Cuyahoga Land Bank: 10-year Economic Impact Analysis

June 2019

Prepared by:

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CUYAHOGA LAND BANK

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Foreword

Frank S. Alexander and Congressman Dan Kildee, U.S. House of Representatives, Michigan's 5th District, are considered the fathers of the modern day land banking movement. They co-founded the national Center for Community Progress and have written extensively on the subject, and assisted countless public and private non-profit practitioners in implementing creative land reclamation strategies.

Land banks play a vital role in revitalizing communities, strengthening neighborhoods and providing affordable housing for families. I congratulate the Cuyahoga Land Bank for 10 years of hard work that generated over $1.4 billion in economic impact in the greater Cleveland metro area. This positive economic impact shows that land banks—in Cuyahoga County and over 100 other communities across the country—are making a real difference. The Cuyahoga Land Bank should be celebrated for its work to breathe life back into distressed communities.

— Honorable Dan T. Kildee, U.S. House of Representatives, Michigan's 5th District

Land banks and land banking programs focus on returning vacant, abandoned, and deteriorated properties to productive uses. They start with the premise that these properties impose significant economic, social, and cultural costs on surrounding neighborhoods, communities, and local governments. Vacant and abandoned properties are liabilities. The challenge is to find ways to convert these liabilities into assets—to turn vacant spaces into vibrant places.

Meeting this challenge is not easy. These properties are characterized by complex ownership and title issues of absentee shell corporations, of indeterminate numbers of heirs due to lack of probate, of multiple uncompleted or deficient legal proceedings. They are commonly "underwater" with aggregate public and private liens far exceeding fair market value. These properties are inaccessible to the open market, and the challenges are compounded as these properties decline in value in each day.

The Cuyahoga Land Bank has been a leader in the design and implementation of effective and efficient approaches to meeting these challenges. The pathbreaking legislation drafted by Gus Frangos and others in 2008 was an intricate and complex undertaking in unraveling the maze of state laws that contribute to vacancy and abandonment and reshaping them to facilitate the conversion of these properties into productive assets. Along with legislative reforms in Michigan in 2002, this Ohio legislation marked the advent of a new generation of land banks and land banking in the United States.

In the ten years of its existence the Cuyahoga Land Bank has consistently been a national leader in the design and implementation of new approaches to turn these vacant spaces into vibrant places. This study of the economic impacts over the past decade demonstrates both the accuracy of the first premise—of converting liabilities into assets—and the creative wisdom of the Cuyahoga Land Bank in doing so.

– Frank S. Alexander, Sam Nunn Professor Law, Emeritus, Emory Law
Senior Advisor, Center for Community Progress

A Message from Gus Frangos, President & General Counsel of the Cuyahoga Land Bank

In 2008, Cuyahoga County was the epicenter of the foreclosure crisis. Staggering mortgage and tax foreclosures; abandonment and real estate market destabilization; and a several billion dollar loss in the County's real estate tax base presented the community with a daunting reality.

A group of dedicated community development leaders spearheaded by then-County Treasurer James Rokakis began brainstorming a response to this crisis. A consensus soon developed to create county land banks with new and powerful features designed specifically to remove blight and steer unproductive, delinquent properties back into taxpaying productive use.

I had the great privilege along with my friend and co-drafter Robert Rink to draft the legislation that established county land banks. Known as SB 353, this new generation of county land banks in Ohio quickly became known nationally as "land banks on steroids." The Cuyahoga Land Bank opened its doors on June 1, 2009. Our charge was to work to stop the bleeding of the County's residential tax base. Accordingly, soon after opening our doors, we inked pooling agreements with FNMA, HUD and several large mortgage companies. Soon, we were hauling in over 100 abandoned properties every month!

Because of the legislative construct for Ohio's county land banks, this incredible experiment has yielded thousands of land dispositions, home renovations, demolition of blight, and economic development projects throughout the County through our partnerships with community development corporations, municipalities, citizens and business stakeholders. We also found ways to re-purpose properties for social service and faith-based agencies serving some of the most needy and disadvantaged populations.

After 10 years, and nearly 2,000 home renovations, 8,000 demolitions and over 60 partner organizations, this experiment has proven to be an enormous success and has improved the quality of life in our community. At virtually every national land banking conference I attend, the Ohio brand of legislation is referred to as the "national model." Most gratifying for me and our incredible staff, we are looked at as the national model for land bank professionalism and productivity.

It has been a privilege to serve as President of this organization. Our staff and visionary Board are not ones to rest on our laurels, however. With the continued partnerships we have developed over the years, we hope to attain to greater things in the years ahead.

— Gus Frangos, Esq.
President & General Counsel, Cuyahoga Land Bank

CUYAHOGA LAND BANK

Executive Summary

The Cuyahoga County Land Reutilization Corporation (a.k.a. Cuyahoga Land Bank or CCLRC), established in 2009, has a mission to "*strategically acquire properties, return them to productive use, reduce blight, increase property values, support community goals and improve the quality of life for county residents.*"

With community goals and increasing quality of life driving the underlying mission, the vehicle and means to achieve these goals are the tangible activities with measurable economic impact that the CCLRC performs every day.

This study is an economic impact evaluation aimed at quantifying the tangible and measurable economic outcomes from 10-years of CCLRC activity. Activity that occurs, but is not measurable, is not included in this report.

Taking all CCLRC expenditures and measurable programmatic activity into account, research confirms a total estimated economic impact of $1.43 billion in Cuyahoga County since inception in 2009. Specific economic impacts quantified as a result of CCLRC action over the past decade include:

INCREASED PROPERTY VALUES AND BLIGHT REDUCTION[1]

- $415.3 million in increased home value from nearly 7,000 residential demolitions
- $320.6 million in increased home value from more than 2,100 programmatic residential rehabilitations

DISTRESSED PROPERTIES BACK ON THE TAX ROLLS[2]

- $13 million from direct property sales
- $18.5 million in property tax revenue collected from CCLRC influenced properties
- $302.8 million in direct private investment induced by catalytic CCLRC activity[3]

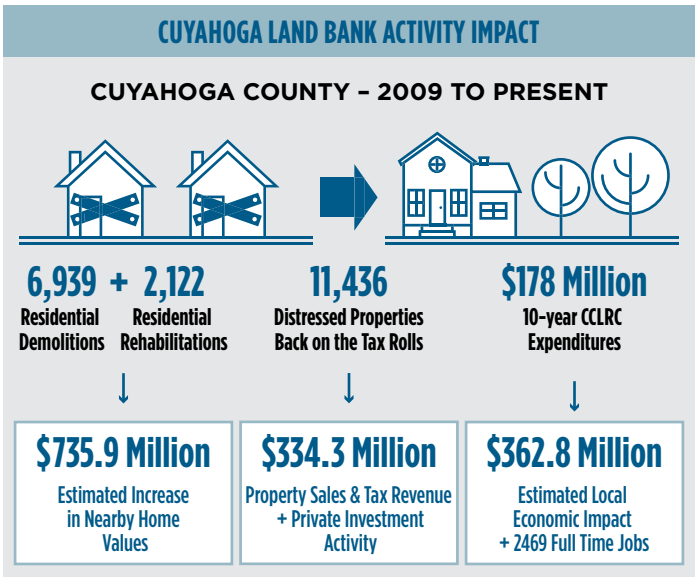
SUPPORTING THE LOCAL ECONOMY

- $305.5 million in local economic impact and 2,114 jobs created from CCLRC budget expenditures between 2009–2019
- $57.3 million in local economic impact and 355 jobs created from programmatically incentivized private sector residential rehabilitation[4] activity

CCLRC'S 10-YEAR EXPENDITURES OF $178 MILLION[5] HAVE THE FOLLOWING ESTIMATED BENEFIT-COST RATIOS (BCRS):

- $8 in economic impact for every $1 of CCLRC expenditure
- 1 job created for every $72,152 of CCLRC expenditure

Findings suggest CCLRC achieved significant positive economic outcomes from its work over the past decade. Research provides evidence of higher home values, stronger neighborhoods, more jobs, and more overall economic activity in Cuyahoga County because of the CCLRC. Assuming community goals and increased quality of life are tied to these fundamentals of local economic strength, this economic impact evaluation suggests that the CCLRC is having success in fulfilling its mission.



Introduction

Cuyahoga County and the City of Cleveland were among the hardest hit by the mortgage foreclosure crisis and the Great Recession in the mid-2000s. An innovative group of local and state officials came together with local non-profit and academic organizations to combat the problem.

Their efforts ultimately resulted in S.B. 353[6], an Ohio State statute that allows the CCLRC to exist and operate.

Through its operations, the founding group positioned CCLRC as a separate non-profit, government-purposed entity tasked to:

1. Strategically acquire blighted properties

2. Return properties to productive use through
   a. Rehabilitation
   b. Sale to new private owners
   c. Demolition
   d. Preparation for traditional economic development
   e. Creative reuse such as gardening, green space, storm water management
   f. Other innovative/ecological purposes

3. Increase property values through these efforts

4. Support community goals through collaborations with Cuyahoga County's individual communities, governments, lenders, and individual property owners

5. Improve the quality of life for Cuyahoga County's residents through its efforts

THE PURPOSE OF THE CUYAHOGA LAND BANK

1. Acquire blighted properties
2. Return properties to productive use
3. Increase property values
4. Support community goals through collaboration
5. Improve the quality of life for community residents

The CCLRC's primary funding source comes from the accumulation of penalties and interest collected from delinquent real estate taxes. This primary funding is supplemented by grants from partner organizations, sale of acquired properties to vetted buyers, and recoupments and donations from various banks.

The CCLRC has the authority to acquire vacant and abandoned foreclosed properties from a variety of sources including: banks; government sponsored entities (e.g. Fannie Mae); federal and state agencies (e.g. HUD); foreclosure and tax forfeiture; and, donated properties. Decisions about disposition of CCLRC properties are made in partnership with the community development stakeholders and cities within Cuyahoga County where those properties are found.

STUDY APPROACH

This is a technical report focused on estimating the quantifiable economic impacts of CCLRC activities to evaluate the benefits and costs of its first 10 years of activity against its broader tasks, mission and goals. The primary sections of the report provide and contextualize the outcomes of the analysis. Specific analytical methods to investigate deeper scholarly rigor are provided in the Appendix section.

This is a comprehensive evaluation of the overall impacts of CCLRC activities taken together—it is not a program-by-program performance analysis. While the study attempts to identify all impacts of the CCLRC, there are two specific impact estimates it does not take into account:

1. The property tax revenue that is preserved because of the increase in home value that CCLRC activities provide

2. The short-term and long-term jobs and associated economic activity provided from the private sector investment induced by CCLRC activity. Nevertheless, these categories positively increase the impact of the CCLRC.

Increased Property Values & Blight Reduction[7]

Residential blight and distress have proven negative impacts on neighborhood health, including decreased property values, increased crime rates, and higher service costs such as police, fire and code enforcement[8] (see Dynamo Metrics 2018). Higher property values, lower crime rates, more jobs and increased economic activity have been strongly tied to blight reduction methods such as demolition, rehabilitation, new construction, and vacant lot improvement.[9]

This section quantifies the estimated property value impact of CCLRC demolition and rehabilitation intervention activity between 2009–2019. Other benefits from these activities (e.g. crime reduction, lower service costs) are likely attained, but are not quantified in the report. The property value impacts and benefits from CCLRC new construction and vacant lot improvements are also not quantified.

APPROACH

An econometric analysis was performed to quantify the impact of ten years' worth of CCLRC demolition and rehabilitation on neighboring property values. The first step in quantifying this impact is identifying proper housing submarkets because impacts vary in different markets. Final housing submarkets are shown in the map at right. See Appendix 1 for submarket identification methods and summary statistics within each.

Rich data was provided by the Cuyahoga County region's unique NEOCANDO data system[10] to build out the property-level time-series sales observations, physical property attributes and neighborhood health indicators required for an econometric analysis. The final econometric model specification[11] is highly reflective of previous scholarly analysis and literature: blighted and distressed residential structures have a large negative impact on neighboring property values while occupied, tax-current and vacant lot properties are shown to have a positive or much less negative impact on neighboring property values.

The identified property value impact spread between blighted and distressed neighbors versus healthy occupied neighbors or vacant lot neighbors is applied to each individual demolition and rehabilitation the CCLRC completed since inception. In other words, the model allows us to know the property value impact on neighbors when a blighted structure turns into a vacant lot from demolition. It also allows us to know the property value impact on neighbors when a blighted structure is rehabilitated, and new neighbors move in, occupy the home, and pay their property taxes. This section provides an overview of total estimated property value impact from all CCLRC demolition and rehabilitation, 2009–2019. This section does not quantify the property tax revenue increase or preservation from the neighboring property values that were increased from these programs.

IMPACT OF RESIDENTIAL DEMOLITION ON PROPERTY VALUES

Total demolition expenditures from 2009 through January of 2019 at CCLRC is roughly $79 million. As shown in Table 1, at right, a total of 6,939 residential demolitions were recorded as being performed for this cost, delivering an average per unit demolition cost of $11,380. This section does not quantify the property tax revenue increase or preservation from the neighboring property values that were increased from these programs.

Most demolitions occurred in Cuyahoga's weakest markets, while only two were performed in its strongest. The total property value impact on neighboring homes, while varying by housing submarket, is more than $415 million, with an average property value impact per demolition of $59,855. Considering average cost per demolition of $11,380, this delivers an average benefit-to-cost ratio (BCR) of $5.26, or $5.26 property value benefit for each demolition dollar spent. Average BCRs vary widely by submarket but are positive across the board. Findings of statistically significant property value impacts from demolition in the weakest markets in Cuyahoga County is a first, after seven years of research and four studies in the region focused on these blight intervention activities. This finding suggests that the CCLRC is beginning to get ahead of blight and recreate market value in the weakest areas of the city after more than 7,000 demolitions in those areas as of this writing.

Increased Property Values & Blight Reduction

Map 1: Final Housing Submarkets in Cuyahoga County

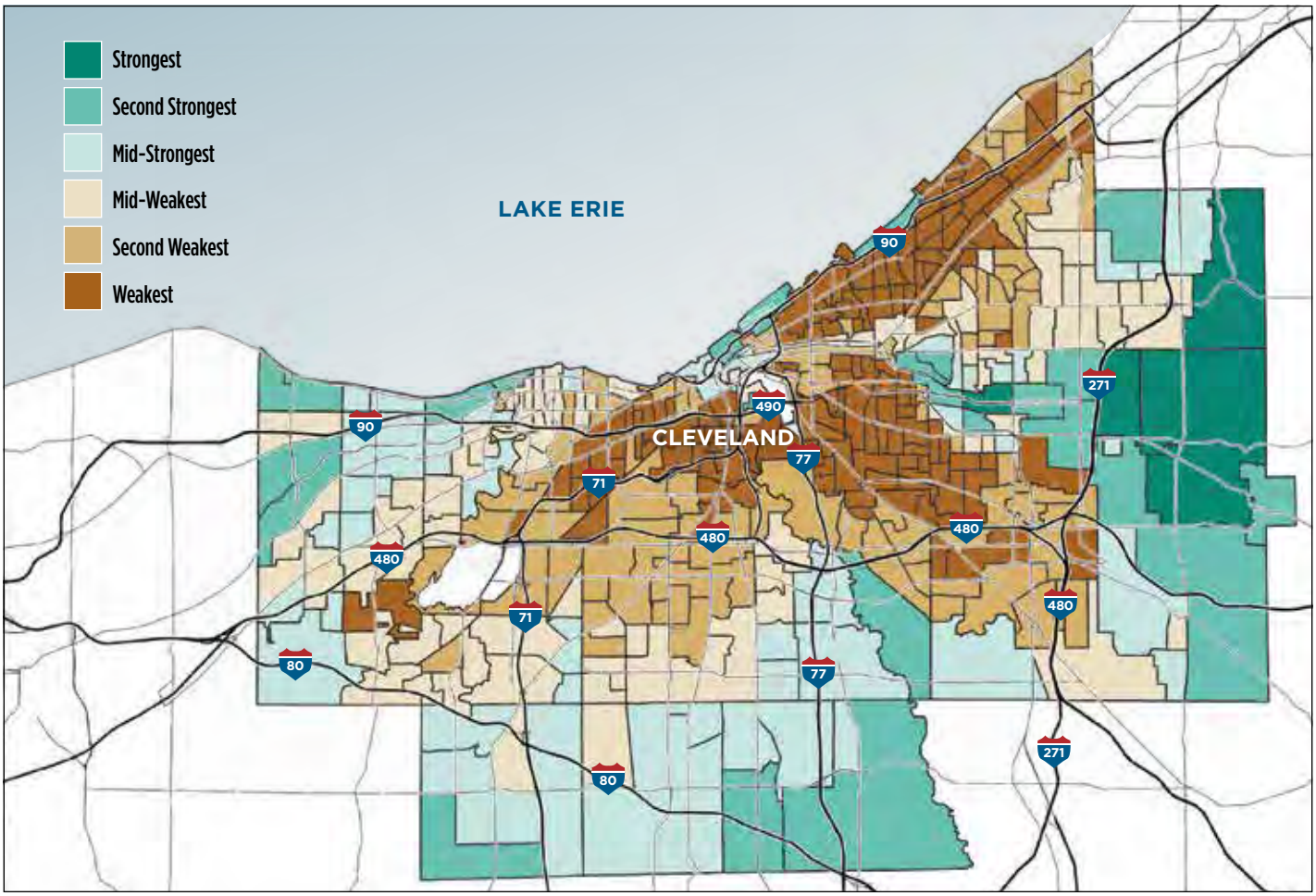


Table 1: Residential Property Value Impact from CCLRC Demolitions, 2009 – 2019

RESIDENTIAL PROPERTY VALUE IMPACT FROM CCLRC DEMOLITIONS, 2009 – 2019				
SUBMARKET TITLE	**NUMBER OF DEMOS**	**RESIDENTIAL PROPERTY VALUE IMPACT**	**AVERAGE IMPACT PER DEMO**	**AVERAGE BCR**
Weakest	6219	$231,651,995	$37,249	$3.27
Second Weakest	543	$124,888,340	$229,997	$20.21
Mid-Weakest	154	$50,538,848	$328,174	$28.84
Mid-Strongest	12	$3,082,665	$256,889	$22.57
Second Strongest	9	$4,900,112	$544,457	$47.84
Strongest	2	$273,017	$136,509	$12.00
TOTALS	**6939**	**$415,334,977**	**$59,855**	**$5.26**

Increased Property Values & Blight Reduction

IMPACT OF RESIDENTIAL REHABILITATION ON PROPERTY VALUES

Total rehabilitation expenditures from 2009 through January of 2019 from the CCLRC and its partners that perform rehabilitation is estimated at $56.3 million . As shown in Table 2, a total of 2,122 residential rehabilitations were recorded as being performed for this estimated cost, delivering an average estimated per unit cost of rehabilitation of $26,535.

Most rehabilitations occurred in Cuyahoga County's weakest markets, while none were performed in its strongest. The total property value impact on neighboring homes, while varying by housing submarket, is more than $320 million, with an average property value impact per rehabilitation of $151,105. Considering average estimated cost per rehab of $26,535, this delivers an average benefit-to-cost ratio (BCR) of $5.69, or $5.69 property value benefit for each rehabilitation dollar spent. Average BCRs vary widely by submarket but are positive multipliers across the board.

Table 2: Residential Property Value Impact from CCLRC Rehabilitations, 2009 – 2019

RESIDENTIAL PROPERTY VALUE IMPACT FROM CCLRC REHABILITATIONS, 2009 – 2019				
SUBMARKET TITLE	NUMBER OF REHABS	RESIDENTIAL PROPERTY VALUE IMPACT	AVERAGE IMPACT PER REHAB	AVERAGE BCR
Weakest	1428	$94,874,116	$66,438	$2.50
Second-Weakest	611	$180,841,840	$295,977	$11.15
Mid-Weakest	72	$38,001,020	$527,792	$19.89
Mid-Strongest	7	$3,251,841	$464,549	$17.51
Second Strongest	4	$3,676,555	$919,139	$34.64
TOTALS	**2122**	**$320,645,372**	**$151,105**	**$5.69**

Distressed Properties Back on the Tax Rolls

APPROACH

CCLRC is also tasked with traditional approaches to returning properties to productive use, such as the sale of "as is" properties to private owners. These direct sales numbers were captured on the revenue side of the ledger for the CCLRC and are provided herein. All CCLRC influenced properties returned to the tax rolls over the past 10 years were identified and accounted for using the NEOCANDO data system. Using data mining methods and tax records, the aggregate property tax revenue captured from all CCLRC properties since they've returned to the tax rolls was quantified.

The CCLRC also performs multiple activities on commercially viable properties to prepare them for traditional economic development activities. Specific economic development projects where CCLRC acted as a catalyst and the private sector investment amount the project received are provided. Appendix 6 provides further project descriptions as well as some details of the involvement of CCLRC to prepare the land for the project.

Distressed Properties Back on the Tax Rolls

DIRECT PROPERTY SALES

Using NEOCANDO (see Appendix 2), and knowledge of tax delinquency and foreclosure history, the CCLRC has increased its vetting capability of buyers to better ensure against speculative buyers and bad actors. While not analyzed in this study, these methods have anecdotally increased the efficacy of tax payment from "as is" sales.[14]

PROPERTY TAX REVENUE FROM CCLRC DISPOSITION[15]

As shown in Table 4 below, a total of 11,436 properties were identified to have been owned or influenced by the CCLRC and returned to the property tax rolls since 2009. Total property tax revenue generated from these properties is estimated at nearly $18.5 million. Average tax revenue received from vacant lots (created through demolition activity) is about $807 for each property to date, while property tax revenue for rehabilitated housing is closer to $4,900 to date.

Table 3: CCLRC Direct Property Sales, 2009 – 2018

CCLRC DIRECT PROPERTY SALES, 2009 – 2018	
YEAR	**TOTAL SALES ($)**
2010	$33,342
2011	$219,005
2012	$630,567
2013	$2,649,503
2014	$1,821,089
2015	$1,881,955
2016	$2,489,149
2017	$1,786,270
2018	$1,435,669
TOTAL	**$12,946,549**

Table 4: Tax Revenue from CCLRC Properties on the Tax Rolls, 2009 – 2019

TAX REVENUE FROM CCLRC PROPERTIES BACK ON THE TAX ROLLS, 2009 – 2019			
CCLRC ACTIVITY BEFORE SALE	**PROPERTY COUNT**	**REVENUE GENERATED**	**AVERAGE REVENUE PER PROPERTY**
Demolition	7391	$5,961,435	$806.58
Rehabilitation	2123	$10,310,756	$4,856.69
Other (define)	1922	$2,195,514	$1,142.31
TOTAL IMPACT	**11436**	**$18,467,706**	**$1,614.87**

Distressed Properties Back on the Tax Rolls

Photo: Milivoj Kuhar, Unsplash

CATALYTIC PRIVATE INVESTMENT

In all, 20 economic development projects were identified with the leadership of CCLRC in which it played a catalytic role in bringing a project to fruition through land assemblage, acquisition and/or demolition. Projects by investment size are provided below. Appendix 6 provides project descriptions along with specific types of land bank involvement, such as land assembly, technical assistance, demolition services, foreclosure research/ tracking and acquisition, remediation, conveyance, title clearing/lien removal, and creative financing.

Photo: Wikimedia Commons

Table 5: CCLRC Catalyzed Projects, 2009 – 2019

CCLRC CATALYZED PROJECTS, 2009–2019	
PROJECT TITLE	**AMOUNT OF PROJECT**
Randall Mall Amazon Fulfillment Center	$171,000,000
Mueller Electric Building	$16,000,000
Micelli's Dairy	$16,000,000
YMCA Housing First	$13,900,000
Euclid Avenue Ave. Housing First	$12,130,000
HGR Industries	$12,000,000
Fisher House Circle North Initiative	$11,000,000
West 98th St.	$9,047,000
Heinens	$9,000,000
Variety Theater	$7,500,000
Children's Museum	$7,000,000
LaSalle Theater	$4,100,000
Universal Windows	$3,500,000
Circle East	$3,500,000
Newburgh Heights Municipal Center	$2,800,000
Swingos on the Lake	$2,000,000
Trencher Site	$1,000,000
Lakeside Avenue Industrial Complex	$600,000
First Floor Living	$400,000
Meyers Dairy	$300,000
TOTAL	**$302,777,000**

Supporting the Local Economy

APPROACH

We measured the county-level economic impact of CCLRC expenditures and induced private sector rehabilitation spending between 2009–2019 using traditional Economic Impact Analysis (EIA) methods. In EIA, the geographic makeup of the Cuyahoga County economy was accounted for, and then the spending over the years of CCLRC is pushed through that local economy to measure the amount of additional economic activity and jobs CCLRC spending and induced spending had.[17]

IMPACT OF CCLRC ANNUAL BUDGET EXPENDITURE

Total expenditures over the 10-year period were roughly $178.1 million[18]. These expenditures were pushed through specific industry sectors relevant to each expenditure type (e.g. demolition activity, property maintenance, etc.) to arrive at job creation, labor income, value added and total economic output figures.

Total economic output created from the $178.1 million is estimated at $305.5 million, a multiplier effect of 1.72X.

In other words, $1 of CCLRC expenditure creates $1.72 in Cuyahoga County economic output. These same expenditures created an estimated 2,114 jobs over the past decade as well. See Appendix 7 for a view of the industry sector profile of spending by the CCLRC.

Table 6: CCLRC Annual Expenditures and Cuyahoga County Economic Impacts, 2009 – 2018

CUYAHOGA LAND REUTILIZATION CORPORATION — ANNUAL EXPENDITURES AND CUYAHOGA COUNTY ECONOMIC IMPACTS, 2009 – 2018*						
YEAR	TOTAL ANNUAL EXPENDITURE	EMPLOYMENT CREATION	LABOR INCOME ($)	VALUE ADDED ($)	TOTAL ECONOMIC OUTPUT ($)	MULTIPLIER EFFECT
2009	$870,589	8.5	$575,257	$788,605	$1,126,036	1.29
2010	$4,469,463	51.3	$3,029,313	$4,282,729	$7,115,566	1.59
2011	$13,089,956	160.4	$9,010,282	$12,879,472	$22,897,663	1.75
2012	$16,434,717	188.2	$10,978,470	$15,509,270	$28,618,008	1.74
2013	$24,651,213	360.0	$22,439,855	$27,837,316	$48,669,083	1.97
2014	$18,503,232	223.3	$12,821,017	$18,436,561	$34,303,990	1.85
2015	$21,296,478	247.1	$13,736,148	$19,623,879	$37,197,913	1.75
2016	$23,668,228	276.5	$14,651,041	$21,684,189	$39,424,565	1.67
2017	$27,270,285	301.8	$17,674,404	$24,755,671	$43,567,338	1.60
2018	$27,862,779	296.7	$17,017,697	$24,124,197	$42,627,761	1.53
TOTALS	**$178,116,940**	**2,114**	**$121,933,484**	**$169,921,889**	**$305,547,923**	**1.72**

*All economic impact numbers are in 2019 Dollars.

These numbers do not include NSP pass through dollars.

Supporting the Local Economy

Photo: DJ Johnson, Unsplash

IMPACT OF RESIDENTIAL REHABILITATION EXPENDITURE INCENTIVIZED BY CCLRC[19]

Total estimated expenditures of the private sector and CDC activities over the 10-year period is roughly $34.4 million. These expenditures were pushed through the construction industry sector expenditure type to arrive at job creation, labor income, value added and total economic output figures. Total economic output created from the conservatively estimated $34.4 million in rehab spending is estimated at $57.3 million, a multiplier effect of 1.66X.

In other words, $1 of home rehabilitation expenditure creates $1.66 in Cuyahoga County economic output. These same expenditures created an estimated 355 jobs over the past decade as well. See IMPLAN ID 63 in Appendix 7 for the title of the construction industry used for this analysis.

Table 7: Estimated Impact of Private Sector Rehabilitation Expenditures Induced by CCLRC, 2009 – 2019

ESTIMATED IMPACT OF PRIVATE SECTOR REHABILATION EXPENDITURES INDUCED BY CCLRC, 2009 – 2019*					
REHAB PROGRAM TYPE	65% OF ESTIMATED SPEC COST TO REHAB	EMPLOYMENT CREATION	LABOR INCOME ($)	VALUE ADDED ($)	TOTAL ECONOMIC OUTPUT ($)
203K	$118,173	1.2	$72,672	$104,654	$196,638
Afford-A-Home	$67,285	0.7	$41,378	$59,587	$111,961
CDC	$11,982,526	123.5	$7,368,762	$10,611,702	$19,938,724
Deed in Escrow	$15,314,430	157.9	$9,417,746	$13,562,429	$25,482,957
Straight Sale	$1,020,765	10.5	$627,729	$903,987	$1,698,536
Program Unknown (Blank)	$5,907,182	60.9	$3,632,674	$5,231,389	$9,829,453
TOTALS	$34,410,361	354.7	$21,160,959	$30,473,748	$57,258,269

*This represents 65% of the estimated rehabilitation specification cost to reach code compliance.

Summary of Findings

This study marries applied academically defensible methods from spatial econometrics, regional Economic Impact Analysis (EIA), and data mining with a CCLRC leadership report of catalyzed private sector investment to estimate the total economic impact of all CCLRC expenditures and programmatic activities during their first decade of activity. Table 8 summarizes the total estimated financial impact from each component of the impact evaluation.

INCREASED PROPERTY VALUES & BLIGHT REDUCTION

- $415.3 million in increased home value from just over 7,000 residential demolitions
- $320.6 million in increased home value from more than 2,100 programmatic residential rehabilitations

DISTRESSED PROPERTIES BACK ON THE TAX ROLLS

- $13 million from direct property sales
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- $302.8 million in direct private investment induced by catalytic CCLRC activity

SUPPORTING THE LOCAL ECONOMY

- $305.5 million in local economic impact and 2,114 jobs created from CCLRC budget expenditures between 2009–2019
- $57.3 million in local economic impact and 355 jobs created from programmatically incentivized private sector residential rehabilitation activity

CCLRC'S 10-YEAR EXPENDITURES OF $178 MILLION HAVE THE FOLLOWING ESTIMATED BENEFIT-COST RATIOS (BCRS):

- $8 in economic impact (benefit) for every $1 of CCLRC expenditure (cost)
- 1 job created (benefit)for every $72,152 of CCLRC expenditure (cost)

Findings suggest CCLRC achieved significant positive economic outcomes from its work over the past decade, meeting its mission and strengthening the underlying core of the Cuyahoga County economy. The BCRs and impact multipliers associated with CCLRC activities suggest significant economic "bang for your buck" from their work. Research provides evidence of higher home values, stronger neighborhoods, more jobs, and more overall economic activity in Cuyahoga County because of the CCLRC with an economic return that is higher than the cost of their work.

Table 8: Total Estimated Economic Impact of CCLRC, 2009 – 2019

TOTAL ESTIMATED ECONOMIC IMPACT OF CCLRC, 2009 – 2019		
	DOLLAR IMPACT	JOBS IMPACT
Residential Property Value Impact from CCLRC Demolitions	$415,334,977	
Residential Property Value Impact from CCLRC Rehabilitations	$320,645,372	
Direct Property Sales	$12,946,549	
Direct Property Tax Revenue of CCLRC Properties Back on Tax Rolls	$18,467,706	
Direct Private Investment Induced by CCLRC	$302,777,000	
CCLRC Economic & Employment Impact	$305,547,923	2114
Estimated Impact of Private Sector Rehabilitation Expenditures Induced by CCLRC	$57,258,269	355
TOTAL ESTIMATED 10-YEAR ECONOMIC IMPACT	**$1,432,977,796**	**2,469**

Bibliography & Appendices

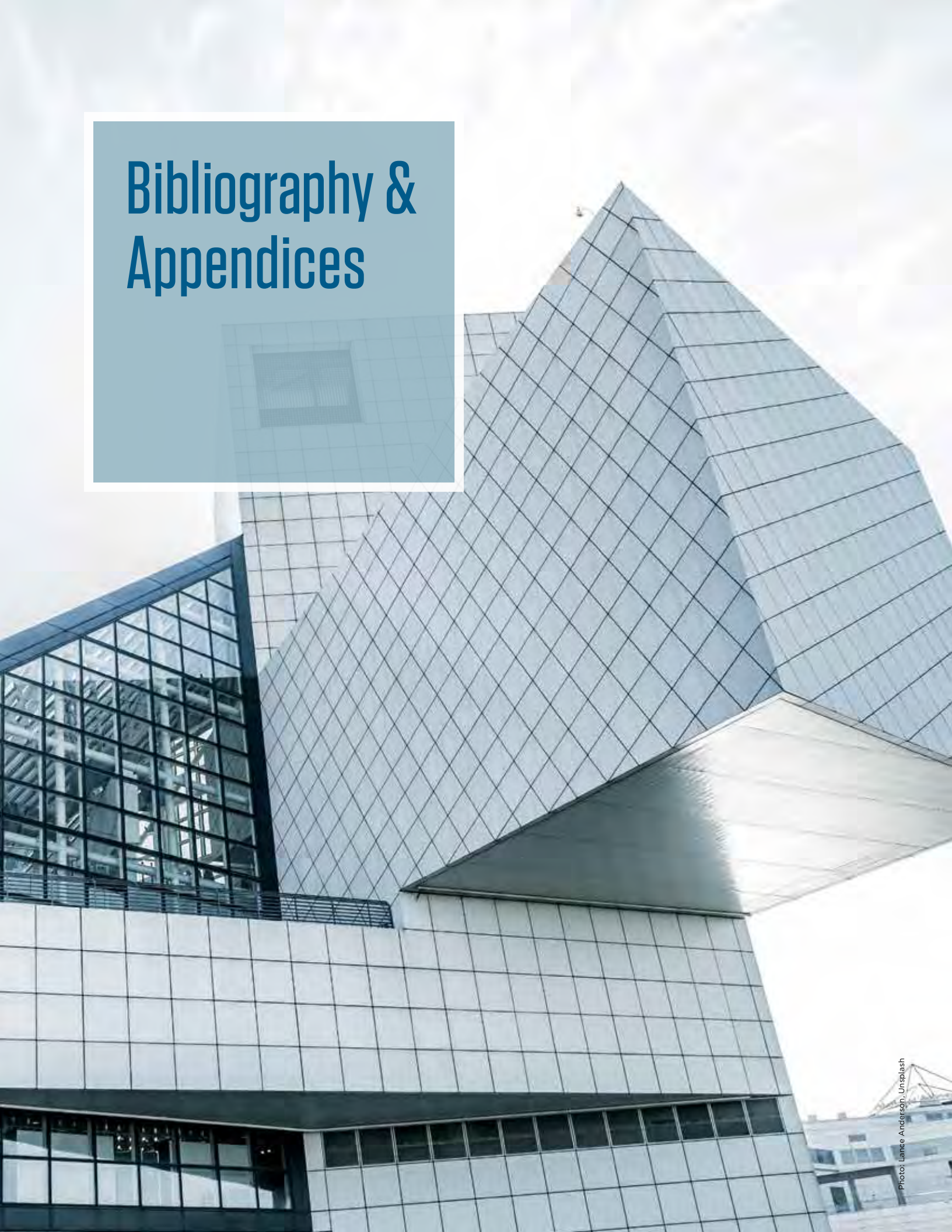

Photo: Lance Anderson, Unsplash

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Appendix 1 : Submarket Analysis & Statistics Summary of Each Market

A two-stage Multivariate Cluster Analysis (MCA)[20] was carried out to identify the varying housing submarkets in Cuyahoga County, OH (See Map 1, page 9).

THE TWO STAGES OF THE MCA ARE:

- Stage 1 - a principal components analysis (PCA)[21] of the census tract-level variables in the table below that explain socio-economic and demographic aspects of the given study area; and,
- Stage 2 - a k-means clustering analysis[22] of the estimated values of the principal components from the PCA that explain greater than 50% of the variation across the census tract geographies of interest.

After analysis of multiple clustering options, the best distribution of "k" housing submarkets delivered from the MCA of Cuyahoga County's census tracts is when k = 6 housing submarkets. These 6 submarket regimes were used in the final hedonic pricing model specification used for the econometric portion of this study. Summary statistics associated with each of the identified housing submarkets are available in the table below.

AVERAGED CENSUS TRACT VARIABLES BY SUBMARKET						
	WEAKEST	SECOND WEAKEST	MID WEAKEST	MID STRONGEST	SECOND STRONGEST	STRONGEST
Residential Sales ('09 - '17)	23790	23775	15536	7555	3952	470
Census Tracts within Submarket	156	111	88	49	30	5
Median Household Income	$26,542	$44,599	$58,368	$77,788	$104,096	$169,821
Median Rent	$707	$832	$924	$965	$1,143	$1,112
Median Housing Value	$57,247	$91,504	$138,012	$194,534	$284,672	$436,818
Unoccupied	22.9%	11.1%	7.9%	6.1%	6.9%	8.4%
Owner Occupied	46.6%	63.9%	73.8%	82.1%	84.6%	94.7%
Bachelor's Degree or More	10.5%	21.2%	38.4%	47.5%	64.6%	76.2%
Below Poverty Line	31.6%	13.3%	6.8%	3.3%	2.0%	2.9%
Unemployment	11.5%	5.9%	4.2%	3.0%	2.1%	2.0%
1-Bedroom Homes	9.5%	9.4%	8.8%	6.5%	5.7%	1.6%
2-3 Bedroom Homes	72.9%	75.2%	68.2%	56.2%	44.6%	34.3%
4 Bedroom Homes	15.2%	14.2%	21.7%	36.1%	49.0%	64.1%
Built 2010 - Present	0.3%	0.3%	0.5%	0.7%	1.5%	2.3%
Built 2000 - 2009	2.2%	1.6%	3.5%	6.9%	9.7%	3.4%
Built 1980 - 1999	3.9%	5.3%	7.6%	22.1%	23.9%	13.9%
Built 1960 - 1979	11.2%	21.3%	28.8%	29.2%	20.7%	29.5%
Built 1940 - 1959	30.1%	47.5%	35.1%	25.7%	22.4%	31.6%
Built Before 1939	52.2%	23.9%	24.5%	15.5%	21.8%	19.3%
Household Size	2.4	2.3	2.3	2.5	2.6	2.6
Under Age 17 in Household	24.4%	21.4%	19.5%	20.5%	23.6%	23.4%
Median Age of People	37	40	42	45	44	49
Caucasian	24.1%	59.0%	77.8%	87.1%	84.1%	84.7%
African American	62.8%	31.3%	14.3%	5.4%	6.0%	3.9%
Hispanic	9.5%	5.4%	3.3%	2.4%	2.0%	2.7%
AVG_AGGTT	907	1597	1633	2069	2034	1228

Appendix 2 : Data Used to Perform Econometric Analysis

We constructed a data system that allowed us to perform fully-specified, spatially-oriented hedonic price modeling[23] and data mining. Base data used comes from NEOCANDO, the Northeast Ohio Community and Neighborhood Data for Organizing[24].

NEOCANDO is a free and publicly accessible social and economic data system of the Center on Urban Poverty and Community Development, a research institute housed at Case Western Reserve University's Mandel School of Applied Social Sciences.

NEOCANDO is a groundbreaking achievement: it contains parcel level, time-series property data going back decades for every parcel in all of Cuyahoga County.

It allows a researcher to identify property and sale attributes and to determine the property tax payment status, mortgage status, occupancy status, and ownership status of each property in the county dynamically over a significant time-series.

We took data from NEOCANDO and further manipulated it for spatial counting and analysis. First, we incorporate the NEOCANDO data into a GIS-based platform.

Then we use GIS to make data out of the data: we create spatial variables by counting the multiple statuses of properties surrounding every property in the county. In other words, because NEOCANDO allows us to know the status (taxes, mortgage foreclosure, occupancy status, etc.) of the properties around each home, for each home we can create "counts" of such properties surrounding it using GIS.

The attributes of each and every home in the study area, therefore, include the statuses of the houses around them. The residential environment around each sales observation in our models for this study are fully specified: there is no double counting, and the occupancy, ownership, tax, and foreclosure status of every residential structure surrounding each property in each time period is accounted for.

Although NEOCANDO data stretches back decades, we selected the study time period for this study as the 8-3/4 years beginning in April 2009 and ending in December 2017 because it was the best available data to match the time periods since the CCLRC came into existence.

Appendix 3: Submarket Regimes Hedonic Pricing Model

SUBMARKET REGIMES HEDONIC PRICING MODEL, CUYAHOGA COUNTY, OH, 2009 - 2017												
	WEAKEST		SECOND WEAKEST		MID WEAKEST		MID STRONGEST		SECOND STRONGEST		STRONGEST	
SALES OBSERVATIONS	23,790		23,775		15,536		7,555		3,952		470	
ADJUSTED R-SQUARED	0.338		0.4405		0.4963		0.474		0.4713		0.6503	
VARIABLE TYPES	COEFFICIENT	PROBABILITY	COEFFICIENT	PROBABILITY	COEFFICIENT	PROBABILITY	COEFFICIENT	PROBABILITY	COEFFICIENT	PROBABILITY	COEFFICIENT	PROBABILITY
Neighborhood Variables												
owner occupied and tax current within 500 feet	0.0056800	0.0000000	0.0020034	0.0000000	0.0017609	0.0000000	0.0015968	0.0000000	0.0018037	0.0000002	-0.0025434	0.0781385
renter occupied and tax current within 500 feet	0.0010524	0.0501107	0.0001831	0.7047415	0.0019860	0.0001041	-0.0003985	0.6769889	-0.0016450	0.1129348	0.0061621	0.5666617
unoccupied and tax current within 500 feet	-0.0064053	0.0011542	-0.0006854	0.7482167	-0.0087540	0.0000240	-0.0040899	0.3143109	-0.0036086	0.6202189	-0.0129230	0.6476245
owner occupied and tax delinquent within 500 feet	-0.0192828	0.0000000	-0.0131295	0.0000000	-0.0139765	0.0000198	-0.0230276	0.0000906	-0.0401185	0.0000739	-0.0456168	0.3213231
renter occupied and tax delinquent within 500 feet	-0.0161038	0.0000000	-0.0202064	0.0000000	-0.0258865	0.0000007	-0.0279747	0.0111439	-0.0266684	0.1090169	-0.2066494	0.0572903
unoccupied and tax delinquent within 500 feet	-0.0060226	0.0052726	-0.0256483	0.0000179	-0.0559049	0.0000006	-0.0612105	0.0053802	-0.0557024	0.1477750	-0.2330485	0.2420082
mortgage foreclosed and occupied within 500 feet	-0.0052920	0.0593821	-0.0227002	0.0000000	-0.0138600	0.0000024	-0.0174544	0.0004020	-0.0303347	0.0001874	-0.0823660	0.0092691
mortgage foreclosed and unoccupied within 500 feet	-0.0296425	0.0000379	-0.0207452	0.0003196	-0.0248374	0.0098138	-0.0397048	0.0525515	-0.0784744	0.0079075	0.0556708	0.5199738
cclrc owned or tax foreclosed res. structure within 500 feet	-0.0148883	0.0000027	-0.0389569	0.0000000	-0.0504840	0.0000000	-0.0335459	0.0233312	-0.0717901	0.0049541	-0.0921539	0.2571441
vacant residential lot	-0.0009869	0.1003576	-0.0003147	0.7228981	-0.0061867	0.0000265	-0.0026672	0.0359177	0.0006396	0.6474922	0.0114919	0.0057880
Spatial Lag Variable												
Log of avg. price of neareast 6 sales in previous quarter/1000	0.1917832	0.0000000	0.3712084	0.0000000	0.3747502	0.0000000	0.2512931	0.0000000	0.3809171	0.0000000	0.1327422	0.0093911
Structural Variables												
number of full + half bathrooms	-0.0056618	0.7339186	0.0495539	0.0005784	0.1102955	0.0000001	0.0814483	0.0000000	0.2311921	0.0000000	0.1347720	0.0000002
number of bed rooms	0.0030354	0.7341784	0.0325170	0.0002114	0.0340207	0.0067309	-0.0057876	0.5334211	0.0455285	0.0000961	0.0138986	0.5874344
age of home when sold	-0.0070955	0.0000000	-0.0058372	0.0000000	-0.0031409	0.0000000	-0.0023053	0.0000000	-0.0004181	0.2452031	0.0004012	0.7038097
number of fireplaces	0.0634811	0.0007021	0.0915114	0.0000000	0.0567895	0.0000000	0.0363368	0.0001593	0.0221709	0.1610850	0.1512466	0.0170593
lotsize in square feet/1000	0.0075858	0.0000010	0.0017979	0.0143534	0.0032815	0.0000005	0.0006536	0.0010036	0.0004613	0.0193631	0.0014248	0.0000000
residential building usable square feet	0.0001649	0.0000000	0.0002065	0.0000000	0.0000626	0.1597365	0.0002208	0.0000000	0.0000001	0.4763544	0.0001807	0.0000000
air conditioning	0.2188618	0.0000000	0.0649211	0.0000000	0.0524947	0.0000000	0.0526467	0.0000003	0.1018932	0.0000000	0.1245653	0.0021243
finished attic	-0.0271433	0.3066025	0.0522862	0.0602938	-0.0118854	0.5328658	-0.0240310	0.2965296	-0.0808930	0.0079023	0.0530898	0.5985534
finished basement	0.0205264	0.3306821	-0.0011908	0.8828123	-0.0244381	0.0082693	0.0226460	0.0611994	-0.0181577	0.3443511	0.0080979	0.8639515
brick exterior	0.0490368	0.0191911	0.0459249	0.0000004	0.0254011	0.0043309	0.0468349	0.0000132	0.1068082	0.0000000	0.0463936	0.2751205
garage	0.0942471	0.0000000	0.0946327	0.0001645	0.2086881	0.0000000	0.1039446	0.0583793	0.1129593	0.0651556	-0.1903431	0.3294286
porch	0.0356908	0.0153866	0.0130426	0.0925280	0.0168778	0.0119296	0.0460838	0.0000000	0.0391888	0.0054876	0.0068064	0.8599516
terrace	0.1007757	0.0000856	0.0404110	0.0000410	0.0244066	0.0027637	0.0442126	0.0000006	0.0256756	0.0732044	-0.0359679	0.3388475
Sales Transfer Type Dummy Variables												
sold as quit claim deed	-0.4075714	0.0000000	-0.5489405	0.0000000	-0.5952129	0.0000000	-0.5146286	0.0000000	-0.5327467	0.0000000	-0.5541453	0.0076233
sold while exiting reo	-0.6921318	0.0000000	-0.6226506	0.0000000	-0.5193738	0.0000000	-0.3848779	0.0000000	-0.4495417	0.0000000	-0.4309462	0.0000000
sold while owner occupied and tax current	0.3757248	0.0000000	0.3014565	0.0000000	0.2696362	0.0000224	0.1327626	0.3023406	0.0882820	0.5147547	-0.2506697	0.1939477
sold while renter occupied and tax current	0.2358912	0.0000000	0.2024488	0.0000004	0.1705629	0.0076899	0.0414089	0.7484000	-0.0083657	0.9510842	-0.3987264	0.0264125
sold while unoccupied and tax current	0.1154372	0.0000926	0.1610370	0.0000581	0.1409057	0.0287346	0.0012053	0.9925853	-0.0526328	0.7041144	-0.4963228	0.0077686
sold while owner occupied and tax delinquent	0.2648787	0.0000000	0.0905343	0.1142588	0.0603751	0.4841429	-0.0547597	0.6977832	-0.2170420	0.3010339	-0.1759174	0.4416854
sold while renter occupied and tax delinquent	0.2414533	0.0000000	0.0803039	0.1172980	0.0224138	0.7722583	-0.0808196	0.5645187	0.0301807	0.8515907	-0.0736961	0.7362745
sold while mortgage foreclosed and occupied	0.0296774	0.5611610	-0.0458702	0.3295729	-0.0262961	0.7084036	-0.1494737	0.2609417	-0.1235563	0.3904336	-0.4837284	0.0220013
sold while mortgage foreclosed and unoccupied	-0.1526784	0.0648551	-0.1722256	0.0092673	-0.1002255	0.2044115	-0.0837770	0.5665100	-0.3304844	0.0597701	-0.8231091	0.0000797
sold while land bank owned or tax foreclosed	-0.0026587	0.9409049	0.0201798	0.6596938	0.0567009	0.4428406	-0.1328638	0.3352805	-0.0315807	0.8378545	-0.0565026	0.8054694
Time Period of Sales Dummy Variables												
sold in 2009, 2nd quarter	-0.1773083	0.0009211	0.1460604	0.0001847	0.0778313	0.0361391	0.0975610	0.0427670	0.1239495	0.0914716	-0.0044431	0.9774682
sold in 2009, 3rd quarter	-0.0872758	0.1034785	0.1886761	0.0000016	0.0777497	0.0286814	0.0873624	0.0503876	0.1780492	0.0105390	0.0698967	0.6975765
sold in 2009, 4th quarter	0.0474815	0.3778441	0.1710902	0.0000084	0.0744000	0.0472860	0.0895078	0.0400291	0.1377540	0.0662897	-0.0053584	0.9734301
sold in 2010, 1st quarter	0.3179432	0.0000000	0.3072407	0.0000000	0.1490242	0.0004196	0.1698082	0.0009698	0.1557982	0.0392005	0.1528621	0.4173776
sold in 2010, 2nd quarter	0.2057038	0.0000777	0.2074795	0.0000000	0.1242605	0.0007787	0.1664272	0.0009502	0.2593687	0.0004951	-0.0200477	0.8945720
sold in 2010, 3rd quarter	0.0269789	0.6155526	0.0836724	0.0539436	0.0381055	0.3671697	0.0135152	0.7884125	0.2253145	0.0025903	-0.0295812	0.8409959
sold in 2010, 4th quarter	0.0804826	0.1700041	0.0551575	0.2120516	0.0683367	0.0818796	0.0483457	0.3934716	0.1339797	0.0918232	0.1768562	0.4448014
sold in 2011, 1st quarter	-0.0032203	0.9546784	0.0360892	0.4228363	-0.0166879	0.6946177	-0.0315318	0.5913631	0.0148273	0.8532837	-0.0118497	0.9568297
sold in 2011, 2nd quarter	0.1894192	0.0005919	0.0347698	0.4200141	0.0363510	0.3711558	0.0218223	0.6641923	0.2073304	0.0079954	-0.0914375	0.5682042
sold in 2011, 3rd quarter	0.1065203	0.0689758	0.0410052	0.3364073	0.0609230	0.0957369	0.0539236	0.2526462	0.2010390	0.0087781	-0.1883015	0.2435530
sold in 2011, 4th quarter	-0.0119481	0.8271819	0.0554842	0.1916501	-0.0430509	0.2969513	0.0162351	0.7424210	0.1144201	0.1152492	-0.1739087	0.2717991
sold in 2012, 1st quarter	0.1596106	0.0037614	0.0288508	0.4997299	0.0211427	0.6372346	-0.0437355	0.3923483	0.1289042	0.1164013	-0.3425857	0.1443228
sold in 2012, 2nd quarter	0.0317210	0.5381515	0.0700385	0.0825736	0.0259276	0.4822011	0.0693447	0.1187159	0.0996857	0.1677094	-0.2313536	0.1429509
sold in 2012, 3rd quarter	0.0587213	0.2805224	0.1052752	0.0079913	0.0367400	0.3391959	0.0433851	0.3264521	0.2004706	0.0034445	0.1841660	0.2480192
sold in 2012, 4th quarter	0.0252791	0.6364382	0.0628447	0.1229788	-0.0111170	0.7694560	0.0353558	0.4617384	0.0930783	0.2176945	-0.2065649	0.2156712
sold in 2013, 1st quarter	0.0260557	0.6345588	0.1184198	0.0042736	0.0484909	0.2201874	0.0342573	0.4711975	0.1374779	0.0764808	-0.1675781	0.3686377
sold in 2013, 2nd quarter	0.1120807	0.0332698	0.1472996	0.0001300	0.0827492	0.0161862	0.0972536	0.0297099	0.2065791	0.0036397	-0.0017155	0.9918059
sold in 2013, 3rd quarter	0.1077002	0.0393932	0.1187428	0.0021264	0.1126943	0.0008214	0.1115225	0.0103678	0.2212289	0.0011392	0.1903014	0.2753593
sold in 2013, 4th quarter	0.1374578	0.0068777	0.1905208	0.0000156	0.0245549	0.5123188	0.0751580	0.0863920	0.1389052	0.0691497	0.1794428	0.3920960
sold in 2014, 1st quarter	0.3489173	0.0000000	0.0748482	0.0747592	0.0226118	0.5683953	0.0551432	0.2929453	0.2265581	0.0025046	-0.1056922	0.5517078
sold in 2014, 2nd quarter	0.1017190	0.0524987	0.1777888	0.0000062	0.0482840	0.1801484	0.0983097	0.0285758	0.2469668	0.0003451	-0.0335930	0.8224673
sold in 2014, 3rd quarter	0.1647383	0.0012757	0.1132328	0.0030437	0.0936483	0.0066381	0.0900754	0.0439470	0.1705636	0.0184157	0.0204523	0.8996218
sold in 2014, 4th quarter	0.3101814	0.0000000	0.1138229	0.0042030	0.0892016	0.0111221	0.1081042	0.0220263	0.2350416	0.0019512	0.1598606	0.4044598
sold in 2015, 1st quarter	0.2564285	0.0000048	0.1257879	0.0020983	0.0492000	0.2058920	0.1315033	0.0055657	0.1780082	0.0257604	0.0913771	0.6258512
sold in 2015, 2nd quarter	0.2426001	0.0000033	0.0928880	0.0245091	0.0692793	0.0457389	0.1297019	0.0031743	0.1832909	0.0094015	-0.0285471	0.8501231
sold in 2015, 3rd quarter	0.0915653	0.0789036	0.0905069	0.0176911	0.0781734	0.0220341	0.1400097	0.0009554	0.2062137	0.0027704	0.0650175	0.6675765
sold in 2015, 4th quarter	0.1313654	0.0091775	0.0862377	0.0256289	0.0424979	0.2390389	0.0630275	0.2013722	0.1053927	0.1925038	-0.1339205	0.4713198
sold in 2016, 1st quarter	0.3543951	0.0000000	0.2280140	0.0000001	0.0995462	0.0073323	0.1386812	0.0030224	0.1839380	0.0127073	-0.0563590	0.7642825
sold in 2016 2nd quarter	0.3108836	0.0000000	0.2188468	0.0000000	0.1496772	0.0000060	0.1802936	0.0000212	0.1517816	0.0261278	0.1689906	0.4302180
sold in 2016, 3rd quarter	0.1935803	0.0001877	0.1579948	0.0000288	0.1066196	0.0016252	0.1775654	0.0000335	0.2135811	0.0020637	0.1085496	0.4656336
sold in 2016, 4th quarter	0.3496058	0.0000000	0.2433912	0.0000000	0.1288189	0.0002368	0.1607477	0.0001885	0.2652374	0.0004681	0.0842511	0.5959284
sold in 2017, 1st quarter	0.5114833	0.0000000	0.2195396	0.0000000	0.1271146	0.0004099	0.1512661	0.0009547	0.2564402	0.0002485	-0.0452285	0.7640118
sold in 2017, 2nd quarter	0.4119851	0.0000000	0.2898803	0.0000000	0.1911199	0.0000000	0.2084606	0.0000009	0.2740047	0.0000688	0.1259055	0.4057928
sold in 2017, 3rd quarter	0.5680815	0.0000000	0.1995314	0.0000001	0.1019202	0.0030018	0.1786994	0.0000307	0.2185600	0.0018641	-0.1015557	0.5946708
sold in 2017, 4th quarter	0.4034680	0.0000000	0.1788819	0.0000028	0.1211610	0.0003650	0.1626428	0.0002216	0.2028281	0.0043830	-0.0636436	0.6998176
Model Constant	7.9841884	0.0000000	6.4505590	0.0000000	6.4713335	0.0000000	8.1006757	0.0000000	6.4626324	0.0000000	10.2774175	0.0000000

Appendix 4: Summary Statistics of Key Spatial Variables in Econometric Analysis

AVERAGED KEY VARIABLES BY HOUSING SUBMARKET						
	WEAKEST	SECOND WEAKEST	MID WEAKEST	MID STRONGEST	SECOND STRONGEST	STRONGEST
Residential Sales ('09 - '17)	23790	23775	15536	7555	3952	470
Census Tracts Within Submarket	156	111	88	49	30	5
Residential Sales Price ($)	$35,333	$75,105	$123,414	$169,043	$236,467	$381,147
Owner Occupied Tax Current w/in 500 feet	60.9	81.2	75.3	57.6	52.0	25.9
Renter Occupied Tax Current w/in 500 feet	30.7	23.1	15.5	9.6	9.7	3.7
Unoccupied Tax Current w/in 500 feet	5.1	4.1	2.1	1.1	1.0	0.7
Owner Occupied Tax Delinquent w/in 500 feet	7.0	2.6	1.2	0.7	0.5	0.1
Renter Occupied Tax Delinquent w/in 500 feet	6.9	1.5	0.6	0.2	0.2	0.0
Unoccupied Tax Delinquent w/in 500 feet	3.1	0.6	0.2	0.1	0.1	0.0
Mortgage Foreclosed Occupied w/in 500 feet	3.2	2.7	1.5	0.8	0.6	0.2
Mortgage Foreclosed Unoccupied w/in 500 feet	0.6	0.4	0.2	0.1	0.1	0.0
Land Bank or Tax Foreclosed w/in 500 feet	2.2	0.7	0.3	0.1	0.1	0.0
Residential Vacant Lot w/in 500 feet	14.0	4.0	2.6	3.2	4.3	3.1
Mortgage Foreclosed Occupied w/in 500 feet	3.2	2.7	1.5	0.8	0.6	0.2
Mortgage Foreclosed Unoccupied w/in 500 feet	0.6	0.4	0.2	0.1	0.1	0.0
Land Bank or Tax Foreclosed w/in 500 feet	2.2	0.7	0.3	0.1	0.1	0.0
Residential Vacant Lot w/in 500 feet	14.0	4.0	2.6	3.2	4.3	3.1

Appendix 5: Regression Diagnostics from Final Model Specification

GLOBAL CHOW TEST		
GLOBAL REGIME CHOW TEST	**5721.8100**	**0.0000**
	CHOW TEST SCORE	PROBABILITY
NEIGHBORHOOD VARIABLES		
Owner Occupied and Tax Current within 500 Feet	160.6900	0.0000
Renter Occupied and Tax Current within 500 Feet	14.5530	0.0125
Unoccupied and Tax Current within 500 Feet	7.9800	0.1574
Owner Occupied and Tax Delinquent within 500 Feet	12.3880	0.0298
Renter Occupied and Tax Delinquent within 500 Feet	8.2310	0.1440
Unoccupied and Tax Delinquent within 500 Feet	35.0770	0.0000
Mortgage Foreclosed and Occupied within 500 Feet	33.2270	0.0000
Mortgage Foreclosed and Unoccupied within 500 Feet	5.5950	0.3477
Land Bank Owned or Tax Foreclosed Residential Structure within 500 Feet	30.8210	0.0000
Vacant Residential Lot within 500 Feet	25.0450	0.0001
SPATIAL LAG VARIABLE		
Natural Log of the Price of Nearest 6 Sales in Previous Quarter	166.3980	0.0000
STRUCTURAL VARIABLES		
Number of Full + Half Bathrooms	151.5680	0.0000
Number of Bedrooms	19.3090	0.0017
Age of Home When Sold	309.4830	0.0000
Number of Fireplaces	23.9690	0.0002
Lot Size in Square Feet/1000	44.3780	0.0000
Residential Building Usable Square Feet	503.6790	0.0000
Air Conditioning	85.3820	0.0000
Finished Attic	11.3770	0.0444
Finished Basement	11.8120	0.0375
Brick Exterior	15.9050	0.0071
Garage	14.8210	0.0112
Porch	11.8610	0.0367
Terrace	13.6380	0.0181
SALES TRANSFER TYPE DUMMY VARIABLES		
Sold as Quit Claim Deed	34.9880	0.0000
Sold while Exiting REO	250.9720	0.0000
Sold while Owner Occupied and Tax Current	18.5930	0.0023
Sold while Renter Occupied and Tax Current	17.0330	0.0044
Sold while Unoccupied and Tax Current	14.5740	0.0123
Sold while Owner Occupied and Tax Delinquent	15.4170	0.0087
Sold while Renter Occupied and Tax Delinquent	16.3290	0.0060
Sold while Mortgage Foreclosed and Occupied	7.3420	0.1964
Sold while Mortgage Foreclosed and Unoccupied	11.9980	0.0348
Sold while Land Bank Owned or Tax Foreclosed	1.7720	0.8797

Table continued on following page

Appendix 5: Regression Diagnostics from Final Model Specification *(cont.)*

TIME PERIOD OF SALES DUMMY VARIABLES		
Sold in 2009, 2nd Quarter	26.2350	0.0001
Sold in 2009, 3rd Quarter	18.9580	0.0020
Sold in 2009, 4th Quarter	5.5520	0.3522
Sold in 2010, 1st Quarter	11.5860	0.0409
Sold in 2010, 2nd Quarter	5.9510	0.3111
Sold in 2010, 3rd Quarter	7.0490	0.2170
Sold in 2010, 4th Quarter	1.1550	0.9492
Sold in 2011, 1st Quarter	1.1250	0.9519
Sold in 2011, 2nd Quarter	11.0660	0.0501
Sold in 2011, 3rd Quarter	6.4940	0.2610
Sold in 2011, 4th Quarter	6.3940	0.2697
Sold in 2012, 1st Quarter	11.4830	0.0426
Sold in 2012, 2nd Quarter	4.6400	0.4614
Sold in 2012, 3rd Quarter	5.9960	0.3066
Sold in 2012, 4th Quarter	4.5470	0.4737
Sold in 2013, 1st Quarter	5.1920	0.3929
Sold in 2013, 2nd Quarter	3.8950	0.5646
Sold in 2013, 3rd Quarter	2.5010	0.7764
Sold in 2013, 4th Quarter	9.5310	0.0897
Sold in 2014, 1st Quarter	27.7280	0.0000
Sold in 2014, 2nd Quarter	10.8280	0.0549
Sold in 2014, 3rd Quarter	2.5610	0.7673
Sold in 2014, 4th Quarter	14.6140	0.0121
Sold in 2015, 1st Quarter	9.7890	0.0814
Sold in 2015, 2nd Quarter	9.9250	0.0774
Sold in 2015, 3rd Quarter	3.7400	0.5874
Sold in 2015, 4th Quarter	3.6100	0.6068
Sold in 2016, 1st Quarter	18.2780	0.0026
Sold in 2016, 2nd Quarter	7.7620	0.1699
Sold in 2016, 3rd Quarter	3.6930	0.5944
Sold in 2016, 4th Quarter	15.3380	0.0090
Sold in 2017, 1st Quarter	39.3240	0.0000
Sold in 2017, 2nd Quarter	16.1630	0.0064
Sold in 2017, 3rd Quarter	60.3640	0.0000
Sold in 2017, 4th Quarter	25.3200	0.0001
MODEL CONSTANT	102.5020	0.0000

REGRESSION DIAGNOSTICS

Multicolinearity Condition Number	182.271

TEST ON NORMALITY OF ERRORS

TEST	DEGREES OF FREEEDOM	VALUE	PROBABILITY
Jarque-Bera	2	25628.6480	0.0000

DIAGNOSTIC FOR HETEROSKEDASTICITY

RANDOM COOEFICIENTS TESTS

TEST	DEGREES OF FREEEDOM	VALUE	PROBABILITY
Breusch-Pagan Test	69	9463.3530	0.0000
Koenker-Bassett Test	69	2699.5430	0.0000

Appendix 6: Private Investment Project Descriptions and CCLRC Services Provided

PRIVATE INVESTMENT PROJECT DESCRIPTIONS AND CCLRC SERVICES PROVIDED			
PROJECT	**PROJECT DESCRIPTION**	**LAND BANK INVOLVEMENT**	**AMOUNT OF PROJECT**
Variety Theater	Historic theater renovation, retail and landscape, parking lot. Historic preservation	Land assembly, technical assistance and demolition services.	$7.5 Million Tax Credit Project
LaSalle Theater	Historic theater renovation, retail and landscape, parking lot. Historic preservation.	Land assembly and demolition services	$4.1 Million
Fisher House Circle North Initiative (Land and Gas Station tank remediation)	Development of 33 units of extended-stay housing for families of Veterans injured in combat; Common Public Green space	Technical assistance, research, acquisition, land assembly and demolition, gas station remediation for Wes Finch Circle North housing and retail development	$11 Million
Randall Mall Amazon Fulfillment Center	Industrial office development; Amazon Fulfillment Center	Research, tracking foreclosure; Land Assembly.	$171 Million
Heinens	Expansion of Heinen's headquarters and distribution facilities	Research, tracking foreclosure; land assembly; demolition service	$9 Million
HGR Industries	Headquarters and retail facilities for HGR Industries. Jobs Ohio Project assembly for NEO Sports and Drive Time Retail Sports and Entertainment facility	Land Bank referred to tax foreclosure, secured title and transacted with developer	$12 Million
Children's Museum	Children's Museum Relocation from University Circle; renovation of forfeited condemned Stager-Beckwith mansion; historic preservation.	Land Bank secured title from State Forfeiture; transacted with Childrens Museum developer	$7 Million
Swingos on the Lake	Abandoned Former Swingos Restaurant; Condominiumized space needing tenancy for the Carlyle Condominiums	Land Bank secured parcel; researched and located developer and transacted property to developer.	$2 Million
YMCA Housing First	Metro Hospital, Housing First development of 71 housing units at the former YMCA at Denison and 25th	Land Bank assembled the Land and building, demolished two large structures, held property pending tax credit approvals	$13.9 Million
West 98th St.	Held and conveyed large warehouse for Housing First Project of 40 housing units	Land Bank acquired and held property to permit CHN/Housing First to gain tax credits for project.	$9.047 Million
Euclid Avenue Ave. Housing First	Housing First 60 units of affordable housing	Land Bank advanced $400k+ to exercise option for CHN; acquired and conveyed land to project.	$12.13 Million
Lakeside Avenue Industrial Complex	Condemned industrial property renovation into commercial warehouse and wholesale	Land Bank secured from forfeiture, researched and identified developer	$600k
Universal Windows	Corporate headquarters for Universal Windows, offices.	Land Bank performed demolition and large-scale environmental remediation services and participated in the project with County and Jobs Ohio.	$3.5 Million
Newburgh Heights Police	Newburg Hts Police and Safety Headquarters. Demolition of old site and new construction of headquarters	Land Bank performed environmental services, demolition and land assembly	$2.8 Million
Trencher Industrial Site	Relocate manufacturing facility to long contaminated site in Euclid, total remediation by developer.	Acquired and hold forfeited manufacturing site pending clean up and relocation. Still awaiting clean up as of 3-6-19.	$1 Million
Mueller Electric Building	Redevelopment of a historic former electric manufacturer into 51 units of market housing	Land Bank assembled, acquired and conveyed adjacent lots for project parking and zoning compliance	$16 Million
First Floor Living	Vacant condemned milti-family being renovated into 4-unit extended first floor living units	Land Bank acquired from forfeiture, cleared title and debris removal for redevelopment	$400,000
Micelli's Dairy	Plant expansion of dairy company adding 60 employees	Land Bank performed environmental services, demolition and technical assistance with federal lien removal for needed parcels	$16 Million
Meyers Dairy	Expansion of Meyers dairy site	Land Bank performed environmental services, demolition and technical assistance	$300,000
Circle East	Wes Finch development of 78 units of market rate housing in East Cleveland- for CWRU, UCI housing expansion and demand	CCLRC and County secured and redirected $3.5 Million of NSP-2 funds to assist in finance stack for the Project	$3.5 Million
TOTAL			**$302,777,000**

Appendix 7: Industry Profile Impacted by CCLRC Expenditures

IMPACT PROFILE ON INDUSTRY CATEGORIES FROM CCLRC EXPENDITURES	
	IMPLAN id
In-house Renovation & Construction of Residential Structures	63
Landscape and Horticultural Services	469
Architectural, Engineering and Related Services	449
Grantmaking, Giving, and Social Advocacy Organizations	514
Accounting, Tax Preparation, Bookkeeping and Payroll Services	448
Office Administrative Services	462
Funds, Trusts and Other Financial Vehicles	439
Employee Compensation	NA

Endnotes

[1] These endnotes explain the conservative assumptions used in quantifying the economic impacts. Impact estimates do not include the increased property tax revenue from increased home values caused by land bank activities.

[2] CCLRC direct property sales and associated tax revenue are accounted for given that these outcomes are components of the economic impact of CCLRC. That said, these outcomes would have likely occurred regardless because it is a pre-existing functional component of government.

[3] This study does not include the short- and long-term local economic impact or the associated jobs created from private sector investment catalyzed by the CCLRC. Dynamo Metrics taken a conservative approach by not inclucing this.

[4] To make estimates conservative, 65% of the estimated code compliance specification cost was used to quantify this local economic impact and job creation.

[5] Does not include roughly $36 million of NSP 2 pass through dollars to CCLRC partner organizations.

[6] ftp://sosftp.sos.state.oh.us/free/publications/SessionLaws/127/127SB-353.pdf or http://archives.legislature.state.oh.us/BillText127/127_SB_353_EN_N.html

[7] See Appendix 1 – 5 for full overview of data, methods and final specification of the econometric analysis.

[8] See Alm et al. 2016; Biswas 2012; Daneshvary, Clauretie, and Kader 2011; Griswold 2006; Griswold and Norris 2007; Griswold et al. 2014; Han 2014; Harding, Rosenblatt, and Yao 2009; Ihlanfeldt and Mayock 2016; Immergluck 2015; Leonard and Murdoch 2009; Lin, Rosenblatt, and Yao 2009; Mikelbank 2008; Rogers and Winter 2009; Schuetz, Been, and Ellen 2008; Whitaker and Fitzpatrick 2013; Baumer, Wolff, and Arnio 2012; Cui and Walsh 2015; Ellen, Lacoe, and Sharygin 2013; Stucky, Ottensmann, and Payton 2012; Immergluck and Smith 2006; Lacoe and Ellen 2015; Wallace, Hedberg, and Katz 2012; Katz, Wallace, and Hedberg 2013; Williams, Galster, and Verma 2014.

[9] See Griswold 2006; Griswold and Norris 2007; Griswold et al. 2014; Dynamo Metrics 2015, 2016b, 2016a, 2017, 2018; Bucchianeri, Gillen, and Wachter 2012; Voicu and Been 2008; Ding, Simons, and Baku 2000; Edmiston 2012; Simons, Quercia, and Maric 1998; Borowy et al. 2013; Branas et al. 2011, 2016; Kondo et al. 2015; Spader, Schuetz, and Cortes 2015; Plerhoples Stacy 2017.

[10] See Appendix 2 or link to the NEOCANDO data system: http://neocando.case.edu/

[11] See Appendix 3 for final econometric model specification, Appendix 4 for summary statistics of key neighborhood variables used in applied econometric analysis, and Appendix 5 for regression diagnostics associated with final econometric model specification.

[12] For previous weak market demolition impact results in Cuyahoga County, see Griswold et al. 2014; Dynamo Metrics 2016b, 2016a

[13] This total rehabilitation expenditure estimate is calculated using 1,423 rehabilitation specifications (rehab specs) made by CCLRC. These rehab specs are estimated costs to bring potential rehabs up to code. The average cost to bring a rehab prospect that was eventually rehabbed up to code was $26,535. Therefore, total estimated cost of all rehab is $26,535 multiplied by total rehabs performed (2,122), to reach the total estimated cost of $56.3 million.

[14] There were no direct property sales in 2009.

[15] We identified every property that is or has been influenced by CCLRC in Cuyahoga County from 2009 to present. We then mined for the total property tax revenue collected after properties owned by CCLRC were transfered to new owners through rehabilitation and sale, direct-sale, side-lotting or other property disposition types.

[16] Learn more about the cloud-based regional input/output economic modeling software, IMPLAN, used for the EIA in this study, here: http://old-support.implan.com/index.php?option=com_content&view=article&id=238

[17] Total expenditures do not include roughly $36 million of NSP 2 pass through dollars to CCLRC partner organizations.

[18] This calculation was created as a conservative estimate of impact intentionally. Thus, only 65% of the average estimated code compliance specification cost of $26,535, and the actual code compliance specification costs where available, were accounted for in total estimated expenditure amount. Further, all “in house”, Veterans and Refugees rehabs have already been accounted for in total CCLRC expenditures above.

[19] Inquire with authors for full breakdown of results from the two-stage multivariate cluster analysis

[20] See page 19 – 21 of Dynamo Metrics 2017 for full breakdown and methods of MCA.

[21] Cam and Neyman, 1967

[22] James et al. 2013

[23] See the following for hedonic pricing model specifications: Rosen 1974; Griswold 2006; Chow 1960; Anselin 1988, 1990; Anselin and Arribas-Bel 2013; Kuminoff, Parmeter, and Pope 2010

[24] Access NEOCANDO here: http://neocando.case.edu/

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