for such information and its impact to be fully diffused into a market price (Kilpatrick, 2006; Simons, 2002). Thus, these studies have not been able to control for preexisting information. Without such controls, the estimated impact of foreclosures or abandonment on nearby property values would simply mean that foreclosures and abandonment occur in areas with relatively lower-valued properties. It also becomes unclear whether nearby foreclosures caused a decline in nearby property values or whether a general decline in property values caused foreclosures in the area.

Furthermore, past research demonstrated that the impact of abandoned property on nearby property values decreases as the distance between them increases. However, no research has examined how the duration of property abandonment influences nearby property values. Scholars argue that the mechanism by which a distressed property influences nearby property values is largely visual. Then, it is plausible to assume that the impact of recently abandoned properties may not be same as the impact of properties that have been unmaintained for a much longer time.

Research Objective and Questions

This research, therefore, has a number of major objectives. First, it attempts to contribute to current literature by providing empirical findings on areas that have not been addressed by previous research in the following ways: First, the impact of housing abandonment is examined while controlling for nearby foreclosures and local market trends; second, this study examines whether the impact of housing abandonment would differ depending not only on how far the abandoned property sits from the subject property but also on how long the property has been abandoned. Second, this research hopes to provide findings that will help policymakers develop more effective policy strategies to address the housing abandonment problem.

To achieve these research objectives, this study estimates the impact of housing abandonment on nearby property values in Baltimore from 1991 to 2010 and attempts to

answer the following research questions:

1. What is the impact of housing abandonment on nearby property value?
2. Does the impact of abandoned property on nearby property value differ depending on the distance between an abandoned property and nearby property? If so, how?
3. Does the impact of abandoned property on nearby property value differ depending on how long the property has been abandoned? If so, how?

Data

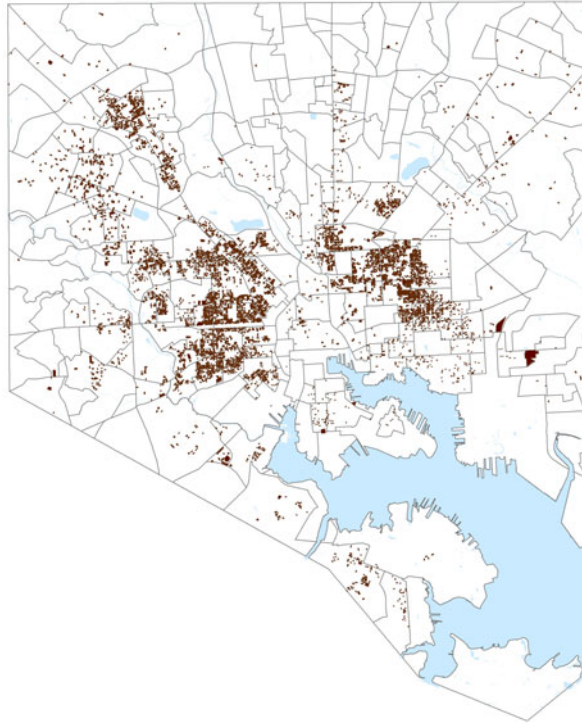### *Housing Abandonment in Baltimore City, Maryland*

To answer the above research questions, between 1991 and 2010, I conducted an empirical study of housing abandonment and its impact on nearby property values in Baltimore. Baltimore was selected as a study area because the city has suffered from a substantial amount of housing abandonment over several decades. Since colonial times, Baltimore has been home to a leading manufacturing and shipping industry (EIR Economics Staff, 2006). By the late 1950s, Baltimore was the sixth-largest city in the United States, with a population of 949,708, and provided more than 75% of the jobs in the region, with more than 34% of the city's workforce employed in manufacturing (Levine, 2000). However, the deindustrialization of Baltimore, which began in the 1960s, caused a decline in the manufacturing industry. Between 1950 and 1995, Baltimore lost more than 100,000 manufacturing jobs, representing 75% of its industrial employment (Levine, 2000). As the manufacturing jobs disappeared, the city's population diminished. According to the U.S. Census, after reaching its peak population of 949,708 in 1950, Baltimore continued to lose its population at an average rate of 7% per decade, reaching a population of 620,961 in the year 2010—a loss of about one third since 1950 (U.S. Census, 2010 a,b). This loss of population and jobs contributed to a large amount of vacant, abandoned, and underutilized residential and commercial properties in the city. The distribution of abandoned residential properties in Baltimore in 2010 is shown in Figure 1.

Recognizing the extent of the housing abandonment problem in the city, Baltimore has been tracking abandoned properties since the early 1980s. With the recent introduction of the city's Open Notice file and CitiStat, the city compiled the detailed property database to track abandoned properties. Although there is no generally agreed upon definition of abandonment, Baltimore City defines a property as abandoned if it is boarded up, or if it is unboarded but the conditions are unlivable and severely dilapidated, or if it is unboarded or inadequately secured to prevent unauthorized entry or use of the building by uninvited persons, regardless of the property's status on mortgage or tax delinquencies. Baltimore City considers a property simply *unoccupied* if it is livable and uninhabited (U.S. Government Accountability Office, 2011). Unoccupied properties are not calculated in the city's vacancy data (U.S. Government Accountability Office, 2011). According to the city's vacancy data, there were 16,850 abandoned residential properties as of 2010, compared with 5,925 in 1991—an increase of more than 10,000 in just two decades (see Table 1 and Figure 2).

Data Source

To estimate the impact of housing abandonment on nearby residential property values in Baltimore from 1991 to 2010, the following data were obtained. The residential property sales data and abandoned property data were obtained from the Baltimore City Department of Housing and Community Development. To identify the foreclosed

Figure 1.   Distribution of abandoned residential properties in Baltimore, Maryland, 2010.

Note. Source: The Vacant House File (1991–2010), the Baltimore City Department of Housing and Community Development.

Table 1.   Number of abandoned residential properties in Baltimore City from 1991 to 2010.

Year	Number of abandoned residential properties	Year	Number of abandoned residential properties
1991	5,925	2001	13,227
1992	6,336	2002	13,830
1993	6,871	2003	15,302
1994	7,196	2004	15,807
1995	8,222	2005	16,165
1996	9,269	2006	16,936
1997	10,609	2007	16,084
1998	11,488	2008	15,981
1999	11,844	2009	16,501
2000	12,535	2010	16,850

Note. Source: The Vacant House File (1991–2010), the Baltimore City Department of Housing and Community Development.

residential properties, the foreclosure filing case numbers were first obtained from the Circuit Court of Baltimore City. Using scripting tools, the address of the property and the initial filing dates for each case were scraped from the Maryland Judiciary Case Search

Figure 2.   Number of abandoned residential properties in Baltimore, Maryland, 1991–2010.

Note. Source: The Vacant House File (1991–2010), the Baltimore City Department of Housing and Community Development.
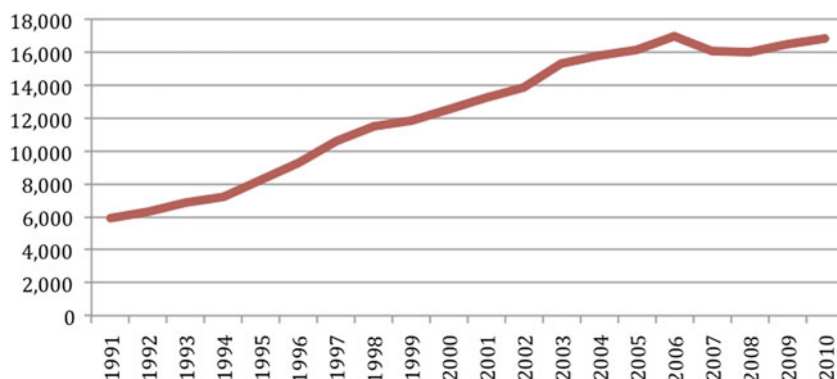
Table 2.   List of data and sources.

Data (period: 1991–2010)	Source
Abandoned residential properties	The Vacant House File provided by Baltimore Department of Housing and Community Development
Residential property sales	Property sales data provided by Baltimore Department of Housing and Community Development
Foreclosed residential properties	Circuit Court of Baltimore City and Maryland Judiciary Case Search website (http://casesearch.courts.state.md.us/inquiry/inquiry-index.jsp)
GIS files (parcel map, zip code map)	http://data.baltimorecity.gov/

web portal. Finally, GIS data were downloaded from the Baltimore City website to identify the locations of all of the abandoned properties, sold residential properties, and foreclosed properties (see Table 2).

Since the 1970s, Baltimore City has been tracking the number and geographic location of abandoned residential properties using the city's "The Vacant House File," a database ancillary to the city's real property database (The Vacant House File, The Baltimore City Department of Housing and Community Development). This database contains the list of every abandoned property identified by the city's Code Enforcement Office and properties that have had an outstanding Vacant House Notice, and it is updated monthly (The Vacant House File, The Baltimore City Department of Housing and Community Development). The provided data contain the parcel identification number (block and lot number), full address, the dates the Vacant House Notice was first issued and reissued, the type of structure, the tax payment status, and the lot size.

Residential property sales data were obtained from the Baltimore City Department of Housing and Community Development. These data contain a list of all the residential properties that were sold from January 1, 1991, to December 31, 2010. Each residential property sale had the following information: parcel identification (block and lot number), date of sale (transaction date), deed date, a type of transaction, full address, sales

price, and land use code. Between January 1, 1991, and December 31, 2010, there were a total of 312,813 residential property transactions in Baltimore.

The Circuit Court of Baltimore City provided the list of foreclosure filing case numbers documented between January 1, 1991, and December 31, 2010. For each case number, the address of the property and the date each filing was initiated were scraped from the Baltimore City Circuit Court website. A foreclosure filing may or may not result in an actual foreclosure; the owner may be able to prevent foreclosure by becoming up-to-date on the delinquent mortgage, selling the property, or modifying the loan. This research considers every filed foreclosure case regardless of outcome. Between January 1, 1991, and December 31, 2010, there were 54,852 foreclosure filings initiated and processed in Baltimore City.

Methodology

Weighted Repeat Sales Methodology

I used the repeat sales methodology to estimate the impact of abandoned residential properties on the sales prices of nearby properties using longitudinal data. Most prior studies (Immergluck & Smith, 2006a; Lin et al., 2009; Rogers, 2010; Schuetz et al., 2008; Shlay & Whitman, 2006) estimated the impact of foreclosures on the sales prices of nearby properties using cross-sectional hedonic price models. However, most recently, Harding et al. (2009) used the repeat sales approach using longitudinal data as an alternative estimation procedure because scholars argue that the repeat sales approach substantially reduces the general problem of hedonic price models.

The hedonic price model is based on the premise that the price of a house can be predicted from observable house characteristics. Most prior studies that estimated the impact of foreclosures or abandonment used hedonic price models by regressing house price on a set of house characteristics and measures of nearby foreclosures or abandonment as additional independent variables. However, hedonic price models do pose a challenge: It is impossible to observe and include all of the relevant characteristics in the model (Harding et al., 2009). Controlling for the overall market level is especially critical in estimating the impact of foreclosures because it is unclear whether nearby foreclosures cause a decline in nearby property sales prices or whether foreclosures are caused by a general decline in house prices (Harding et al., 2009). In addition, the coefficient estimates of the included variables in the hedonic price models are subject to omitted variable bias because it is likely that foreclosures are correlated with unobserved property and locational characteristics and especially the local market level (Harding et al., 2009). Consequently, Harding et al. proposed the repeat sales approach because it significantly reduces the omitted variable problem of hedonic price models and is better suited to estimate the separate effects of the overall market level and the impact of nearby foreclosures.

The repeat sales model was originally derived by Bailey, Muth, and Nourse (1963) and later by Case and Shiller (1989). It assumed that the characteristics (X_{it} and X_{τ}) and their implicit prices (β) of a property do not change between the first (τ) and second sale date (t). Additionally, it uses data on properties that have been sold at least twice and estimates price changes rather than prices themselves:

$$\ln\left(P_{it}\right) - \ln\left(P_{i\tau}\right) = \sum_{t=1}^{T} \alpha_t D_{it} - \sum_{\tau=1}^{T} \alpha_{\tau} D_{i\tau} + (X_{it} - X_{i\tau})\beta + (\varepsilon_{it} - \varepsilon_{i\tau}) \qquad (1)$$

Because it assumes that the characteristics and their implicit prices of a property do not change between the sales, ($X_t = X_\tau$), and their implicit prices ($\beta_t = \beta_\tau$), equation 1 becomes:

$$\ln\left(\frac{P_{it}}{P_{i\tau}}\right) = \sum_{t=1}^{T} \alpha_t G_{it} + (\varepsilon_{it} - \varepsilon_{i\tau}) \tag{2}$$

where G_{it} is a time dummy equal to 1 at the second sale date, -1 at the first sale date, and 0 otherwise, and $\varepsilon_{i\tau}$ and ε_{it} are the error terms at the periods of the first sale and the second sale, respectively, with zero means, equal variances, and uncorrelated with each other.

Case and Shiller (1989) further expanded the original repeat sales model of Bailey et al. (1963) and proposed the time-based weighted repeat sales method. Case and Shiller argued that the variance in equation 2 might not be constant but related to the holding period between transactions. They argued that the longer the time between sales, the price changes for each house are more likely to be caused by factors other than market forces (Standard & Poor's, 2008): for example, some houses may have been well maintained, whereas others may have deteriorated. Such pricing errors will accumulate over time. In other words, the repeat sales regression model will have heteroskedastic errors. Therefore, Case and Shiller controlled for heteroskedastic errors by weighting the repeat sales observations by a function that declines with the length of time between the transactions. This method is called three-stage generalized least squares estimation procedure. In the first stage, the repeat sales model of Bailey et al. was estimated using the ordinary least squares method. Next, the squared residuals obtained from the first stage were regressed on a constant term and the time interval between sales. In the final stage, the repeat sales were reestimated using generalized least squares regression where the weights were inversely proportional to the fitted values of residuals obtained in the second stage (Case & Shiller, 1989). This research used the three-stage generalized least squares estimation procedure to estimate the impact of abandoned properties on nearby property values.

Repeat Sales Data Construction

Constructing accurate repeat sales data is critical to calculating the impact of abandoned property on nearby property values. Therefore, I applied three stages of filtering to the Baltimore City Department of Housing and Community Development's residential property sales data. In the first stage, I extracted a list of transactions of single-family houses that were sold at least twice between January 1, 1991, and December 31, 2010, in Baltimore. After extraction, I created sales pairs while ensuring that two transactions were indeed about the same property by comparing the addresses, block and lot number, size of the lot, and land use code. The repeat sales data included only true market transactions. Therefore, in the next stage, I excluded nonrepresentative transactions such as non–arm's length transactions such as lease, gift, auction, foreclosure, straw deed, tax sales, and confirmation deed. In the final stage, I filtered the repeat sales pairs to eliminate any flipped properties and outliers that violate the repeat sales methodology assumption that property and neighborhood characteristics have not changed between transactions. Clapp and Giacotto (1999) suggested that flipped properties refer to properties that are improved and resold after a short period of time (within one or two years). These flipped properties, therefore, have much higher price appreciation and can cause biased repeat sales index as well as other estimated coefficients. Examining Baltimore residential property sales data, transactions with less than a one-year holding

period showed abnormally high price appreciation. Thus, any transaction with a holding period of less than one year was eliminated from the data set. Finally, outliers—properties with abnormal price increases—were identified. Abnormal price increases suggest properties that are likely altered or improved, which violates the repeat sales methodology assumption that property characteristics remain the same between transactions. In addition, such abnormal price increases might be indicative of mortgage fraud. In order to identify outliers, quarterly price appreciation was calculated for all the transactions for abnormality and less than 1% of the total remaining transactions that were identified as outliers were eliminated from the data set. After the three stages of filter, the final data set had a total of 101,497 repeat sales pairs. The average price at the time of the initial purchase in the repeat sales pair was $79,885.14, whereas the average price at the time of the second sale was $116,338.30. The mean holding period between the transactions was 1,761 days (4.83 years).

Abandoned Property Data Set Construction

This research estimates the impact of abandoned properties on nearby property values depending on two factors: (a) how long the property has been abandoned and (b) how far the abandoned property is located from the nearby subject property. Therefore, first I identified all of the abandoned properties present at each sale date of each repeat sale pair, and then I sort the identifieded abandoned properties into three groups depending on the duration of abandonment: properties that are abandoned for less than one year (P1), properties that are abandoned for more than one year but less than three years (P2), and properties that are abandoned for more than three years (P3).

Figure 3.   Rings around the subject property (repeat sales pair).

Note. The image is taken from an actual neighborhood in Baltimore, Maryland. Rings are drawn around the boundary of the subject property, which is located at the center of the innermost ring. Distances are shown in feet.

Table 3. Grouping abandoned properties based on location and duration of abandonment.

	R1 (0–250 ft)	R2 (251–500 ft)	R3 (501–1,000 ft)	R4 (1,001–1,500 ft)
P1 (≤1 year)	R1P1	R2P1	R3P1	R4P1
P2 (1–3 years)	R1P2	R2P2	R3P2	R4P2
P3 (>3 years)	R1P3	R2P3	R3P3	R4P3

Note. For instance, R1P1 is the total number of abandoned properties that are located within 250 ft of the subject property and have been abandoned for less than one year and one month before the nearby property sale transaction date. I assume a typical one-month delay in real estate transactions from when a buyer and a seller negotiate a sales price to when they actually close the sale. The impact of abandonment happens at the time they negotiate the sales price. Location of abandoned properties: ring 1 (R1) = 0–250 ft; ring 2 (R2) = 251–500 ft; ring 3 (R3) = 501–1,000 ft; ring 4 (R4) = 1,001–1,500 ft. Duration of abandonment: period 1 (P1) = less than 1 year; period 2 (P2) = more than 1 year but less than 3 years; period 3 (P3) = more than 3 years.

In addition, on the basis of past research findings, I assumed the closer an abandoned property is located, the greater its impact on nearby property values. To confirm this assumption, the area around the subject property was divided into four concentric rings of different radii around each subject property. The radii of the rings were (a) 0–250 ft (ring R1), (b) 251–500 ft (ring R2), (c) 501–1,000 ft (ring R3), and (d) 1,001–1,500 ft (ring R4). As shown in Figure 3, the innermost ring can be considered as having abandoned properties on the same block as the subject property. The second ring can be considered as having abandoned properties visible from the subject property. The two outer rings may not be visible from the subject property but could influence the subject price by altering a potential buyer's perception of the neighborhood.

The distance between each abandoned property and subject property was calculated using the Generate Near Table tool in ESRI ArcGIS software. Then, depending on the calculated distance, all of the identified abandoned properties were divided into rings R1, R2, R3, and R4.

Finally, I combined both the location factor and the duration factor of abandoned properties. I sorted all of the abandoned properties in each ring into three different time periods: P1, P2, and P3. Therefore, in the final data set, abandoned properties are divided into 12 different groups depending on the location of the abandoned property and the duration of abandonment as shown in Table 3.

Model Specification

I started with the standard repeat sales, equation 2, but expanded the equation as shown below to include both the nearby abandoned properties and the foreclosed properties.[3]

$$\ln(P_{it}) - \ln(P_{i\tau}) = \sum_{t=1}^{T} \alpha_t D_{it} - \sum_{\tau=1}^{T} \alpha_\tau D_{i\tau} + a(N_{it} - N_{i\tau}) + b(F_{it} - F_{i\tau}) + (\varepsilon_{it} - \varepsilon_{i\tau}) \quad (3)$$

$$\ln\left(\frac{P_{it}}{P_{i\tau}}\right) = \sum_{t=1}^{T} \alpha_t G_{it} + a(N_{it} - N_{i\tau}) + b(F_{it} - F_{i\tau}) + (\varepsilon_{it} - \varepsilon_{i\tau}) \quad (4)$$

where $P_{i\tau}$ and P_{it} are the purchase price of a property at the first sale and the second sale, respectively; α_t is the overall market price level; G_{it} is the standard matrix of indicators that identify sales dates, a time dummy equal to 1 at second sale date, −1 at the first sale date, and 0 otherwise; N_{it} is the number of nearby abandoned residential properties present

at the time of the second sale; and $N_{i\tau}$ is the number of nearby abandoned residential properties present at the time of the first sale. Similarly, F_{it} is the number of nearby foreclosed properties present at the time of the second sale, $F_{i\tau}$ is the number of nearby foreclosed properties present at the time of the first sale; and ε_{it} and $\varepsilon_{i\tau}$ are the error terms at the periods of the first sale and the second sale, respectively, with zero means, equal variances, and uncorrelated with each other. The error term is assumed to be independent and identically distributed and captures pure random shocks to the transaction price.

First, I examined whether the distance between the abandoned property and the subject property influences the impact of housing abandonment on nearby property values. I expanded equation 4 to include the abandoned properties in each ring while controlling for the market level and foreclosed properties in each ring. The resulting equation to be estimated is then:

$$\ln\left(\frac{P_{it}}{P_{i\tau}}\right) = \sum_{t=1}^{T} \alpha_t G_{it} + \sum_{r=1}^{4} a_r(N_{tr}^i - N_{\tau r}^i) + \sum_{r=1}^{4} b_r(F_{tr}^i - F_{\tau r}^i) + (\varepsilon_{it} - \varepsilon_{i\tau}) \quad (5)$$

Second, I examined whether the duration of housing abandonment—how long the properties have been abandoned at the time of the nearby property sale—influences the impact of housing abandonment on nearby property values. To estimate the impact of abandoned properties in each time period (P1, P2, and P3), I slightly modified equation 4 and the resulting equation to be estimated is as follows:

$$\ln\left(\frac{P_{it}}{P_{i\tau}}\right) = \sum_{t=1}^{T} \alpha_t G_{it} + \sum_{p=1}^{3} a_p(N_{tp}^i - N_{\tau p}^i) + b(F_{it} - F_{i\tau}) + (\varepsilon_{it} - \varepsilon_{i\tau}) \quad (6)$$

Finally, I examined both the location and the duration of housing abandonment on nearby property values at the same time while controlling for foreclosed properties and the market level. I first sorted the total number of abandoned properties located within 1,500 ft at each sale date of nearby property into 12 groups as shown in Table 3. Then, I estimated the impact of each of the 12 groups of abandoned properties on nearby property value while controlling for foreclosed properties in each ring and the market level. The final equation to be estimated is as follows:

$$\ln\left(\frac{P_{it}}{P_{i\tau}}\right) = \sum_{t=1}^{T} \alpha_t G_{it} + \sum_{p-1}^{3}\sum_{r=1}^{4} a_r(N_t^{ipr} - N_\tau^{ipr}) + \sum_{r=1}^{4} b_r(F_{tr}^i - F_{\tau r}^i) + (\varepsilon_{it} - \varepsilon_{i\tau}) \quad (7)$$

Results

In this section, I present the empirical results of the data analysis of the impact of abandoned properties on nearby property values. First, I present the estimated contagion effect of abandonment depending on how far abandoned properties are located. Next, I demonstrate how the duration of abandonment influences the magnitude of the impact of abandonment on nearby property values. Finally, I show how the magnitude of the impact of abandonment is affected when both the location and the duration of abandonment are taken into account. I present the findings to contend that both the location and the duration of abandonment need to be considered for more accurate assessment of the magnitude of the impact of abandonment.

Estimation of the Impact of Abandoned Properties
Depending on the Location of Abandoned Properties

First, distance decay impact is examined. Table 4 presents the average change in the number of abandoned properties located in each ring between repeat sales pair transactions from 1991 to 2010. As shown in the table, there is a mean increase in the number of abandoned properties as the distance between the abandoned property and the subject property increases. This is largely due to the geometry of the rings; ring 1 covers the smallest area whereas ring 4 covers the largest area.

Now, the impact of an additional abandoned property on nearby property value in each ring is estimated using equation 5 while controlling for nearby foreclosures in each ring and the local market trend. The result is summarized in Table 5.

The result in Table 5 confirms the past research findings; the impact of abandoned properties on nearby property value decreases as the distance between abandoned property and subject property increases. An additional abandoned property within 250 ft has the greatest impact on nearby property value; it reduces the nearby property value by approximately 0.87% when nearby foreclosures and market level are held constant.[4] However, it also shows that the magnitude of the impact of abandoned properties declines dramatically when abandoned properties are located beyond 250 ft. An additional abandoned property located between 250 and 500 ft reduces the nearby property value by 0.14%. Likewise, the property located beyond 1,000 ft has roughly one eighth of the impact of an abandoned property located within 250 ft when other factors are held constant.

Table 4. Change in abandonment between repeat sales pair transactions (1991–2010) in each ring ($N = 101{,}497$).

	Mean	Minimum	Maximum
Abandoned in ring 1 (0–250 ft)	1.72	−40	88
Abandoned in ring 2 (251–500 ft)	3.22	−52	143
Abandoned in ring 3 (501–1,000 ft)	10.09	−92	410
Abandoned in ring 4 (1,001–1,500 ft)	13.83	−164	499

Table 5. Estimated contagion effect of abandoned properties in each ring (within 1,500 ft; $N = 101{,}497$).

	Contagion effect	*t*-statistics	$p > |t|$
Abandoned in ring 1: 0–250 ft	−0.872***	−15.88	.000
Abandoned in ring 2: 251–500 ft	−0.139***	−3.58	.000
Abandoned in ring 3: 501–1,000 ft	−0.047**	−2.64	.008
Abandoned in ring 4: 1,001–1,500 ft	−0.102***	−8.75	.000
Foreclosure in ring 1	−1.361***	−9.62	.000
Foreclosure in ring 2	−0.196*	−2.10	.039
Foreclosure in ring 3	−0.303***	−6.57	.000
Foreclosure in ring 4	−0.095**	−2.86	.004

Note. Coefficients are scaled by 100; *t*-ratios are based on robust standard errors. Regression output includes the −1, 0, 1 dummy variables from the repeat sales model as additional regressors, but in order to save space, coefficients on those variables are not reported here.
* $p < .1$. *** $p < .001$.

Estimation of the Impact of Abandoned Properties Depending on How Long Properties Are Abandoned

Next, I examine whether the duration of the housing abandonment—how long the properties have been abandoned—influences the extent to which abandoned properties impact nearby property values. Table 6 shows the average change in the total number of abandoned properties within 1,500 ft broken down by three time periods. As shown in the table, many properties in Baltimore were left abandoned for a long time.

The impact of abandoned properties on nearby property values depending on the duration of abandonment is estimated using equation 6. The result is shown in Table 7.

Table 7 demonstrates that the longer the abandoned property has been unoccupied and unmaintained, the greater its impact on nearby property values when nearby foreclosures and market level are held constant. With other factors held constant, each additional property that has been abandoned for more than three years reduces the nearby property value by 0.17%. However, each additional property that has been abandoned for less than three years reduces the nearby property value by much less, approximately 0.04%.

Estimation of the Impact of Abandoned Properties by Location and Duration of Abandonment

Now, I estimate the model that considers both the location and the duration of abandoned properties. First, Table 8 shows the mean increase in the number of abandoned properties in each ring and time period between the repeat sales. Although Baltimore City has demolished many abandoned structures over the years, the number of abandoned properties continued to increase in each ring and time period.

I estimated the impact of each of 12 groups of abandoned properties (sorted by the location and the duration of abandonment as shown in Table 8) on nearby property values while controlling for nearby foreclosures in each ring and the local market trend using equation 7. The result is shown in Table 9.

Table 6. Change in abandonment between repeat sales pair transactions by the duration of abandonment (1991–2010) (within 1,500 ft; $N = 101,497$).

	Mean	Minimum	Maximum
Abandoned ≤ 1 year	2.94	−147	176
Abandoned 1–3 years	5.34	−184	280
Abandoned >3 years	20.57	−197	738

Table 7. Estimated contagion effect of abandoned properties sorted by the duration of abandonment (within 1,500 ft; $N = 101,497$).

	Contagion effect	t-statistics	$p > |t|$
Abandoned ≤ 1 year	−0.034*	−2.33	.020
Abandoned 1–3 years	−0.044***	−3.98	.000
Abandoned >3 years	−0.173***	−37.32	.000
Foreclosure	−0.258***	−26.41	.000

Note. Coefficients are scaled by 100: t-ratios are based on robust standard errors. Regression output includes the −1, 0, 1 dummy variables from the repeat sales model as additional regressors, but coefficients on those variables are not reported here to save space.
*$p < .1$. **p$< .01$. ***$p < .001$.

Table 8. Change in the number of abandoned properties in each ring and time period between repeat sales pair transactions (1991–2010; $N = 101,497$).

Abandonment		Mean	Minimum	Maximum
P1: abandoned ≤ 1 year	R1: located at 0–250 ft	0.19	−31	30
	R2: located at 251–500 ft	0.34	−37	44
	R3: located at 501–1,000 ft	1.06	−74	75
	R4: located at 1,001–1,500 ft	1.37	−67	87
P2: abandoned 1–3 years	R1: located at 0–250 ft	0.33	−29	34
	R2: located at 251–500 ft	0.63	−43	56
	R3: located at 501–1,000 ft	1.90	−84	120
	R4: located at 1,001–1,500 ft	2.49	−103	156
P3: abandoned > 3 years	R1: located at 0–250 ft	1.20	−25	88
	R2: located at 251–500 ft	2.25	−51	132
	R3: located at 501–1,000 ft	7.14	−106	339
	R4: located at 1,001–1,500 ft	9.97	−88	427

Note. Location of abandoned properties: ring 1 (R1) = 0–250 ft; ring 2 (R2) = 251–500 ft; ring 3 (R3) = 501–1,000 ft; ring 4 (R4) = 1,001–1,500 ft. Duration of abandonment: period 1 (P1) = less than 1 year; period 2 (P2) = more than 1 year but less than 3 years; period 3 (P3) = more than 3 years.

Earlier, we found that the negative contagion effect of abandoned properties on nearby property value grows in magnitude as properties are abandoned for a longer time. We also found that the impact of abandoned properties on nearby property values decreases as the distance between the abandoned property and the nearby property increases. Furthermore, as shown in Table 5, the abandoned properties in every ring had a statistically significant negative impact on nearby property values when the duration of abandonment was not considered. However, as shown in Table 9, when both the location and the duration of

Table 9. Estimated contagion effect of abandoned properties by location and duration of abandonment ($N = 101,497$).[5]

|		Contagion effect	*t*-statistics	$p > |t|$
P1: abandoned ≤ 1 year	R1: located at 0–250 ft	−0.512***	−4.58	.000
	R2: located at 251–500 ft	0.087	1.11	.267
	R3: located at 501–1,000 ft	−0.011	−.29	.775
	R4: located at 1,001–1,500 ft	−0.042	−1.36	.175
P2: abandoned 1–3 years	R1: located at 0–250 ft	−0.716***	−7.65	.000
	R2: located at 251–500 ft	−0.034	−.52	.605
	R3: located at 501–1,000 ft	0.008	.24	.810
	R4: located at 1,000–1,500 ft	−0.020	−1.81	.416
P3: abandoned > 3 years	R1: located at 0–250 ft	−0.964***	−13.03	.000
	R2: located at 251–500 ft	−0.266***	−4.93	.000
	R3: located at 501–1,000 ft	−0.045*	−1.90	.057
	R4: located at 1,000–1,500 ft	−0.143***	−9.05	.000
Foreclosure in R1		−1.374***	−9.70	.000
Foreclosure in R2		−0.213*	−2.25	.024
Foreclosure in R3		−0.303***	−6.57	.000
Foreclosure in R4		−0.118***	−3.53	.000

Note. Coefficients are scaled by 100; *t*-ratios are based on robust standard errors. Regression output includes the −1, 0, 1 dummy variables from the repeat sales model as additional regressors, but in order to save space, coefficients on those variables are not reported here. Location of abandoned properties: ring 1 (R1) = 0–250 ft; ring 2 (R2) = 251–500 ft; ring 3 (R3) = 501–1,000 ft; ring 4 (R4) = 1,001–1,500 ft. Duration of abandonment: period 1 (P1) = less than 1 year; period 2 (P2) = more than 1 year but less than 3 years; period 3 (P3) = more than 3 years.
*$p < .10$. ***$p < .001$.

abandoned properties are considered, the model yields different measurements.

Table 9 suggests that when properties have been abandoned for less than three years, only those abandoned properties located within 250 ft have a significant impact on nearby property values. Properties that are abandoned for less than three years and are located beyond 250 ft do not have a significant negative impact on nearby property values. However, when properties have been abandoned for more than three years, abandoned properties in every ring have a significant impact on nearby property values. As shown in Table 9, by the time properties have been abandoned for more than three years, the nearby property value within 250 ft is reduced by roughly 1% when other factors are held constant. And although the magnitude is smaller, properties that have been abandoned for more than three years but located beyond 250 ft had significant negative impact: roughly 0.27% in ring 2, 0.05% in ring 3, and 0.14% in ring 4. This model's findings are illustrated in Figure 4.

Figure 4.   Impact of abandoned properties depending on the duration of abandonment when properties are abandoned for (a) less than 1 year (contagion effect: -0.51% in P1); (b) more than 1 year but less than 3 years (contagion effect: -0.72% in R1); and (c) more than 3 years (contagion effect: -0.96% in R1, -0.27% in R2, -0.05% in R3, and -0.14% in R4).
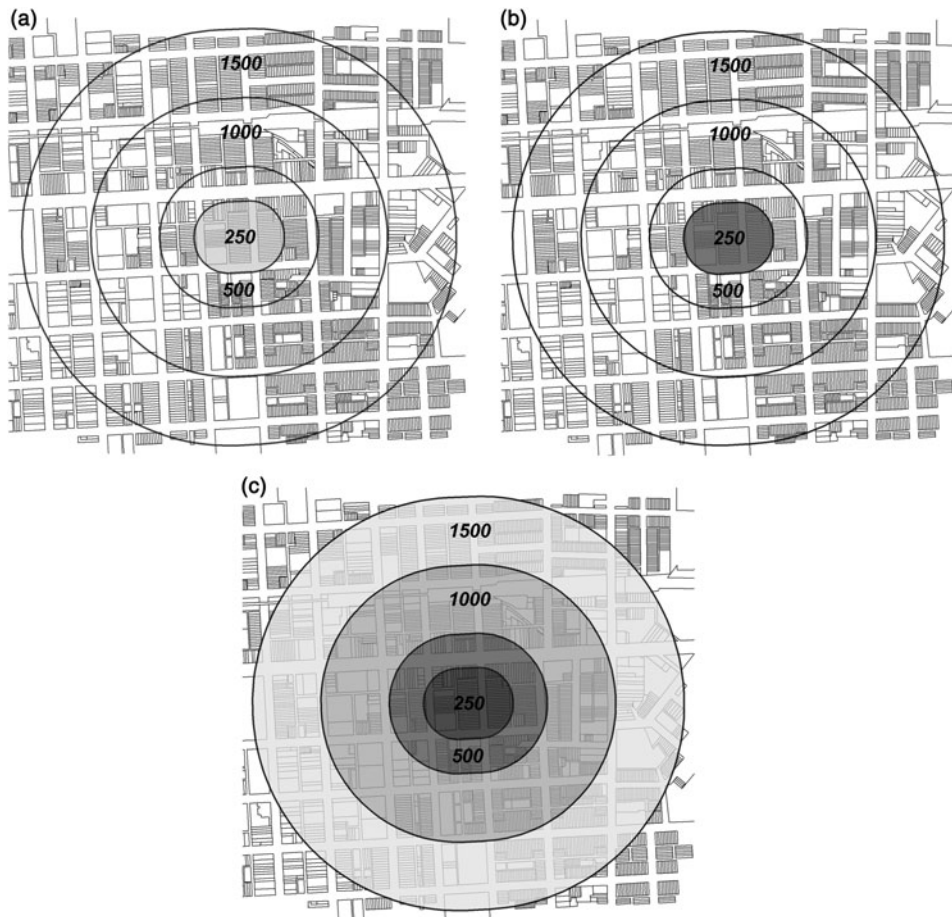
Conclusion

For decades, many older industrial cities in the United States, such as Baltimore, have struggled with a housing abandonment problem. Now, with a foreclosure crisis, housing abandonment is no longer confined to older industrial cities in the United States, but rather is appearing in small towns and suburbs across the country. Scholars have long argued that housing abandonment can cause neighborhood decline and there is, though limited, empirical evidence to support this argument. Despite the extent of the housing abandonment problem, research on this topic and the development of effective policies has not been at the forefront of urban research or policymaking. This was, in part, due to considering abandonment as an inevitable result of urban disinvestment or market failure, rather than viewing it as a problem itself. This view has recently changed; many scholars and policymakers began to see the housing abandonment as a cause of urban disinvestment or market failure, rather than as a symptom. Thus, this study attempts to extend the current level of understanding of the relationship between housing abandonment and neighborhood decline for more effective policymaking.

Past researchers have demonstrated that the presence of abandoned properties reduces nearby property values, and have confirmed the distance decay impact—the impact of abandoned properties declines as the distance from the abandoned property increases. However, many abandoned properties sit unoccupied and unmaintained for years. Yet, no research has examined how the duration of abandonment affects the impact of abandonment on nearby property values. In addition, most studies estimated the impact of abandonment through cross-sectional analysis without controlling for nearby foreclosures or local housing market level. Without such controls, the estimated impact of abandonment on nearby property values would simply mean that abandonment occurs in areas with relatively lower-valued properties. It also becomes unclear whether nearby abandoned properties caused a decline in nearby property values or whether abandoned properties are caused by a general decline in property values in the area. Therefore, this research attempts to use analytical models that represent methodological improvements over earlier research efforts to yield a more concrete understanding of the relationship between housing abandonment and neighborhood decline. This research uses longitudinal data of housing abandonment while controlling for nearby foreclosures and local housing market level and estimates the impact of abandonment with weighted repeat sales methodology.

This research finds that the presence of abandoned properties does have a negative contagion effect on nearby property values and confirms the distance decay impact. Furthermore, it finds that that the duration of housing abandonment significantly affects the extent to which abandoned properties impact nearby property values. When properties are abandoned for relatively short period of time, they affect the value of other property that is located within the same block or in such close proximity that the abandoned property is visible. However, when abandoned properties sit unoccupied and unmaintained for longer periods of time, their impact on nearby property values not only increases in magnitude but also goes farther in distance. This suggests that when properties are abandoned for long periods of time, even when these abandoned properties are not visible from the subject property, it appears to affect the potential buyer's perception of entire neighborhood, thus affecting properties located farther away.

This finding implies that immediate intervention to have an abandoned property reoccupied and maintained is important to mitigate the negative impact of housing abandonment. One abandoned property is bad enough, but the longer it sits unoccupied and unmaintained the greater its negative impact on nearby property values as well as the

values of other properties in the neighborhood. Estimates of the impact of abandonment on nearby property values provide a basis to project the potential benefits of renovating abandoned properties. Therefore, neighborhoods blighted by properties that have been abandoned for long periods should be targeted for immediate intervention for greater potential benefits.

Notes

1. From HUD Aggregated USPS Administrative Data on Address Vacancies, Quarter 4 ending December 31, 2011 (http://www.huduser.org/portal/usps/home.html).
2. From 2011 American Housing Survey (http://www.census.gov/housing/ahs/data/national.html).
3. This research article does not control for nearby vacant lots that have increased or decreased between two sales of a nearby residential property. The repeat sales methodology used in this article assumes that in most cases the number of nearby vacant lots remains constant between sales, therefore the implicit prices do not change and eventually are differenced out when the model estimates the rate of price appreciation between two sales. However, it is plausible that there are cases where the number of nearby vacant lots has increased or decreased between sales. The absence of a control variable—change in the number of nearby vacant lots—in the analytical method indicates that the magnitude of the impact of abandoned properties on nearby property value may differ if a change in the number of nearby vacant lots is controlled for. However, this absence would not alter the research findings that (a) the larger the distance from the abandoned properties, the smaller the magnitude of the impact of abandoned properties on nearby property value; and (b) as the properties are abandoned a longer time, the impact on nearby property value would increase.
4. On average, there are 101 housing structures in ring 1 (250 ft radius ring) in the data sample ($N = 101,497$). This means one additional abandoned property in ring 1 can be translated into roughly 1% increase in housing abandonment in ring 1.
5. The recent foreclosure crisis, however, created a very different housing market. Therefore, to test the robustness of the data, I reestimated the final model using the data excluding the 2009 and 2010 transactions. I find the estimated coefficients are almost identical to those reported in Table 9.

Notes on Contributor

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