

WORKING PAPER

Demolition as Urban Policy in the American Rust Belt¹

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Introduction

Tyree Guyton grew up in the 1960s in Detroit's McDougall-Hunt neighborhood, just northeast of downtown. Unlike Paradise Valley to the south, or Poletown to the north, McDougall-Hunt was not targeted by a large, systematic, single-purpose land clearance scheme. Yet when Guyton returned to his neighborhood after a decade of military service in 1986, he noted that it looked as if a bomb had been detonated there (Actipedia, 2014). The neighborhood's housing stock was almost completely missing after the city had demolished most of it in response to arson, abandonment and code violations (see Figure 1). Heidelberg Street *looked* as though it had been cleared by an urban renewal program, but what had occurred was a series of ad hoc house demolitions. Guyton eventually funneled his energy and anxiety about the matter into the now famous Heidelberg Project—a public art installation surrounding two blocks of Heidelberg Street between Mount Elliot and Ellery Street—consisting of discarded remnants of consumerist society.

More recently, some have suggested that ad hoc defensive demolition of this sort can constitute an urban policy approach by itself, and should be expanded. This notion has been bolstered intellectually by studies documenting the costs of “blight” and pragmatically by a mixture of municipal-level desperation and copious demolition-focused funding provided by federal and state governments. The logic of these efforts is most openly and unapologetically articulated in the Detroit Blight Removal Task Force (DBRTF) report (2014), which calls for the demolition of 86,000 additional units to remove the “cancerous blight” from the city. Like similar programs in other cities, this is not an unfunded policy fantasy. The DBRTF identify about half of the funding they need from a range of local, state and federal sources to finance this massive demolition campaign.

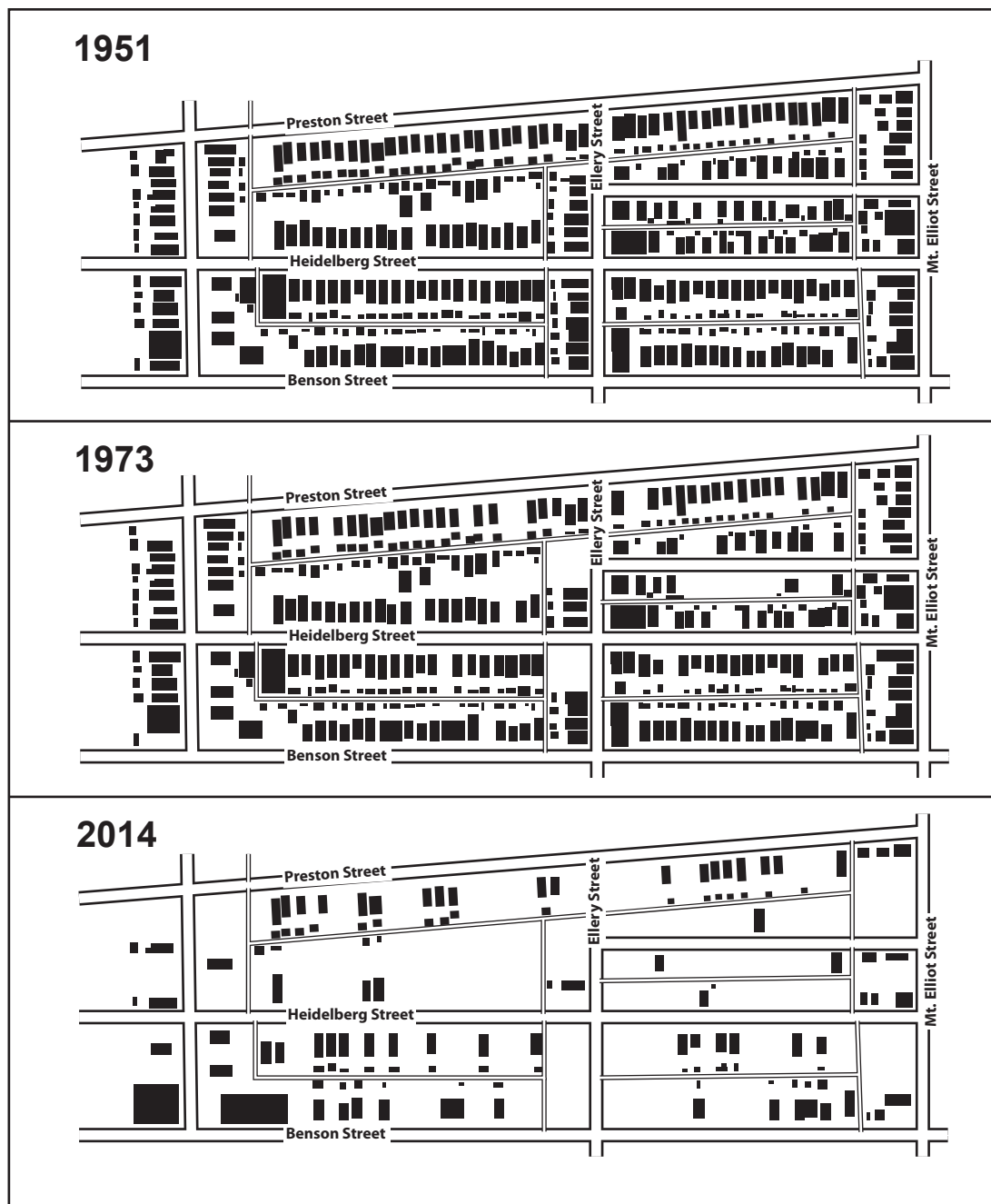


Figure 1: Housing stock erosion near Heidelberg Street in Detroit, 1973-2014 (Note: Building footprints were traced from the following maps: a. 1951: Sanborn Maps via the University of Michigan Library; b. 1973: Aerial photos via the Wayne State University Online Map Archive; and c. 2014: Google Maps).

The logic of the demolition paradigm is that if a city removes the houses being used for criminal activity, or as targets for arsonists, or that are draining nearby house values, investors will return to the neighborhood and allow communities to grow again. Though this is often framed as a novel approach, Rust Belt cities have extensive experience with ad hoc demolition in neighborhoods like McDougall-Hunt. In total, there are 269 neighborhoods in 49 American Rust Belt cities that have lost more than 50% of their housing since 1970 (Figure 2). This article explores what happened to housing markets and social marginality in extreme-housing-loss neighborhoods (EHLN) after these demolitions took place. Three objectives frame this analysis. First, it seeks to illustrate the extent of ad hoc demolition versus other systematic city-clearing efforts like urban renewal. Second, it will detail the impact on housing markets that such demolition accompanied. Third, it seeks to demonstrate the impact on social marginality in such communities as their housing stock was demolished. The overall argument is that ad hoc demolition is more impactful than even urban renewal, and has failed to stabilize markets and communities as promised. Its reemergence as a dominant policy vehicle is better explained, I argue, by the highly politicized intersection of city governance and growth.

Demolition as urban policy

The act of demolition is not exclusively associated with declining cities or neighborhoods. In fact, it is arguably more often associated with land market investment—as the necessary step before new development in already built-up areas (Weber et al., 2006). But as a component of urban policy (or as a stand-alone urban policy) demolition has had an interesting evolution—one that is overwhelmingly focused on distressed neighborhoods in older American cities. The urban renewal period of the mid-twentieth century provides a crucial historical and

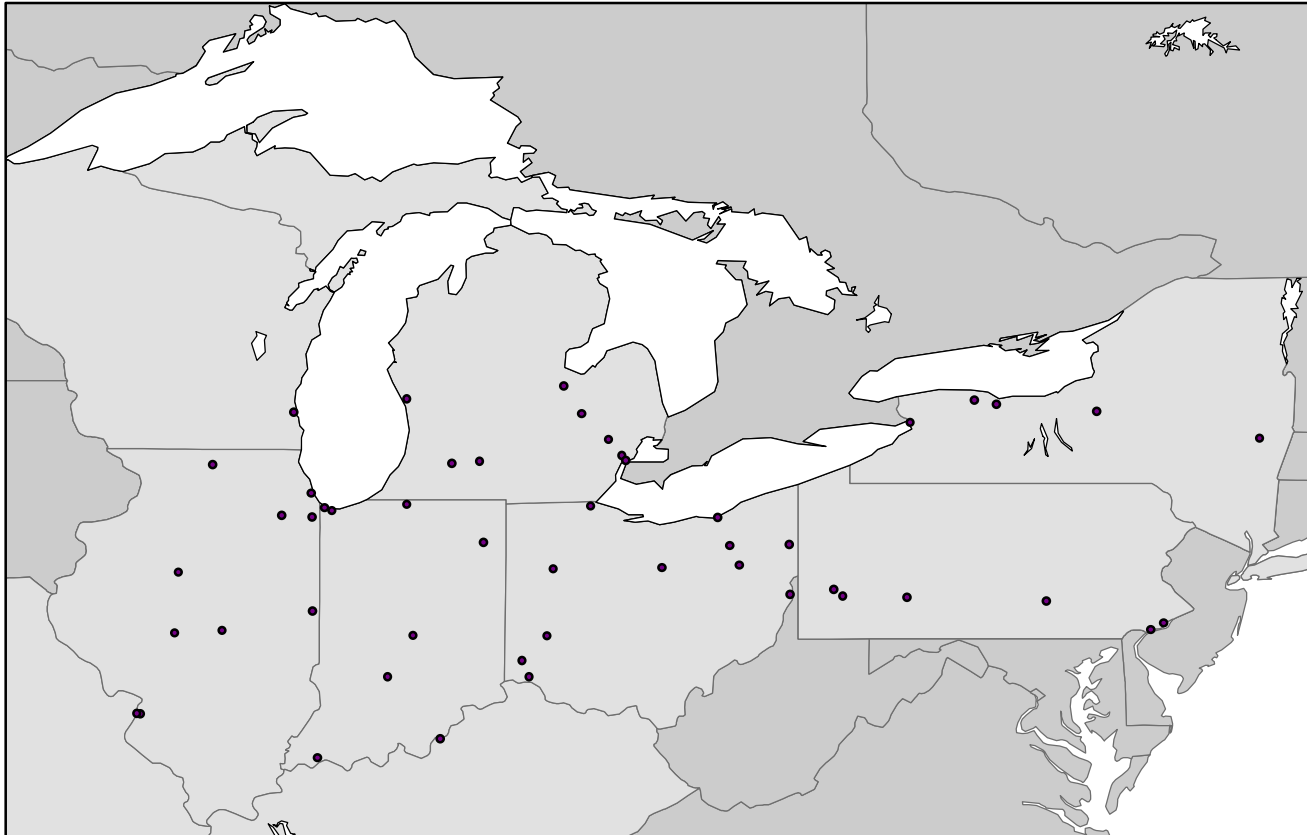


Figure 2: Cities containing at least one extreme housing loss neighborhood in the American Rust Belt (source: Geolytics Neighborhood Change Database)

philosophical pivot point in the evolution of demolition as urban policy. Prior to the urban renewal period, local officials in large American cities increasingly used demolition to eradicate “unhealthy” housing. Definitions of “unhealthy” varied, but generally revolved around issues of sanitation (lack of indoor plumbing), unsafe construction methods, and poor ventilation (Plunz, 1990). Officials in large cities like New York and Boston boasted about the number of such houses they were able to demolish in the 1920s and 1930s as the momentum for more activist governance was gaining pace (Talen, 2014). Such efforts relied almost exclusively on local funds, as federal urban programs were decades away from coming to fruition (Gordon, 2003). Demolition strategies also dovetailed with the modernizing ethos of the late nineteenth century that created the ethics and disciplines of urban planning and public health.

As the United States emerged from World War II as a global superpower, and with its main rivals decimated, the federal government embarked on an urban modernization campaign. It was largely built on these earlier efforts, but amplified considerably by government resources and expanded condemnation powers (Goetz, 2013; Gordon, 2003). The Housing Acts of 1949 and 1954, along with a number of programs that facilitated the massive expansion of expressways, were particularly important not only as enabling legislation that allowed cities to demolish whole neighborhoods, but as the codification of a logic that embodied the period. This logic was underpinned by the notion that cities could become efficient machines for living, if only the housing stock was upgraded, and city form was built around the needs of the automobile. The top-down rationalist planner, arguably best embodied by New York’s Robert Moses, was born in this period. The rationally ordered, auto-focused city was the end that justified the means of demolishing all or part of 2,500 neighborhoods in 993 cities nationwide (Fullilove, 2005).

By the late 1960s, however, activists in a variety of cities had constructed a social movement to contest the logic and practice of urban renewal (Weber, 2002). Jane Jacobs (1961), who famously led opposition to expressway-related demolitions in Lower Manhattan (and later a similar project in Toronto), argued that such efforts destroyed the fabric of community through misguided, top-down, often indiscriminate efforts to modernize cities. Other activists lamented that communities of color were first and most frequently targeted by demolition-heavy, development-light programs (Highsmith, 2009; Thomas, 2012). Given that redlining, restrictive covenants, and simple violence severely restricted the residential options of African-Americans, the demolition of whole Black neighborhoods created overcrowding in a number of areas, and cultivated resentment that grew into uprisings and distrust for urban development that persists to this day (Sugrue, 2005). By the early 1970s, these relatively local activist efforts blended with a federal government that was actively trying to reduce expenditures in the wake of the worst economic downturn since the War. Urban programs, particularly the ones that funded and authorized widespread demolition, were increasingly replaced with block grant programs—smaller in financial scale and more local in application (Gordon, 2003). Cities were increasingly left to their own devices over the ensuing four decades as federal urban expenditures continued to evaporate and the logic of local autonomy reigned supreme (Hackworth, 2007; Harvey, 1989).

In the wake of urban renewal's demise, demolition emerged as a much more ad hoc, locally financed (and managed) process. Since the early 1970s, mass demolition and redevelopment has largely evaporated, with two major exceptions. First, cities continue to engage in economic development schemes that sometimes entail mass site demolition. High-profile examples like Detroit's Poletown neighborhood, which was partially razed to make way for an expanding GM assembly plant, or New London, Connecticut's waterfront neighborhood,

which was cleared and replaced with a mixed-use building², continue to occur in cities around the United States. The second major exception to the post-1970s ad hoc direction of demolition as urban policy was the HOPE VI program, which aimed to demolish wide swaths of severely distressed public housing (namely the “projects” that were built as part of urban renewal) and replace them with smaller, mixed-income communities (Crump, 2002; Hanlon, 2012). Whatever the similarities in logic and approach, however, these efforts were not of the scale or embedded in the same modernizing logic that underpinned urban renewal.³

The dominant direction since 1970 has been more ad hoc, house-by-house demolition. Ad hoc demolition focuses on heavily disinvested neighborhoods and is executed by local officials as a result of code violations, tax foreclosure, arson, or other safety infractions. Often, particularly in cash-strapped cities lacking the resources to demolish all such structures, demolition is complaint-based, rather than part of a systematic campaign. It has been more of a defensive reaction to creeping disinvestment than an urban policy. Recently, however, it has been suggested that such efforts could be regenerative in their own right—that removing the blight will generate growth and more functional communities (Williams, 2013). The emergence of this paradigm has been paralleled and propelled by new funding sources to execute it.

The emphasis on ad hoc demolition is undergirded by theoretical, popular and academic literature that clarifies the negative externalities of “blight”.⁴ First, scholars have argued that there are important physical and psychological health effects of concentrated vacancy and blight. Vacant structures attract vermin, drug activity and arson (National Vacant Properties Campaign, 2005). They can be especially dangerous places for children. Garvin et al. (2013) found that the threat extends to the psycho-social realm. Such structures, they argue, have a stigmatizing effect, lowering community morale, amplifying social disorder and provoking neighbors to turn inward

as a coping mechanism. Second, a variety of scholars have documented the links between vacant housing and crime. As Kinder (2014, 1767), among others, points out, “empty resident structures in Detroit are plentiful and notorious as havens of drug dealing, scraping, and arson”. Others have extended this observation in studies aiming to document the precise impact of vacancy on criminal activity (National Vacant Properties Campaign, 2005). A third group, perhaps most important for the expansion of ad hoc demolition into an urban policy program, focuses on the economic impact of vacancy and blight in general. Vacant structures are a strain on local resources as they generate little or no tax revenue, yet come with significant service delivery costs for a city. They have an immediate impact on the property values of nearby homes (Griswold, et al., 2014; National Vacant Properties Campaign, 2005), and large clusters of vacant housing generate an oversupply of units that makes adjacent homes difficult to sell, leading to severely dysfunctional markets (Bernt, 2009; Hackworth, 2014). These factors multiply in heavily disinvested neighborhoods, creating a spiral effect on municipal revenues, property values and investment potential.

Though the ad hoc demolitions have largely been driven by local politics, nearly all levels of government have recently been involved in expanding the resources or administrative capacity to facilitate such efforts. At the federal level, the Neighborhood Stabilization Program (NSP) authorized \$7 billion in funds starting in 2007 to manage vacant properties. Though only 10% of the funding was permitted for demolition, the focus of NSP funds in already-disinvested neighborhoods has been demolition and several cities such as Youngstown (OH) have been given permission to increase this percentage (Rhodes and Russo, 2013). In 2010, the federal government expanded these efforts to form the Hardest Hit Fund—resources devoted to the twenty states (including all in this analysis) hardest hit by the foreclosure crisis. In 2013, the

Obama Administration announced \$300 million in funds dedicated to blight removal (DBRTF, 2014, 2). The scope of these funds has varied, but some cities like Detroit have been using them primarily to demolish blighted structures, particularly in heavily disinvested neighborhoods (Hackworth, 2015a). In 2014 alone, Detroit demolished 3,300 additional houses using federal funds, on top of the 3,700 demolished using municipal funds (Gallagher, 2015). The Genesee County Land Bank (home to Flint, Michigan) garnered over \$22 million from the same program to demolish 1,084 structures in Flint (GCLB, 2015). In total, the state of Michigan has devoted over \$100 million of its \$498 million Hardest Hit Fund resources to demolition (GCLB, 2015; US Treasury, 2012).

State-level programs have also amplified the resource pool available for ad hoc demolitions. Among other examples, the Moving Ohio Forward Program was announced in 2012 “to assist communities in their economic recovery by removing blighted or abandoned structures to reclaim our neighborhoods” (State of Ohio Attorney General, 2015). As of 2014, the state had allocated \$68 million of a total of \$75 million for this purpose. Combined with other funds, Ohio’s attorney general (2015) recently boasted, the state has financed the demolition of 12,000 more housing units than demolished through local programs. Similar to these efforts, the Blight Elimination Program in Michigan allocated \$25 million statewide in 2012-13 to demolish blighted structures (Flint Area Reinvestment Office, 2013). States have also increased the capacity for counties and cities to foreclose and demolish housing, and to create land banks and property registration systems, in recent years (Hackworth, 2014). Like the federal programs, the focus of these efforts in highly disinvested places remains on demolition of vacant housing (Hackworth, 2015a).

At the local level, cities are increasingly invoking the language of “right-sizing,” but emphasizing demolition almost exclusively (Hackworth, 2015a). Cities across the Rust Belt are now demolishing thousands of units per year and executing tax foreclosures with renewed vigor (Klinefelter, 2015). In addition to the basic emphasis on demolition, cities throughout the region are changing local ordinances to allow local recovery of demolition costs (namely through charging delinquent homeowners) (PA Blight Library, 2015). Property registration programs are emerging which allow cities to penalize and eventually condemn (then demolish) offending structures.

Overall, such efforts aim to expand the scope of ad hoc demolitions in already-distressed cities using a combination of new funding, authority, and attention being paid to the topic. This expansion has several characteristics which, when combined, distinguish it from past demolition-focused programs. First, government funding and public policy interest has increased dramatically in the wake of the Great Recession housing crisis, even though the disinvestment of heavily affected neighborhoods in the Rust Belt has been decades in the making. Second, the programs aimed at ameliorating the housing crisis are varied in nature, often involving a mix of mortgage assistance to residents, redevelopment money, and demolition funding. But the mixture is uneven across the distressed cities. In extreme-housing-loss neighborhoods the emphasis is overwhelmingly on continued demolition. Third, the justifications for such programs are heavily focused on the immediate negative externalities. To the extent that justifications gesture to the wider implications of an expansion of demolition, they tend to have a teleological quality. The Detroit Blight Removal Task Force Report (2014), for example, is rooted in the assumption that if you demolish the structures, investors will ameliorate the situation by purchasing and improving the remaining houses. “In spite of the massive challenge ahead of us”, the task force

writes (2014, 9), “there is a growing demand from people who want to buy vacant homes in recovering neighborhoods”. Demolition is increasingly seen as a stand-alone policy necessary to unleash the equilibrating tendencies of the market, and the ostensibly community-stabilizing benefits that follow. As a recent *New York Times* (Williams, 2013) piece on the subject put it, “for a number of American cities in the Northeast and Midwest that have lost big chunks of their population, [demolition]... is increasingly regarded as a path to salvation”. Ad hoc demolition has moved from defensive local maneuver to an ostensibly generative policy vehicle in and of itself.

A number of scholars have, conversely, expressed grave concern with the assumption that demolition will improve the problems associated with such neighborhoods without some other form of intervention. First, some scholars have argued that the putative connections between physical deterioration and social disorder are spurious or overstated. Benediktsson (2014), for example, argues that the actualized relationship between vacancy and disorder is socially constructed rather than physically predetermined based on a level of “blight”, and dependent on intra-community relationships more than anything else (also see Hipp, 2010; Sampson and Raudenbush, 2004). Second, some have suggested that demolition may *accelerate* rather than slow processes of disinvestment. By applying the highly problematic logic of “triage” to neighborhoods or houses (Kirkpatrick, 2015), planners risk accelerating the underlying process when they label something as beyond hope. Metzger (2000) argues that this triage logic was applied to neighborhoods in the 1960s and 70s and served as a signal to investors, banks and governments that any further funding there was pointless, thus making the declaration of imminent death a self-fulfilling prophecy. Related to this point, some scholars have noted that, absent other programs or investments, isolated demolition-only policies may exacerbate

economic and community conditions (Ryan, 2013). Finally, some have drawn upon the almost universally criticized urban renewal experience to suggest that the demolition model did not work then, and should not be replicated even if the underlying justifications for the programs are marginally different. Hollander and Nemeth (2011) have argued, for example, that current demolition plans threaten to replicate the top-down planning flaws of the urban renewal period. Talen (2014) argues that urban renewal's demolition focus did indeed change the landscape, but not in a way that improved the lives of poor people or neighborhood livability (see also Ryan, 2012).

Given these concerns, it is curious that demolition as urban policy is being pursued so uncritically in a wide variety of cities. The aforementioned government demolition programs almost exclusively invoke the negative externalities literature when promoting such actions, while leaving the more critical literature unmentioned (Hackworth, 2015a). Most of the housing programs have several facets (e.g., demolition, mortgage help, redevelopment incentives), but within extreme-housing-loss neighborhoods the focus is almost exclusively on *more* demolition. The key question is why? No definitive treatment of this inquiry exists, but the urban political economy literature offers useful clues.

First, at the local level it is difficult to overstate the fiscal desperation in cities with widespread abandonment. Often hemmed in by hostile suburbs, they are desperate to stop the hemorrhage of further abandonment. Vacant housing tends to be more expensive to maintain than vacant land, and adjacent owners often advocate the demolition of vacant houses, so when faced with the limited choice of one over the other, they tend to choose the latter. Second, while local officials in places like Detroit are on record suggesting that no demolition-only urban policy could succeed, the funding and enabling legislation for "urban policy" is often formed at

the state level, where the politics and understanding of blight are very different. In places like Michigan and Ohio, hostility from “out-state” legislators—who score political points by restricting the perceived abuses of cities like Detroit and Cleveland to their constituents—severely constrains the range of policy options available (Greenblatt, 2014; Hackworth, 2014). Third, and related, state-level urban public policy is deeply influenced by what Block and Sommers (2014) have deemed “market fundamentalism”. Market-friendly think tanks are deeply involved in writing legislation and promoting anti-statist, pro-market policies amongst legislators governing disinvested urban land (Akers, 2013; Hackworth, 2015b). The notion that simple eradication of blight will trigger an autonomous market rebound is more prevalent in Rust Belt state legislatures than in Rust Belt city halls, and factors into the lopsided nature of state-level funding programs designed to address the problem.

Finally, the local state is under pressure to maintain conditions for continued accumulation and to sustain political legitimacy (O’Connor, 1972). These pressures are often contradictory, but within this context demolition allows for both to be met, superficially at least. By engaging in demolition, city governments respond to the demands of some constituents (thus maintaining legitimacy), while also socializing an expensive segment of the process of returning devalorized urban land to profitability (facilitating the reproduction of an accumulation-friendly environment) (Weber, 2002). Given how unlikely it is for immediate investment to return to such neighborhoods, however, this explanation is only partially helpful. Here, theorists of triage offer interesting insights (Kirkpatrick, 2015). Triage (as urban policy) is the practice of separating neighborhoods into three general categories to determine where public investment for redevelopment and community-building should be devoted (Kleniewski, 1986). Deriving from the wartime practice of separating injured soldiers into three categories based on their likelihood

of survival, urban triage involves categorizing neighborhoods into: A) those that are doing well independently and thus do not need public intervention; B) those that are so mortally wounded by disinvestment and associated processes that no intervention is likely to succeed; and C) those with marginal damage that can be palpably improved with public assistance. Unlike past applications of triage, however, the expansion of demolition in already heavily demolished neighborhoods is not centrally about the application of resources to the “marginally wounded”. Rather, it focuses on the removal of “mortally wounded” neighborhoods because of the expense and risk they pose to investment elsewhere in the city.

The remainder of this article elaborates this argument about the approach to the “mortally wounded” in four steps. First, I illustrate how post-1970s ad hoc demolitions, when aggregated, are more extensive than during the urban renewal period. Second, I argue that extreme demolition has had a mixed at best, and corrosive at worst, impact on EHLN markets. Third, I argue that social marginality in heavily affected neighborhoods has definitively worsened as demolition has taken place. To conclude, I return to the urban political economy literature to explore how the expansion of demolition as urban policy can take place against the backdrop of such countervailing evidence.

Extreme-housing-loss neighborhoods in the Rust Belt

This study focused on cities in New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois and Wisconsin. I added St. Louis (MO) and Louisville (KY) to the catchment because they are large and economically similar to key Rust Belt cities, and their metropolitan areas spill into the study area. New York City was eliminated because of qualitative differences with cities in the industrial Midwest. Using the Geolytics Neighborhood Change Database, which allows for

normalized census tract comparisons over time, I then narrowed the sample to all cities that contained at least one extreme-housing-loss neighborhood. Extreme-housing-loss neighborhoods (EHLN) are defined as census tracts that lost more than 50% of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970, thus indicating that it is likely not a primarily residential area; or 2) the tract lost more than 80% of its housing in a single decade, thus indicating mass demolition as part of a commercial or institutional development project. The aim was to find neighborhoods where the housing unit demolitions were gradual but continuous. This resulted in 269 tracts in 49 cities (see Figure 2). Once selected, the cities were then combined into a database and their tracts separated into three neighborhood categories: 1) EHLN; 2) moderate-housing-loss neighborhoods (MHLN)—tracts that lost between 0 and 49.9% of their housing between 1970 and 2010; and 3) growing neighborhoods, which added housing units during that span (see Table 1).

Not only is there no identifiable spatial cluster to these cities (they are fairly evenly dispersed throughout the region), but it becomes evident that high-profile cases like Detroit are not even the most affected in relative terms (Table 2). Though Detroit possesses the greatest absolute number and areal coverage of census tracts affected and parcels cleared, other cities like Highland Park (MI) and East St. Louis (IL) have much higher percentages of land affected (Figure 3). Not visible in this map is the large variation in extent of land categorized as EHLN. As Table 2 illustrates, just 2.9% of the total land area in the 49 affected cities is composed of EHLN, but this belies huge variation. Highland Park (MI), for example, is 70.6% EHLN, while Springfield (IL) contains just one EHLN (0.1%). Moreover, some cities have a difficult combination of extreme and moderate housing loss neighborhoods. East Chicago (IN) and Gary (IN) for example, are almost entirely composed of EHL or MHL neighborhoods. At the opposite

Table 1: Population, household, and housing unit change in three Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics Neighborhood Change Database).

		EHLN ²		MHLN ³		Growing ⁴		Total	
	Year	Amount	Decade (%)	Amount	Decade (%)	Amount	Decade (%)	Amount	Decade (%)
Population	1970	1,731,280	-	8,761,861	-	6,506,210	-	16,999,351	-
	1980	1,102,487	-36.3	7,300,045	-16.7	6,537,345	0.5	14,939,877	-12.1
	1990	805,069	-27.0	6,605,144	-9.5	6,521,785	-0.2	13,931,998	-6.7
	2000	643,864	-20.0	6,172,419	-6.6	6,876,442	5.4	13,692,725	-1.7
	2010	491,207	-23.7	5,324,260	-13.7	7,198,443	4.7	13,013,910	-5.0
Households	1970	564,275	-	2,916,125	-	2,119,825	-	5,600,225	-
	1980	392,678	-30.4	2,664,493	-8.7	2,486,300	17.3	5,543,471	-1.0
	1990	291,734	-25.7	2,452,751	-7.9	2,612,867	5.1	5,357,352	-3.4
	2000	227,668	-22.0	2,323,361	-5.2	2,800,648	7.2	5,351,677	-0.1
	2010	178,852	-21.4	2,062,359	-11.2	2,971,428	6.1	5,212,639	-2.6
Housing Units	1970	629,865	-	3,089,369	-	2,201,332	-	5,920,566	-
	1980	455,546	-27.7	2,913,601	-5.7	2,622,429	19.1	5,991,576	1.2
	1990	359,460	-21.1	2,743,396	-5.8	2,786,130	6.2	5,888,986	-1.7
	2000	286,881	-20.2	2,625,379	-4.3	2,987,889	7.2	5,900,149	0.2
	2010	236,210	-17.7	2,471,956	-5.8	3,279,669	9.8	5,987,835	1.5

Notes:

¹ Includes cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010.

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010.

Table 2: Summary stats of three neighborhood types in the American Rust Belt (source: Geolytics Neighborhood Change Database).¹

Variables	Extreme Housing Loss Neighborhoods ²	Moderate Housing Loss Neighborhoods ³	Growing Neighborhoods ⁴	Total
<i>Total number of census tracts</i>	269	1,884	1,830	3,983
<i>Total population (2010)</i>	491,207	5,324,260	7,198,443	13,013,910
<i>Total land area in affected cities</i>	412.8km ²	2,632.6km ²	11,299.1 km ²	14,344.5 km ²
<i>Percent of total land area in affected cities</i>	2.9	18.4	78.8	100.0
<i>High percent of total land area</i>	70.6 (Highland Park, MI)	96.9 (East Chicago, IL)	98.9 (Bloomington, IN)	-
<i>Low percent of total land area</i>	0.1 (Springfield, IL)	0.0 (Brockport, NY)	0.0 (East St. Louis, IL)	-

Notes:

¹ Includes cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

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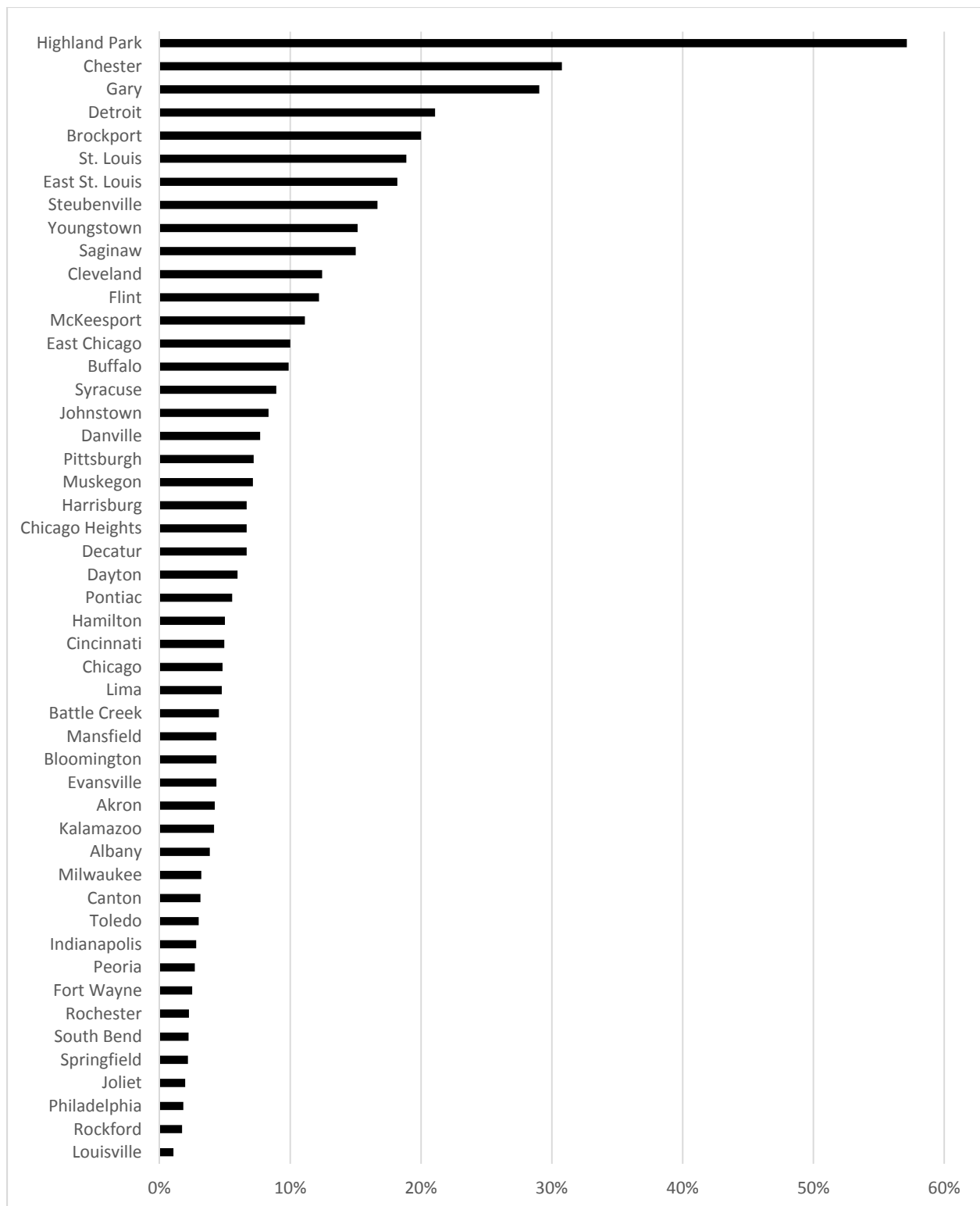


Figure 3: The percentage of selected Rust Belt cities that are composed of extreme housing loss neighborhoods (source: Geolytics Neighborhood Change Database).

end of the spectrum, Bloomington (IN) has just one EHL neighborhood and the remainder of the city is growing. These mixtures represent very different burden levels for the cities involved. Those with high percentages of land in this condition, generally have the most severe fiscal problems.

Comparatively speaking, ad hoc demolition has affected more land, neighborhoods and housing units than urban renewal.⁵ Following Talen (2014, 238), I view the urban renewal period as being propelled by *both* the major Housing Acts in 1949 and 1954 and the various highway construction bills of the mid-twentieth century. Using this broader definition, Talen derives a “conservative” national estimate of 910,000 housing unit demolitions on 57,000 acres (230.7 sq. km) between 1949 and 1971. Approximately 125,000 units were rebuilt on these sites, leaving a net loss of 785,000 housing units. If we crudely apply these numbers to the catchment area for this study, the approximate urban renewal impact is 295,763 units demolished, 40,627 rebuilt, for a net loss of 255,136 housing units.⁶ This is useful as a broad barometer, but provides no information about individual cities, so case studies are beneficial. White’s (1980, 73) case studies of urban renewal (just the housing programs) in Chicago, Detroit, Cleveland and St. Louis are beneficial in this regard (see Table 3).

While urban renewal sites were much bigger per project than ad hoc demolition, they amounted to much less cleared land in total. Using an average parcel size of 5,000 square feet⁷ and applying it to 393,655 housing units removed after 1970 in all cities in the catchment area, approximately 38,987 total acres (157.8 sq. km) were cleared as a result of these processes. Individual city comparisons also show important differences. As Table 3 indicates, unit losses from ad hoc demolition were higher in all sample cities, as were areal coverage totals. Only in Chicago were more census tracts affected by urban renewal than ad hoc demolition during the

Table 3: Comparison of Urban Renewal and post-1970 ad hoc demolition in selected cities.

Selected Cities	Urban Renewal, 1949-1974 ¹			Ad Hoc Demolition, 1970-2010 ²		
	Total Projects	Acres	Tracts Affected	Net Unit Change	Acres	Tracts
Chicago	32	1,539	85	-50,454	5,791	39
Cleveland	7	600	15	-28,321	3,251	22
Detroit	16	986	16	-117,211	13,454	63
St. Louis	4	690	14	-36,294	4,166	20

NOTES:

¹ Total projects, acres, and tracts affected for urban renewal period were derived from White (1980, 73). White's counts only include projects related to the 1949 and 1954 Housing Acts.

² These estimates only include housing units contained within extreme housing loss neighborhoods (i.e. those that lost more than 50 percent between 1970 and 2010). Acreage counts were derived by multiplying the number of units removed by an average lot size of 5,000 square feet (then converting to acreage to be consistent with White's earlier estimates).

post-1970s period being evaluated here. And Table 3 examines only EHLN, which is a very conservative way to measure ad hoc demolition, because it excludes the hundreds of thousands of units removed in moderate-housing-loss neighborhoods (which can have rates of loss as high as 49.9%), and the many cities in the region that have MHL neighborhoods but not EHL neighborhoods (and thus were eliminated from the study altogether). Nevertheless, it is clear that ad hoc demolition has cumulatively affected more housing units and land than urban renewal. Beyond the quantitative perspective, however, the central question remains: did ad hoc demolition stabilize markets and communities?

Market change after ad hoc demolition

To measure market changes in EHL neighborhoods, I employed a simple approach involving five variables: owner-occupancy rate, renter-occupancy rate, vacancy rate, house values, and contract rent values.⁸ For each variable, medians were recorded and then compared to figures for growing neighborhoods in the study area. For percentage-based variables (i.e., owner-occupancy, renter-occupancy, and vacancy rates), the relative differences were gauged via simple subtraction. So, for example, if the median owner-occupancy rate in 1980 for EHLN was 28.4%, while for growing neighborhoods it was 68.4%, the two figures were subtracted to derive the difference of -40.0 points. For nominal medians (i.e., house values and contract rents), the differences were expressed as ratios. For example, if median rents in 1990 for EHL neighborhoods was \$330, versus \$441 in growing neighborhoods, the values were divided to derive the ratio of 0.75. To make the different types of figures comparable, nominal data ratios were then converted into percentage point differences between EHLN and growing neighborhoods (see Table 4). Using the latter example, the ratio of 0.75 would be represented as

-25.0 percentage points (relative to growing neighborhoods). What follows is a description of changes in the five market variables, paying particular attention to whether the differences between EHL and growing neighborhoods converged, diverged or remained at similar levels. Breakdowns for each neighborhood type and variable are contained in the appendix. The description here centers around Table 4, which summarizes the changes illustrated in the tables.

At 30.1%, the 1970 owner-occupancy rate in EHL neighborhoods was substantially lower (-39.8 points) than the growing neighborhood figure, but the figures converged significantly over the following 40 years. By 2010, the median owner-occupancy rate in EHLN had fallen to 26.9%, but the difference with growing neighborhoods had narrowed, because the rate for the latter had fallen substantially (to 52.6%). There were important fluctuations between 1970 and 2010. During the 1990s, for example, convergence was so significant that by 2000 the difference was only 16.8 percentage points as the EHLN rate soared in absolute and relative terms. In the most recent decade (to 2010), almost all of that convergence disappeared as rates of foreclosure disproportionately impacted the most heavily disinvested areas. Rental-occupancy rates display an inverse pattern. The rental-occupancy rate median for EHLN in 1970 was 60.1%, substantially higher than both the national average (32.7%) and the growing neighborhood median (26.1%) for that year. Over the next four decades, the EHLN rental-occupancy rate converged substantially with the growing-neighborhoods rate. By 2010, the EHLN median (45.9%) was similar to the growing-city median (37.2%). Here, the convergence has been more linear (than owner-occupancy statistics) and associated with a mix of EHLN decreases (in rental-occupancy) and growing-neighborhood increases.

The goal of lowering vacancy rates is one justification for ad hoc demolition programs—the logic being that a removal of excess housing stock will by definition lower the percentage of

Table 4: Summary of extreme housing loss neighborhood statistics relative to growing neighborhoods in selected Rust Belt cities, 1970-2010 (source: Geolytics Neighborhood Change Database).

Variable	1970 Position ¹	2010 Position	Trajectory ²	50%+ Trajectory ³
<i>Market</i>				
Owner Occupied Units	Substantially Lower (-39.8)	Substantially Lower (-25.7)	Converging significantly	Growing City
Renter Occupied Units	Substantially Higher (+34.0)	Similar (+8.7)	Converging significantly	EHLN
Vacant Units	Similar (+6.3)	Moderately Higher (+15.8)	Diverging	EHLN
House Value	Substantially Lower (-45.0)	Substantially Lower (-49.0)	Diverging	Growing City
Contract Rent	Moderately Lower (-24.0) ⁴	Moderately Lower (-17.0)	Converging	EHLN
<i>Social</i>				
Black Population	Substantially Higher (+76.4)	Substantially Higher (+77.5)	Diverging	EHLN
White Population	Substantially Lower (-76.4)	Substantially Lower (-67.6)	Converging	Growing City
Other Population	Similar (+0.1)	Similar (-4.0)	Diverging	Growing City
Household Income	Substantially Lower (-39.0)	Substantially Lower (-43.0)	Diverging	Growing City
Unemployed Population	Similar (+5.6)	Moderately Higher (+14.2)	Diverging	EHLN
Less than HS Diploma	Substantially Higher (+25.9)	Moderately Higher (+13.5)	Converging	EHLN
College or More	Moderately Lower (-10.9)	Moderately Lower (-16.4)	Diverging	Growing City

Notes

¹ Position equals the EHLN rate relative to the growing city. The figures are classified as higher or lower, then further classified by the degree of difference.

"Substantially" = +/-25 points; "Moderately" = 10-25 points; "Similar" = within 10 points.

² Trajectory refers to the change in relative difference between 1970 and 2010. The figures are classified as "converging" or "diverging" (from the growing city figures, then further classified if they are "significant" = >10 points change.

³ This column refers to which variable change affected the trajectory the most. For example, if the unemployment rate difference between EHLN and Growing City was converging but the EHLN rate was constant (while the Growing City rate grew), then the growing city would be responsible for more of the shift than EHLN change.

⁴ Contract rent figures are for 1980-2010.

unoccupied housing (see Bernt, 2009). Yet, the pattern since 1970 tells a different story in EHLN. The vacancy-rate median for EHL neighborhoods in 1970 was 9.1%, higher than both the national (8.8%) and growing-neighborhoods median (2.8%), but not radically so. The similarity with both barometers evaporated during the ensuing four decades as the EHLN rate grew to 24.0% in 2010, 15.8 points higher than growing neighborhoods for the same year. Though the pattern seems to be one of definitive divergence from growing neighborhoods on this metric, a substantial portion of that divergence occurred between 2000 and 2010 (likely because of the final few years in that decade).

Median house values in EHL neighborhoods were only 55% of the median for growing neighborhoods, and 90% of the national average, in 1970. Over the ensuing four decades relative (to national rates) house values fell for both EHL and growing neighborhoods, but more rapidly for the former. By 2010, the EHL median house value was 51% of that in growing neighborhoods, indicating a slight divergence. But this rate represents a slight improvement on even lower ratios in 1980, 1990 and 2000. Both categories (EHL and growing neighborhoods) weakened considerably against national figures during the span. The gap between rent values in EHL and growing neighborhoods has been less significant than the difference in house values over the last three decades. In 1980 (the first year for which reliable data are available), the median rent in EHL neighborhoods was \$193, which was 76% of the growing city total and 79% of the national figure for that year. Over the next three decades, rent levels grew faster in EHLN than growing neighborhoods, so that by 2010, the median for the former was 83% of the latter.

Overall, and unsurprisingly, EHL neighborhoods contained substantially different markets compared to growing neighborhoods in 1970. EHLN held substantially higher rental-occupancy and vacancy rates, and substantially lower owner-occupancy, house value, and

contract rent levels. Over the ensuing four decades change was not linear, but several patterns emerged. Owner- and renter-occupancy rates in EHLN became, paradoxically, more similar to those in growing neighborhoods, while changes in the difference between house values and rent levels remained relatively static, and vacancy rate differences soared. Massive ad hoc demolition does not appear to be associated with significant changes in the markets targeted. EHL neighborhoods had substantially weaker markets compared to growing neighborhoods in 1970. After removing 63% of the housing in those neighborhoods, they emerged in 2010 with similarly weaker markets, and much higher vacancy rates.

Social marginality after ad hoc demolition

I employed a similar method to evaluate broad changes in social marginality. The broad idea is to evaluate whether EHL neighborhoods became more or less socially marginalized after the four decades of intense demolition activity. The tract medians of eight variables were evaluated: Black population, White population, “other”⁹ population, household income, unemployment rate, population with less than high school education, and population with college or more education. As with the market statistics, what follows is an analysis of medians within each neighborhood category, with a focus on the relative changes between EHL and growing tracts. The detailed variable tables are contained in the appendix. The generalized changes are summarized in Table 4.

Of the variables assessed here none differ as much as the ethno-racial characteristics in EHL versus growing neighborhoods. Put simply, EHL neighborhoods were substantially more African-American (+76.4 points) and less White (-76.4 points) in 1970. By 2010, EHL neighborhoods became even more Black (88.3% of population) and less White (7.7% of

population), though the relative differences in relation to the latter variable diminished somewhat because growing neighborhoods also became somewhat more African-American during this time. Interestingly, the neighborhood differences (EHLN versus growing) are more significant than even differences with the national figures. Almost all of the ethno-racial difference was in Black and White terms—very little of the population self-identified outside of these categories in 1970 (0.3% for EHLN and 0.2 for growing neighborhoods), and by 2010, the picture had changed very little (2.0% for EHLN; 6.0% for growing). The level of ethno-racial segregation still evident in such cities raises distressing equity questions for planners, especially considering that EHL neighborhoods are, by definition, the overwhelming targets of demolition schemes, today and yesterday.

Though less severe, similar household income differences were revealed during the timeframe in question. Although nominal median household incomes increased in all neighborhood categories, the relative differences between EHL and growing neighborhoods increased from their already high levels. In 1970, the median household income for EHL neighborhoods was \$6,808, a mere 61% of the income level in growing neighborhoods. Though the ratio fluctuated during the 1970-2010 period, the EHLN figure never exceeded that threshold. By 2010, the EHLN median was \$30,809, 57% of the growing neighborhood median (which had itself fallen markedly in relation to national figures). Some of this difference is explained in a yawning gap in employment rates between the two neighborhood types. In 1970, the two neighborhood types had (more) similar rates of unemployment (8.7% for EHLN, 3.1% for growing), but by 2010 the rates and gap had increased markedly. By 2010, the 23.1% unemployment rate in EHL neighborhoods was 14.2 points higher than the rate in growing neighborhoods. Perhaps most alarmingly, this was actually an improvement for EHL

neighborhoods from their peak unemployment of 25.6% (and a 20.3 point gap with growing neighborhoods) in 1990.

Finally, education statistics reveal worsening social marginality in EHL neighborhoods between 1970 and 2010. In 1970, the percentage of EHLN adult residents with less than a high school diploma was 71.4%, 25.9 points higher than in growing neighborhoods. Over the next four decades, national rates of high school attendance and completion increased across the board, so the EHLN rate had dropped to 26.3%, marking a convergence but one likely due more to the normalization of high school than to gains relative to growing neighborhoods. Similar gaps are revealed when evaluating the opposite of the educational spectrum, those who have completed at least some college. In 1970, a median of only 6.8% of EHLN residents fell into this category, but such educational attainment was also relatively rare in growing neighborhoods (17.7%). By 2010, both categories had grown in absolute terms, but the gap between them had yawned to 16.4 points, revealing a divergence in advanced educational attainment.

In general, EHLNs were considerably more African-American, less White, poorer, less employed, and less educated than growing neighborhood populations in 1970. By 2010, social marginality had become even more acute. Only two EHLN variables converged with the growing-city rates—Black population and less than high school diploma—and only one of these variables was due to absolute improvements in EHL neighborhoods. Black population concentration actually increased in EHL neighborhoods, but the relative difference decreased somewhat because growing neighborhoods had also become more African-American. The broader notion that demolition will stabilize markets, which will in turn stabilize neighborhoods, appears not to have come to fruition, if measured by degree of social distance with the growing city.

Understanding the demolition paradigm

Demolition has long been a part of urban policy in the United States, but recently its use has been expanded. This expansion is fueled by new government resources in the wake of the Great Recession, and a spate of studies linking blight to a range of pernicious outcomes. Some have even suggested that demolition can serve as a stand-alone policy. If you remove the “cancerous cells”, the thinking goes, healthy ones will grow in their place. Or, using the language of neoclassical economics, if you remove the institutional barriers and cloudy land titles, the market will soon take advantage of next-to-zero land values and return to forgotten neighborhoods. Though it receives less attention than urban renewal, Rust Belt cities have engaged in considerable housing demolition during the past 45 years. There are 269 neighborhoods in 49 cities with at least one neighborhood where more than 50% of the housing has been demolished since 1970 in an ad hoc manner. The total land area and unit losses experienced exceed even changes during the urban renewal period of the mid-twentieth century. In the most affected neighborhoods, there has been no definitive market stabilization, and struggling communities have become even more socially isolated from growing sections than they were in 1970.

The question is why, given this mixed (at best) evidence, is there a call to expand demolition-as-urban-policy? Here, the most compelling rationales come from the urban political economy literature, which emphasizes the intense pressure to create conditions for profitability in declining cities. The proximate motivator for cities is tax revenue, but the wider impulse to facilitate such conditions is undergirded by the capitalist system and the various growth machines that articulate it. Heavily disinvested neighborhoods are, by definition, places lacking

fixed investment in the built environment—high percentages of properties have already been reverted to public ownership and are for sale to private investors for almost nothing. So the explanation of direct self-interest—i.e., demolishing houses helps protect existing investments—is unlikely given the scale of the expansion of demolition (large) in relation to the scale of investment (small) by growth machine members.¹⁰ But heavily disinvested neighborhoods also pose different obstacles that can counter those of the growth machine and its objectives at a wider scale. Heavily disinvested neighborhoods are expensive to service given their increasingly disparate settlement patterns. Precious resources that could be used for lucrative CBD commercial redevelopment, for example, are diverted to finance the delivery of services to far-flung houses and their residents. Such neighborhoods also symbolically taint a declining city's fragile image as a safe place for future investment. They often complicate future investment possibilities by facilitating a crazy-quilt of tax liens, fraud and poverty that make it difficult for ostensibly equilibrating capitalism to take advantage of the near-zero land values. Though it is often framed in more microscopic terms—i.e., immediate externality effects—the wider expansion of demolition as urban policy arguably aims to correct wider challenges. In a sense, it is a return to triage, but rather than using such logic to determine which neighborhoods can be saved with investment, it functions here as the extermination of the already-mortally-wounded neighborhoods. The notion, in short, that ad hoc, stand-alone demolition as urban policy is a means to market and community improvement is highly questionable. Its rationale is more plausibly explained as a way to improve conditions for economic growth elsewhere in the city.

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Endnotes

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² Both of these examples generated high-profile Supreme Court cases that impacted the future ability of cities to expropriate land for private real estate development.

³ This is not to say, of course, that they did not have their own underlying logics. Rather, it is to emphasize that they were different from those underlying urban renewal, and the resulting efforts much smaller in scale.

⁴ There is no fixed definition of “blight”, though courts, researchers and city officials have debated various ways of understanding it for over 100 years (see Gordon, 2003).

⁵ HOPE VI demolitions were also compared, but their aggregate coverage is even smaller than urban renewal. Nationally, 260,000 units of public housing were demolished between 1994 and 2015 (US HUD, 2015). As of 2010, 117,000 public housing units had been demolished nationally as part of the HOPE VI program (and 56,800 were rebuilt) (Hanlon, 2012). Within the study area, approximately 43,000 units were demolished, and 14,600 units were rebuilt, of which only 5,500 are public housing, for a net loss of approximately 28,400 units total and 37,500 public housing units. These numbers include revitalization grants from fiscal years 1997-2006 plus demo grants from 1996-2003. Only 5,500 (approximately) rebuilds are public housing units. The net loss in the study area is approximately 37,500 public housing units.

⁶ This number was derived by indexing Talen’s (2014) estimate (910,000 housing units) to the total number of 1950 housing units in the US (45,983,398) then applying that percentage (1.98%) to the total number of housing units in the study area in 1950 (14,945,252).

⁷ This figure is a rough estimate of housing parcel sizes in affected areas. Unlike the urban renewal period (which focused on dense neighborhoods directly adjacent to the CBD), ad hoc demolition has largely focused on the first ring of single-family houses in cities.

⁸ I am cautious about causality here. I do not want to suggest that demolition *caused* a drop in income or a rise in vacancy in one neighborhood category or another. Rather, the logic here is conservative, and oriented around falsification. That is, the claims of demolition proponents suggest that if only the “cancer” is removed, more functional markets, and by extension less marginalized communities, will occur in its wake. This study is a simple evaluation of those claims in places where demolition has, by definition (more than half of the housing), been the most dominant policy intervention since 1970.

⁹ I am reluctant to use this language, not least because it belies much difference by lumping into such a generic category. Operationally, it refers to all persons who did not identify as being either Black or White for the US Census. I use it here, though, to highlight how incredibly bimodal the ethno-racial landscapes of these cities are. They began as almost entirely Black-White cities, and remained that way through 2010, despite significant diversification elsewhere in the country.

¹⁰ Most investors in highly disinvested neighborhoods do not fit the framework of a growth machine member as outlined by Molotch (1976) and others. Rather, they tend to be petty capitalists, often living in the city, who own side lots or a rental income house (see Hackworth and Nowakowski, 2015 for a case study on this topic).

APPENDIX

Table A1: Housing tenure and occupancy change in three Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics Neighborhood Change Database).

		EHLN ²				MHLN ³				Growing ⁴		
	Year	%	Decade (+/-) ⁵	National (+/-) ⁶	Growing (+/-) ⁷	%	Decade (+/-)	National (+/-)	Growing (+/-)	%	Decade (+/-)	National (+/-)
Owner Occupied	1970	30.1	-	-28.4	-39.8	50.1	-	-8.4	-19.8	69.9	-	+11.4
	1980	28.4	-1.8	-31.1	-35.0	47.6	-2.5	-11.9	-15.8	63.4	-6.5	+3.9
	1990	27.0	-1.4	-29.7	-33.0	44.3	-3.3	-12.4	-15.7	60.0	-3.4	+3.3
	2000	52.8	+25.8	-6.8	-16.8	60.3	+15.9	+0.7	-9.3	69.6	+9.5	+10.0
	2010	26.9	-25.9	-30.4	-25.7	36.7	-23.6	-20.6	-15.9	52.6	-17.0	-4.7
Renter Occupied	1970	60.1	-	+27.4	+34.0	44.4	-	+11.7	+18.3	26.1	-	-6.6
	1980	56.0	-4.1	+24.8	+23.9	43.0	-1.4	+11.8	+10.9	32.1	+6.0	+0.9
	1990	55.1	-0.9	+23.1	+20.8	44.6	+1.6	+12.6	+10.3	34.3	+2.2	+2.3
	2000	32.9	-22.2	+4.1	+7.0	30.4	-14.2	+1.6	+4.5	25.9	-8.4	-2.9
	2010	45.9	+12.9	+17.5	+8.7	43.4	+13.0	+15.0	+6.2	37.2	+11.3	+8.8
Vacant Units	1970	9.1	-	+0.3	+6.3	4.4	-	-4.4	+1.6	2.8	-	-6.0
	1980	12.9	+3.8	+3.7	+8.9	7.1	+2.7	-2.1	+3.1	4.0	+1.2	-5.2
	1990	16.2	+3.3	+4.9	+11.2	9.4	+2.3	-1.9	+4.4	5.0	+1.0	-6.3
	2000	12.8	-3.4	+1.2	+9.0	7.4	-2.0	-4.2	+3.5	3.8	-1.1	-7.8
	2010	24.0	+11.2	+9.7	+15.8	16.0	+8.6	+1.7	+7.8	8.1	+4.3	-6.2

Notes:

¹ Includes cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010.

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010.

⁵ Percentage point change from previous decade.

⁶ Percentage point difference from national figure for that year (derived from: <http://www.census.gov/housing/hvs/data/histtabs.html> (Table 7)).

⁷ The percentage point difference from the growing city figure for that year.

Table A2: House value changes in three different Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics NCDB).

Year	EHLN ²				MHLN ³				Growing ⁴		
	Median House Value ⁵	Decade (%)	National Ratio ⁶	Growing City Ratio ⁷	Median House Value	Decade (%)	National Ratio	Growing City Ratio	Median House Value	Decade (%)	National Ratio
1970	\$11,037	-	0.90	0.55	\$14,402	-	1.18	0.72	\$20,008	-	1.64
1980	\$18,112	64.1	0.38	0.40	\$26,517	84.1	0.56	0.59	\$45,089	125.3	0.96
1990	\$26,848	48.2	0.34	0.39	\$40,183	51.5	0.51	0.58	\$69,455	54.0	0.88
2000	\$50,243	87.1	0.42	0.46	\$64,288	60.0	0.54	0.59	\$108,824	56.7	0.91
2010	\$79,662	58.6	0.45	0.51	\$97,781	52.1	0.55	0.63	\$156,080	43.4	0.88

Notes:

¹ Includes cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010.

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010.

⁵ House value is derived by dividing the aggregate value for owner-occupied noncondo housing units by the number of owner-occupied noncondo housing units for each census tract. After making this calculation, the median of all census tracts containing data in each category was identified. All figures are nominal.

⁶ National median house values for 1970-2000 were derived from <http://www.census.gov/hhes/www/housing/census/historic/values.html>. For 2010, the figure was derived from <http://quickfacts.census.gov/qfd/states/00000.html>. The 2010 figure is derived from the American Community Survey and is the median value of all owner-occupied units in the US. The figures are as follows: 1970= \$12,200; 1980= \$47,200; 1990= \$79,100; 2000= \$119,600; 2010=\$176,700.

⁷ Growing city ratio was determined by dividing the median house value for EHLN the median house value for Growing Neighborhoods.

Table A3: Rent changes in three different Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics NCDB).

Year	EHLN ²				MHLN ³				Growing ⁴		
	Median Rent ⁵	Decade (%)	National Ratio ⁶	Growing City Ratio ⁷	Median Rent	Decade (%)	National Ratio	Growing City Ratio	Median Rent	Decade (%)	National Ratio
1970	-	-	-	-	-	-	-	-	-	-	-
1980	\$193	-	0.79	0.76	\$222	-	0.91	0.87	\$253	-	1.04
1990	\$330	70.8	0.74	0.75	\$391	76.5	0.88	0.89	\$441	74.7	0.99
2000	\$443	34.3	0.74	0.76	\$516	31.9	0.86	0.89	\$582	31.8	0.97
2010	\$665	50.2	0.76	0.83	\$749	45.0	0.85	0.94	\$793	36.3	0.90

Notes:

¹ Includes cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010.

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010.

⁵ Rents are derived from dividing the aggregate gross rent of renter-occupied housing units paying cash rent by the number of renter-occupied housing units paying cash rent. The rent median is derived from the census tract calculations, eliminating those with no data. Figures for 1970 were eliminated because they contained many apparently erroneous figures (67% of tracts registered average rents of less than \$2; and 80% of tracts registered rents of less than \$20). All figures are nominal (i.e. not adjusted for inflation).

⁶ National average rent figures for 1980-2000 were derived from: <http://www.census.gov/hhes/www/housing/census/historic/grossrents.html>. For 2010, they were derived from: <http://www.census.gov/prod/2013pubs/acsbr11-07.pdf> (note: 2011 figure was used). The figures are as follows: 1980= \$243; 1990= \$447; 2000= \$602; 2010=\$880.

⁷ Growing city ratio was determined by dividing the EHLN median rent by the Growing Neighborhoods median rent.

Table A4: Racial change in three Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics NCDB).

		EHLN ²				MHLN ³				Growing ⁴		
	Year	%	Decade (+/-) ⁵	National (+/-) ⁶	Growing (+/-) ⁷	%	Decade (+/-)	National (+/-)	Growing (+/-)	%	Decade (+/-)	National (+/-)
Black	1970	76.7	-	+65.6	+76.4	5.3	-	-5.8	+5.0	0.3	-	-10.8
	1980	85.4	+8.7	+73.7	+83.2	22.6	+17.3	+10.9	+20.4	2.2	+1.9	-9.5
	1990	90.1	+4.7	+78.0	+86.5	36.2	+13.6	+24.1	+32.6	3.6	+1.4	-8.5
	2000	90.7	+0.6	+78.4	+83.8	50.0	+13.8	+37.7	+43.1	7.0	+3.3	-5.3
	2010	88.3	-2.4	+75.3	+77.5	53.2	+3.2	+40.2	+42.4	10.8	+3.9	-2.2
White	1970	22.7	-	-64.8	-76.4	93.4	-	+5.9	-5.7	99.1	-	+11.6
	1980	12.6	-10.1	-70.5	-82.4	66.0	-27.4	-17.1	-29.0	95.0	-4.2	+11.9
	1990	8.1	-4.5	-72.2	-83.9	49.6	-16.3	-30.7	-42.3	91.9	-3.0	+11.6
	2000	6.8	-1.2	-68.3	-76.4	36.8	-12.8	-38.3	-46.4	83.2	-8.7	+8.1
	2010	7.7	+0.9	-70.7	-67.6	35.3	-1.5	-43.1	-40.0	75.3	-7.9	-3.1
Other	1970	0.3	-	-1.1	+0.1	0.3	-	-1.1	+0.1	0.2	-	-1.2
	1980	0.9	+0.6	-4.3	-0.4	1.2	+0.9	-4.0	-0.1	1.3	+1.1	-3.9
	1990	0.9	+0.1	-6.8	-1.1	1.7	+0.5	-6.0	-0.4	2.1	+0.8	-5.6
	2000	1.5	+0.5	-11.0	-2.3	2.7	+1.0	-9.8	-1.1	3.8	+1.7	-8.7
	2010	2.0	+0.5	-6.6	-4.0	3.8	+1.0	-4.8	-2.2	6.0	+2.2	-2.6

Notes:

¹ Includes all cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010.

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010.

⁵ Percentage point change from previous decade.

⁶ Percentage point difference from national figure for that year. National figures were derived from: 1) for 1970-2000 national percentages (<http://www.census.gov/prod/2002pubs/censr-4.pdf>); 2) for 2010 figures (<http://www.census.gov/popest/data/historical/2010s/index.html>) (for 2010 figures; note: "two or more races" are included under "other").

⁷ The percentage point difference from the growing city figure for that year.

Table A5: Household income changes in three different Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics NCDB).

Year	EHLN ²				MHLN ³				Growing ⁴		
	Median HH Income ⁵	Decade (%)	National Ratio ⁶	Growing City Ratio ⁷	Median HH Income	Decade (%)	National Ratio	Growing City Ratio	Median HH Income	Decade (%)	National Ratio
1970	\$6,808	-	0.80	0.61	\$8,742	-	1.03	0.78	\$11,243	-	1.32
1980	\$11,456	68.3	0.70	0.57	\$15,548	77.9	0.94	0.77	\$20,214	79.8	1.23
1990	\$16,489	43.9	0.57	0.49	\$24,386	56.8	0.84	0.72	\$33,931	67.9	1.17
2000	\$28,232	71.2	0.69	0.59	\$35,779	46.7	0.88	0.74	\$48,026	41.5	1.18
2010	\$30,809	9.1	0.62	0.57	\$38,410	7.4	0.77	0.71	\$54,328	13.1	1.09

Notes:

¹ Includes cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010..

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010.

⁵ After gathering household median incomes for each tract, the median of all census tracts containing data in each category was identified. All figures are nominal.

⁶ National median household incomes for 2009, 1999, 1989, and 1979 were derived from:

<http://www.census.gov/hhes/www/income/data/historical/household/> (Table H6). I used the figure for the years prior to the census taking (2009 = \$49,777; 1999 = \$40,696; 1989 = \$28,906; 1979 = \$16,461). The national figure for 1969 (\$8,486) was derived from:

<https://www.census.gov/hhes/www/income/data/historical/state/state1.html>

⁷ Growing city ratio was determined by dividing the median house value for HHLN and Marginal (separately) by the median house value for Growing.

Table A6: Unemployment rate changes in three different Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics NCDB).

Year	HHLN ²				Marginal ³				Growing ⁴		
	Rate (%) ⁵	Decade (+/-) ⁶	National (+/-) ⁷	Growing City (+/-) ⁸	Rate %	Decade (+/-)	National (+/-)	Growing City (+/-)	Rate (%)	Decade (+/-)	National (+/-)
1970	8.7	-	+3.8	+5.6	4.8	-	-0.1	+1.7	3.1	-	-1.8
1980	20.0	+11.3	+12.9	+13.6	12.2	+7.3	+5.1	+5.7	6.4	+3.3	-0.7
1990	25.6	+5.6	+20.0	+20.3	12.7	+0.5	+7.1	+7.4	5.3	-1.1	-0.3
2000	19.4	-6.2	+15.4	+14.2	11.7	-1.0	+7.7	+6.5	5.2	-0.1	+1.2
2010	23.1	+3.7	+13.5	+14.2	16.2	+4.6	+6.6	+7.3	8.9	+3.7	-0.7

Notes:

¹ Includes all cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010.

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010.

⁵ This figure is the median of all census tract unemployment figures, with no data cells eliminated. The census definition of unemployment is: Persons 16+ years old in the civilian labor force and unemployed.

⁶ Percentage point change from previous decade.

⁷ Percentage point difference from national figure for that year. National figures were derived from: 1) for 1970-2000 (<http://www.census.gov/statab/hist/HS-29.pdf>); 2) for 2010 (<http://www.census.gov/compendia/statab/2012/tables/12s0622.pdf>).

⁸ The percentage point difference from the growing city figure for that year.

Table A7: Educational attainment change in three Rust Belt¹ neighborhood types, 1970-2010 (source: Geolytics NCDB).

	Year	High Housing Loss Neighborhoods ²				Marginal Neighborhoods ³				Growing Neighborhoods ⁴		
		%	Decade (+/-) ⁵	National (+/-) ⁶	Growing (+/-) ⁷	%	Decade (+/-)	National (+/-)	Growing (+/-)	%	Decade (+/-)	National (+/-)
Less than HS Diploma ⁸	1970	71.4	-	+26.7	+25.9	60.4	-	+15.7	+14.9	45.5	-	+0.8
	1980	59.6	-11.8	+26.1	+27.3	47.8	-12.7	+14.3	+15.5	32.3	-13.3	-1.2
	1990	49.5	-10.0	+27.1	+25.8	38.3	-9.5	+15.9	+14.6	23.8	-8.5	+1.4
	2000	38.5	-11.0	+22.6	+20.9	30.1	-8.2	+14.2	+12.5	17.6	-6.1	+1.7
	2010	26.3	-12.2	+13.4	+13.5	21.9	-8.2	+9.0	+9.1	12.8	-4.8	-0.1
College or More ⁹	1970	6.8	-	-14.4	-10.9	10.2	-	-11.0	-7.5	17.7	-	-3.5
	1980	12.6	+5.9	-19.3	-14.9	17.7	+7.6	-14.2	-9.8	27.5	+9.9	-4.4
	1990	18.7	+6.1	-20.5	-17.0	24.6	+6.9	-14.6	-11.1	35.7	+8.2	-3.5
	2000	24.6	+5.8	-26.4	-18.3	30.2	+5.6	-20.8	-12.6	42.9	+7.2	-8.1
	2010	37.5	+12.9	-18.3	-16.4	40.7	+10.5	-15.1	-13.2	53.9	+11.0	-1.9

Notes:

¹ Includes cities in the following states: New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, and Wisconsin. St. Louis and Louisville were added because they are large cities whose MSAs spill into the study area, and New York City was eliminated because of its qualitative differences with cities in the Midwest.

² Extreme housing loss neighborhoods (EHLN) are census tracts that lost more than 50 percent of their housing between 1970 and 2010, unless one of the following was true: 1) the tract contained fewer than 500 housing units in 1970 (thus indicating that it might not be a primarily residential area); or 2) the tract lost more than 80 percent of its housing in a single decade (thus indicating mass demolition as part of a commercial or institutional conversion).

³ Moderate housing loss neighborhoods (MHLN) are census tracts that lost between 0 and 49.9 percent of its housing units between 1970 and 2010.

⁴ Growing neighborhoods are census tracts that gained housing units between 1970 and 2010..

⁵ Percentage point change from previous decade.

⁶ Percentage point difference from national figure for that year. National figures were derived from: 1) for Less than High School graduate (<http://www.census.gov/compendia/statab/2012/tables/12s0230.pdf>); 2) for 1970-2000 "College or More" (<http://www.census.gov/hhes/socdemo/education/data/cps/historical/tabA-1.csv>); 3) for 2010 "College or More" (<http://www.census.gov/compendia/statab/2012/tables/12s0231.pdf>).

⁷ The percentage point difference from the growing city figure for that year.

⁸ This includes the percentage of all persons 25+ who: a) did not attend high school; and b) attended but did not graduate from high school.

⁹ This includes the percentage of all persons 25+ who have attended college or graduate school (even if they did not graduate).