

A Typology of Opportunity Zones Based on Potential Housing Investments and Community Outcomes

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Abstract

The Opportunity Zones tax incentive is a decentralized, large-scale, flexible, federal place-based initiative intended to bring investment to historically underinvested communities across the United States. Although the eligibility of Opportunity Zones was based on certain criteria, every state developed its own process for recommending eligible census tracts for designation. This fact, along with the diversity in the characteristics of eligible census tracts, led to broad variation across designated Opportunity Zones. This variation means that evaluating the Opportunity Zones incentive will require different approaches for different types of communities. Using a combined principal components analysis and cluster analysis approach, the authors developed a typology of Opportunity Zones based on designated tracts' characteristics around socioeconomics and housing markets. Five types of Opportunity Zones were identified and described as, in order from most to least represented, (1) rural, small-town, and tribal communities (36 percent of OZs); (2) underinvested majority-Black communities (26 percent); (3) suburban majority-Hispanic families (19 percent); (4) growing job hubs (13 percent); and (5) metropolitan immigrant communities (6 percent). Potential investment outcomes and community outcomes for each type, and considerations for evaluating each type of Opportunity Zone, are discussed. This typology may be useful for Opportunity Zone stakeholders interested in housing investments and researchers conducting future evaluations of the incentive.

Introduction

Opportunity Zones (OZs) represent the latest, largest, and most flexible federal place-based tax incentive to encourage economic development in historically underinvested and distressed communities. Transactions in Opportunity Zones eligible for capital gains tax reductions or deferrals cover a spectrum of investments, from commercial and multifamily real estate and infrastructure developments to investments in businesses throughout their lifecycle, from startups to later-stage companies.

The Executive Order under the Trump administration that established the White House Opportunity and Revitalization Council, helmed by the U.S. Department of Housing and Urban Development (HUD), included a clause to evaluate the data, metrics, and methodologies that can be used to measure the effectiveness of public and private investments in urban and economically distressed communities, including qualified Opportunity Zones.¹ The feasibility of a comprehensive evaluation of the Opportunity Zones incentive is challenging due to constraints around the availability of data for investments in designated Opportunity Zones, which are either using or not using the tax incentive. To this end, this article provides a nuanced approach for future evaluation of the Opportunity Zones tax incentive through a typology of designated neighborhoods, drawing from literature on housing markets. Opportunity Zone tracts and clusters are categorized for the practical purpose of understanding that success will look different for different baseline scenarios. Each type of designated community may require different evaluation approaches and different thresholds of success, though they will focus broadly on employment, housing, and income outcomes. A differentiated evaluation approach is necessary given the heterogeneous, decentralized, and flexible scope of the incentive.

This article focuses on housing investment outcomes rather than operating business outcomes or other types of real estate or infrastructure investments. The majority of publicized transactions in Opportunity Zones in the first years of the initiative are in residential real estate (Novogradac, 2021). HUD is also interested in understanding potential housing outcomes in these census tracts.

What types of housing investments will Opportunity Zones attract? Investors driven by profit alone will look to Opportunity Zones where they can make the highest positive returns on their investment. Potential returns may depend on factors such as expected future demand and elasticity of the housing supply, which are affected by issues such as vacancy and zoning, as well as other housing regulations (Patrick, 2021). Impact investors, on the other hand, are driven by additional factors, including social or environmental impacts. Potential housing transactions include the construction or substantial improvement of rental housing and owner-occupied housing under various ownership structures. These housing units vary from single-family to multifamily housing developments, which could be affordable housing, market-rate housing, mixed-income (affordable and market-rate housing), or mixed-use (multifamily with other commercial uses). An expansion of the housing supply could subsequently have effects on land values and housing prices. Other

¹“Section 3(f): evaluate the following: ... (vi) what data, metrics, and methodologies can be used to measure the effectiveness of public and private investments in urban and economically distressed communities, including qualified Opportunity Zones.” Exec. Order No. 13853, 83 Fed. Reg. 65071 (December 12, 2018). <https://trumpwhitehouse.archives.gov/presidential-actions/executive-order-establishing-white-house-opportunity-revitalization-council>.

indirect impacts may follow, including changes in welfare among existing residents and future residents, based on where they may live, and the effect of housing prices on their income or wealth.

What are other types of community outcomes foreseen to transpire as a result of Qualified Opportunity Fund investments along with other capital investments in Opportunity Zones? First, it will be essential to establish baseline scenarios for each neighborhood and to understand the distribution of existing community characteristics. A robust evaluation would consider the outcomes for different types of households in turn, particularly for vulnerable groups, including racial and ethnic minorities, older households, families, and other households that may have particular needs. Examining changes in the makeup of the community is essential to understanding whether Qualified Opportunity Zone investments—and potential benefits from such investments—are going to long-term residents, incoming residents, or combinations of both, which has implications for the discourse around potential gentrification and displacement and the bearers of these impacts. The nature of defining *benefits* varies from community to community and can only be understood in the context of the local place and those in the community.

Differences between Qualified Opportunity Fund investor types and their depth of engagement with community stakeholders, the presence and involvement of community-based organizations, and general indicators of social and community capital and resilience may affect the extent to which investments are considered to be providing benefits to the community. Some researchers have already taken this into account; the Urban Institute developed a tool drawing on nine other social impact tools that grade Qualified Opportunity Fund investment projects based on their potential community impact (Greene et al., 2020). This framework includes specific questions for developers of proposed projects, data that would not necessarily otherwise be collected. Shaping these kinds of frameworks for different types of designated Opportunity Zones will ensure a more robust evaluation.

There are other key considerations to keep in mind for evaluation. When evaluating the Opportunity Zone tax incentive, it will be important to distinguish between investments with little additional benefit from the tax incentive and those that would not have occurred *but for* the Qualified Opportunity Fund investment in the capital stack. Qualified Opportunity Fund investments in one Opportunity Zone may also have spillover effects in another neighboring designated Opportunity Zone. That would depend on the scale of the project and other capital investment (private or public) occurring alongside investment from Qualified Opportunity Funds or those with capital in this capital stack. Many states also implemented paired incentives. A future evaluation would require specific project and business capital stack data for investments from Qualified Opportunity Funds and investments without this funding in the capital stack. However, evaluating the Opportunity Zones incentive requires understanding baseline neighborhood characteristics and trends before any investment.

Baseline Characteristics of Opportunity Zones

Opportunity Zones are a designated group of census tracts that provide direct federal capital gains tax benefits for investments made following IRS guidelines. A total of 8,764 census tracts were designated as Opportunity Zones, including 7,826 in the 50 states plus the District of Columbia

and 938 in U.S. insular areas.² The designations have spurred additional state and local incentives to mirror or enhance the federal designation and tax incentive. These incentives range from tax benefits to additional benefits for public investment into designated Opportunity Zones. This is also the case for the federal government, where more than 400 federal grants from 20 federal agencies have offered Opportunity Zone benefits, such as preference points giving priority consideration to grants in designated Opportunity Zones or those used in combination with Qualified Opportunity Funds.

Census tracts themselves are somewhat arbitrary in designation. They are meant to be relatively permanent geographic designations that can be analyzed longitudinally. They are generally designated to have a population between 1,200 and 8,000, with 4,000 being the ideal; therefore, census tracts are typically split or combined depending on population changes (U.S. Census Bureau, 2019b). Census tracts tend to follow legal boundaries and other boundaries, such as waterways, railroad tracks, and roads (U.S. Census Bureau, 2018). Although many studies use census tracts as a proxy for neighborhoods because census data are collected and made available at this geographic level, some research has challenged whether tracts truly represent real neighborhoods (Clapp and Wang, 2006; Sperling, 2012). For instance, Clapp and Wang (2006) found that using a classification model to define optimal neighborhoods creates different boundaries—for instance, boundaries that run behind houses rather than down the middle of the street. Sperling (2012) notes that tracts are not necessarily homogenous in settlement patterns or sociodemographic characteristics. These limitations are important to keep in mind when analyzing the effect of the Opportunity Zones incentive on neighborhood communities.

Census tracts vary widely in size and population depending on where they are located across the rural-urban continuum.³ Exhibit 1 shows that urbanized tracts in major metropolitan areas have the smallest average size (3 square miles) and the largest average population per tract (4,655 people), whereas rural tracts are much larger (268 square miles on average) and comprise smaller populations (3,544 people on average). These characteristics will have implications for housing and economic development strategies and the evaluation of outcomes across designated Opportunity Zones.

²“Insular areas” refers to U.S. territories: Puerto Rico, Guam, the Northern Mariana Islands, American Samoa, and the U.S. Virgin Islands. The designated Opportunity Zones in U.S. insular areas offer similar benefits to those on the U.S. mainland and merit further research, but these are largely outside the scope of this article.

³To compare census tracts across urban/rural morphologies, the authors divided them into three redefined groups based on census block classifications in the 2010 decennial census (see <https://www.census.gov/programs-surveys/geography/about/faq/2010-urban-area-faq.html>):

- “Rural” tracts are those with at least 90 percent of their population living in rural census blocks.
- “Small town” tracts are those that were not deemed “rural” and that have more residents in urban cluster blocks than in urbanized area blocks.
- “Urbanized” tracts are those that were not deemed “rural” and that have more residents in urbanized area blocks than in urban cluster blocks.

“Major metro area” means a metropolitan statistical area with a Census-estimated population of more than 3 million in 2019 or a population of more than 1 million with a growth rate of at least 10 percent between 2010 and 2019 (<https://www.census.gov/newsroom/press-kits/2020/pop-estimates-county-metro.html>).

Exhibit 1

Census Tract Differences across Urban/Rural Morphologies

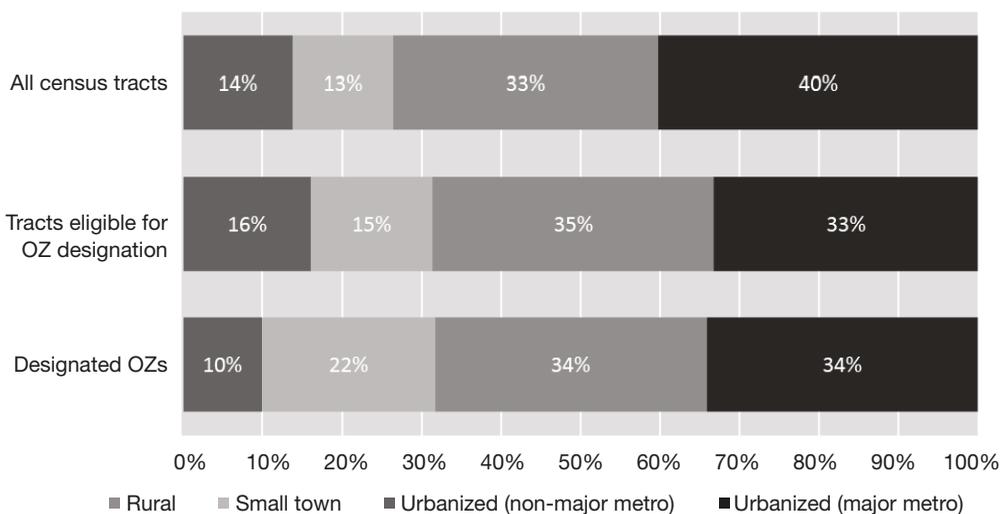
	Rural	Small town	Urbanized (non-major metro area)	Urbanized (major metro area)
Average size (square miles)	268	63	7	3
Population per tract	3,544	4,551	4,395	4,655

Sources: Authors' calculations; U.S. Census Bureau, 2011, 2019a

Examining the distribution of designated Opportunity Zones across rural and urban morphologies is important for understanding how the incentive will play out across the country. Exhibit 2 shows that, among tracts that were eligible for Opportunity Zone designation, a lower proportion of urbanized tracts in major metropolitan areas qualified for Opportunity Zone designation relative to their overall share of all tracts. Among eligible tracts, a disproportionately higher share of small-town tracts and a disproportionately lower share of rural tracts were selected. States may have seen small-town census tracts as more favorable for investment and economic development than rural tracts; local land use and the potential for investment may also have been considered in the recommendations for designation. The distribution of designated Opportunity Zones across urban and rural morphologies shows some of the priorities and strategies states pursued when recommending their Opportunity Zones for designation.

Exhibit 2

Rural/Urban Morphology of Opportunity Zones (OZs)



Sources: Authors' calculations; Community Development Financial Institutions Fund, n.d.

The universe of census tracts eligible for Opportunity Zone designation varied by census region, state, and within various areas within states. New England had the lowest proportion of eligible census tracts (46 percent), and the East South Central division (comprising Alabama, Kentucky, Mississippi, and Tennessee) had the highest (70 percent) (exhibit 3). These discrepancies increased

at the state level; only 38 percent of Hawaii’s census tracts were eligible for Opportunity Zone designation, compared to 81 percent of Mississippi’s census tracts (exhibit 4). These differences largely reflect disparate poverty rates across states. These baseline disparities across different states and regions of the country mean that there may be inherent differences between the Opportunity Zones selected in each state and within each state.

Exhibit 3

Opportunity Zone Eligibility by Census Region

Census Region (and Division)	Census Tracts	Tracts Eligible for OZ Designation	Percent of all Tracts Eligible for OZ Designation (%)	Designated OZs
NORTHEAST	13,538	6,688	49	1,302
New England	3,392	1,572	46	319
Middle Atlantic	10,146	5,116	50	983
SOUTH	26,308	16,494	63	3,098
South Atlantic	13,706	8,283	60	1,540
East South Central	4,457	3,124	70	578
West South Central	8,145	5,087	62	980
MIDWEST	17,093	9,311	54	1,730
East North Central	11,808	6,385	54	1,211
West North Central	5,285	2,926	55	519
WEST	16,117	8,724	54	1,696
Mountain	5,250	2,888	55	542
Pacific	10,867	5,836	54	1,154

OZ = Opportunity Zone.

Sources: Authors’ calculations; Community Development Financial Institutions Fund, n.d.

Exhibit 4

Opportunity Zone Eligibility by State, in Ascending Order Based on the Share of Tracts Eligible (1 of 2)

State	Census tracts	Tracts eligible for OZ designation [†]	Percent of all tracts eligible for OZ designation (%)	Designated OZs
Hawaii	351	132	38	25
Rhode Island	244	97	40	25
Alaska	167	68	41	25
North Dakota	205	84	41	25
Connecticut	833	344	41	72
New Jersey	2,010	835	42	169
Wyoming	132	56	42	25
Massachusetts	1,478	677	46	138
Nevada	687	330	48	61
Utah	588	283	48	46
Vermont	184	89	48	25

[†] Census tracts eligible for Opportunity Zone designation include “low-income communities,” with a poverty rate of at least 20 percent or a median income 80 percent or less of that of the state or metropolitan statistical area, and tracts contiguous with a low-income community whose median income does not exceed 125 percent of that of the contiguous low-income community.

Exhibit 4

Opportunity Zone Eligibility by State, in Ascending Order Based on the Share of Tracts Eligible (2 of 2)

State	Census tracts	Tracts eligible for OZ designation	Percent of all tracts eligible for OZ designation (%)	Designated OZs
Iowa	825	410	50	62
South Dakota	222	112	50	25
Pennsylvania	3,218	1,640	51	300
New Hampshire	295	151	51	27
Nebraska	532	273	51	44
Wisconsin	1,409	734	52	120
Colorado	1,249	657	53	126
Maryland	1,406	743	53	149
Illinois	3,123	1,659	53	327
Washington	1,458	780	53	139
New York	4,918	2,641	54	514
California	8,057	4,343	54	879
Indiana	1,511	817	54	156
Delaware	218	118	54	25
Michigan	2,813	1,528	54	288
Kansas	770	420	55	74
Florida	4,245	2,356	56	427
Minnesota	1,338	744	56	128
Ohio	2,952	1,647	56	320
Virginia	1,907	1,071	56	212
Arizona	1,526	870	57	168
Texas	5,265	3,131	59	628
Maine	358	214	60	32
Montana	271	162	60	25
Oregon	834	513	62	86
Oklahoma	1,046	651	62	117
Missouri	1,393	883	63	161
North Carolina	2,195	1,414	64	252
Idaho	298	192	64	28
District of Columbia	179	116	65	25
Tennessee	1,497	986	66	176
South Carolina	1,103	741	67	135
New Mexico	499	338	68	63
Georgia	1,969	1,339	68	260
Louisiana	1,148	785	68	150
Kentucky	1,115	768	69	144
Alabama	1,181	835	71	158
Arkansas	686	520	76	85
West Virginia	484	385	80	55
Mississippi	664	535	81	100

OZ = Opportunity Zone.

Source: Authors' calculations; Community Development Financial Institutions Fund, n.d.

State control over recommendations for designation means that there is a great deal of variation across the distributions of Opportunity Zones within each state. For instance, states were not required to ensure that each of their counties had at least one Opportunity Zone, but some states included this criterion in their designation strategy. Exhibit 5 shows the share of counties within each state that include designated Opportunity Zones. States such as Missouri, Mississippi, Georgia, and, to a lesser extent, New Mexico, Arkansas, Minnesota, Pennsylvania, and New York, were not as concerned with county-level equity in OZ designation, whereas other states, including Alabama,⁵ Florida,⁶ Illinois,⁷ Kentucky,⁸ Maryland,⁹ Michigan,¹⁰ North Carolina,¹¹ and Washington,¹² aimed to designate at least one Opportunity Zone in every county. These statewide distributions of designated Opportunity Zones reflect states' strategies for their Opportunity Zones and may lead to differing investment and community outcomes.

⁵ "There is at least one Opportunity Zone in each of the state's 67 counties." Alabama Department of Economic and Community Affairs, Opportunity Zones Program.

⁶ "A total of 427 Qualified Opportunity Zones are designated in Florida and located in every county in the state, stretching from the Panhandle through the Keys... The nomination process in Florida included reviewing over 1,200 recommendations submitted by local governments, regional planning councils, nonprofits, developers, investors and others." Florida Department of Economic Opportunity, Opportunity Zones Program. <https://web.archive.org/web/20210430234018/https://floridajobs.org/business-growth-and-partnerships/for-businesses-and-entrepreneurs/business-resource/opportunity-zones>.

⁷ "Phase 2: Equitable Distribution: In order to ensure a statewide beneficial impact, Governor Rauner used a geographical distribution method:

- Provided each of the 88 counties at least one zone that ranks highest on needs-based index.
- Limited each town/city to no more than 5 zones—outside the City of Chicago."

Illinois Department of Commerce & Economic Opportunity, Opportunity Zones. <https://web.archive.org/web/20210521122709/https://www2.illinois.gov/dceo/Pages/OpportunityZones.aspx>.

⁸ "There's an Opportunity Zone within driving distance of every single Kentuckian in the state." Team Kentucky, Opportunity Zones Workshop—Owensboro. https://www.youtube.com/watch?v=HboscM_uFNE.

⁹ "Each of Maryland's 24 jurisdictions has at least one Opportunity Zone designation, and the designations will remain in place for the next 10 years." Opportunity Zone Leadership Task Force (2019), The 2019 Maryland Opportunity Zone Leadership Task Force Report. <https://governor.maryland.gov/ltgovernor/wp-content/uploads/sites/2/2019/10/Compressed-OZ-Report-1.pdf>.

¹⁰ "The first step determined the geographic distribution of the state's 288 Opportunity Zone designations using an area's proportional share of the statewide total of eligible low-income tracts (1,158). If a county had 25 percent of the state's eligible tracts, it was initially given 25 percent of the state's eligible tract designations. Then, designation considerations and any necessary modifications were made to account for original Rising Tide communities and each rural county that had at least one low income census tract." Michigan Opportunity Zones, About. <https://web.archive.org/web/20210120120344/https://miopportunityzones.com/about/>.

¹¹ "[T]o select the number of zones called for in the federal law, the state followed these guiding principles... Opportunity for all: Aim for at least one Opportunity Zone in every county." NC Department of Commerce, North Carolina Opportunity Zones. <http://web.archive.org/web/20210421023640/https://public.nccommerce.com/oz/#section-zones>.

¹² "Opportunity Zone Pools: County/associate development organization (ADO) Set-Aside (up to 69 tracts total): Each county, through the applicable ADO, may nominate a certain number of eligible census tracts within the county for designation. The number of tracts per county is allocated based on the total number of eligible tracts in the county... Counties will receive a minimum of one and a maximum of five tracts through this formula. If fewer than 69 tracts are nominated, any remaining tracts will be added to competitive process. Federally recognized Tribe Set-Aside (up to 29 tracts total): Each of the state's federally recognized tribes may nominate one eligible census tract for designation. The tract may, but need not, include lands owned or controlled by the nominating tribe. If fewer than 29 tracts are nominated, any remaining tracts will be added to the competitive process." Washington State Department of Commerce, Opportunity Zones, How Did Washington Decide Which Areas to Designate as Opportunity Zones? <http://web.archive.org/web/20210310050954/https://www.commerce.wa.gov/growing-the-economy/opportunity-zones/>.

Exhibit 5

Distribution of Designated Opportunity Zones Across Counties, by State



OZ = Opportunity Zone.

Map created by the authors using ArcGIS® software by Esri.

Source: U.S. Census Bureau, 2019a

Existing Opportunity Zone Typologies

Several researchers have developed typologies to classify the diversity of Opportunity Zones into subsets of tracts, which are more manageable to understand and analyze for investors, community advocates, evaluators, and other Opportunity Zone stakeholders (exhibit 6). These studies have classified Opportunity Zones on the basis of data around various metrics, such as opportunities and jobs, social vulnerability, socioeconomic change, industrial or commercial uses, or presence of anchor institutions. Some of the Opportunity Zone types identified by these typologies may look more favorable for real estate or business investment than others. Some typologies focus on the organization's perceived benefits that communities prefer—for instance, higher growth or anchor institutions conducive to economic development. Other typologies incorporate strong social equity considerations—for instance, those with high social vulnerability or those experiencing significant socioeconomic change. The variation in the existing typology studies to date illustrates the diversity of the designated Opportunity Zones and the range of views around economic development in underinvested communities. The typology in this article focuses on housing investment outcomes, and it uses a more nuanced methodology to classify Opportunity Zones into different clusters on the basis of variables around housing markets and sociodemographics of existing residents.

Exhibit 6

Existing Opportunity Zone Classifications (1 of 2)

Source	Purpose	Methodology	Inputs	Types
Coes & Loh, 2018	“For investors to identify which Opportunity Zones should be prioritized for investment from a triple-bottom-line perspective that can deliver positive economic, environmental, and social returns. Additionally... to provide local policymakers and community groups with a policy framework to manage and ensure equitable, inclusive development in Opportunity Zones.”	Developed one score for each Opportunity Zone’s walkable urban form and a second score indicating social vulnerability. Categorized Opportunity Zones by state based on these scores.	<i>Smart Growth Potential:</i> Walkability Index (EPA), Job density (LEHD), Distance to top 100 CBD (GIS), Density (ACS) <i>Social equity and social vulnerability:</i> Transportation Accessibility (EPA), Housing/Transportation Affordability Index (developed by Center for Neighborhood Technology from ACS), housing tenure (ACS), Social Vulnerability Index (CDC), Environmental Justice Index (EPA)	<ul style="list-style-type: none"> • High opportunity and low equity • High equity and low opportunity • Low equity and low opportunity • Bubble communities / emerging WalkUPs
Katz, 2018	“Guide the market and spur financial institutions, local economic development organizations, and other intermediaries to do the kind of deeper data collection and analysis that matches capital to investable projects.”	Used jobs-to-residents ratio to categorize Opportunity Zones into four types. Anchor tracts have hospitals with 300+ beds and/or colleges with 5,000+ students. Industrial tracts have at least a 20-percent share of construction, manufacturing, transportation, or warehouse jobs.	Jobs-to-residents ratio (LEHD), national data set of hospitals and colleges, occupational industries	<ul style="list-style-type: none"> • Tier 1 job centers • Tier 2 job centers • Mixed jobs/residential • Residential areas • Anchor tracts • Industrial tracts
Higgins & Katz, 2019	“By placing Opportunity Zones into employment centers with recognizable districts... we hope to have made patterns more visible to investors seeking new deals, public officials seeking model policies to ensure equitable community growth, and the civic sector seeking ways to influence the market.”	Focused on 429 most job-dense Opportunity Zones (top 5 percent or >3:1 job:res ratio), which act as employment centers and have some market traction, giving them the highest potential for inclusive growth	Jobs (total, by industry, age, race) (LEHD), 5-year job change (LEHD), population (ACS), median household income (ACS), neighborhood characteristics (Zillow), locations of hospitals, airports, large universities (NCES)	<ul style="list-style-type: none"> • Downtown • Anchor district (education or medical) • Industrial district • Airport or port district • Non-CBD district

Exhibit 6

Existing Opportunity Zone Classifications (2 of 2)

Source	Purpose	Methodology	Inputs	Types
Develop LLC, n.d.	“Provide a tool for wealth managers, fund managers, real estate developers, business investors, and other stakeholders to gain a much deeper understanding of where there is ‘opportunity’ in communities they may have never seriously explored before.”	Created Opportunity Zones Index from average ranking of each Opportunity Zone on six equally weighted indicators	Projections developed by Esri Demographics based on ACS: 2018–2023 population growth rate, 2018 total retail sales, 2023 median household income, 2023 median home value, 2018 bachelor’s degree rate, 2018 unemployment rate	Percentile ranks
Theodos et al., n.d.	“Given the breadth of eligible investment types, Opportunity Zones must be carefully selected to ensure the return on the public investment is maximized and will lead to gains for low- and moderate-income residents. To guide selection, we prepared a data set for all eligible tracts, ranking them in terms of the investment flows they are already receiving and the social and economic change they have experienced.”	Developed investment score to capture existing equity flows in tract. Also developed flag for socioeconomic change to indicate places where gentrification is potentially occurring.	<i>Investment score:</i> Loan dollar amounts to multifamily and commercial businesses (CoreLogic, Inc.), loan dollar amounts to homeowners (HMDA), loan dollar amounts to small businesses (CRA), number of employees (LEHD), SF and MF housing units (ACS) <i>Socioeconomic change flag:</i> Change in residents with college degree, median family income, share of white population, housing cost burden (ACS, Census Bureau)	Deciles of investment scores; Socioeconomic change flag

ACS = American Community Survey. CBD = central business district. CDC = Centers for Disease Control and Prevention. CRA = Community Reinvestment Act. EPA = Environmental Protection Agency. GIS = geographic information system. HMDA = Home Mortgage Disclosure Act. LEHD = Longitudinal Employer-Household Dynamics. MF = multifamily. NCES = National Center for Education Statistics. SF = single-family.

Existing Neighborhood Typologies and Housing Typologies

To guide the development of this Opportunity Zone typology, the authors also looked to the literature on typologies of neighborhoods (as identified by census tracts) or other housing typologies. Exhibit 7 displays a table comparing the universes, variables used, and resulting types identified by a sample of studies. To develop their typologies, the authors of most studies used a relatively large number of variables, which captured demographics (such as race, immigration status, age, income, poverty, and family structure), housing markets (such as tenure, housing types, age of stock, housing values, vacancy rates, and housing quality), neighborhood form (such

as population density, building types, and urban/rural morphology), local economics (such as employment and establishments), or a combination of these variables. Typologies identified 4 to 10 types of neighborhoods—or countries, in the case of André and Chalaux (2018). Others created standardized indices around access to opportunity and ranked neighborhoods relative to each other (for example, the Mastercard Center for Inclusive Growth or Enterprise Community Partners). Major themes covered by the typologies include race and immigration, affluence (struggling versus prosperous areas), change or growth, diversity, and urban/rural morphology. The authors drew from these variables and themes when developing their typology of Opportunity Zones.

Exhibit 7

Selected Housing and Neighborhood Typologies from the Literature (1 of 3)

Source	Universe	Variables used to delineate types	Types
Economic Innovation Group (2020), Distressed Communities Index	ZIP Codes, counties, cities, or congressional districts	High school diploma rate, poverty rate, share of population age 25–54 not working (unemployed or not in labor force), vacancy rate, median household income, 2014 to 2018 change in employment, 2014 to 2018 change in establishments	<ul style="list-style-type: none"> • Prosperous • Comfortable • Mid-tier • At risk • Distressed
Mastercard Center for Inclusive Growth (2021)	Census tracts ¹³	Inclusion and growth metrics: Place (growth in net occupancy, growth in residential real estate value, share parkland, share without housing burden, internet subscription rate, share with commute < 35 min), Economy (growth in net new businesses, growth in spending, growth in small business loans, share minority or women-owned businesses, labor market engagement index, share business types represented), Community (growth per capita income, growth per capita spending, Gini coefficient, early education enrollment, share females living above poverty, health insurance coverage)	Percentile ranks of Inclusive Growth Score
Enterprise Community Partners Opportunity360 (n.d.)	All census tracts	<i>Housing stability</i> (homeownership rate, share receiving project-based housing assistance, share receiving HCVs, share low-income households severely cost burdened, share occupied units that are crowded, share households with multiple families), <i>Education</i> (share with HS diploma, associate’s degree, bachelor’s degree), <i>Health and well-being</i> (share uninsured, life expectancy), <i>Economic security</i> (median household income, HUD Labor Market Engagement Index Score, poverty rate, unemployment rate), <i>Mobility</i> (share commuting with transit, share commuting by walking, average travel time to work, share commuting more than an hour, share with no vehicle)	Percentile ranks of Opportunity360 index

¹³ Census tracts were categorized in comparison with census tracts across the country, within the same state, or with the same level of urbanization as measured by the U.S. Department of Agriculture Urban-Rural Continuum.

Exhibit 7

Selected Housing and Neighborhood Typologies from the Literature (2 of 3)

Source	Universe	Variables used to delineate types	Types
Spielman and Singleton (2015)	All census tracts	Age, race, education, family structure, language, mobility/stability, housing type, housing price, vacancy, housing age, density, commuting, industry, wealth, public assistance	<ul style="list-style-type: none"> • Hispanic and children • Wealthy nuclear families • Middle income, single-family homes • Native American • Wealthy urbanites • Low income and diverse • Old wealthy White • Low-income minority mix • African-American adversity • Residential institutions, young people
Bieri, Knox, and Wei (2012)	Suburban areas ¹⁴	White, married with children, foreign born, educational attainment, older than 65, homeownership rate, percent detached single-family, family income	<ul style="list-style-type: none"> • Sitcom suburbs • Elite suburbs • Affluent suburbs • Renter/condos • Mixed income • Immigrant/minority
Vicino, Hanlon, and Short (2011)	Immigrant neighborhoods ¹⁵	Income, education, race and ethnicity, household family structure, age of housing	<ul style="list-style-type: none"> • Asian • Gentrified • White working class • Hispanic
Owens (2012)	Socioeconomically ascending neighborhoods	Race, foreign born, population, households, housing built within past 10 years; residents under 8, under 5, and over 65; female-headed households, poverty rate	<ul style="list-style-type: none"> • Minority urban • Affluent • Diverse urban • New White • Upper-middle-class White • Booming • Hispanic enclave • No population
Fisher and Woodwell (2017)	Neighborhood housing markets (census tracts)	Urban/suburban/rural or exurban (quartiles of households per square mile density or outside MSA); multifamily density (25% households in 50+ unit buildings, tertiles of percent multifamily)	<ul style="list-style-type: none"> • Apartment towers • High-density downtown neighborhoods • Apartment suburbs • Eclectic urban • Eclectic suburban • City neighborhoods • Suburban communities • Off the beaten path • Exurban areas • Rural

¹⁴ Suburban areas were defined as tracts in metro areas not in central cities.

¹⁵ Immigrant neighborhoods were defined as census tracts from 18 Consolidated Metropolitan Statistical Areas (CMSAs) with their center inside the central city, with a location quotient over 1.25 for foreign-born population share (for the tract compared with the CMSAs urban tracts).

Exhibit 7

Selected Housing and Neighborhood Typologies from the Literature (3 of 3)

Source	Universe	Variables used to delineate types	Types
Metropolitan Council (Twin Cities) (2020)	Changing suburban neighborhoods in seven counties	Race, age, income, housing costs, percent of housing built in past 10–15 years	<ul style="list-style-type: none"> • Type A: renter communities of color with high poverty • Type B: older inner-ring suburbs with slow housing recovery • Type C: historically White, working class areas with strong, affordable housing stock • Type D: fastest recovering immigrant hubs • Type E: Transit-oriented development (TOD)-friendly senior hubs • Type F: exurban areas with strong growth and development • Type G: affluent exurban areas near natural amenities
Mikelbank (2004)	Suburban tracts	Population (size, education, age, income, race, family structure), housing stock (value, rent, age, vacancy), economy (employment, establishments, taxes)	<ul style="list-style-type: none"> • Seasonal wealth White bedrooms • Traditional White bedrooms • Small retail White bedrooms • Black manufacturing • Struggling manufacturing • Suburban success: prosperity • Suburban success: working stability • Suburban success: aging • South/western working diversity • Central working diversity
André and Chalaux (2018)	32 countries	Tenure, cost burden, overcrowding, dwellings per thousand inhabitants, distribution in urban vs. rural areas, vacant homes and residential construction, prices, rents, price-to-income ratio index, distribution of tenures, affordability, debt-to-income ratios, housing quality (amenities, living space, deprivation), homelessness, policy measures and national schemes, types of support, housing allowance eligibility criteria and payment rates, social housing stock and new construction, agencies and governance of social housing sector	<ul style="list-style-type: none"> • Northern (extended private rental, high household debt) • Western (higher homeownership rates, more social housing) • Southern-Central (overcrowding, limited social housing) • Eastern (prevalent homeownership, poorer housing conditions)

HCV = Housing Choice Voucher. HS = high school. HUD = Department of Housing and Urban Development. MSA = metropolitan statistical area.

Methods

To discern how the Opportunity Zone incentive may play out differently across the various designated census tracts, the authors developed an Opportunity Zone typology separating the designated tracts into distinct groups. Following the likes of Spielman and Singleton (2015); Bieri, Knox, and Wei (2012); and Vicino, Hanlon, and Short (2011), the authors used a standard approach for developing a typology, first conducting a principal components analysis (PCA) as a means of feature selection, based on a set of 40 variables related to demographics and housing markets, followed by a cluster analysis inputting the principal components that explained most of the variation among the designated Opportunity Zones. This approach identified five distinct clusters of Opportunity Zones.

These methods were applied to 7,791 of the 8,764 designated Opportunity Zones. As noted previously, the 938 Opportunity Zones in Puerto Rico, Guam, the Northern Mariana Islands, American Samoa, and the U.S. Virgin Islands were not included in this analysis because of data limitations and fundamental differences in the investment context between designated Opportunity Zones in U.S. states and those in U.S. insular areas. An additional 35 Opportunity Zones in the 50 states and the District of Columbia were also not included in the cluster analysis because they contain very few resident households and housing units and are therefore not appropriate to include in a cluster analysis based on demographic and housing market attributes.¹⁶

Most of the 40 variables come from estimates produced by the U.S. Census Bureau's 2019 5-year American Community Survey (2019 ACS), but data on jobs from the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) and housing prices from the Federal Housing Finance Agency and HUD were also used.¹⁷ Variables were chosen that have good coverage across the Opportunity Zones in this analysis.

Using PCA, these 40 standardized variables were transformed into a smaller set of principal components (PCs), which limits the variables' collinearity and identifies the variables that capture most of the variance among the Opportunity Zones, as represented by the original 40 variables. The PCA was executed using R software on a data matrix containing the standardized scores of the 40 variables for the 7,495 Opportunity Zones with valid data for all variables. Ten principal components were obtained, which together explain 73 percent of the variance across the 40 variables.¹⁸

¹⁶ These 35 Opportunity Zones were excluded because they contain fewer than 100 households, according to the U.S. Census Bureau's 2019 American Community Survey 5-year estimates. See table in appendix exhibit 1 for a summary of them.

¹⁷ See the Data Sources appendix exhibit 2 for more details and source information on the 40 variables.

¹⁸ *Principal components* are linear transformations of a set of input variables, and PCs are orthogonal to previous PCs, such that each additional PC captures a different portion of the variance of the observations along all variables. The PCA identified 10 principal components with eigenvalues (measuring the magnitude of the variance captured by the PC) greater than 1. Dropping principal components with an eigenvalue of 1 or less follows the Kaiser rule. An eigenvalue of 1 is equivalent to the variance explained by an average single variable. For full factor loadings of each PC, see appendix exhibit 3.

Next, the Zones were grouped into five clusters of similar Opportunity Zones by running a k-means clustering algorithm on the 10 principal components.¹⁹ Because the k-means algorithm begins with a random selection of cluster centers at the beginning of the optimization process, it yields slightly different results each time it runs. The algorithm was run 100 times, and the results with the best fit, as measured by the variability of the observations within each cluster, were chosen. From the resulting grouping of the 7,495 complete-data Opportunity Zones, the means of the 40 original variables were calculated for each of the five clusters. The remaining 296 Opportunity Zones that were missing at least one variable were assigned to the five clusters by selecting the nearest cluster based on the Euclidean distance between the non-missing variables and each cluster mean.

With each Opportunity Zone assigned to one of five clusters, the authors qualitatively characterized each cluster by examining (a) the distribution of the 40 demographic and housing variables by cluster and (b) the geographic location of each cluster's Opportunity Zones.

Results

Exhibit 8 displays the characteristics of the five clusters of Opportunity Zones identified by the algorithm. The clusters are not equal in size; the smallest cluster, Cluster 2, includes 490 Opportunity Zones, and the largest cluster, Cluster 3, includes 2,771 Opportunity Zones. Exhibit 9 covers the most significant characteristics of each cluster based on the deviation of the cluster mean from the overall mean among all Opportunity Zones.

Cluster 1, which constitutes 26 percent of all Opportunity Zones, has the highest Black population of all clusters, the highest poverty rate, the highest unemployment rate, and the lowest median income (both in absolute terms and relative to the median income of the area²⁰). Cluster 1 also has the oldest owner-occupied housing and has among the oldest renter-occupied housing of all clusters, both of which date back to the 1960s, on average (exhibit 10).

Cluster 2, constituting just 6 percent of all Opportunity Zones, is the most urbanized cluster, with the lowest homeownership rate, rate of commuting by driving alone, and share of households living in detached single-family homes, and the highest population density, job density, and share of households living in multifamily buildings. Cluster 2 also has the oldest renter-occupied housing, the highest housing prices (for home values and rents), and high shares of foreign-born and Asian populations.

¹⁹ Five clusters were identified by choosing an “elbow” of the plot of within-cluster variability and number of clusters chosen. The choice of five clusters is in line with other typologies of census tracts or housing markets and other Opportunity Zone classifications, if on the lower end. Because Opportunity Zones already represent a particular subset of distressed census tracts, it makes sense to classify them into fewer categories.

²⁰ The *area* refers to the CBSA (metropolitan statistical area or micropolitan statistical area) or county if the Opportunity Zone is not located in a CBSA. CBSAs (core-based statistical areas) are defined by the Office of Management and Budget and consist of one or more counties all economically tied to an urban center of at least 10,000 people. CBSAs include the 384 metropolitan statistical areas (MSAs) and 543 micropolitan statistical areas. This cluster analysis uses CBSA-level variables to represent regional area conditions. If the Opportunity Zone is not in a CBSA, county-level variables are used.

Cluster 3 constitutes 36 percent of all Opportunity Zones and includes almost all rural tracts, with a population density of 822 people per square mile on average. Cluster 3 has the largest share of White non-Hispanic populations (70 percent on average, which is still lower than the U.S. share of non-Hispanic Whites—76 percent, according to the 2019 ACS 1-year estimates) and highest homeownership rates, as well as the lowest rents and lowest rates of HUD assistance and FHA-insured mortgages (exhibit 10). Although more than 97 percent of Opportunity Zones in the other clusters are inside metropolitan statistical areas (MSAs), only 40 percent of Cluster 3 Opportunity Zones are in MSAs (29 percent are in micropolitan statistical areas, and 31 percent are outside Core-Based Statistical Areas [CBSAs]).

Cluster 4 constitutes 13 percent of all Opportunity Zones, and its demographics include smaller households, more college graduates, fewer families with children, and a higher share of recent movers.

Finally, Cluster 5 constitutes 19 percent of all Opportunity Zones and consists of majority-Hispanic populations; a high share of foreign-born, larger households; and the highest share of families with children (43 percent). Cluster 5 tracts are located in areas with high and rising home prices and have the highest rate of FHA-insured mortgages (18 percent of owner-occupied homes have FHA-insured mortgages).

Exhibit 8

Opportunity Zone Clusters: Variable Means (1 of 2)

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Number of Opportunity Zones	2,047	490	2,771	982	1,501
Percent of Opportunity Zones	26%	6%	36%	13%	19%
Tract urban form variables					
Population per square mile	4,981	42,369	822	5,078	8,103
Population plus jobs per square mile	7,306	59,621	1,281	13,181	10,486
Percent urban area	92%	100%	19%	94%	93%
Percent urban cluster	6%	0%	40%	5%	4%
Percent rural area	1%	0%	41%	1%	2%
Jobs-to-resident ratio	0.79	0.89	0.51	2.29	0.51
Percent who drive alone to work	67%	29%	80%	68%	71%
Percent who take public transit, walk, or bike to work	16%	60%	4%	17%	9%
Tract housing variables					
Percent living in the same home as a year ago	81%	87%	86%	72%	87%
Percent vacant	20%	9%	17%	13%	8%
Percent of housing stock that is single-family detached	46%	7%	67%	29%	48%
Percent of housing stock in buildings with 20+ units	11%	45%	3%	27%	10%
Median gross rent	\$757	\$1,340	\$740	\$993	\$1,126
Median home value	\$94,607	\$611,016	\$119,809	\$227,762	\$241,829
Number of units built in 2014 or later	14	47	31	84	28
Percent who own home	36%	20%	65%	31%	42%

Exhibit 8

Opportunity Zone Clusters: Variable Means (2 of 2)

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5
Tract demographic variables					
Gini coefficient	0.48	0.49	0.44	0.48	0.42
Poverty rate	37%	24%	20%	25%	24%
Median household income	\$27,944	\$51,373	\$43,977	\$45,145	\$46,542
Percent of population 25 or older with a college degree	12.7	31.2	17.2	37.0	13.9
Household size	2.49	2.64	2.48	2.11	3.32
Percent of households that are families with children under 18	30%	29%	29%	19%	43%
Percent of population 65 or older	13%	12%	19%	12%	10%
Percent of population that is foreign born	8%	38%	5%	12%	31%
Percent unemployed	14%	7%	7%	6%	8%
Percent not in labor force	45%	36%	44%	34%	36%
Percent White Non-Hispanic	25%	21%	70%	56%	19%
Percent Black	59%	30%	14%	23%	18%
Percent Hispanic	14%	36%	11%	14%	57%
Percent Asian	1%	14%	1%	5%	5%
Tract temporal variables					
Absolute change in households from 2013 to 2019	6	122	10	161	85
Percent change in household income from 2013 to 2019	17%	30%	19%	34%	26%
Percent change in rent from 2013 to 2019	12%	25%	13%	22%	19%
Percentage point change in population with a college degree, 2013 to 2019	2	6	2	7	2
CBSA/county housing variables²¹					
Median home value, CBSA or county	\$188,314	\$510,908	\$149,804	\$244,910	\$374,207
HUD Fair Market Rent	\$1,039	\$2,032	\$865	\$1,182	\$1,535
CBSA/county temporal housing variable					
CBSA/non-CBSA state home price index (2020 with 2012 base year)	137	140	133	147	165
Tract relationship to area variables					
Ratio of median household income of tract to CBSA (or county if non-CBSA)	0.47	0.62	0.87	0.69	0.66
Ratio of median gross rent of tract to CBSA/county	0.80	0.89	0.94	0.94	0.87
Ratio of median home value of tract to CBSA/county	0.50	1.24	0.83	0.97	0.64

CBSA = core-based statistical area.

Source: Authors' analysis. See appendix exhibit 2 for more details and source information on the 40 input variables.

²¹ CBSAs (core-based statistical areas) are defined by the Office of Management and Budget and consist of one or more counties all economically tied to an urban center of at least 10,000 people. CBSAs include the 384 metropolitan statistical areas (MSAs) and 543 micropolitan statistical areas. In this cluster analysis, CBSA-level variables were used to represent regional area conditions. If the Opportunity Zone is not in a CBSA, county-level variables were used.

Exhibit 9

Significant Characteristics of Opportunity Zone Clusters

Cluster	Percent of all OZs (%)	Most Significant Characteristics of Each Cluster, Based on Deviation of Cluster Mean from Overall Mean		Name
1	26	Much higher (relative to all OZs)	Black population, poverty rate, unemployment rate	Underinvested majority-Black communities
		Much lower (relative to all OZs)	Median income (absolute and relative to regional median income)	
2	6	Much higher	Median home value (absolute and relative to regional median income), commuting by transit, population and job density, HUD Fair Market Rent, regional median home value, people living in large multifamily buildings, foreign-born population, Asian population, median rent, people with college degrees	Metropolitan immigrant communities
		Much lower	Ownership rate, people living in detached houses, commuting by driving alone	
3	35	Much higher	Ownership rate, White non-Hispanic population, people living in a rural area	Rural, small town, and tribal communities
		Much lower	People living in an urbanized area	
4	13	Much higher	People with college degrees	Growing job hubs
		Much lower	Household size, families with children, people living in the same place as 1 year ago	
5	19	Much higher	Hispanic population, household size, foreign-born population, families with children, regional median home value, regional home price growth, HUD Fair Market Rent	Suburban majority Hispanic families
		Much lower	NA ²²	

NA = not applicable. OZ = Opportunity Zone.

Source: Authors' analysis. See appendix exhibit 2 for more details and source information on the 40 input variables.

²² None of the variables' means for cluster 5 were significantly lower than its mean for all clusters. Variables with cluster means over 0.8 standard deviations from the overall mean were considered significant cluster characteristics.

Exhibit 10

Opportunity Zone Clusters: Age of Housing and Housing Assistance²³

Cluster	Median year built	Median year built (owner-occupied)	Median year built (renter-occupied)	Percent of renter households with HUD assistance (%)	Percent of owner-occupied households with FHA-insured mortgage (%)
1	1964	1962	1966	20	15
2	1964	1972	1965	20	11
3	1974	1974	1974	5	8
4	1974	1974	1976	11	10
5	1971	1969	1973	8	18

FHA = Federal Housing Administration.

Sources: Authors' calculations; HUD administrative data; U.S. Census Bureau, 2020

Examining the distribution of Opportunity Zone clusters across states (exhibits 11 and 12) shows regional correlations between cluster types and certain areas of the country. Cluster 2 (“metropolitan immigrant communities”) is almost absent from the South and Midwest and is most prevalent in New York (where it makes up 59 percent of Opportunity Zones), Hawaii (36 percent), and Washington, D.C. (24 percent). This finding makes sense because Cluster 2 represents the densest and most urbanized tracts, which can be found in these states. Cluster 1 (“underinvested majority-Black communities”), which includes largely Black tracts, is concentrated in the South and the East North Central division of the Midwest, and it constitutes the highest share of Opportunity Zones in Illinois (where it makes up 63 percent of all Opportunity Zones), Washington, D.C. (56 percent), and Pennsylvania (54 percent). The high share of Cluster 1 in Pennsylvania is significant because Pennsylvania has a below-average share of Black residents (12.9 percent, compared with the U.S. share of 14.2 percent, according to the 2019 ACS 1-year estimates).

²³ The variables shown in exhibit 10 were not used in the cluster analysis because the data coverage was incomplete across Opportunity Zones.

Exhibit 12

Distribution of Opportunity Zone Clusters by State (1 of 2)

State	Tracts eligible for OZ	Percent of all tracts eligible (%)	Designated OZs	Share of OZs, Cluster 1 (%)	Share of OZs, Cluster 2 (%)	Share of OZs, Cluster 3 (%)	Share of OZs, Cluster 4 (%)	Share of OZs, Cluster 5 (%)
Alabama	835	71	158	42	-	47	10	-
Alaska	68	41	25	16	-	48	28	8
Arizona	870	57	168	15	-	26	23	35
Arkansas	520	76	85	27	-	61	6	6
California	4,343	54	879	5	12	6	5	71
Colorado	657	53	126	6	-	47	29	18
Connecticut	344	41	72	43	1	7	21	28
Delaware	118	54	25	32	-	28	32	8
District of Columbia	116	65	25	56	24	-	16	-
Florida	2,356	56	427	36	-	26	8	30
Georgia	1,339	68	260	48	-	41	7	5
Hawaii	132	38	25	4	36	16	8	36
Idaho	192	64	28	4	-	79	11	7
Illinois	1,659	53	327	63	1	22	4	10
Indiana	817	54	156	33	-	44	20	3
Iowa	410	50	62	18	-	73	10	-
Kansas	420	55	74	18	-	62	15	4
Kentucky	768	69	144	21	-	73	6	-
Louisiana	785	68	150	49	-	40	11	1
Maine	214	60	32	3	-	81	16	-
Maryland	743	53	149	32	1	21	18	27
Massachusetts	677	46	138	12	16	20	28	23
Michigan	1,528	54	288	36	-	42	17	3
Minnesota	744	56	128	6	-	50	28	16
Mississippi	535	81	100	21	-	72	6	1
Missouri	883	63	161	44	-	47	9	-
Montana	162	60	25	12	-	72	16	-
Nebraska	273	51	44	14	-	39	39	9
Nevada	330	48	61	30	-	11	25	34
New Hampshire	151	51	27	-	-	59	30	11
New Jersey	835	42	169	18	11	9	8	54
New Mexico	338	68	63	11	-	59	19	11
New York	2,641	54	514	15	59	15	6	5
North Carolina	1,414	64	252	29	-	57	9	5
North Dakota	84	41	25	4	-	64	32	-
Ohio	1,647	56	320	49	-	34	15	1
Oklahoma	651	62	117	22	-	59	14	2
Oregon	513	62	86	1	2	43	40	14

Exhibit 12

Distribution of Opportunity Zone Clusters by State (2 of 2)

State	Tracts eligible for OZ	Percent of all tracts eligible (%)	Designated OZs	Share of OZs, Cluster 1 (%)	Share of OZs, Cluster 2 (%)	Share of OZs, Cluster 3 (%)	Share of OZs, Cluster 4 (%)	Share of OZs, Cluster 5 (%)
Pennsylvania	1,640	51	300	54	2	26	14	4
Rhode Island	97	40	25	20	-	20	32	28
South Carolina	741	67	135	35	-	58	6	1
South Dakota	112	50	25	12	-	64	24	-
Tennessee	986	66	176	34	-	51	14	1
Texas	3,131	59	628	18	-	46	8	27
Utah	283	48	46	4	-	33	24	39
Vermont	89	48	25	-	-	80	16	4
Virginia	1,071	56	212	22	2	42	19	15
Washington	780	53	139	4	4	43	22	26
West Virginia	385	80	55	18	-	75	7	-
Wisconsin	734	52	120	29	-	36	29	6
Wyoming	56	42	25	4	-	76	16	4

OZs = Opportunity Zones.

Note: A dash indicates that a cluster is not represented in that state.

Source: Authors' analysis. See appendix exhibit 2 for more details and source information on the 40 input variables.

Cluster 3 (“rural, small town, and tribal communities”) is the predominant cluster type in states such as Maine (81 percent), Idaho (79 percent), West Virginia (75 percent), Kentucky (73 percent), and Mississippi (72 percent). The low share of Cluster 3 Opportunity Zones in California is striking because California is such a large state and includes rural and suburban tracts, but this classification may be a result of the diverse demographics of California, where only 36.3 percent of the population is non-Hispanic White (according to the 2019 ACS 1-year estimates). Indeed, 71 percent of California’s Opportunity Zones are classified under Cluster 5, the predominantly Hispanic cluster. Cluster 3 also contains 77 percent of Opportunity Zones that are in Indian reservations.

Cluster 4 (“growing job hubs”) is most represented among Opportunity Zones in Oregon (where 40 percent of Opportunity Zones are Cluster 4), Nebraska (39 percent), North Dakota (32 percent), Delaware (32 percent), and Rhode Island (32 percent) and least represented among Opportunity Zones in states with major cities, such as Illinois (4 percent), California (5 percent), and New York (6 percent), as well as in more rural states, such as South Carolina (6 percent), Arkansas (6 percent), and West Virginia (7 percent). This finding is interesting because much of the discourse around the potential outcomes of Opportunity Zone transactions in gentrifying neighborhoods discusses investments in places such as New York and Los Angeles; however, the Opportunity Zones most likely to be gentrifying (growing with new, early-career college graduates) make up a small share of the Opportunity Zones in states such as New York and California. Nine percent of Cluster 4 Opportunity Zones have universities, and 9 percent have large hospitals, the highest rate of university and hospital coverage among all populated Opportunity Zones.

Cluster 5 (“suburban majority-Hispanic families”) is most common in states with large Hispanic populations, including California (71 percent of Opportunity Zones are Cluster 5), New Jersey (54 percent), Utah (39 percent), Hawaii (36 percent), Arizona (35 percent), Nevada (34 percent), and Florida (30 percent). After Cluster 2, Cluster 5 is the least represented among states; 10 states have no Cluster 5 Opportunity Zones.²⁴

Appendix exhibit 4 is a set of maps showing specific locations of different Opportunity Zone cluster types in several example areas.²⁵

Discussion

Now understanding the characteristics of the five Opportunity Zone clusters and their geographic distribution across the country, the Opportunity Zone investment implications for each cluster and the communities affected by these investments are discussed. Also discussed are considerations for evaluating the Opportunity Zone incentive within the context of each cluster.

Cluster 1 represents majority-Black tracts that have likely seen the greatest underinvestment. Cluster 1 Opportunity Zones have seen the lowest amount of housing built since the 2007–2009 financial crisis and have the highest housing vacancy rate, highest poverty rate, and lowest incomes of all clusters. How would market investors view Cluster 1 Opportunity Zones? Cluster 1 Opportunity Zones may not be prioritized for housing investments due to the high rate of existing vacancies. These tracts may have a need instead for broader economic development investments focused on the creation of new businesses or the relocation of existing businesses into these clusters to create more jobs and higher wages for residents, paired with public investments and alignments of public services, for a more holistic community wealth-building and economic development approach. At the same time, Cluster 1 communities have the most to gain from Opportunity Zone investment; good-quality housing could serve as a social support, and the greatest gains may come from combined housing and business investments, which together boost demand for living and working in these areas. Cluster 1 Opportunity Zones might also benefit from strategic place-making leveraging communities’ cultural assets. To evaluate outcomes in Cluster 1 Opportunity Zones, it will be essential to examine changes in housing quality, increases in new construction or rehabilitation, and the rental income characteristics of new developments (market-rate versus income-limited housing). Although there is a lower likelihood of gentrification and forced displacement due to the high existing vacancy rates, these communities are still at risk for displacement if rapid investment occurs without a coordinated approach for affordable housing to ensure that existing residents have options to continue to live in the community if their incomes do not rise parallel to the broader community changes. Community outcomes may need to be measured in the longer term due to higher baseline distress.

Cluster 2 includes the most metropolitan Opportunity Zones, inhabited by more newly arrived and more affluent immigrants and people of color. Cluster 2 has seen the highest rent increases between 2013 and 2019, and the median home values exceed those of the metro area. How

²⁴ Alabama, Iowa, Kentucky, Maine, Missouri, Montana, North Dakota, South Dakota, Washington, D.C., and West Virginia

²⁵ The maps and additional examples are also available here: <https://bit.ly/3JBECeF>. Data and code used for this article are available by request.

would market investors view Cluster 2 Opportunity Zones? Cluster 2 Opportunity Zones would accommodate primarily infill and mixed-use development and substantial rehabilitation or adaptive reuse of existing real estate developments. These clusters are also likely to have more mixed-use and mixed-income housing developments to accommodate the broader economic composition of the neighborhoods. Investors may see higher returns due to the low vacancy rates and positive growth over the past decade. Although these neighborhoods may have seen broader investments in the community, they are also seeing wider disparities in incomes and the types of housing supplied (higher-rent market-rate housing on one end of the spectrum and affordable housing on the other). These neighborhoods could greatly benefit from more workforce housing opportunities, which would provide investors with returns higher than those for income-limited housing while still addressing community needs. Outcomes from Opportunity Zone investments would affect majority-renter, people of color, and immigrant populations. Any lowering of rents from an increasing housing supply or development of more options for housing (affordable housing or workforce housing) could benefit renters. The growing population means that it will be necessary to delineate between outcomes for existing residents and outcomes for new residents (especially if new residents look socioeconomically different from those there previously) while also examining economic mobility within the census tract.

Cluster 3 consists of rural and small-town tracts and tribal communities. Cluster 3 Opportunity Zones are census tracts with majority-white, older owner households that have the second highest vacancy rates and are closest to the incomes and rents of the surrounding area. In terms of housing investments, investors may need to think outside the box; the Opportunity Zone incentive may encourage more innovative rural housing investments beyond typical single-family detached homes, and they may be combined with business relocations and expansions. In terms of community outcomes, housing quality may be more important than housing quantity. Outcomes would affect older and retired residents, who may have particular housing needs around aging. Tribal communities have different baseline situations and would see different potential investment and community outcomes. When evaluating Opportunity Zone outcomes in Cluster 3 census tracts, it will be important to contextualize rural development because it differs from urban or suburban development outcomes. Because Cluster 3 Opportunity Zones are representative of their surrounding counties or CBSAs, it will be important to investigate whether the mere designation of a census tract as an Opportunity Zone encourages the transfers of development that would have initially been targeted to another census tract in the area. Finally, Cluster 3 Opportunity Zones may be affected by more recent short-term changes due to the COVID-19 pandemic because some areas have seen an urban-to-rural migration (Whitaker, 2021). It will be important to examine how much newly built housing is occupied by newcomers moving from more urban areas, and to observe their socioeconomic characteristics compared with those of existing residents.

Cluster 4 Opportunity Zones include the growing urban and suburban tracts inhabited by more educated residents living in job hubs. Cluster 4 census tracts have the smallest households and fewest children and have seen the most gentrification, as defined by growth in college-educated populations; the most housing built since the 2007–2009 financial crisis; and the greatest share of movers new to the census tract. Cluster 4 has the highest job-to-resident ratio (2.3 on average) and the highest proportion of hospitals and universities among populated tracts, and it has rents

close to the median rents of the surrounding area. Investors following market trends in Cluster 4 tracts would be enticed to build housing targeted to recent graduates, early-career professionals, or young families, including smaller units, denser housing, more amenity-rich properties, and a focus on apartments, condominiums, and townhouse-style projects as opposed to single-family developments. Potential positive community outcomes may include supporting workers in job centers and possibly supporting young adults transitioning into starting families. Developments could bring additional benefits to the neighborhoods, such as infrastructure improvements, additional green space and parks for residents, and the potential for mixed-use projects for small business owners and community-based organizations. To evaluate the Opportunity Zone incentive in Cluster 4, it will be important to look at trends such as the job-housing balance and outcomes for newcomers versus existing residents, particularly people of color, who currently make up just under one-half of the tract's population on average.

Finally, Cluster 5 Opportunity Zones are primarily suburban and largely consist of Hispanic families. They are the second densest cluster, have the lowest vacancy rates, have the second highest rents, and are the most homogenous based on their Gini coefficient. Investors meeting market needs would be encouraged to build housing targeted to families, with more bedrooms and higher square footage. There is likely room for development in these tracts due to the low vacancy rates and high rents. Community outcomes would affect families, children, Hispanic populations, immigrants, and other people of color. When evaluating the Opportunity Zone incentive in Cluster 3 tracts, it will be important to examine changes in housing quality and rates of overcrowding. It will also be important to evaluate the potential for displacement of lower income or smaller households.

Anchor Institutions

Anchor institutions such as large universities and hospitals play a significant role in how the Opportunity Zone designation affects their communities. They can play a significant role in economic and community development because they are strongly tied (“anchored”) to their physical locations, serving large numbers of employees and clients (including visitors) and wielding influential voices in local governments and business communities. Anchor institutions may play a role in the Opportunity Zone context by directly investing in the capital stack for real estate or infrastructure projects or in businesses, influencing the decisions of other investors, and contributing to broader Opportunity Zone strategies tied to city or county economic development strategies.

Drexel University researchers have developed guidance to help governments and other leaders in communities make the most of their Opportunity Zone designations and build strong ecosystems to prepare communities for Opportunity Zone investment and to empower communities to shift the discussion from economic development to a focus on community wealth building. They discuss the strategic importance of anchor institutions, such as universities and hospitals, located in or near an Opportunity Zone:

“The Opportunity Zone incentive, and all the enthusiasm it has inspired, offers a unique chance for cities to organize multiple anchor institutions around a common goal of redevelopment and job creation in order to set their Opportunity Zones apart—with each anchor making contributions aligned with its mission and strengths according to its own community-focused needs.”²⁶

Exhibit 13 shows that the highest proportion of anchor institutions, as indicated by large universities and large hospitals, can be found in Cluster 4 tracts. However, Cluster 1 tracts also have a significant share, and they likely contain most Historically Black Colleges and Universities (HBCUs). Indian reservations, which have their own historical, legal, and community contexts that affect their current way of life and their potential for different kinds of Opportunity Zone investments, are most prevalent in Cluster 3 Opportunity Zones. An evaluation of the Opportunity Zone incentive should differentiate between census tracts with and without anchor institutions, Indian reservations, or other place-based entities, which may contribute to earlier success of attracting Opportunity Zone investment and creating a local ecosystem for continued attraction of public and private capital for a community development or community wealth-building focus.

Exhibit 13

Opportunity Zones, Anchor Institutions, and Indian Reservations

Cluster	Has large university (%)	Has large hospital (%)	Has Indian reservation (%)
1	4	5	1
2	2	3	0
3	2	1	7
4	9	9	1
5	0	2	1
NA (fewer than 100 households)	23	14	3

NA = not available.

Sources: Authors' calculations; U.S. Census Bureau, 2019a; U.S. Department of Homeland Security, n.d.

Conclusion

Through a cluster analysis based on housing and demographic variables, the authors developed a typology of Opportunity Zones, classifying them into five different clusters: rural, small-town, and tribal communities (36 percent of Opportunity Zones); underinvested majority-Black communities (26 percent); suburban majority-Hispanic families (19 percent); growing job hubs (13 percent); and metropolitan immigrant communities (6 percent). Clusters vary in their geographic distribution in ways that reflect both the diversity of neighborhoods across states and the different approaches states used to recommend their census tracts to be designated as Opportunity Zones. The results represent one typological approach, but clusters can also be broken down into smaller, more homogenous groups for further clarity.

²⁶ From *Transactions to Transformation: How Cities Can Maximize Opportunity Zones* by Bruce Katz and Evan Weiss, 2018, Drexel University. <https://drexel.edu/nowak-lab/publications/reports/opportunity-zones/>.

Opportunity Zone clusters have different assets and needs. The unique characteristics of the clusters may also contribute to investment demand and the potential returns that Qualified Opportunity Fund investors and their fund managers are seeking. A preliminary study of Qualified Opportunity Fund activities based on electronic Internal Revenue Service (IRS) tax filings found that initial investment has been concentrated in a subset of 16 percent of Opportunity Zones, which are relatively better off than other OZs (Kennedy and Wheeler, 2021). It would be interesting to examine the intersection between this subset of census tracts and the clusters described in this article, perhaps Cluster 4. With more transactional data, one would be able to inspect potential differences between types, levels, and timing of investments, as well as community outcomes, across different clusters of Opportunity Zones. A future evaluation could use the typology in this article alongside locational data on Opportunity Zone investments and the type of investments Qualified Opportunity Funds are pursuing, such as specific real estate asset classes or equity in specific stages of the business creation lifecycle. These data would ideally include the total number of investments and the dollars invested per transaction for each cluster. The authors hope this typology becomes useful for evaluating the incentive as data on Opportunity Zone transactions can be paired with existing IRS data and potential future data if more data reporting requirements become law.

Appendix

Appendix Exhibit 1

Opportunity Zones in the 50 States and D.C. with Fewer than 100 Households

Count	Description
17	Census tracts occupied largely by government-owned land and facilities, including prisons, airports, military bases, and parks
9	Census tracts dominated by large university or hospital campuses
5	Census tracts dominated by industrial and/or commercial land
4	Large census tracts consisting of rural and undeveloped land, appearing to be poised for tourism-related development
35	TOTAL

Source: 2019 ACS and authors' own analysis

Appendix Exhibit 2

Data Sources (1 of 2)

Tract urban form variables	
Population per square mile	Total residents, from the 2019 American Community Survey 5-year estimates (2019 ACS), divided by the area of the census tract
Population plus jobs per square mile	Sum of the jobs in 2016, from the U.S. Census Bureau's LEHD Origin-Destination Employment Statistics (LODES), and residents (from the 2019 ACS), divided by the area of the census tract
Percent urban area	Percent of residents living in an "urbanized area" from the 2010 decennial census
Percent urban cluster	Percent of residents living in an "urban cluster" from the 2010 decennial census
Percent rural area	Percent of residents living in a rural area from the 2010 decennial census
Jobs-to-resident ratio	Jobs in 2016 (from LODES) divided by residents (from the 2019 ACS)
Percent who drive alone to work	From the 2019 ACS
Percent who take public transit, walk, or bike to work	From the 2019 ACS
Tract housing variables	
Percent living in the same home as a year ago	From the 2019 ACS
Percent vacant	From the 2019 ACS
Percent of housing stock that is single-family detached	From the 2019 ACS
Percent of housing stock in buildings with 20+ units	From the 2019 ACS
Median gross rent	From the 2019 ACS
Median home value	From the 2019 ACS
Units built in 2014 or later	From the 2019 ACS
Percent who own home	From the 2019 ACS
Tract demographics variables	
Gini coefficient	From the 2019 ACS
Poverty rate	From the 2019 ACS
Median household income	From the 2019 ACS
Percent age 25 or older with a college degree	From the 2019 ACS
Household size	From the 2019 ACS

Appendix Exhibit 2

Data Sources (2 of 2)	
Percent of households that are families with children younger than 18	From the 2019 ACS
Percent of population 65 or older	From the 2019 ACS
Percent of population that is foreign born	From the 2019 ACS
Percent unemployed	From the 2019 ACS
Percent not in labor force	From the 2019 ACS
Percent White non-Hispanic	From the 2019 ACS
Percent Black	From the 2019 ACS
Percent Hispanic	From the 2019 ACS
Percent Asian	From the 2019 ACS
Tract temporal variables	
Absolute change in households from 2013 to 2019	From the 2013 American Community Survey 5-year estimates (2013 ACS) and 2019 American Community Survey 5-year estimates (2019 ACS)
Percent change in household income from 2013 to 2019	From the 2013 ACS and 2019 ACS
Percent change in rent from 2013 to 2019	From the 2013 ACS and 2019 ACS
Percentage point change in population with a college degree, 2013 to 2019	From the 2013 ACS and 2019 ACS
Regional housing variables	
Median home value, CBSA or county	Median home value for the CBSA containing the census tract (for census tracts in CBSAs) or median home value for the county containing the census tract (for census tracts outside CBSAs), from the 2019 ACS.
HUD Fair Market Rent	The 2021 HUD fair market rent for the Housing Market Area containing the census tract (does not include small area fair market rents).
Regional temporal housing variable	
CBSA/non-CBSA state home price index (2020, with 2012 base year)	Regional 2020 FHFA home price index with 2012 (shows change in home prices between 2012 and 2020 based on repeat single-family home sales). For tracts in CBSAs, this is for the CBSA containing the tract. For tracts outside CBSAs, this is for the non-CBSA portion of the state containing the tract.
Tract relationship to regional variables	
Ratio of median household income of tract to CBSA (or county if non-CBSA)	Tract median household income divided by median household income for the CBSA containing the tract (for census tracts in CBSAs) or for the county containing the tract (for census tracts outside CBSAs), from the 2019 ACS.
Ratio of median gross rent of tract to CBSA/county	Tract median gross rent divided by median gross rent for the CBSA containing the tract (for census tracts in CBSAs) or for the county containing the tract (for census tracts outside CBSAs), from the 2019 ACS.
Ratio of median home value of tract to CBSA/county	Tract median home value divided by median home value for the CBSA containing the tract (for census tracts in CBSAs) or for the county containing the tract (for census tracts outside CBSAs), from the 2019 ACS.

CBSA = Core Based Statistical Area. FHFA = Federal Housing Finance Agency. LEHD = Longitudinal Employer-Household Dynamics.

Appendix Exhibit 3

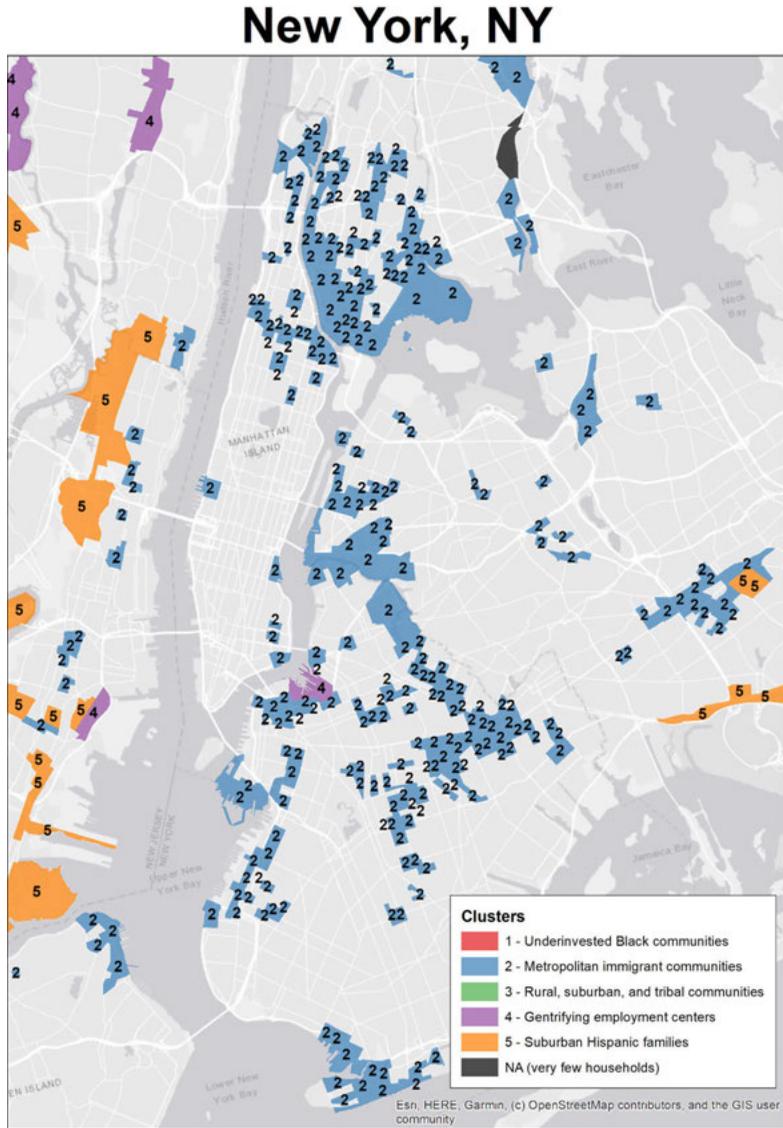
Rotated Factor Loadings from the Principal Components Analysis

Variable	PC1	PC2	PC3	PC4	PC5	PC6	PC7	PC8	PC9	PC10
popdensity	0.23	0.01	0.04	0.3	0.06	0.13	0.04	0.14	0.03	0.18
jobpopdensty	0.22	0.01	0.12	0.21	0.01	0.14	0.02	0.06	0.19	0.29
pcturbarea	0.22	0.11	0.04	0.24	0.19	0.23	0.02	0.08	0.16	0.1
pcturbcluster	0.14	0.04	0.03	0.06	0.25	0.35	0.25	0.01	0.25	0.24
pctrurarea	0.18	0.11	0.02	0.28	0	0.05	0.29	0.11	0.04	0.12
jobsres	0.05	0.01	0.17	0.15	0.15	0.01	0	0.18	0.43	0.35
pctdrivealone	0.24	0.09	0.13	0.22	0.1	0.11	0.02	0	0.01	0.03
pcttransitwalkbike	0.23	0.08	0.18	0.23	0.13	0.1	0.03	0.06	0.02	0.04
pctsamehouse1yr	0.03	0.08	0.22	0.36	0.13	0.16	0.1	0.13	0.07	0.11
pctvac	0.13	0.12	0.12	0.14	0.23	0.06	0.11	0.29	0.19	0.06
pctdetached	0.23	0.09	0.16	0.01	0.08	0	0.06	0.03	0.04	0.08
pct20plus	0.21	0.03	0.23	0	0.18	0.04	0.02	0.01	0.11	0.12
medrent	0.22	0.22	0.05	0.06	0.18	0.04	0.03	0.04	0.21	0.24
medval	0.24	0.16	0.07	0.21	0.05	0.01	0.05	0.05	0.09	0.15
unitsblt2014	0.04	0.12	0.11	0.19	0.07	0.11	0.55	0.13	0.03	0.09
pctown	0.24	0.19	0.09	0.15	0.1	0.1	0.11	0.03	0.05	0.01
gini	0.04	0.19	0.19	0.1	0.09	0.06	0.22	0.13	0.14	0.26
povrate	0.05	0.34	0.01	0.04	0.07	0.21	0.1	0.14	0.01	0.11
medhhinc	0.05	0.37	0.01	0.01	0.16	0.06	0.02	0.06	0	0.01
pctcoll	0.1	0.19	0.31	0.13	0.06	0.02	0.01	0.02	0.13	0.12
hhsz	0.08	0.05	0.39	0.08	0.05	0.2	0.12	0.12	0.03	0.02
pctfamilies	0.05	0	0.38	0.04	0.03	0.28	0.07	0.01	0.05	0.05
pct65over	0.16	0.05	0.13	0.26	0.06	0.38	0.03	0.01	0.08	0.06
pctforborn	0.24	0.08	0.17	0.07	0.18	0	0.03	0.09	0.09	0.01
pctunemployed	0.02	0.27	0.06	0.02	0.17	0.05	0.14	0.05	0.05	0.13
pctnotinlf	0.13	0.18	0.04	0.25	0.12	0.09	0.19	0.23	0.2	0.12
pctwhthn	0.18	0.18	0.21	0	0.19	0.04	0.16	0.02	0.04	0.05
pctblk	0.04	0.25	0.03	0.03	0.45	0.05	0.11	0.17	0.05	0.1
pcthispc	0.15	0.04	0.29	0.02	0.25	0.12	0.07	0.16	0.07	0.17
pctasian	0.16	0.09	0.03	0.03	0.09	0.09	0.1	0.1	0.11	0.35
abshhs1319	0.09	0.08	0.05	0.2	0.17	0.05	0.49	0.33	0.05	0.02
pctinc1319	0.06	0.1	0.03	0.13	0.23	0.01	0.02	0.49	0.3	0.29
pctrent1319	0.08	0.1	0.03	0.13	0.14	0.13	0.01	0.4	0.09	0.19
absppcoll1319	0.07	0.09	0.12	0.1	0.17	0.06	0.13	0.2	0.44	0.17
mktmedval	0.26	0.1	0.11	0.09	0.06	0.23	0.03	0.03	0.09	0.18
hudfmr	0.27	0.08	0.1	0.09	0.01	0.22	0.02	0	0.06	0.16
trctmktinc	0.13	0.33	0.03	0.06	0.1	0.12	0.08	0.04	0.07	0.08
trctmktmedrnt	0.04	0.24	0.07	0.1	0.25	0.29	0.06	0.01	0.39	0.18
trctmktmedval	0.04	0.19	0.23	0.19	0.06	0.23	0.14	0.09	0.04	0.05
hpimetst20	0.11	0.05	0.16	0.16	0.23	0.29	0.15	0.25	0.01	0.06

Appendix Exhibit 4

Opportunity Zone Clusters in Example Areas (1 of 6)

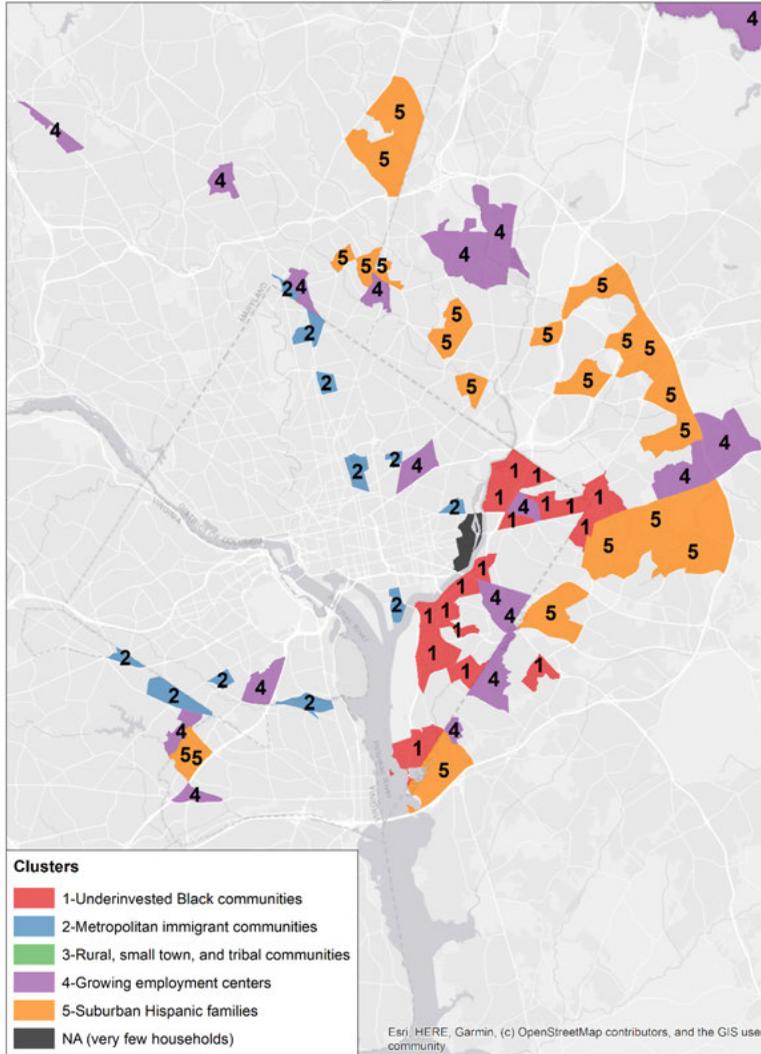
Opportunity Zones are colored and labeled by cluster. Dark gray tracts are Opportunity Zones with fewer than 100 households that were excluded from the cluster analysis. Maps were created by the authors using ArcGIS® software by Esri. These maps and additional examples are available online here: <https://bit.ly/3JBCEcF>



Appendix Exhibit 4

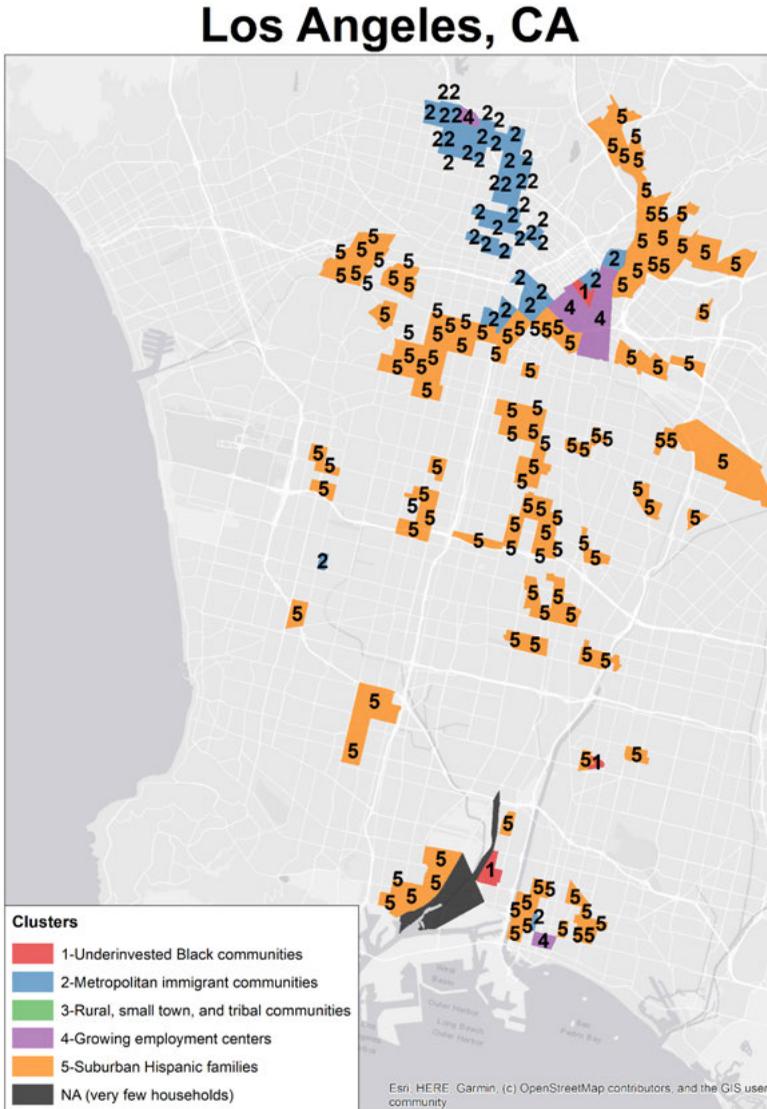
Opportunity Zone Clusters in Example Areas (2 of 6)

Washington, DC



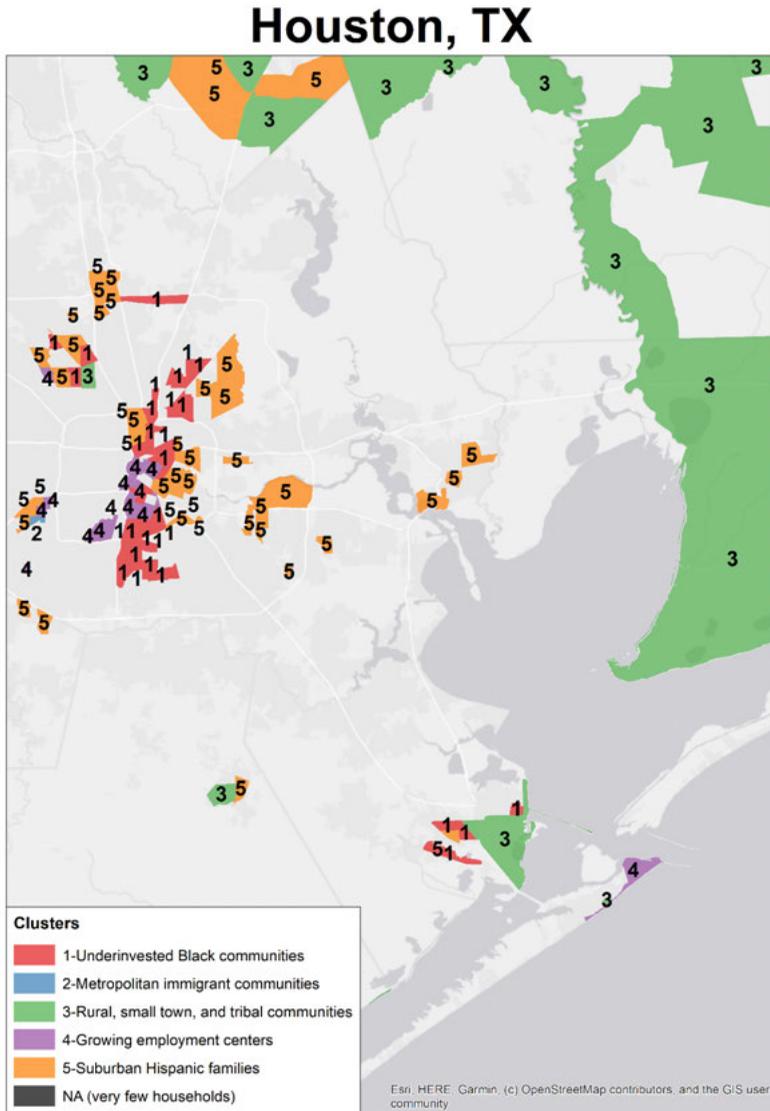
Appendix Exhibit 4

Opportunity Zone Clusters in Example Areas (3 of 6)



Appendix Exhibit 4

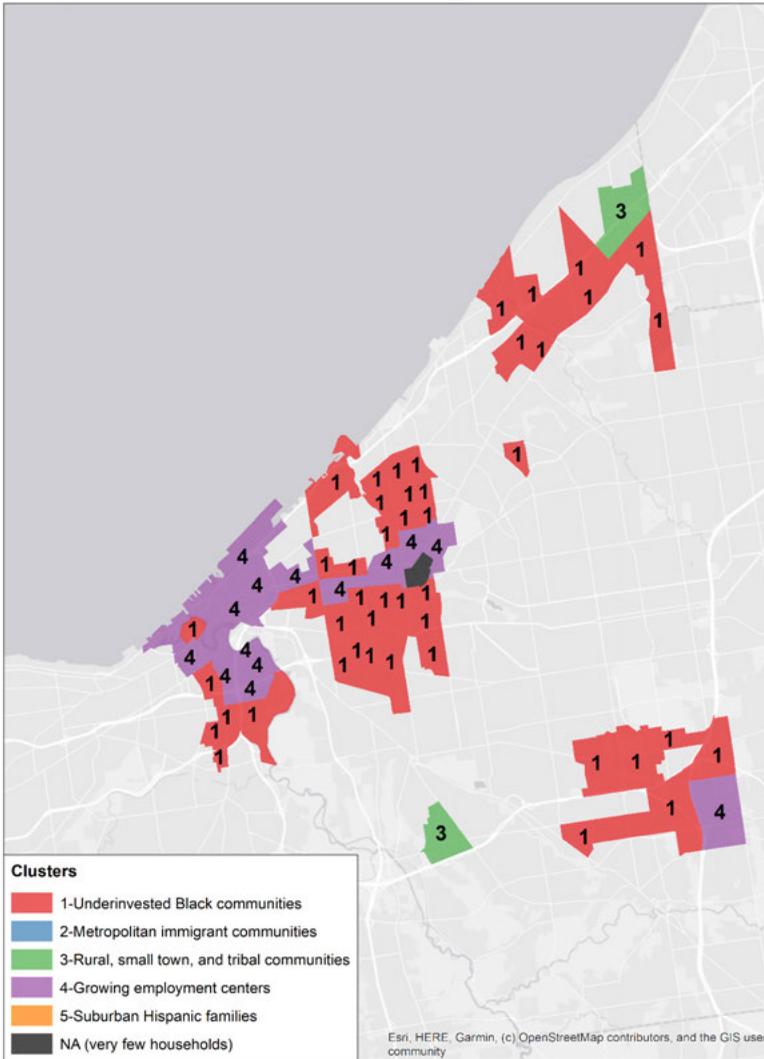
Opportunity Zone Clusters in Example Areas (4 of 6)



Appendix Exhibit 4

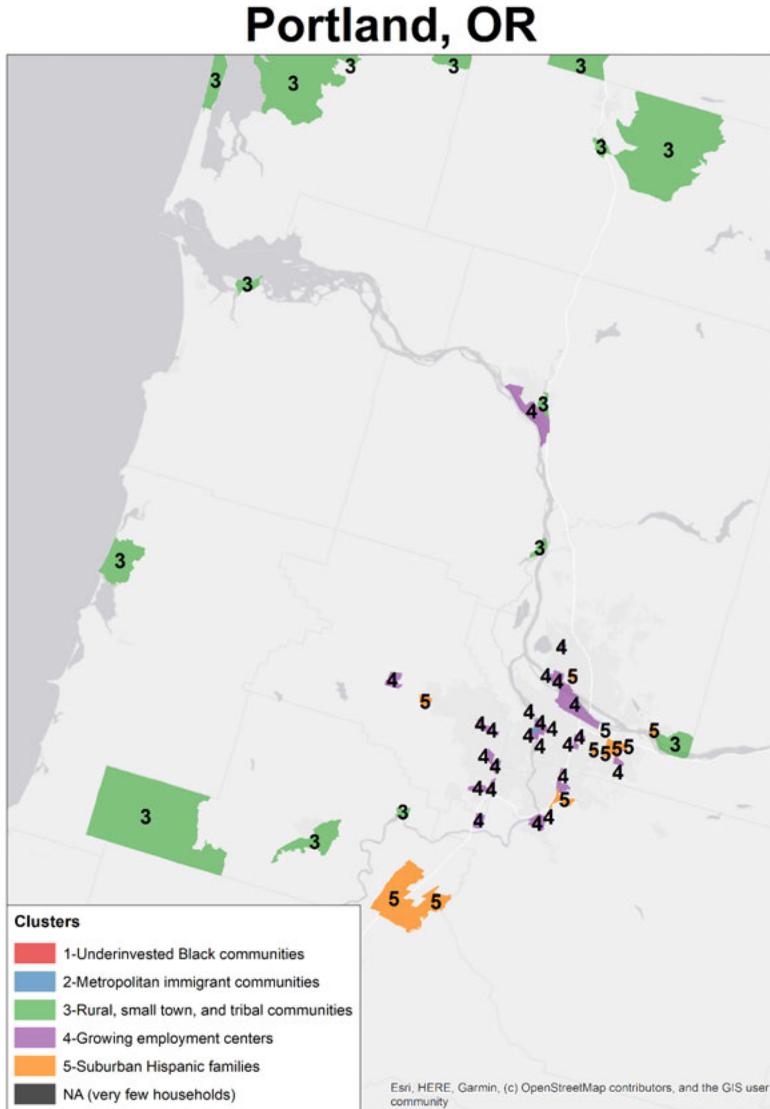
Opportunity Zone Clusters in Example Areas (5 of 6)

Cleveland, OH



Appendix Exhibit 4

Opportunity Zone Clusters in Example Areas (6 of 6)



Sources: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, 2015; U.S. Census Bureau, 2019a.

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