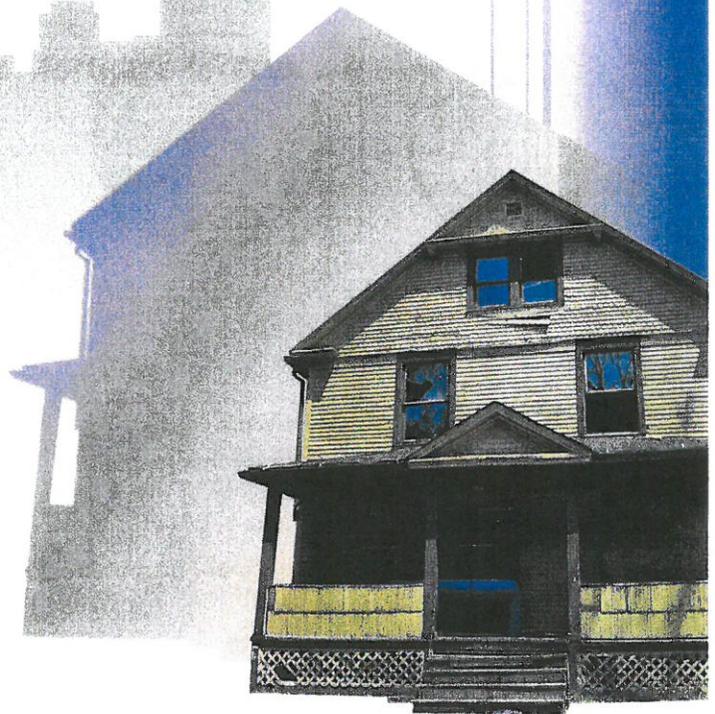


Estimating the Effect of
Demolishing Distressed Structures in
Cleveland, OH, 2009-2013:
Impacts on Real Estate Equity and Mortgage-foreclosure



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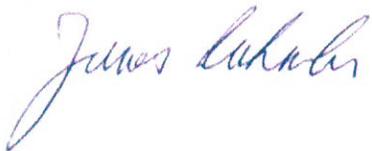


Thanks to those who made this study possible

Reducing blight in our cities and neighborhoods is of critical importance to each of us. Tens of thousands of vacant and abandoned structures exist in Ohio, and for many of these structures, demolition is the only option. But demolition is expensive. Municipalities and counties, with limited financial resources, are unable to keep pace with the need for removal of these blighted properties.

Thriving Communities Institute, a program of Western Reserve Land Conservancy, has actively pursued new sources of funding for demolition. Attorney General Mike DeWine recognized the critical role of demolition in revitalizing our communities and allocated \$75 million of discretionary funds from a national bank settlement for this purpose. At the federal level, we met with the U.S. Department of the Treasury and the White House Advisory Council requesting the reallocation of a portion of the Hardest Hit Fund from foreclosure prevention to demolition. These agencies asked that we prove that demolition of blighted properties can be considered a foreclosure prevention method – that strategic demolition would reduce the number of foreclosures in our communities. We asked the sponsors listed below to support this research. The study is now complete and **\$60 million** in demolition funding is **now** available to county land banks in Ohio.

Thank you to each of our sponsors. Your contributions brought us one step further toward eliminating blight in our neighborhoods. We could not have done it without you!



Jim Rokakis
Director, Thriving Communities Institute



Cleveland
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Sponsors

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EXECUTIVE SUMMARY

Estimating the Effect of Demolishing Distressed Structures in Cleveland, OH, 2009-2013:

Impacts on Real Estate Equity and Mortgage-Foreclosure

A Report Produced by Griswold Consulting Group

Nigel G. Griswold¹, Benjamin Calnin, Michael Schramm, Luc Anselin & Paul Boehnlein

Introduction

This two-part empirical analysis focuses on the effect that residential demolition has had on real estate equity and mortgage-foreclosure rates in the Cleveland, Ohio area between 2009 and 2013. Part 1 of the analysis uses a spatially dynamic economic model of land use change to estimate varying levels of financial impact from demolition activity on real estate equity across four housing submarkets. Just over 6,000 demolitions were completed over the study period, costing roughly \$56.3 million. Findings estimate total demolition benefits at \$78.9 million, suggesting a \$22.6 million net benefit attributed to demolition activity. Benefits from demolition activity were shown to accrue primarily in high and moderately functioning markets. Conversely, findings suggest that little real estate equity return is available from demolition activity in weak real estate markets.

Part 2 of the analysis uses a pattern-based approach to investigate the relationship between demolition activity and mortgage-foreclosure rates. Findings show a clear trend of decreasing mortgage-foreclosure rates in areas where demolition intervention activity took place. This is true for the study area as a whole as well as in low, moderate and high distress neighborhoods.

Background

Economies embedded in bygone industry sectors have experienced a slow transition into success within the fast-paced global economy. These “legacy cities,” are largely concentrated in the Midwest “Rust Belt,” and include the study area region. Economic exodus over the past 50 years has left vast inventories of vacant and blighted industrial, commercial and residential properties scattered across these urban landscapes. Disamenity properties are liabilities to neighborhoods, communities and municipal budgets.

As legacy cities gain control of their distressed property inventories, limited budgets demand optimal targeting of blight remediation funds for maximum impact. This study focuses on the community and market outcomes of demolishing distressed residential structures. Using sophisticated data systems,

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econometric modeling, pattern-based modeling and predictive analytics, this study investigates:

- 1) Property value impacts of nearby distressed properties;
- 2) The impact that demolition of distressed properties has on neighboring real estate equity;
- 3) The impact that demolition has on localized mortgage-foreclosure rates.

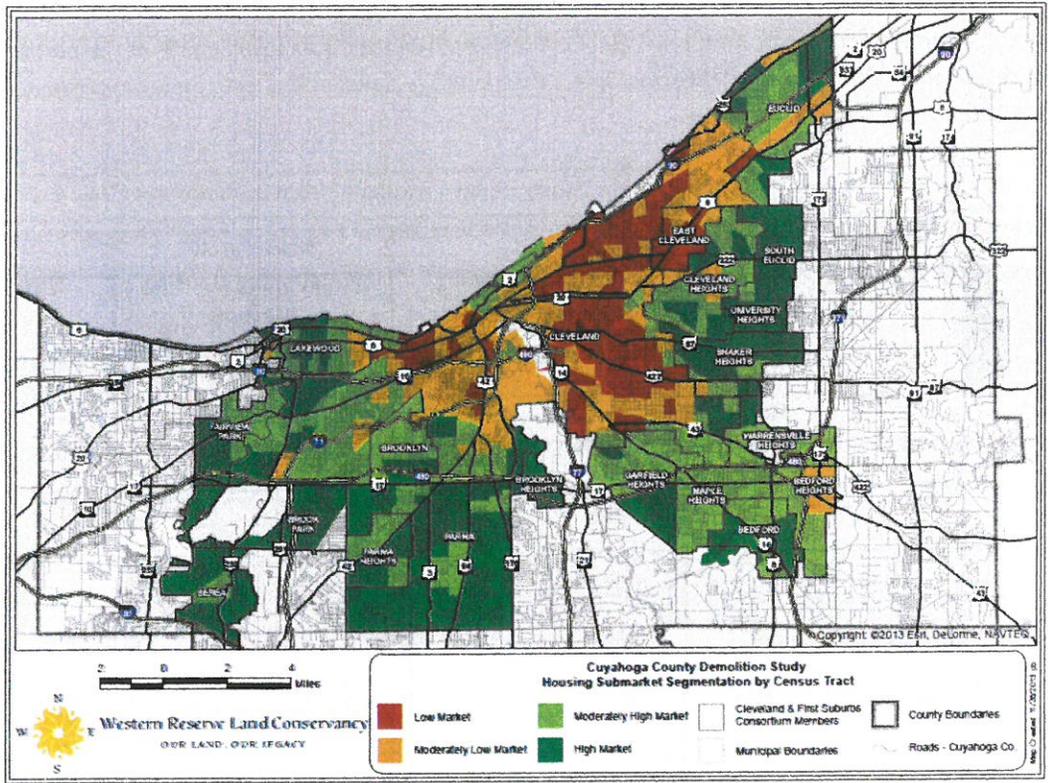
Part 1 of the report focuses on the research process and findings associated with estimating the real estate equity impacts on neighboring properties caused by demolition activity. Part 2 of the report focuses on the research process and findings associated with estimating the impact that demolition has on localized mortgage-foreclosure rates over time.

PART 1: Impact of Demolition on Real Estate Equity

Overview

Empirical data derived from the NEO CANDO² data system was used to econometrically model the impacts that distressed residential structures and vacant lots have on the value of nearby homes. Evidence strongly suggests that the impact of distressed properties varies across high, moderately high, moderately weak and weak functioning real estate submarkets in Cleveland and surrounding areas (See map below). It is further shown that property value impacts vary depending on the specific type of distress within each submarket. Key findings include consistent and significant positive value gaps between distressed residential structures and vacant lots. Given that demolition of distressed residential structures creates residential vacant lots, findings suggest an available hedge in real estate equity from strategic and targeted demolition activity in relevant markets. The research capitalizes on the equity hedge estimates to perform a counterfactual simulation that predicts residential property values as if zero demolition activity occurred across the space and time of the study. Status quo property value estimates are then compared with counterfactual property value estimates to quantify the net financial effect of demolition investments.

² See: <http://neocando.case.edu>



Findings

The necessary spatial corrections were made to reach the final empirical model. Identified as a “spatial regimes” approach, the model allows sales within the four identified submarkets to vary across space and time. The explanatory variables in the final model explain 56.5% of the variation in the model’s dependent variable, sales price.³ The table below provides key findings from the final results of the regression analysis. Coefficient estimates, level of statistical significance, and the magnitude of the real estate equity hedge available to homes within 500 feet of demolishing the identified distressed structures are provided.

Coefficients are read as percentages, and are only valid if they are statistically significant – i.e. -0.016^{***} is interpreted as a -1.6% impact on home sales price if an additional blighted structure was within 500 feet of it. As mentioned above, the available equity hedge from demolition activity is quantified by calculating the difference between the impacts of a vacant lot on a home sales price (vacant lot impact is assumed zero if it is insignificant) and the impact of a particular type of blight on home sales price. After studying

³ See Pg. 16-26 of the Full Report for details on the final empirical model.

the table below, it becomes clear that the majority of home equity benefits derived from demolition activity congregate in higher functioning markets. Further, the benefits that congregate in the stronger markets are relatively higher in financial terms, given that average sales prices are higher in stronger markets (See Table 2, Pg. 26 of Full Report).

Table 1: Regression Results and Associated Real Estate Equity Hedges Available from Demolition of Distressed Structures

Distressed Properties Within 500 Feet ⁴	Extremely Weak Functioning Housing Markets		Weak Functioning Housing Markets		Moderately Functioning Housing Markets		High Functioning Housing Markets	
	Coefficient	Hedge Value	Coefficient	Hedge Value	Coefficient	Hedge Value	Coefficient	Hedge Value
Vacant Lots	-0.003		-0.012***	N/A	-0.010***	N/A	-0.010***	N/A
Tax Delinquencies	-0.016***	1.6%	-0.036***	2.4%	-0.040***	3.0%	-0.038***	2.8%
Vacant Tax Delinquencies	-0.028***	2.8%	-0.003	N/A	-0.051***	4.1%	-0.086***	7.6%
Vacancies	0.009	N/A	-0.003	N/A	-0.022***	1.2%	-0.026***	1.6%
Mortgage Foreclosures	0.041**	-4.1%	0.024**	-2.4%	-0.016***	0.6%	-0.026***	1.6%
Tax Delinquent Mortgage Foreclosures	0.006	N/A	-0.037	N/A	-0.042+	3.2%	-0.030	N/A
Vacant Mortgage Foreclosures	-0.017	N/A	-0.030	N/A	0.005	N/A	-0.009	N/A
Tax Delinquent Vacant Mortgage Foreclosures	-0.070+	7.0%	-0.004	N/A	-0.086*	7.6%	-0.060	N/A
Tax Foreclosures	0.013	N/A	-0.058	N/A	-0.052+	4.2%	-0.201***	19.1%
Vacant Tax Foreclosures	-0.031	N/A	-0.053	N/A	-0.065+	5.5%	-0.108+	9.8%

Coefficient Significance Key: + for p<.1; * for p<.05; ** for p<.01; and, *** for p<.001

Predictive analysis estimates the value of homes if demolition over the study time period had not been undertaken and compares it to current home values given the occurrence of demolition.⁵ The table below provides the key findings from the analysis. Total cost of more than 6,000 demolitions is compared to total benefits of demolition in each submarket as well as in the aggregate regional market.

⁴ See Appendix 1 from the full report for specific definitions of each spatial distress variable.

⁵ See Pgs. 53-55 of the Full Report for a full explanation of the predictive analysis.

Table 2: Summary of Findings from Simulation for Cost-Benefit Analysis of Demolition Investments

Submarkets	Status Quo Value	Counter-Factual Value	Change	Total Demos	Hedge Per Demo	Total Demo Cost	Cost Benefit	Cost Benefit Ratio
Extremely Weak	\$449.7M	\$447.5M	\$2.22M	2,944	\$754.16	\$27.6M	-\$25.4M	-0.92
Weak	\$766M	\$773M	-\$7M	1,951	-\$3,585	\$18.3M	-\$25.3M	-1.38
Moderately Functioning	\$4.63B	\$4.59B	\$38.3M	776	\$49,367	\$7.3M	\$31.0M	4.27
High Functioning	\$8.43B	\$8.38B	\$45.4M	335	\$135,475	\$3.1M	\$42.2M	13.45
TOTALS	\$14.27B	\$14.19B	\$78.9M	6,006	\$13,140	\$56.3M	\$22.6M	1.40

PART 2: Impact of Demolition on Mortgage-Foreclosure Rates

Overview

Pattern-based analysis strongly suggests that residential demolition activity lessens the mortgage-foreclosure rate across comparable neighborhoods. A neighborhood distress index was carefully constructed to categorize Census Blocks⁶ into low, moderate and high distress tiers throughout the study area. Each tier of distress is divided between those neighborhoods that experienced demolition intervention and those that did not received demolition intervention. Demolition activity and property distress are measured for residential parcels only, specifically focused on the existence and demolition of tax-foreclosed, tax-delinquent, mortgage-foreclosed and vacant properties. Neighborhoods with similar levels of distress that experience demolition are consistently shown to have steeper declines in mortgage-foreclosure rates than those that do not experience demolition activity.

These findings provide federal policy makers with research evidence that supports increased spending of Troubled Asset Relief Program (TARP) housing resources⁷ on demolition activity. Apples-to-apples neighborhoods are experiencing trends that suggest greater declines in mortgage-foreclosure rates when demolition activity is present. Therefore, these findings suggest that demolition is a preventative measure

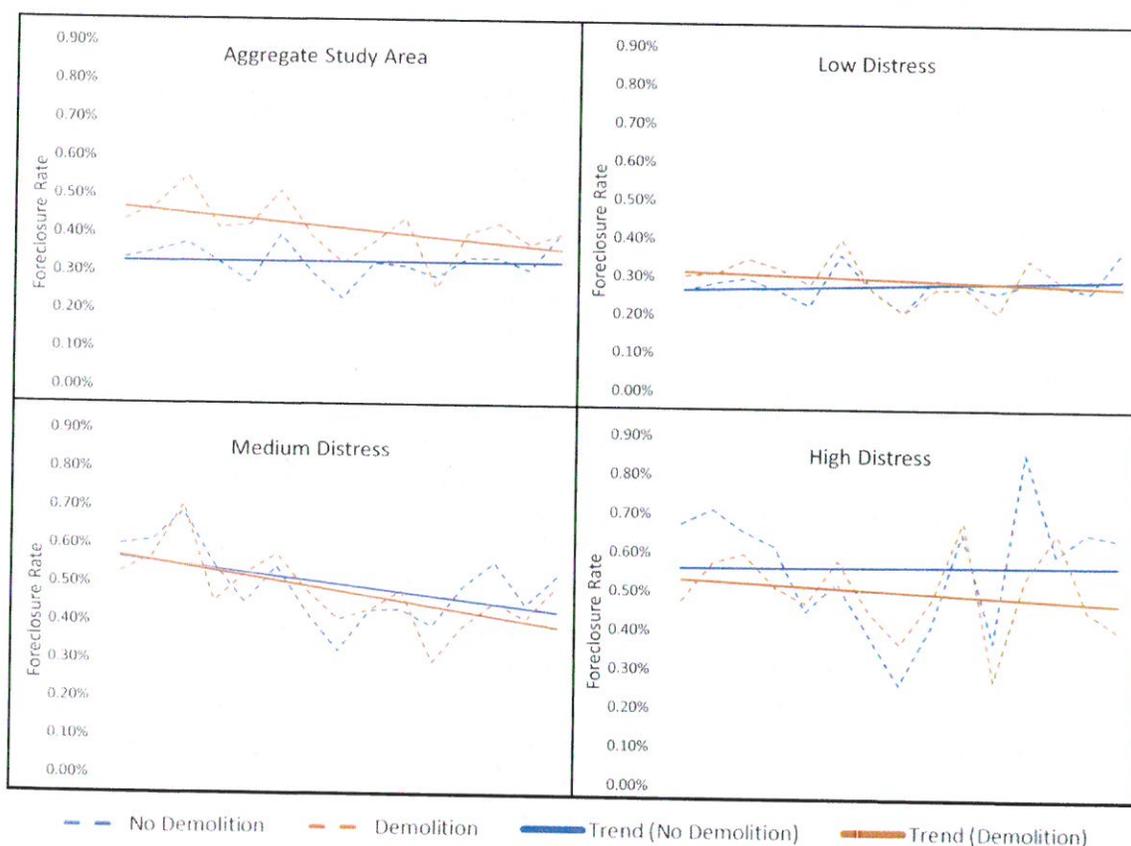
⁶ U.S. Census Bureau on the web: <http://www.census.gov/geo/maps-data/maps/block/2010/>

⁷ The Troubled Asset Relief Program (TARP) is the primary policy response from the Federal Government related to the 2008 mortgage-foreclosure crisis. Of the total allocated funds, the U.S. Treasury provided \$45.6 billion for housing support programs, which has been subsequently reduced to \$38.5 billion. The status of the \$7.1 billion reduction in funds remains unclear. Three main TARP housing support programs are the Home Affordable Modification Program (HAMP), Making Homes Affordable Program (MHA) and Hardest Hit Fund Program (HHF). HHF funds were given to select states formulaically based on how intensely the mortgage-foreclosure crisis impacted them and are designed to quell and prevent future mortgage-foreclosure in those states. Of the \$38.5 billion allocated for these three programs, only \$9.5 billion was spent as of September 30, 2013. The remaining \$29 billion remains unspent.

for future mortgage-foreclosure. Given that neighborhood scale demolition activity is shown to meet the necessary outcome of TARP housing funds' programmatic spending, it offers the U.S. Treasury a prime opportunity to expedite the release of TARP housing funds for demolition activities before access to available resources expire on December 31st, 2017. The TARP housing funds are largely unspent for a simple reason: TARP housing funds currently must be spent to assist individual homeowners. Funds are not available to help communities address the foreclosure crisis at the neighborhood level.⁸

Findings

Cleveland Area Foreclosure Rates by Census Blocks
With and Without Demolition Intervention, 3rd Quarter, 2009 – 1st Quarter, 2013



As shown in the graphs above, the analysis provides evidence that demolition activity is associated with decreasing mortgage foreclosure rates in low, medium, high and aggregate neighborhood distress types. The neighborhood distress index was designed to control for differing types of neighborhoods. Although results show consistent positive benefits from demolition activity, the benefits received in low, medium and high distress areas differ. In contrast with results in Part 1, findings suggest that benefits in terms of

⁸ Recent pilot programs allowing Michigan and Ohio to spend \$100 million and \$60 million of HHF on targeted demolition activity, respectively, are validated from these findings given that the use of these pilot funds meet HHF mission statement requirements.

decreasing mortgage foreclosure rates are greater in high distress areas as opposed to those experiencing low levels of distress. That said, taken together with the positive home equity returns that are hedged from demolition activity in strong markets, as laid out in Part 1, a double-bottom line of benefits is suggested to be available from demolition through the additional benefit of lower mortgage foreclosure rates in relevant stronger market areas.

Given that demolition is consistently shown to decrease mortgage foreclosure rates over time across the study area, and the dynamics of demolition are taken into account within these calculations, findings in this analysis suggest that demolition activity is a preventative measure of future mortgage foreclosure.

Conclusions

Part 1 of this analysis identifies that residential real estate equity can be hedged by demolition activity across Cleveland submarkets over the study time period. Specifically, statistically significant and higher magnitude benefits are shown to primarily accrue in stronger housing markets, which also have relatively higher housing prices. These findings suggest that optimal returns can be captured in the stronger submarkets of the study through targeted demolition in these areas. With that said, several limitations exist related to this approach. First, Part 1 primarily focuses on the financial outcomes associated with demolition activity. It has been shown that demolition impacts several other outcomes, including crime reduction, among others. Secondly, the spatial granularity of the housing submarkets is relatively coarse at the Census Tract level, meaning the number of submarkets within a single Census Tract is potentially greater than one. With that said, findings from Part 1 provide new economic insight into the differing financial impacts of distressed structures and demolition activity in differing housing submarkets, greatly impacting the policy dialogue surrounding the benefits and targeting of demolition activity.

Part 2 of this analysis uses a neighborhood distress index to compare mortgage foreclosure rates in Census Blocks which did experience demolition activity with those which did not. The visual and graphical analysis provides clear trends that suggest that neighborhoods that get demolition have better trends in terms of decreasing mortgage foreclosure rates. Given that the analysis is over time, demolition is suggested to be a preventative measure of future mortgage foreclosure. The primary caveat to the analysis in Part 2 is that it is pattern-based and the relationships are visually identified through their correlative differences. In other words, we define the differences between foreclosure rates in areas which did and did not receive demolition by controlling for similar neighborhoods and then placing rates on a graph and observing whether the respective trends appear differently to the eye of the observer. A cause-and-effect relationship may be reasonably implied but is not proven. Future research will focus on a more in depth analysis of the slopes of the individual trends and test for structural differences in the comparative.



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