Access to Opportunity and Locational Equity in the Low-Income Housing Tax Credit Program: A Case of the Seattle Metropolitan Area

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Abstract

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There is a severe shortage of affordable housing in the United States. The main funding source for the construction and preservation of affordable housing is through the Low-Income Housing Tax Credit (LIHTC) program. Researchers have focused on the intersection of housing and access to opportunity, noting the socio-economic and health benefits associated with proximity to opportunity. This begs the question: are limited affordable housing dollars spent in ways that produce optimal outcomes for low-income residents? This study uses federal housing data and HUD AFFH access to opportunity indices to establish if for-profit and non-profit developers in the Seattle Metropolitan Area locate their developments in areas with high levels of access to opportunity. The findings indicate that developers face a tradeoff between good access to transit and environmental health and that their mission may play a role in the site selection process.

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Chapter 1. Introduction

There is an affordable housing crisis currently plaguing the United States, from fast-growing coastal cities to declining rustbelt towns to the rural hinterland. It may manifest itself in different ways, but ultimately, it stems from a simple supply and demand problem: there are more people with need, in need, of housing than there is affordable housing available. In lieu of a dramatic shift in policy, the federal government's most important weapon in the arsenal to combat this shortage of affordable rental housing is the Low-Income Housing Tax Credit (LIHTC) program. This mouthful of an acronym is the largest source of funding for the creation and preservation of affordable housing in the United States (Desai et al, 2010). Over the course of the last thirty years, more than three million units of housing have been built (Low-Income Housing Tax Credits, 2018).

The longevity and size of the LIHTC program have provided fertile ground for researchers to delve into its operational peculiarities (Clarke, 2015; CohnReznick, 2018; Desai et al, 2010; Khadduri et al, 2012; Melendez et al, 2008) and most importantly, its residents' life outcomes (Chetty & Hendren, 2015; Chetty et al, 2016). Increasingly, researchers have focused on the intersection of housing and access to opportunity, noting the host of socio-economic and health benefits associated with proximity to opportunity (Walter et al, 2018). Given the limited funding available for distribution, it is important that policymakers ensure adequate consideration of locational equity in the LIHTC program's competitive allocation process. In addition, some researchers have questioned the role of private, for-profit developers in the production of affordable housing, a critique that follows a broader global reaction to the privatization of poverty (Ballard, 2003).

The focus of this thesis is to investigate the connection between the location of LIHTC developments built by for-profit and non-profit developers in the Seattle Metropolitan Area and their access to opportunity. A quantitative methods approach and GIS spatial analysis is used to analyze the locations of LIHTC properties in King, Pierce, and Snohomish counties against an index of seven Housing and Urban Development (HUD) Department defined access to opportunity indices. The following research question is addressed: How effective are for-profit and non-profit developers in siting LIHTC-funded developments in areas with high levels of access to opportunity? Results indicate there are statistically significant differences in access to opportunity between non-profit and for-profit LIHTC developments. The findings imply that there may be a tangible difference in site selection preference between for-profit and non-profit developers and that this divergence deserves further research.

Chapter 2. Literature Review

The purpose of this literature review is to explore the most important production and preservation subsidy of new affordable housing in this country, the Low-Income Housing Tax Credit (LIHTC) program. It is important to first provide the context of public housing in America, how the LIHTC program arose, how it functions, and its contemporary issues. This discussion sets the stage for a comprehensive analysis of the difference between non-profit and for-profit LIHTC developers. The tradeoffs between the two developer profiles have the potential to inform future funding allocation policy.

Public Housing in the United States

Unlike many other Western countries, the United States does not have a strong nor particularly successful history of housing citizens with need through public housing. Numerous challenges unique to the American context prevented the proliferation of public housing beyond the few existing units present today. The advent of public housing as it is now envisioned is a direct result of the Great Depression and the subsequent New Deal. The Roosevelt administration sought to improve poor housing conditions low-income households lived in and to spur economic growth through increased construction (McCarty, 2014). Despite significant opposition from an array of business interests and local governments fearing loss of sovereignty, the Housing Act of 1937 passed (Wood, 1982). This legislation paved the way for significant federal government investment in housing. The initial units built during the 1930s and 1940s did not carry the negative stigma that is now so closely associated with public housing. Early residents were primarily working-class families that had fallen on hard times during the Depression (McCarty, 2014).

Construction of public housing took a back seat to war efforts during 1940s as the nation mobilized to fight in World War II. Once the war concluded, interest in housing policy returned to the forefront of the federal government's attention. In 1949, a second Housing Act passed with a policy goal to provide a "decent" and "suitable" living environment to all American households (McCarty, 2014). The Act provisioned for the construction of over 800,000 units of housing by 1957. The landmark legislation also tightened income eligibility – income caps were introduced to recognize the intense need for housing the poorest Americans (McCarty, 2014). This inflection point marks the United States divergence from the path other Western countries followed regarding public housing policy. The U.S. chose to prioritize housing its citizens most in need (at 30% AMI and less). The resulting change in tenant profile of the U.S. public housing stock closely matched a shift in public opinion against public housing: between 1952 and 1962, housed families receiving benefits increased from 29% to 46% and the percent of non-white families increased from 36% to 46% (McCarty, 2014).

In the pre-Civil Rights era of overt racial discrimination, public opposition to the placement of public housing projects grew exponentially. Projects increasingly were forced to cluster together in city centers. Combined with white flight spurred urban disinvestment, today's much-maligned areas of concentrated poverty began to form. Despite political headwinds at the local level, the 1960s saw hundreds of thousands of units of public housing built (McCarty, 2014). However, such prodigious production could not last forever, particularly as political tides changed with the election of Richard Nixon in 1968. In 1969, an extremely important piece of legislation called the Brooke Amendment made a fundamental change to the rent structure of public housing; tenant rents were capped to twenty-five percent of their household income (Bull & Gross, 2018). On one hand, this amendment reduced rents for low-income households to less burdensome

levels, yet on the other hand, it hampered the operational capabilities of the public housing authorities tasked with maintenance. Consequently, many public housing developments fell into severe disrepair (though it should be noted that equally many did not), greatly influencing the following two decades of public housing policy discourse (McCarty, 2014).

Several high-profile public housing failures occurred in the late 1960s and through the 1970s, destroying the remaining political backing for continued large-scale development. Disaster cases such as Pruitt-Igoe, Cabrini Green, and the Robert Taylor Homes frequented media headlines, painting a false impression of the dire state of all public housing. Regardless of their veracity or applicability to the state of public housing at large, the Nixon administration harnessed this sentiment and paired it with cost concerns to issue a full moratorium on federal funding for public housing development in 1973 (McCarty, 2014). Congress overturned this moratorium in 1974, but ushered in a clear policy shift. While funding for new public housing continued at a massively decreased level, a new demand-side program focusing on providing housing vouchers to be used on the private rental market appeared. Thus, the Section 8 housing program came to be (McCarty, 2014). The 1970s and 1980s saw a continued devolution of funding responsibilities from the federal government to the states. New public housing production slowed to a trickle in favor of providing additional funding for the Section 8 program.

Without adequate funding at the federal and state levels, or the means to appropriately cover maintenance through tenant rent payments, and coupled with an additional decade of assets aging, public housing authorities saw their buildings deteriorate at accelerating rates. A 1992 commission on housing found that six percent, or around 86,000 units, were “severely distressed” (McCarty, 2014). A peak of 1.3 million public housing units was reached in the 1970s, followed by a small, but steady decline as the most notorious complexes were

demolished. The inaccurate public perception that decaying buildings comprised most public housing ushered in a new policy change of demolition (Goetz, 2011). Replacement – not even at a one-for-one rate – of severely distressed units dominated discourse around public housing in the 1990s and 2000s. Actualized through the HOPE VI program initiated in 1992, the federal government resumed funding new public housing development. Unfortunately, the program resulted in a net-negative effect on the public housing stock (Goetz, 2011).

By the 1980s, the federal government had clearly lost interest in offering supply-side, central government solutions to housing those with need. In addition to HOPE VI, a program launched just a few years earlier in the 1980s would come to dominate new subsidized housing construction. The Low-Income Housing Tax Credit (LIHTC) program offered a market-driven solution to the provision of affordable housing. Whereas the mission of public housing is to provide for households making at or below the 30% AMI level, LIHTC-funded housing is generally geared to households earning in the 30-60% AMI range. The program was likely not intended to replace funding for public housing, but it did in essence.

A New Beginning: The Low-Income Housing Tax Credit Program is Born

The inception of the Low-Income Housing Tax Credit Program can be traced to the Reagan administration and its authorization by the 1986 Tax Reform Act. This program provides funding for the vast majority of new subsidized and affordable units built today (Desai et al, 2010). The program has grown from less than 200 million dollars in annual expenditure in 1987 to over eight billion dollars in 2016. As of 2018, over 48,672 projects containing 3.23 million units of housing have been constructed (Low-Income Housing Tax Credits, 2018). As described in the previous section, LIHTC represents a significant departure from the traditional supply-side model of public housing funding. The federal government no longer provides direct funding;

instead, it distributes tax credits through the IRS to each state's Housing Finance Agency (HFA). The HFAs distribute the tax credits to developers through a competitive allocation process and the developers sell them for equity (Desai et al, 2010). Basic program regulations are set by federal law to ensure funds are used only for developments with affordable housing; however, each state HFA can exercise authority in an autonomous manor (Desai et al, 2010). Once awarded to a developer and sold to an investor, the tax credits are applied over a ten-year period – though the development must remain affordable and the investor financially vested in the project for a minimum of fifteen years.

LIHTC Program Background

The LIHTC program is composed of two separate tax credits: a highly competitive nine percent credit and a less competitive (non-competitive in many states) four percent credit for developments funded with tax-exempt bonds (Clarke, 2015). The nine percent tax credit typically provides enough equity to cover 70 percent of a development's costs, hence its sought-after nature. The four percent tax credit and tax-exempt bond pairing generally covers between 30 and 35 percent of a project's costs (Melendez et al, 2008). The federal government determines the amount of nine percent tax credits available to each state in proportion to their population. In 2003, the allocation rate was set to 1.75 dollars per capita and indexed to inflation thereafter (Desai et al, 2010). The nine percent tax credit is oversubscribed by a factor of four or five due to its deep subsidy (Norris et al, 2018). In states with particularly competitive housing markets, nine percent tax credits are typically awarded to developments serving communities with greatest need: formerly homeless housing, assisted living (for elderly or disabled) housing, or other service intensive housing. While there is no direct cap on four percent tax credits, an effective one exists based on state private activity bond caps – these credits are only available to

developers who utilize tax-exempt bond financing (Melendez et al, 2008). Few states hit this bonding cap, though as the Washington State Department of Commerce 2018 Bond Cap Allocation Program Report concludes, high-growth states will soon exhaust the carryforward amounts created by the Great Recession. Washington State has been able to issue more tax-exempt bonds than the IRS authorizes using this mechanism: 2.19 billion dollars in bonds were issued in 2016 and 2017, exceeding the state's bonding cap by 746 million dollars (Johnson & Green-Taylor, 2018). This indicates that in states like Washington, California, and New York, four percent tax credits will soon become more competitively allocated. The disappearance of carryforward amounts will exacerbate the already limited access affordable housing developers have to funding sources. However, it may push developers to cater their projects to lower AMI levels in order to beat competing applicants.

Federal guidelines set basic affordability thresholds for program compliance. As alluded to earlier, all LIHTC-funded projects must maintain their affordability for a minimum of fifteen years, though a 1989 legislative update extends that to thirty years unless specific conditions are met (Melendez et al, 2008). In order to maintain compliance, LIHTC-funded developments must adhere to the "20-50" and "40-60" rules: a minimum of twenty percent of a project's units must be rented to those earning at or below fifty percent AMI or, alternatively, forty percent of the units at or below sixty percent AMI. However, in many participating developments – especially those operated by non-profit developers - all units are income restricted (Clarke, 2015). The state HFAs administering the program may add additional eligibility criteria. These requirements are outlined in state Qualified Allocation Plans (QAPs) and can be considerably stricter than the federal guidelines (Desai et al, 2010).

The amount of tax credits a project can receive is determined by its qualified basis – the depreciable construction costs, excluding the land acquisition and permanent financing costs – and the tax credit percentage. Despite the "nine" and "four" percent monikers, the actual rates used are set by the Treasury on a monthly basis. (Desai et al, 2010). Rates in 2018 were roughly 7.7 and 3.3 percent, respectively (Norris et al, 2018). The eligible basis can be inflated upward by thirty percent if a project is located in a Qualified Census Tract (QCT) or a Difficult Development Area (DDA) as defined by the Census Bureau (Clarke, 2015).

Once developers have been awarded the tax credits, they have two options: sell to generate equity for a project or use to diminish their own tax liability. Non-profit developers have little to gain from using due to their tax-exempt status and thus have realistically one option. Most for-profit LIHTC developers have too small of a tax burden to need the credits. Consequently, most tax credits are sold to investors (Desai et al, 2010).

How it Works: The LIHTC Program

The process by which an intangible LIHTC tax credit transforms into a multi-family apartment building is a complex one. Figure 1 displays the mechanics of this allocation. When developers elect to sell their tax credits to an investor, they typically employ the syndication process. A "syndicator" – or intermediary agent – groups one, but often several, LIHTC-awarded housing projects together into an investment fund (Melendez et al, 2008). One or several investors then purchase the rights to the tax credits in exchange for equity. The syndicator links affordable housing with needed capital and mitigates risk to investors through the investment fund (Melendez et al, 2008). Furthermore, the fund is generally structured as a limited partnership, with a general partner (typically a one percent share) – the developer – and limited partners (holding the remaining share) – the investors. A report by CohnReznick shows that between

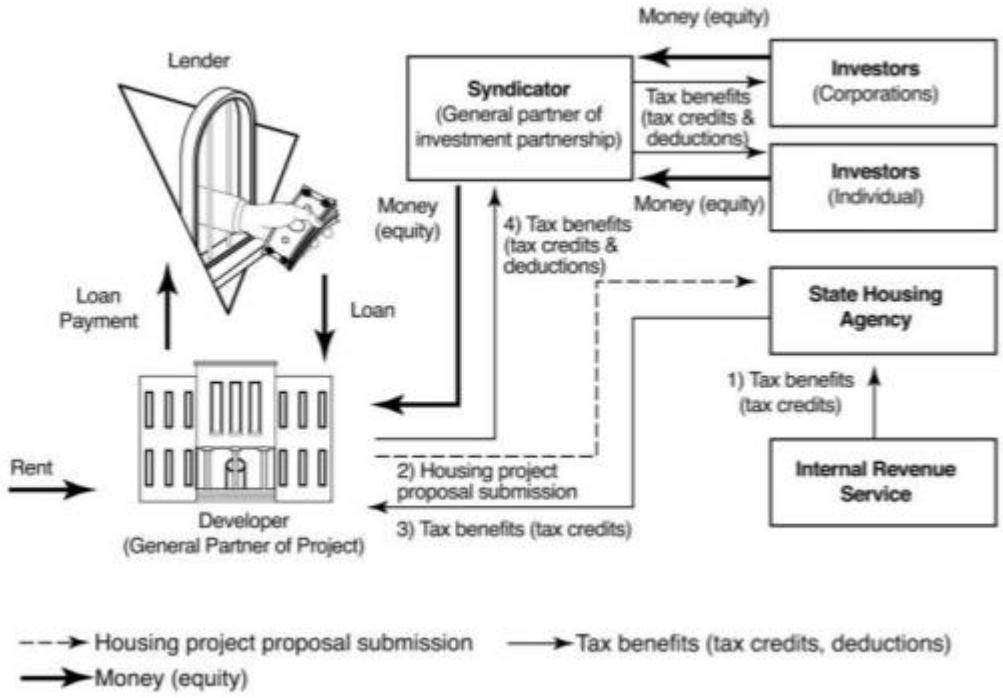


Figure 1. LIHTC Allocation Mechanics (Desai et al, 2010)

2015 and 2017, 72.3 percent of LIHTC equity closed was syndicated, though 27.7 percent was invested directly (Housing Tax Credit Investments: Investment and Operational Performance, 2018). In addition to structuring the deal, syndicators can be responsible for asset management and LIHTC-compliance. Syndicators make their money not only from the tax credit transaction process, but also through management fees. At the outset of the LIHTC program, these fees represented a significant portion of the financing costs to a participating project. Transaction costs accounted for roughly twenty percent of the total equity projects could receive (Melendez et al, 2008). Syndicator fees are no longer so burdensome – CohnReznick's report indicates between five and eight percent of total equity - but they are indicative of the many middlemen that comprise the LIHTC program's base of lobbying support.

The determining factor in the amount of equity developers receive from their tax credits is the market for tax credits. In the early years of the LIHTC program, credits were priced between .45

and .50 dollars but quickly rose to .90 dollars by 2005. The initial low pricing is thought to be a result of uncertainty over the program's rules and relative newness (Desai et al, 2010). In expensive housing markets, credits can be worth considerably more. The 2019 credit price Seattle Housing Authority (SHA) used in syndication deals was 1.01 dollars. Prior to Trump's Tax Cuts and Job Act of 2017, SHA saw prices as high as 1.19 dollars. The credit equity price is a simple calculation of the housing equity credit divided by the amount of housing credits. However, this assumes investors receive the full benefit of the tax credit immediately instead of over a mandated ten years. To ascertain a price that accounts for the time value of money, the stream of tax credits should be discounted (Desai et al, 2010). In the time period leading up to the Great Recession, credit prices (using the method described) approached a price that the market might have considered too high. An explanation for this distortion is found in the type of investors that comprise the market for tax credits.

A diverse group of investors purchased tax credits in the program's early years. Both individual (via retail funds) and corporate investors participated. As the LIHTC program matured, the investor profile changed considerably to become dominated by the financial services industry: banks, insurance companies, and the like (DiPasquale, 2011). Financial institutions can meet their Community Reinvestment Act (CRA) requirements by participating as LIHTC investors. The CRA requires that banks provide credit to their local communities, including to low-income areas (Desai et al, 2010). While CRA evaluation techniques are subjective, it is acknowledged that LIHTC participation can count toward the most stringent category: low-income communities. Banks have an added incentive to invest in LIHTC deals aside from complying with the CRA (Desai et al, 2010). An April 2018 report from CohnReznick shows that in 2017, 86.3 percent of the housing tax credit market is comprised of CRA-complying capital from the

banking sector, with just 13.7 percent coming from economic investors (CohnReznick, 2018). The tax reduction properties of the program combined with CRA obligations explain why investors are willing to bid above the actuarial fair value of a tax credit (Desai et al, 2010). Prior to entering government receivership during the Great Recession, a major source of investor capital came from government-sponsored enterprises (GSEs): Fannie Mae and Freddie Mac. GSEs used the tax credit program to meet growing affordability requirements as set out in their charters (DiPasquale, 2011). The LIHTC program was able to recover along with the overall banking sector, as they filled most of the equity gap post-Recession (CohnReznick, 2018).

The Year 15 Problem

One of the best studied components of the LIHTC program, the "Year 15" problem refers to the mess created when a LIHTC property turns fifteen: changing ownership and equity structures, possibility of market-rate conversion, and operational (maintenance) issues. This problem was an area of concern in the early- and mid-2000s, as the initial vintage of buildings built at the start of the LIHTC program aged out of the mandated fifteen-year compliance period (Hettinger, 2005). In addition to worries over properties converting to market-rate at year fifteen, the all-important, equity-providing investors can divest, leading to tricky restructuring of a property's ownership. Although the 1989 modification to the program extended affordability requirements by another fifteen years, these apply if an owner cannot find a buyer willing to keep the income and rent restriction in place. The owner may request the presiding state HFA to find a buyer if no prospects are found. Finally, the owner may sell to any willing party if the HFA fails in its search (Melendez et al, 2008). The latter is called the Qualified Contract (QC) process, whereby the owner seeks to waive the additional regulatory requirements (Khadduri et al, 2012). New owners are required to keep the property income-restricted for three years, before raising rents. Since

1991, certain non-profits have had the right of first refusal to purchase LIHTC properties (Melendez et al, 2008).

Initial concerns of mass market-rate conversions have thus far not occurred. An estimated forty percent of the 3,173 LIHTC projects placed in service prior to 1990 were considered to be at risk of losing affordability (Melendez et al, 2008). However, a 2012 report found that the vast majority of LIHTC properties remain affordable after year fifteen, with only those in strong housing markets seeing elevated risk of conversion (Khadduri et al, 2012). In general, LIHTC properties follow three paths at year fifteen: they remain affordable without significant change, remain affordable with a renewed subsidy (typically another round of LIHTC funding), or transition to market-rate housing. Ownership structures also shape year fifteen outcomes. Mission-driven non-profits are highly likely to continue to operate their LIHTC properties without significant change. Even amongst for-profit housing owners, year fifteen does not spark conversion. Many cite the complexity brought by the QC process, inability to achieve rents significantly above LIHTC limits, and their own company missions to provide high-quality affordable housing (Khadduri et al, 2012). Refinancing, regardless of continued or new ownership, typically takes place at year fifteen. Lower interest rates enable modest renovations without the need to recapitalize a property with new tax credits or other sources of "soft debt" – affordable housing money (Khadduri et al, 2012). Some projects are in need of significant recapitalization by year fifteen and thus seek new tax credits. These properties are further subjected to affordability requirements (Clarke, 2015). The defining characteristic of properties most susceptible to market-rate repositioning is their position in low-poverty locations. In 2012, forty-nine percent of properties that left behind the LIHTC program still had rents less than the LIHTC rent limit and another nine percent saw rents slightly above it (Khadduri et al, 2012).

Changes in the equity structure of LIHTC properties are common at onset of year fifteen. By far, the most common pattern of ownership change at year fifteen is the sale of the limited partner's (investor) interest in a property to the general partner (developer), who continues to own and operate the property. An estimated ninety-five percent of non-profit owned properties and between sixty and eighty-five percent of for-profit owned properties follow this pattern (Khadduri et al, 2012). However, the terms of sale between the limited partners and the general partner can make or break the ability of a property to operate as affordable housing. If a property's value is determined to be greater than the outstanding debt, the general partner may have to pay a price to the limited partners that limits the property's future cash flows, potentially causing capital needs neglect over time (Khadduri et al, 2012).

Repairs and rehabilitation at year fifteen can present a financial challenge, but also an opportunity for general partners. A 2001 Federal Reserve Bank of Dallas survey found that twenty-eight out of a hundred properties needed moderate to substantial repairs at year fifteen. Out of these properties in need, just three had enough funds set aside to conduct repairs (Clarke, 2015). In 2005, the typical LIHTC property needed between 6,000 and 7,000 dollars per unit in repairs (Hettinger, 2005). Khadduri's 2012 study finds that rehabilitation costs are a more modest 1,000 to 5,000 dollars per unit, at least in buildings experiencing a transition to a more conventional model of operation. As mentioned earlier, some properties can finance these repairs through debt restructuring and favorable refinancing. Others with more significant repair costs seek additional LIHTC rehab funding (Khadduri et al, 2012). It is unclear if the recapitalization approach is the best solution unless the costs clearly cannot be met through traditional financing: some state HFAs place greater priority on funding new development over rehabilitating existing properties, particularly if some funding goes toward paying "exit taxes", while other HFAs

reserve up to forty percent of LIHTC credits for the preservation of affordable units (Clarke, 2015). Investors – the limited partners – face an exit tax if the tax losses allocated exceed the capital invested. However, this burden often falls on the general partner to cover (Khadduri et al, 2012).

Year fifteen is stressful for general and limited partners alike, but there are several best practice strategies that can combat the challenges. All practitioners agree that planning ahead of year fifteen is key to a smooth transition (Clarke, 2015). Disposition or ownership restructuring plans are essential to have in place three to five years in advance of year fifteen (Hittenger, 2005). These complex deals require expertise: acquiring or hiring an expert to do the heavy lifting is recommended. A component of this is to understand the investors' year fifteen requirements – what is their primary concern? It could be a range from a specific internal rate of return, a return of capital, exit taxes, or perceptions of the property's value (Hittenger, 2005). Strategizing for year fifteen is essential to the long-term viability of a LIHTC project, and the data shows that with proper actions comes a smooth transition. The vast majority of LIHTC projects stay affordable past year fifteen and there is just a .71 percent incidence of cumulative foreclosure as of 2016 (CohnReznick, 2018).

LIHTC Critique

As with any program funded by the federal government, there exists criticism attacking it from both sides of the ideological spectrum. The LIHTC program can certainly claim success: it has produced millions of income-restricted units across the country, while creating a profitable and productive market-based housing industry. The objectives of the program are being met. However, there are those who question the entire framework surrounding the program's success, particularly from some who prefer greater government intervention in the housing market.

Megan Ballard's paper attacks the program from an ethical standpoint – it privatizes poverty. The tax credit incentive, originally touted by non-profit developers in the 1980s, has been distorted by construction and real estate industry lobbyists into a program that favors profits over housing those in need (Ballard, 2003). Ballard's assertion that the program's domination by for-profit developers at the expense of mission-oriented non-profit developers is not unfounded, as the statistics show. Furthermore, the strong affordable housing lobby that has grown over the years is another indication of the industry's profitability. Changes to the program, even when positively received by the academic community, have been at times stymied.

On the other end of the political spectrum, conservative senator Chuck Grassley (R-Iowa) has expressed concern over the years that the program features minimal IRS or HUD oversight and that there is no accountability on spending (Chuck Grassley United States Senator for Iowa, 2016). As with Ballard's criticism of the program, Grassley's concerns have some validity. There have been instances of corruption and fraud in LIHTC projects, propagated by poor oversight from state HFAs, but also their federal counterparts. Biscayne Housing Group and the Carlisle Development Group, once Florida's biggest for-profit affordable housing developer, bilked over 36 million dollars from the LIHTC program between 2007 and 2012. In conjunction with their crooked general contractor, the fraudsters inflated construction costs to generate an artificially higher eligible basis, pocketing the extra money (Weaver, 2015). While fraud is a rarity, research into the cost-effectiveness of LIHTC developments relative to housing vouchers shows that in less-expensive housing markets, vouchers can actually be significantly more cost effective (Deng, 2005).

There are two issues that persistently plague the program with no real solution – the threat of tax reform and the cyclical nature of the global economy. The viability of the program has come

under major attack at least twice: once during the Great Recession and once in the aftermath of Trump's Tax Cuts and Jobs Act. The tax credit pricing mechanism is sensitive to the profits of its main buyers – financial institutions. When the profits, or alternatively tax liability, of banks grow, the demand for tax credits strengthens. Conversely, in periods of recession or negative economic growth, credit pricing falls as banks encounter losses and the effectiveness of the tax credits shrinks. Similarly, in the wake of Trump's corporate tax rate cut, credit pricing nosedived as the tax burden of banks shrank. Lower credit prices reduce the amount of equity developers can get from their tax credits. Neither of these events can be predicted, which is why they are so impactful on the market for tax credits. In times of weak demand, the federal government could step in and raise the percentage of the tax credits (for example, bringing back the four and nine percent credits to parity).

Who Develops LIHTC-funded Properties?

The LIHTC program enables nearly 100,000 units of affordable housing production annually (Clarke, 2015). As one would expect, non-profit housing developers take advantage of this program to fund their affordable projects. Federal rules mandate that states reserve at least ten percent of tax credits for non-profit developers (Desai et al, 2010). While the non-profit share of LIHTC produced units remains above that level, perhaps surprisingly, it is for-profit developers that accounts for most housing production. Nearly 78 percent of LIHTC projects placed in service between 1987 and 2014 did so with for-profit developers (Bratt & Lew, 2016). The share of units produced by non-profit developers peaked in the late 1990s at around thirty-five percent (Desai et al, 2010). A 2015 study of the top fifty-two affordable housing developers found that for-profit firms completed 86 percent of the affordable units produced that year (Bratt & Lew, 2016). For-profit developer financial advantages (ease of access to capital) can be seen in the

rehab and acquisition sections of affordable housing as well. The same 2015 study reveals that nine of the ten largest firms acquiring existing units and ten out of ten largest firms rehabbing units are for-profit entities (Bratt & Lew, 2016). This underscores the importance of for-profit developers in the affordable housing industry. The LIHTC program has had a marked success of privatizing affordable housing production, achieving what its framers likely sought it to do: the production of millions of income-restricted units on the backs of the market. The privatization of poverty is a topic of serious academic and policy debate. The LIHTC program certainly falls under that umbrella. Critics and advocates of the program cite cost efficiencies and inefficiencies to support their arguments, among other evidence.

An area of research in need of more study is the similar year thirty problem. There are 230,496 units placed in service between 1990 and 1994 that will come up on the year thirty affordability mark in the coming years (Khadduri et al, 2012). Khadduri's study implies that year thirty outcomes will follow the three patterns observed at year fifteen, with a notable increase in the market-rate repositioning of properties. It is also likely that many properties will have large unmet capital needs due to deferred maintenance, which is likely to lead many projects to recapitalize with new tax credits. It remains to be seen how state HFAs will handle the increase in demand for rehabbing considering the already competitive nature of the program (Khadduri et al, 2012).

Cost Efficiency: For-Profit vs. Non-Profit Developers

A sensitive topic in the affordable housing world revolves around cost efficiency differences between for- and non-profit LIHTC developers. The implication of certain outcomes uncovered in research could be damaging; thus, this subject must be approached carefully. In general, academic literature finds conflicting information on which type of developer has lower

development costs, though most studies show it to be for-profit ones. Despite these findings, researchers note that if non-profit development costs are indeed less competitive than for-profit ones, they must be viewed in the context of the greater non-profit involvement in communities and commitment to resident services (Bratt & Lew, 2016). There are a number of explanations for the higher development costs non-profit developers see.

A 2019 report conducting statistical analysis for the Washington State Legislature on 241 LIHTC projects in the state found a correlation between lower development costs and for-profit developers. Specifically, for-profit developers are involved with less costly developments, though the report does not establish that for-profit developers cause projects to become less costly (Eadrick et al, 2019). The report concurs with the Washington State Housing Finance Commission's advocacy for increasing the involvement of for-profit developers in the nine percent tax credit program. This report does not fundamentally negate Ballard's 2003 critique of the program, as more research is needed to establish a statistically significant relationship between developer type, project costs, and project type (what population is being served, what services are provided, etc.).

For-profit developers have financing flexibility that is not available to non-profit developers. This disadvantage may result in inherently higher financing and LIHTC transaction costs for non-profit developers. A study of properties in five states revealed that the average project had a least four other sources of funding on top of tax credit equity (Bolton et al, 2014). While this study does not break down the split between for- and non-profit developers, it outlines the financing complexity LIHTC projects demand. For-profit developers are more likely to secure conventional loans, and those loans tend to cover a larger portion of development costs (Ballard, 2003). As a result, for-profit developers tend to have smaller financing gaps (remaining project

cost after traditional debt, tax-exempt bonds, and LIHTC equity). As such, non-profit developers must cobble together a patchwork of funding sources, from federal funds through programs like HOME to "soft debt" (very low interest loans) from local governments that bring with them added legal, transactional, and administrative costs (Ballard, 2003; Bratt & Lew, 2016). In addition, the acceptance of grants and soft debt can result in the added requirement to pay state-set prevailing wages. This, according to Seattle-based non-profit Bellwether Housing, can inflate construction costs by up to fifteen percent.

Non-profit developers often focus on providing larger units and costly services that target families and marginalized communities (the homeless, disabled, elderly), respectively. For-profit developers are less likely to provide larger units (over 1,000 square feet). In addition, emerging research in California shows that non-profit developers may build projects with higher levels of quality and durability relative to for-profit developments (Bratt & Lew, 2016). The study of unit and building quality, however, remains an important hole in academic research. On the surface, this assertion tracks with the mission-oriented nature of non-profit developers; for-profit developers are inherently more likely to build LIHTC projects for financial or economic reasons, with more limited building longevity time horizons compared to non-profit developers who seek to create permanent affordable housing.

Siting of LIHTC properties in high-cost areas may also cause non-profits to have higher per-unit development costs. A 1997 study of affordable housing developments found that non-profit developers tend to build in higher cost areas of the country, such as on the West Coast or in the Northeast. Analysis of LIHTC properties built between 1987 and 2014 reveal that for-profit developments make up eighty-six percent of LIHTC properties in the South, while that is true for just sixty-six percent of buildings in the Northeast (Bratt & Lew, 2016). There is a lack of

contemporary research surrounding LIHTC properties in high-cost and fast-growing urban areas, where the need for affordable housing is high. Further research in this area could help define the limitations of a context-blind cost efficiency analysis of non- vs for-profit developers.

Access to Opportunity and Locational Equity in LIHTC

An increasingly important topic in housing studies discourse relates to access to opportunity and the beneficial impacts provided to low-income households (and their future outcomes). Building subsidized housing is no longer enough, as housing is now seen as a part – albeit an integral part – of a whole ecosystem needed to disrupt the cycle of poverty. Given the fixed physical nature of housing, it is critical that there be a focus on not just the number of affordable units created, but also on their location. Between 1994 and 1998, HUD conducted the Moving to Opportunity (MTO) experiment. This study observed 4,600 low-income families living in high-poverty public housing across the US. Families were randomly assigned one of three treatments: they were given Section 8 vouchers to move to census tracts with low poverty rates (below 10 percent), given standard Section 8 vouchers with no restrictions, or were not offered vouchers and remained in public housing (Chetty & Hendren, 2015). Initial research showed little economic impact to families but a significant mental and physical benefit to those adults who moved to low poverty neighborhoods. However, Chetty & Hendren's groundbreaking 2015 paper revealed that the future earnings of children in the MTO study may be impacted by the duration of residency in areas with low poverty. They show that for every year a child spent in a low poverty neighborhood increased their earnings in adulthood. A follow-up study estimated that moving a child from public housing to a low poverty setting before the age of eight will increase the lifetime earnings of the child by 302,000 dollars (Chetty et al, 2016). The location of housing,

not just its existence, is critical to the health, educational attainment, and economic outcomes of its residents.

A holistic lens of housing has been increasingly adopted at both the federal and state levels. A criticism of the LIHTC program is that it perpetuates poverty concentration by funneling the creation of new affordable units in areas with existing high levels of poverty. State HFAs have discretion in setting QAPs and scoring criteria to avoid these locational inequities. Legal challenges and updates to state QAPs have slowly begun to shape LIHTC funding allocation criteria across the country. One example is in Texas, where an opportunity provision was incorporated in to its QAP in 2009. Even so, in 2015, the U.S. Supreme Court ruled that the Texas Department of Housing and Community Affairs (TDHCA) was unfairly allocating too many tax credits to projects in majority Black neighborhoods. This ruling forced TDHCA and other HFAs to change their scoring criteria to award even more points to projects with high access to opportunity (Walter et al, 2018). Furthermore, this analysis shows that neighborhoods in San Antonio with maximum scores based on Texas' 2016 QAP opportunity provision did not score as highly compared to the author's own more comprehensive multivariate opportunity indices. Despite the incorporation of a strengthened opportunity provision in the state's QAP, a more comprehensive access to opportunity provision is needed to guide the siting of LIHTC developments most effectively.

Locational Equity: For-Profit vs. Non-Profit Developers

There is surprisingly little discussion on the tradeoffs between for-profit and non-profit LIHTC sponsors and locational equity of their developments. This gap in institutional and academic research presents an opportunity which this thesis attempts to bridge. The importance of access to opportunity as a component in a project's scoring varies greatly from state to state but is

generally secondary to other factors. The selection of a location for a LIHTC project ultimately comes down to the availability and cost of its land. Land acquisition costs are not considered part of the cost basis in a project's application. This is where economic incentives can influence profit-seeking developers in their development siting. For-profit developers face economic incentive to locate their projects on sites with the cheapest land cost (within the confines of their state's HFA scoring criteria). Those locations are not necessarily in places with the best access to opportunity. On the other hand, the mission driven nature of non-profit developers is more likely to drive their site selection process than site cost alone. Non-profits may be able to focus on sites in neighborhoods with better access to opportunity, perhaps at a level beyond what their state's HFA incentivizes. This incentive structure may explain why there could be a difference in access to equity between the locations of non-profit and for-profit LIHTC developments.

Chapter 3. Methodology

Study Area

The study area of this thesis is the Seattle-Tacoma-Bellevue, WA Metropolitan Statistical Area (Seattle MSA), consisting of King, Pierce, and Snohomish Counties. As of 2020, the Seattle MSA is the fifteenth largest metropolitan area with a population estimate of 4,018,762 (U.S. Census Bureau, 2020). The region has seen sustained high population growth, particularly so over the past decade, in its core city of Seattle. Between 2010 and 2020, Seattle grew 21.1 percent, the third most of any large U.S. city (U.S. Census Bureau, 2020). The geography within the Seattle MSA includes numerous natural constraints: the Cascade mountains, multiple large lakes, and the Puget Sound. In addition, an Urban Growth Area (Puget Sound Regional Council, 2009) further restricts most development to within its confines. These constraints on the supply of housing in the Seattle MSA, paired with continued high demand for housing, have led to an increase in the number of housing cost burdened households. In 2019, the share of renter households that are housing cost burdened (those paying 30.0 percent or more of their income for housing) is 47.0 percent (U.S. Census Bureau, 2019).

The rise in housing costs and decline in affordability is a nationwide issue that, according to the Out of Reach 2021 Report, ranks Washington State as the seventh most expensive state in which to rent a two-bedroom home (National Low Income Housing Coalition, 2021). This housing crisis is most acute in the Seattle MSA, where a minimum wage earner would need between 2.1 and 2.7 full-time jobs to afford the fair market rent on a two-bedroom home. As a result, the Seattle MSA is seeing an exploding homelessness crisis: between 2016 and 2018, households accessing homelessness services increased from 20,700 to 22,500, while unsheltered homelessness saw an annual increase of 26 percent (Maritz & Wagle, 2020). The need for

affordable housing targeting extremely low-income (<30 percent AMI) and very low-income households (<50 percent AMI) is clear. One way the region has addressed this crisis is through the LIHTC program. Since 1992, over 50,000 units of affordable housing have been developed or preserved in the Seattle MSA through the LIHTC program. Almost all of these units are income-restricted to those making <60 percent of AMI. Nearly 14,000 units are nine percent projects – the focus of this thesis' research question.

Data and Data Cleaning

Two datasets were used to conduct analysis on the research question: the National Housing Preservation Database (NHPD) and the Affirmatively Furthering Fair Housing Data and Mapping Tool dataset (AFFH-T). The NHPD was created by the Public and Affordable Housing Research Corporation (PAHRC) and the National Low Income Housing Coalition (NLIHC) to centralize the data of all Federal-level subsidized housing programs. The NHPD is a national dataset of LIHTC properties that provides data on both a subsidy-level and property-level. The NHPD collects its LIHTC information from the Low-Income Housing Tax Credit database, last updated on June 5, 2020, for projects placed in service between 1987 and 2018. The NHPD's dataset is formatted in a more usable way; thus, it was selected over the HUD's LIHTC one. Unfortunately, the NHPD's property-level data does not include a key attribute – the LIHTC program type (four percent vs nine percent). Instead, data on LIHTC projects was gathered using the subsidy-level grid for Washington State of all active projects. The data used from this source includes subsidy sub-program type, nine percent units, four percent units, total number of units, property name, property address, latitude/longitude coordinates, units by bedroom type (0 to 1, 2, 3+), property owner, and sponsor type (non-profit, for-profit, or multiple). As the NHPD dataset is comprised of LIHTC projects (awards) and not properties, it required extensive data cleaning

and verification. Due to the complexity inherent to LIHTC financing over not just the construction but the life of a project, many duplicates existed and had to be removed. The most common reasons for duplication were project re-syndication, combined four and nine percent projects, and multi-phase properties (one property with multiple projects). Two projects (Everett Housing Authority and Multi-Service Center) contained multiple small (typically less than thirty units each) properties submitted under one project. In both cases it was possible to verify at the least the property names, but not all other attributes. Since the properties for each respective project were in close proximity to each other, both were geocoded under singular addresses. Data verification of total units, units by bedroom type, owner, and sponsor type was conducted mainly through each county's assessor parcel viewer and the Washington Secretary of State Corporation Search.

Verifying sponsor type was the most difficult task, given the at times opaque nature of true LIHTC ownership. The ownership question arises when a non-profit partners with a for-profit developer for the purpose of increasing the competitiveness of the for-profit's application. The Washington State Housing Finance Commission's (WSHFC) 2021 Bond/Tax (4 percent) Credit Program Policies and 9% Competitive Housing Tax Credit Policies award three and five points respectively for non-profit sponsorship. The primary intent of the WSHFC's policy regarding this scoring boost is to increase the capacity of non-profits to provide affordable housing and the number of projects that they develop, own, and operate, as sole sponsors or through partnerships with for-profit organizations (WSHFC 2021). Ideally, each case of non-profit and for-profit partnership should be assessed through this lens. However, given the data available, it hard to ascertain the involvement of the non-profit sponsor beyond their legally bound duty. The WSHFC defines non-profit sponsor as follows: "*The Nonprofit Organization must have a*

material role in the development or management of the Project, provide considerable resident services or otherwise contribute to the Project; and have a reasonable expectation to be able to acquire the property after year 15. Advising construction management or the hiring of or advising the property manager are not considered material participation" (WSHFC 2021). It is unclear as to how long this non-profit participation requirement has been in effect, but in conversation with staff at the WSHFC, it was an issue as recently as 2018 or 2019. Ultimately, just one non-profit in the data was reclassified: Hearthstone Housing Foundation. Hearthstone owns over 5,700 units across all three counties in the Seattle MSA. Its ownership reclassification as for-profit is justified based on two observations. Further research of the properties Hearthstone owns, revealed that the vast majority appear to be operated by typical for-profit property management entities and marketed even in some cases as 'luxury housing'. Secondly, the organization stonewalled any attempts at communication and refused to comment when asked about their status as a non-profit partner. The point of this endeavor is not to add a value judgment onto the work Hearthstone does but to clarify their classification status within the context of this thesis.

Until 2018, the application process for four percent projects was not competitive, while it has been for nine percent projects since the inception of the LIHTC program. This disparity is due to the deeper level of subsidy provided by the nine percent program. Since four percent projects have historically been focused on rehabs as opposed to new construction, it makes less sense to apply a place-based analysis to them. However, the number of projects suitable for comparison will grow considerably in the coming years with the addition of the more numerous and newly competitive four percent project subset (that is also more often used to fund new construction).

The HUD-developed AFFH-T dataset is part of the agency's push to create a standardized process for fair housing planning and engender their goal of affirmatively furthering fair housing. Specifically, the AFFHT0006 dataset (July 5, 2020 release) was used as it contains seven indices the HUD has developed to determine disparities in access to opportunity. The seven indices – seven dependent variables – cover five key areas that existing research has shown to have impact on individual outcomes: poverty, education, employment, transportation, and health. Of the seven indices, two use census blocks and the remaining five use census tracts as their geographic unit. Each index has values that are percentile ranked at the state level, ranging from 0 to 100.

As Table 1 below shows, the Low Poverty Index and Labor Market Engagement Index are comprised of data from the 2011-2015 American Community Survey (ACS) at the census tract level. The former measures low poverty in a neighborhood, with a higher score representing less exposure to poverty in a neighborhood. The latter records the relative intensity of labor market participation, with a higher score corresponding to high labor force participation in a neighborhood. The School Proficiency Index uses data from Great Schools (proficiency data, 2015-16), Common Core of Data (4th grade school addresses and enrollment, 2015-16), and Maponics (attendance boundaries, 2016) at the census block level. It uses state exam (math and reading) performance of fourth grade students at a school level to illustrate where high performing elementary schools are located. A higher index score represents a neighborhood with access to quality education. The Low Transportation Cost Index and Transit Trips Index consist of data from the Location Affordability Index (LAI) data, 2012-2016, at the census tract level. They respectively measure transportation cost and number of trips taken by a three-person single-parent family with income at fifty percent of the median income for renters for the region. A higher Low Transportation Cost score indicates lower transportation costs for residents of that

area. Similarly, a higher Transit Trip score shows a higher likelihood of residents to use transit. The Jobs Proximity Index uses Longitudinal Employer-Household Dynamics (LEHD) data, 2017, at the census block level to quantify the accessibility of a neighborhood given its distance from all job locations within the region. The higher the index score, the better access to jobs a location has. The Environmental Health Index uses National Air Toxics Assessment (NATA) data, 2014, at the census tract level to measure potential exposure to exterior harmful toxins and pollution. The higher an index value, the less exposed a location is to pollution. Data cleaning was performed in Excel to prepare the dataset for eventual analysis in GIS.

Table 1. AFFH Dependent Variable Data

Dependent Variables (AFFH)	Data Source	Year	Scoring
Low Poverty Index	American Community Survey	2011-2015	0-100
Labor Market Engagement Index	American Community Survey	2011-2015	0-100
School Proficiency Index	Great Schools (proficiency data) Common Core of Data (enrollment) Maponics (attendance boundaries)	2015-2016 2015-2016 2016	0-100
Low Transportation Cost Index	Location Affordability Index (LAI)	2012-2016	0-100
Transit Trips Index	Location Affordability Index (LAI)	2012-2016	0-100
Jobs Proximity Index	Longitudinal Employer-Household Dynamics	2017	0-100
Environmental Health Index	National Air Toxics Assessment (NATA)	2014	0-100

GIS and STATA Analysis

Spatial data for GIS analysis was gathered from the U.S. Census (census tracts and blocks) and the Puget Sound Regional Council (county borders and shorelines). GIS analysis was conducted in ArcGIS Pro. After changing the spatial references of all spatial data to match, a join of all county lines to the census tracts and blocks respectively was performed. Following this, the LIHTC data table was converted into a feature using each property's x-y coordinates. In order to isolate nine percent LIHTC properties, the four percent properties were removed for the analysis. This new feature was then joined again to both census tracts and blocks. The seven AFFH indices were mapped with the nine percent LIHTC properties overlayed to visualize the spatial

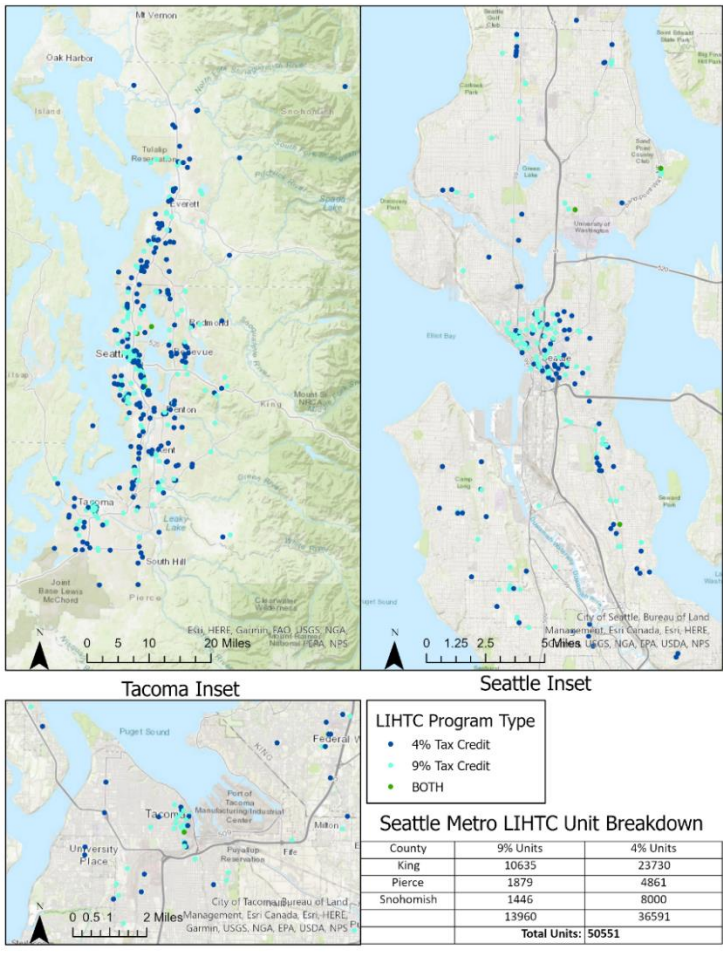
relationship between each dependent variable and the two independent variables. In order to conduct statistical analysis in STATA, a new dataset was created from the new nine percent feature that also contained each index's score for the corresponding census tract or block. This dataset was exported out of ArcGIS Pro and lightly data cleaned.

Once the GIS-produced dataset was cleaned, independent t-testing was performed on the data in STATA. This type of statistical analysis was chosen given the desire to compare each mean AFFH (Low Poverty, Labor Market Engagement, School Proficiency, Low Transportation Cost, Transit Trips, Jobs Proximity, and Environmental Health) index score between for-profit and non-profit properties. In addition, the data conforms with the six assumptions of the study design required to perform independent t-testing.

Chapter 4. Results

There is a total of 50,551 LIHTC units in the Seattle MSA at 483 properties as detailed in Figures 2 and 3. Of those, 36,591 units are four percent LIHTC projects in 252 developments and 13,960 units are nine percent LIHTC projects in 231 developments (refer to Figure 1). The majority of units and properties are located in King County (34,365 and 343), with clear concentrations in Seattle's city center and to a lesser extent Tacoma's. Figure 4 details the spatial distribution of nine percent properties and units, which are even further skewed to King County, with fewer projects located in suburban locales. Of the 231 nine percent projects, just 26 are for-profit owned, comprising 1,831 units (11.26 and 13.12 percent respectively). The oldest current active property was placed in service in 1992 and the most recent in 2018.

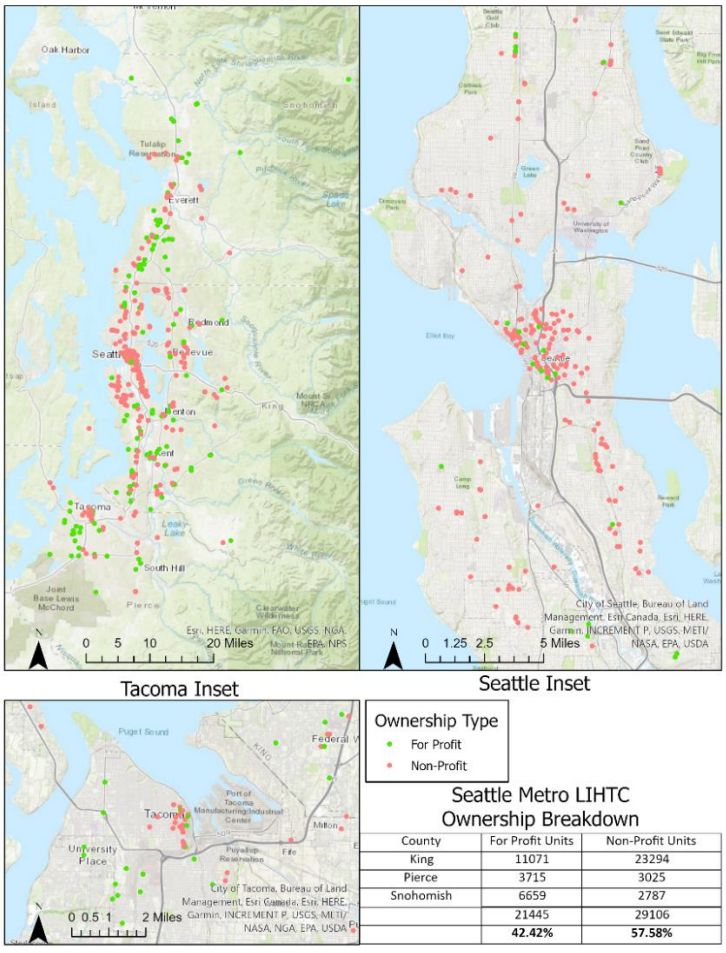
Figure 3. LIHTC Unit Breakdown



Seattle Metro LIHTC Unit Breakdown

County	9% Units	4% Units
King	10635	23730
Pierce	1879	4861
Snohomish	1446	8000
	13960	36591
	Total Units:	50551

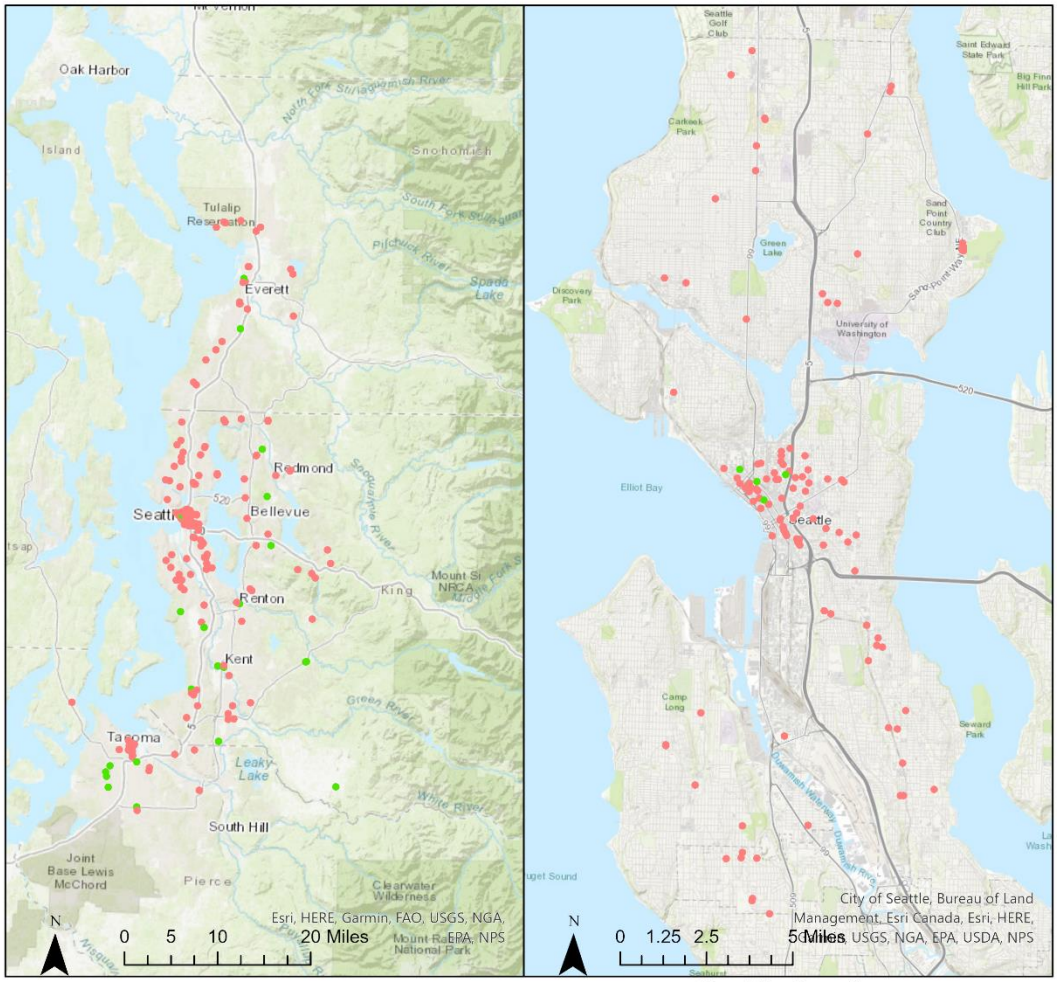
Figure 2. LIHTC Ownership Breakdown



Seattle Metro LIHTC Ownership Breakdown

County	For Profit Units	Non-Profit Units
King	11071	23294
Pierce	3715	3025
Snohomish	6659	2787
	21445	29106
	42.42%	57.58%

Figure 4. LIHTC Ownership & Unit Breakdown



Seattle Metro 9% LIHTC Ownership & Unit Breakdown

County	Properties	Units	3+ beds Units
For Profit	26	1831	351
Non-Profit	205	12129	2024
	231	13960	2375
% For Profit	11.26%	13.12%	14.78%
% Non-Profit	88.74%	86.88%	85.22%

An independent t-test was run on a sample of 231 nine percent LIHTC properties in the study area to determine if there were differences in access to opportunity based on program sponsor type, consisting of two independent variables, non-profit (n = 205) and for-profit (n = 26) sponsors. Each of the seven continuous dependent variables (AFFH indices) – low poverty, labor

market engagement, school proficiency, low transportation cost, transit trips, jobs proximity, and environmental health – were assessed. The results showed that the difference in means between non-profit and for-profit LIHTC properties were statistically significant for three of seven dependent variables, as shown in Table 2.

For-profit LIHTC properties had statistically significantly higher mean environmental health scores (9.46 ± 2.94) compared to non-profit LIHTC properties (5.90 ± .45), t(229) = 2.171, p = 0.031. In general, for-profit properties are in areas with fewer environmental health hazards than non-profit properties. These results confirm a visual assessment of the spatial distribution of for-profit properties (see Figure 11), as they tend to be located in neighborhoods at the periphery of the urban area which are closer to forest land and further from major roads or industrialized areas. Studies have shown the demonstrable negative effects certain air pollutants (from industry and highways) have on the health of adults and particularly children (Manisalidis et al, 2020). The National Air Toxics Assessment (NATA) from which the AFFH's Environmental Health Index uses notes one important caveat. NATA does not take into consideration indoor pollutants or material hazards, which is an emerging area of policy (Norbäck, 2019).

Table 2. Independent t-Test Results

AFFH Indices	Non-Profit Mean (n = 205)	Non-Profit σ	For Profit Mean (n = 26)	For Profit σ	t	*P*
Low Poverty	38.2439	1.599	**42.8461**	4.921	.9552	.3405
Labor Market Engagement	**60.6243**	2.091	51.5000	5.310	-1.4782	.1407
School Proficiency	**51.8390**	1.746	44.0384	5.479	-1.4788	.1406
Low Transportation Cost	**90.0341**	.498	86.7307	1.822	-2.1440	.0331**
Transit Trips	**75.6000**	1.164	69.6153	3.445	-1.7135	.0880*
Jobs Proximity	**75.4000**	1.703	68.8076	5.708	-1.2695	.2055
Environmental Health	5.8975	.454	**9.4615**	2.940	2.1707	.0310**

* = <.10, ** = <.05

The two other dependent variables that see statistically significant differences between means are related to transportation. Non-profit LIHTC properties had statistically significantly higher mean low transportation cost scores (90.03 ± .49) compared to for-profit properties (86.73 ± 1.82),

t(229) = -2.144, p = .033. The transit trips scores also had statistically significant higher means for non-profit properties (75.6 ± 1.16), than for-profit ones (69.6 ± 3.44), t(229) = -1.713, p = .088. Overall, non-profit properties are located in neighborhoods with better access to transit and that spend less on transportation than their for-profit counterparts (see Figures 8 and 9). This difference similarly matches the environmental health visual assessment – non-profit buildings are concentrated in the urban cores of Seattle and Tacoma which are bus, light rail, and regional rail hubs. Furthermore, transit is typically harder to reach and less frequent in areas where for-profit buildings are located. This lack of accessibility may cause a reliance on more expensive transportation methods, such as the automobile, which is reflected in the lower low transportation cost for-profit mean.

Figure 5 highlights areas within the Seattle MSA that have low or high concentrations of poverty. Most notable is the lack of a clear visual relationship between non-profit and for-profit building locations and poverty. There are areas with higher concentrations of poverty around downtown Seattle and Tacoma, Seattle's Rainier Valley, and the suburban Green River Valley. This visual analysis is supported by the lack of statistical significance (P=.34) between the for- and non-profit means. Figure 6 plots labor market engagement across the region. Seattle proper and its Eastside suburbs have higher levels of engagement, representing greater relative intensity of labor engagement and human capital. There is no clear spatial relationship between for-profit and non-profit building locations and this AFFH variable. Similarly, as shown by Figure 7, there is no discernable relationship between the dependent variables and school proficiency. Areas with more proficient schools include northern Seattle, the Eastside, and parts of Snohomish County; conversely, much of southern King County and most of Pierce County have less proficient schools. Figure 10 showcases the distribution of job proximity. There are clear

concentrations of neighborhoods with higher job proximity around employment centers (Seattle proper, Downtown Tacoma, Bellevue and Redmond, and aerospace manufacturing in Everett and Renton). However, there is again no clear relationship between job proximity and the location of non-profit or for-profit LIHTC buildings.

Figure 5. Low Poverty Index

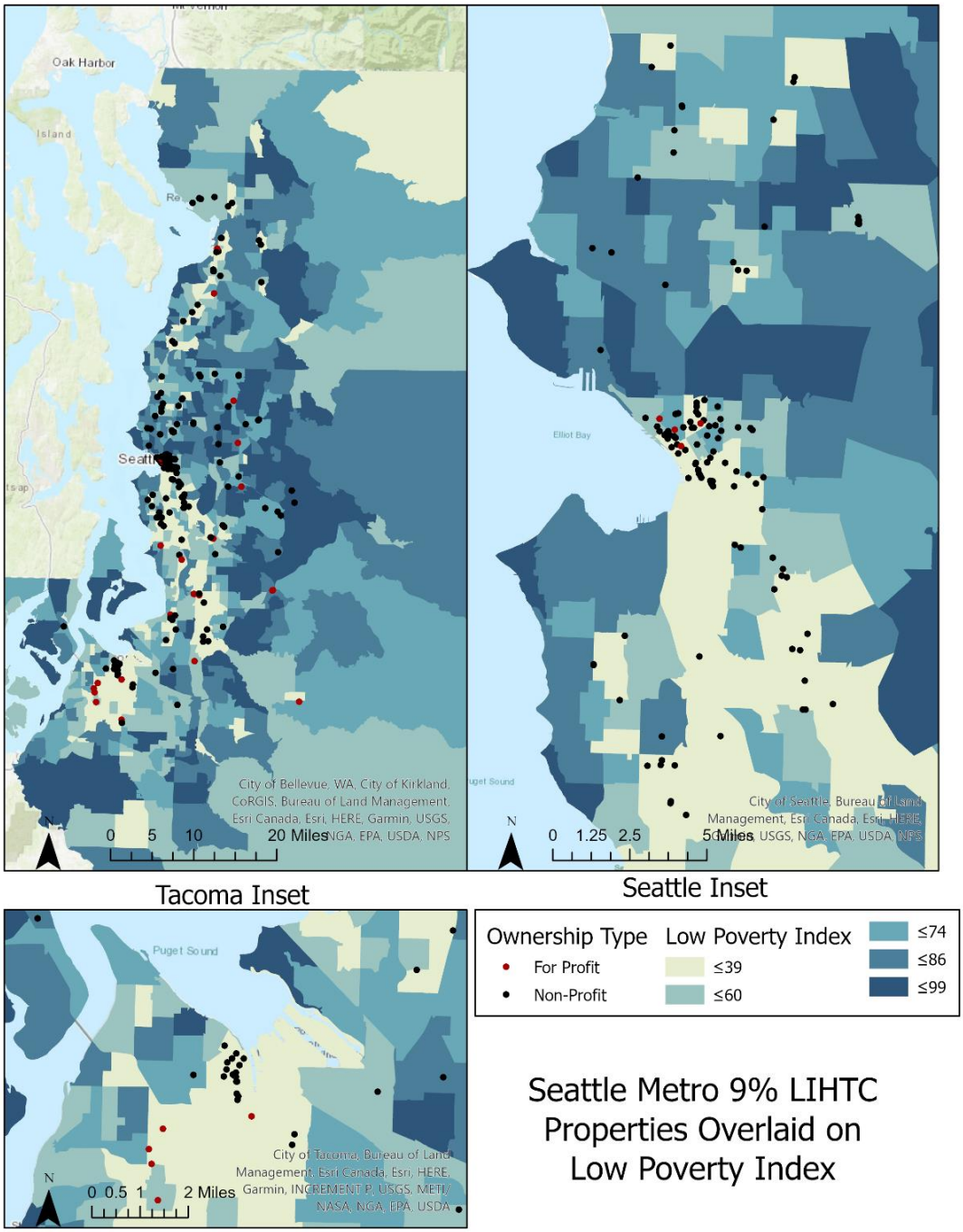


Figure 6. Labor Market Engagement Index

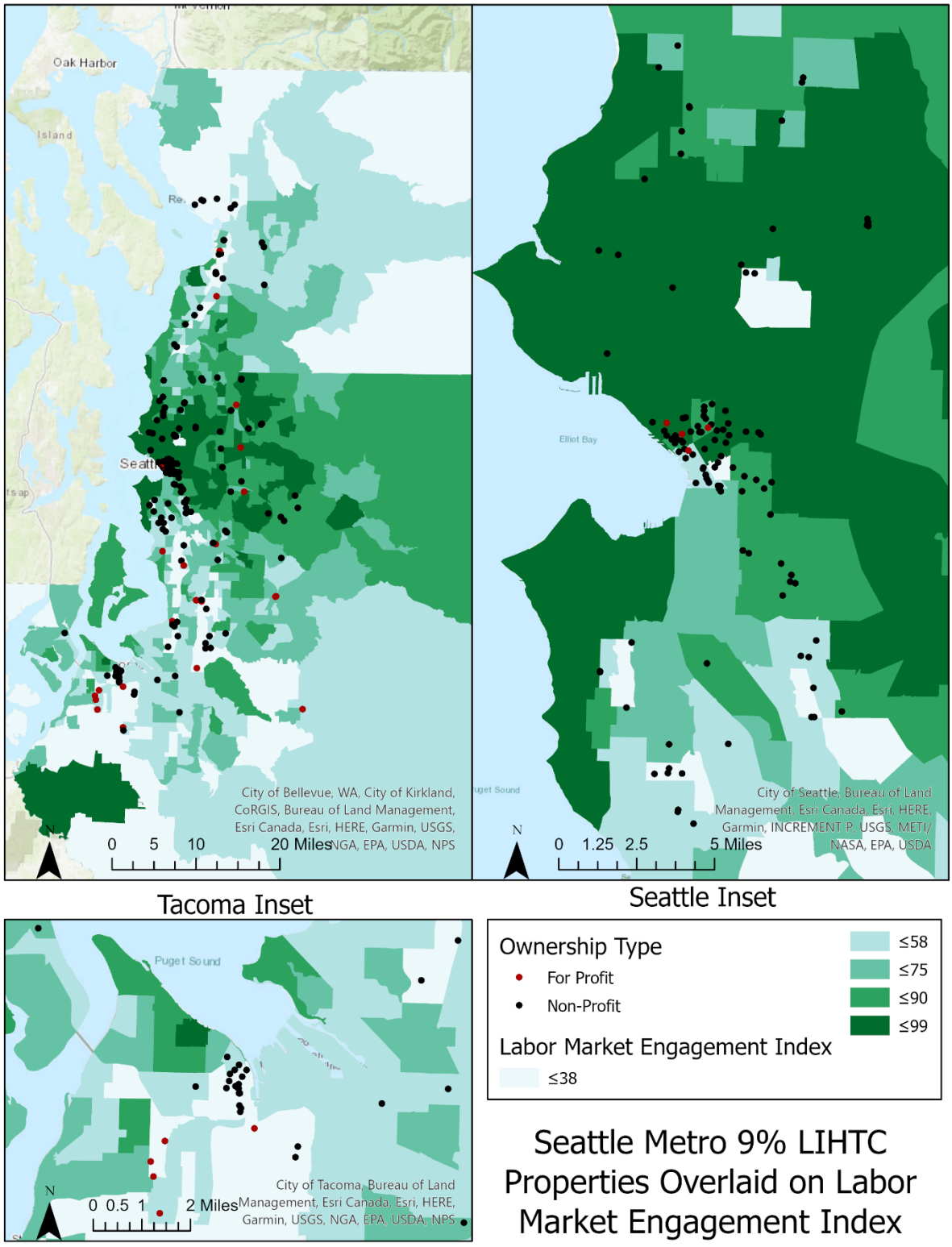


Figure 7. School Proficiency Index

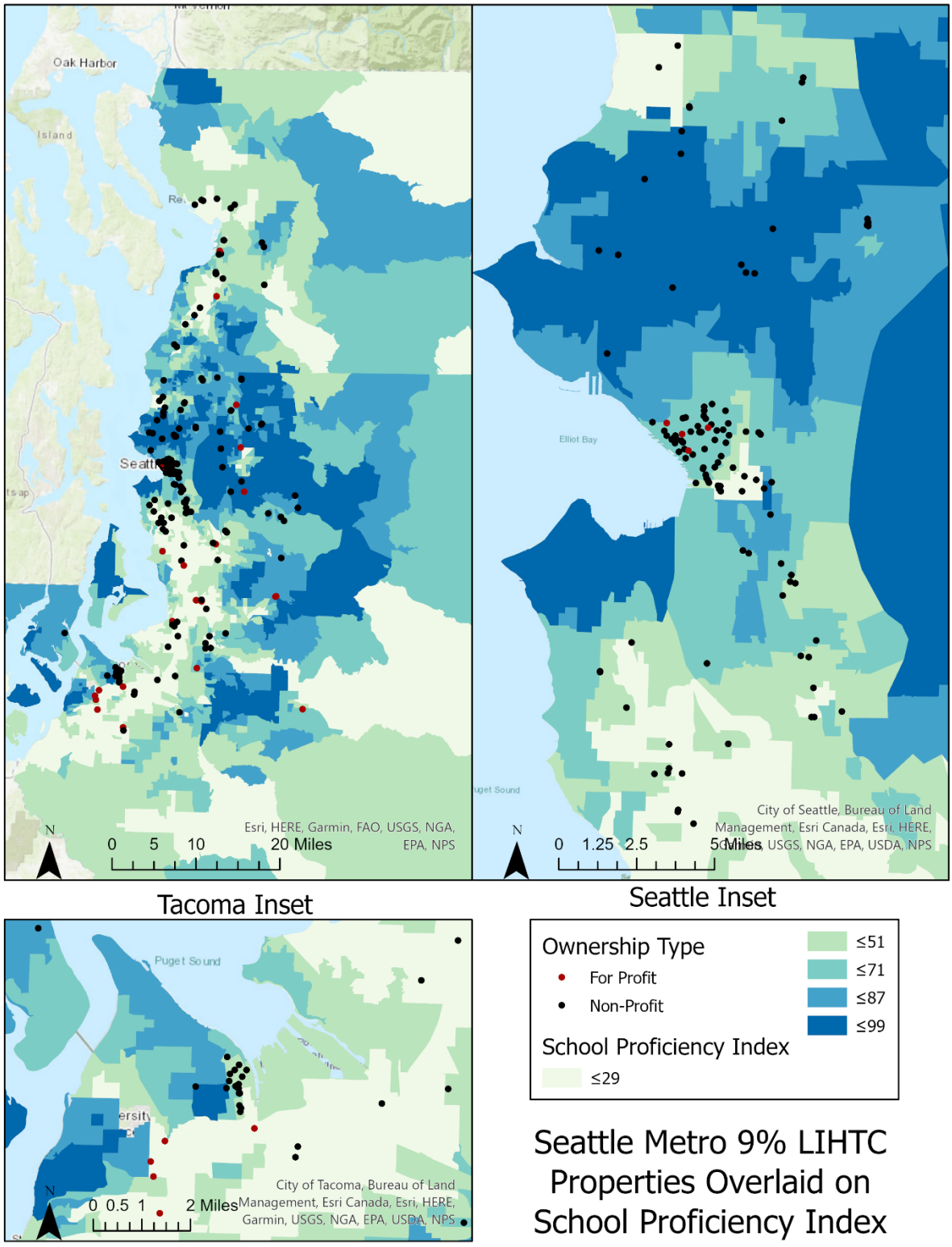


Figure 8. Low Transportation Cost Index

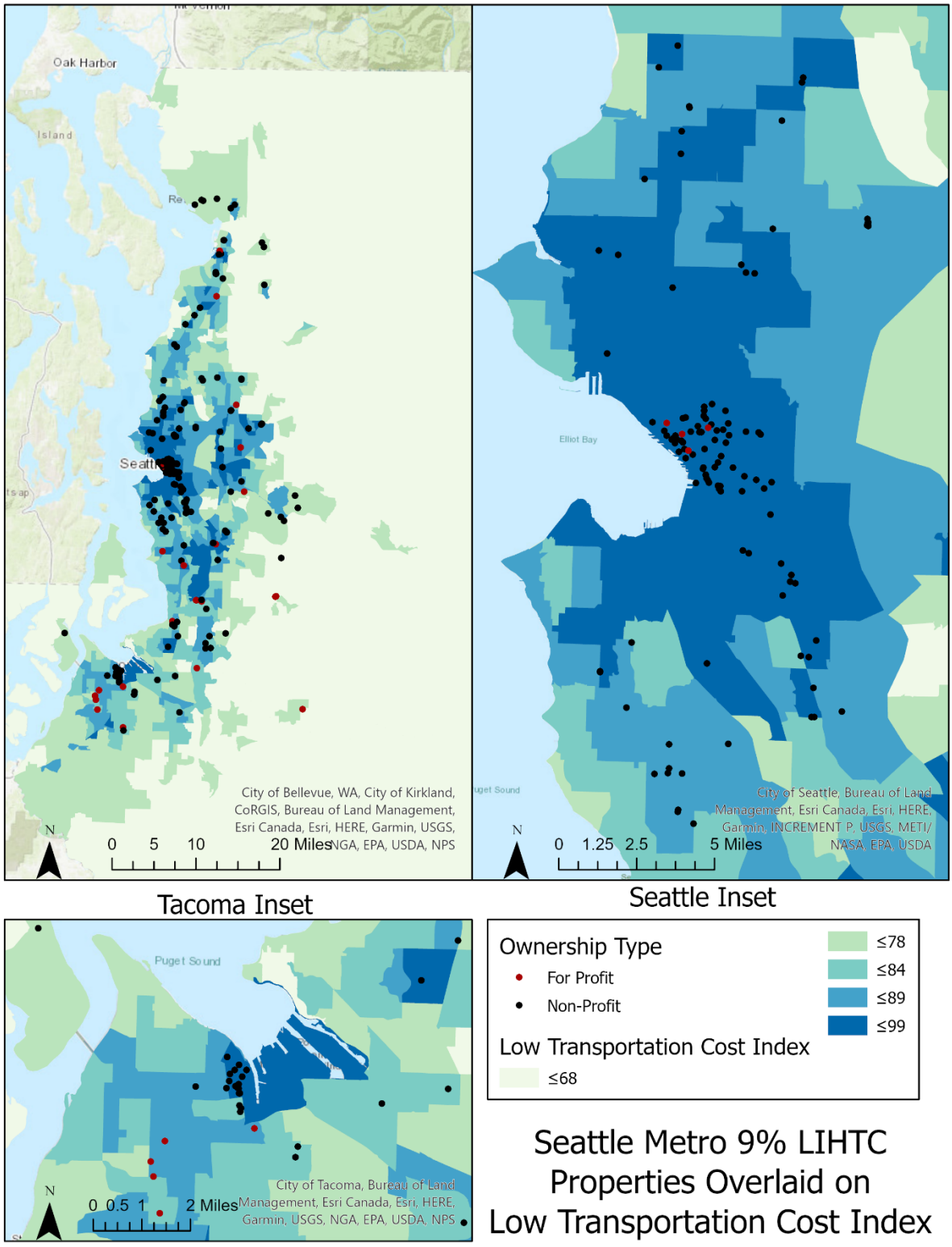


Figure 9. Transit Trips Index

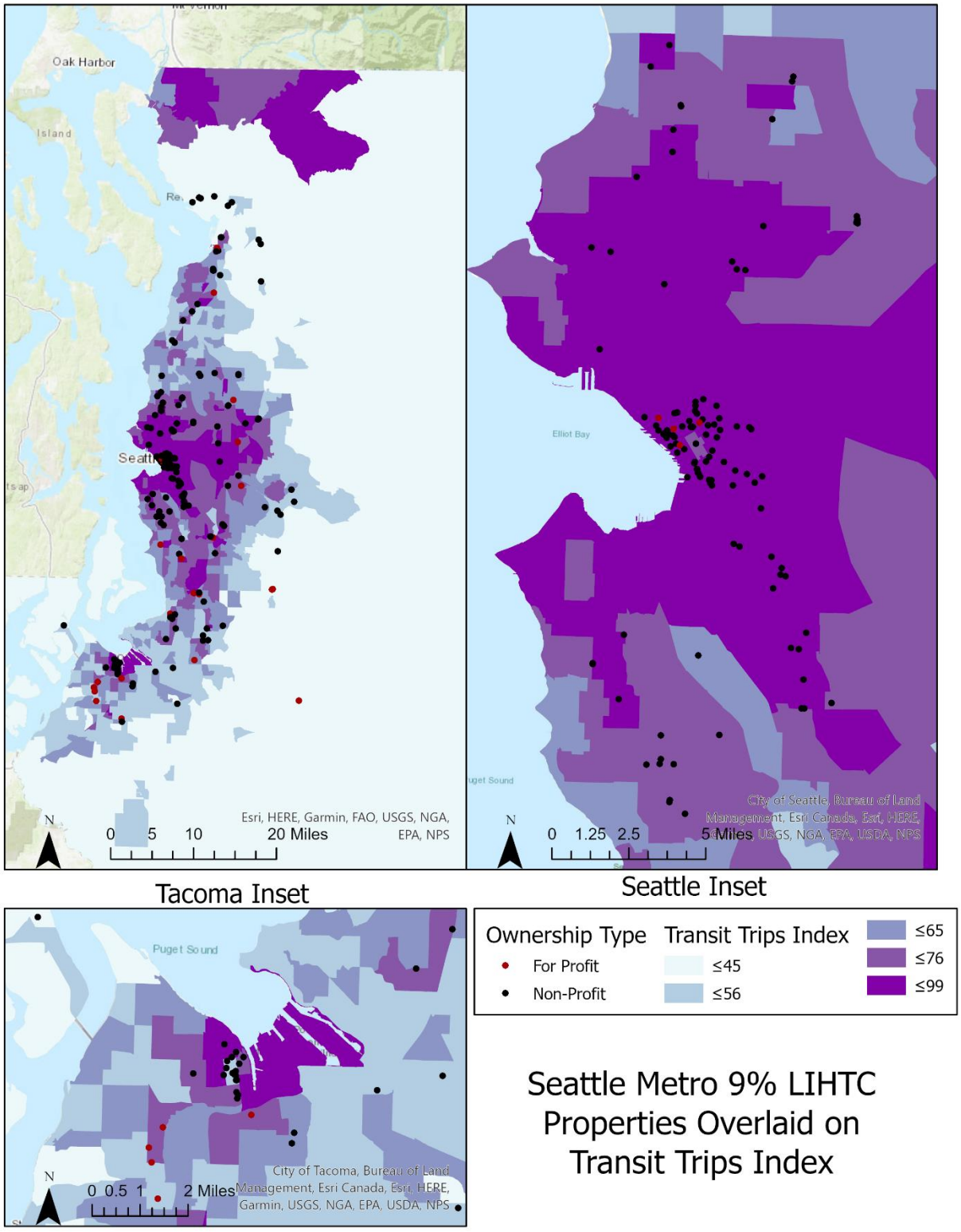


Figure 10. Jobs Proximity Index

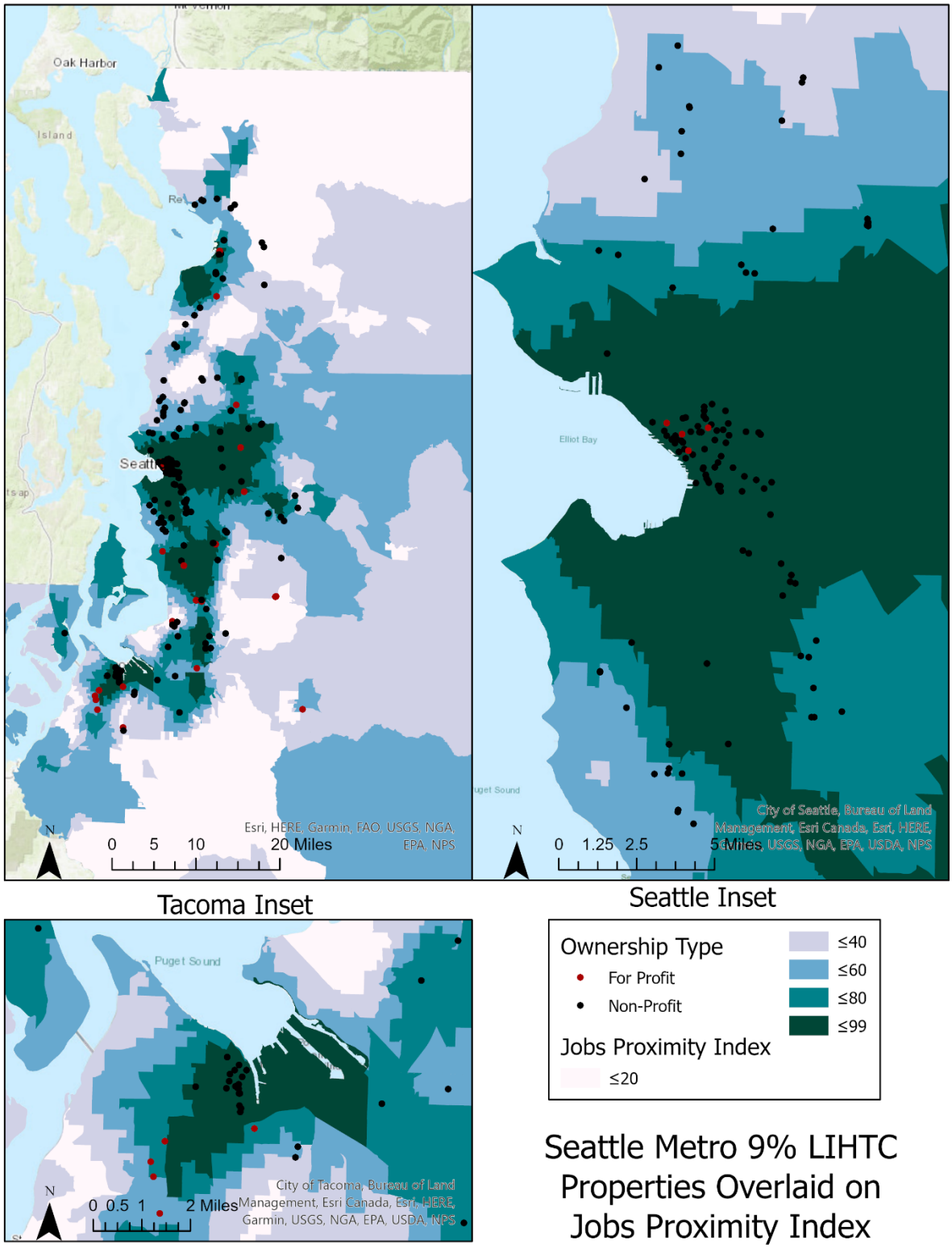
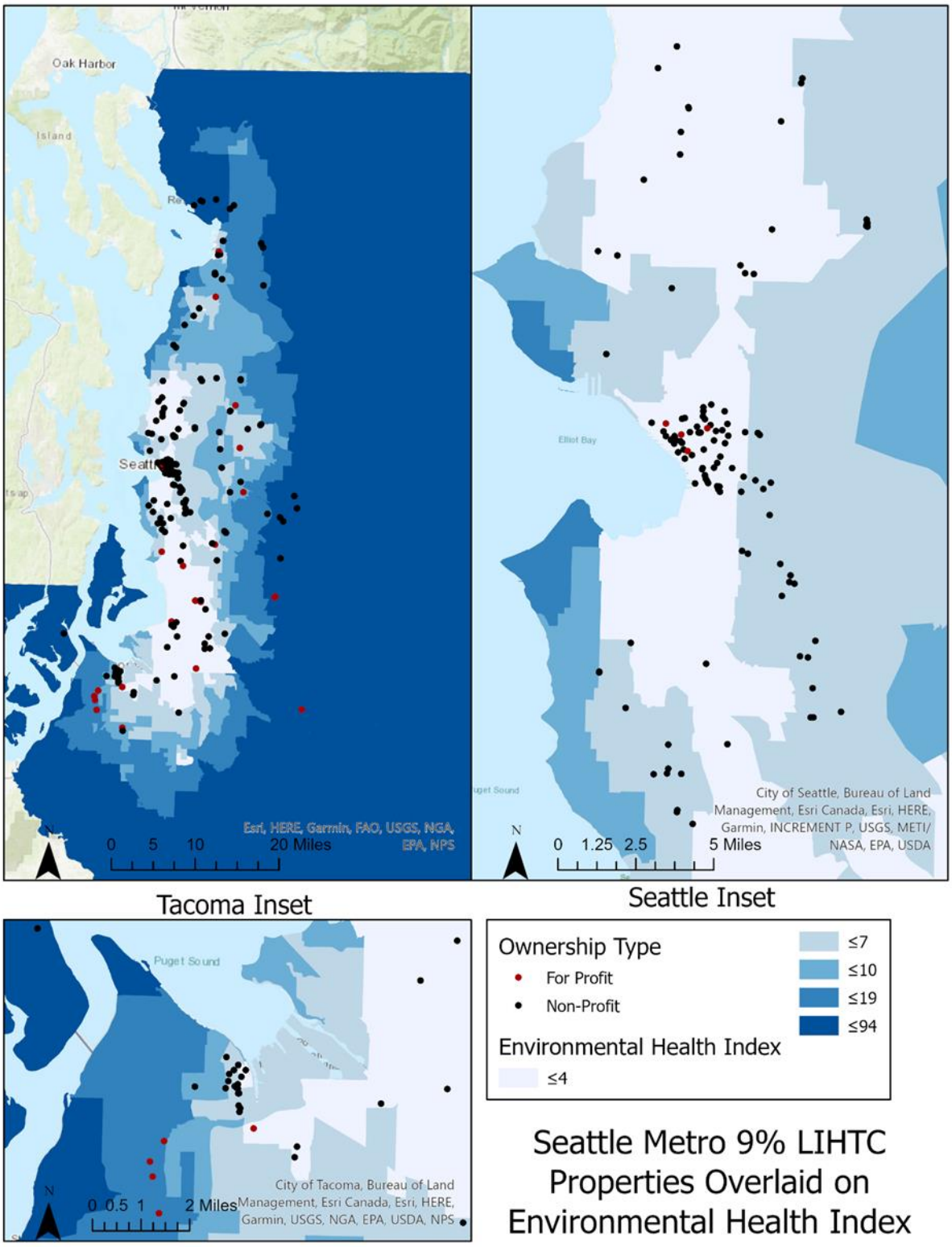


Figure 11. Environmental Health Index



Chapter 5. Discussion

This thesis seeks to evaluate the relationship between access to opportunity and the locational outcomes of LIHTC projects. The results show that LIHTC developments funded in the Seattle MSA over the past thirty years are often located in areas that score in the top two quintiles for access to opportunity. Furthermore, the results indicate that there is a statistically significant difference in locational equity of non-profit and for-profit nine percent LIHTC developments. Given the benefits of living in high opportunity neighborhoods, the following discussion provides additional context as to why access to affordable transportation, transit, and environmental health varies between for-profit and non-profit project sponsors.

There can be contradictory forces within what comprises "opportunity" – components may conflict with one another – for example, some neighborhoods have great access to transit but high levels of poverty or poorly performing schools. Households of most neighborhoods face tradeoffs when selecting their homes. Researchers found that participants in the Housing Choice Voucher (HCV) program in Jacksonville, Florida and San Antonio, Texas regularly faced a choice between highly accessible neighborhoods and those with lower crime rates or better schools (Wang et al, 2017). Similarly, the results found in this thesis show that developers face a similar choice when siting their LIHTC projects: sacrifice accessibility for better environmental health. Non-profit nine percent developments are located in areas with better transit access and lower transportation costs than their for-profit counterparts. Conversely, for-profit nine percent developments are situated in areas with better environment health. It is likely that non-profit developers benefit from a long-term presence in downtown areas where social services were historically concentrated. Today, those locations are at the nexus of major transit investments, such as Sound Transit's Link light rail, Sounder commuter rail, and Tacoma's Line T streetcar.

While this historical artifact may play a part in why non-profit developments have better access to transit, it is the author's belief that the structure of the LIHTC program itself can explain the difference.

Land is not part of the all-important cost basis of a LIHTC project; it falls on the developer to secure outside financing when acquiring land. Non-profit developers can fund land purchase through a variety of ways: philanthropic fundraising, local and state funds, community development capital partners (e.g., Enterprise Community Partners), and increasingly, governmental organization surplus property transfers. For-profit developers are more likely to seek traditional market-based solutions and rely on their own private equity or bridge financing from a lender. A look at the incentives borne of these two different financing structures implies that for-profit LIHTC developers face pressure to minimize their land cost (as long as the site still scores competitively in WSHFC's scoring criteria). The profit-seeking motive of for-profit developers may limit the neighborhoods where they look to select sites, as the per square foot price of land drops as one moves to the fringes of an urbanized area (Diamond, 1980). This may explain why for-profit LIHTC developments are located in areas with better environment health but worse accessibility as those neighborhoods are more likely to be on the periphery of the Seattle MSA.

That is why the mission of a developer may matter; the incentive structure for-profit developers follow may not align with building LIHTC developments in areas with maximal access to opportunity. Non-profit developers do not face the same fiduciary pressure to minimize land costs because they are likely to place more value on the location of their project. It is in their mission to focus on providing housing above all else. That would explain why there is a

statistically significant difference between for- and non-profit developers and low transportation cost and transit access.

A limitation of this thesis is the exclusive focus on nine percent LIHTC projects instead of also incorporating the larger four percent program. There are more four percent LIHTC projects, containing nearly three times as many units compared to nine percent LIHTC ones in the study area. More importantly, the breakdown of sponsor type (42.4 percent for-profit to 57.6 percent non-profit) amongst the four percent program is closer in alignment to the national numbers (roughly 78 percent for-profit to 22 percent non-profit) than the nine percent program (13.1 percent for-profit to 86.9 percent non-profit). In the future, as data is collected in the now competitive four percent program, it would be interesting to see this study applied to it. In addition, the nine percent program is almost exclusively awarded to projects focused on providing supportive housing, which likely has an outsized impact on its location.

Another limitation stems from the AFFH environmental health index. This data is somewhat perplexing and calls in to question its pertinence. Eighty percent of census tracts score below 20, on a scale of 0 to 100. This implies that any populated place has an “unhealthy” environment and is otherwise unhelpful from a policy perspective in defining where truly poor environmental conditions exist. A more comprehensive environmental health index that accounts for proximity to road pollution and heavy industry would be more useful. Such an index should also include interior pollutants, as the existing one does not.

Chapter 6. Conclusion

The purpose of this thesis is not to provide a value judgement on for-profit vs non-profit developers but to provide context for the growing body of research that shows low-income households benefit from locating in high-opportunity areas. As discussed above, the site selection decision-making process for developers may be an area for further policy intervention. This dichotomy illustrates the tradeoffs and locational inequity present in the WSHFC's scoring criteria. It is recommended that the WSHFC increase the weight of location-based components, particularly access to opportunity provisions within its scoring criteria. Such a revision can help address not only any discrepancies between for-profit and non-profit LIHTC projects, but also increase the likelihood that all projects have better access to opportunity.

Chapter 7. Bibliography

Ballard, Megan J. 2003. “Profiting from Poverty: The Competition between For-profit and Nonprofit Developers for Low-Income Housing Tax Credits,” Hastings Law Journal 55 (1): 211–244.

Bolton, M., Bravve, E., & Crowley, S. (2014). Aligning federal low income housing programs with housing need. Washington, DC: National Low Income Housing Coalition.

Bratt, R. G., & Lew, I. (2016). Affordable rental housing development in the for-profit sector: A review of the literature. Cityscape, 18(3), 229-262.

Bull, M., & Gross, A. (2018). Housing in America: An Introduction, Chapter 9: Public Housing

Chetty, R., & Hendren, N. (2015). The impacts of neighborhoods on intergenerational mobility: Childhood exposure effects and county-level estimates. Harvard University and NBER, 1-144.

Chetty, R., Hendren, N., & Katz, L. (2016). The effects of exposure to better neighborhoods on children. The American Economic Review, 106(4), 855-902.

Chuck Grassley United States Senator for Iowa. (2016, June 8). Low-income Housing Tax Credit Program Needs More Attention from IRS, Report Finds [Press release]. Retrieved March 18, 2019, from https://www.grassley.senate.gov/news/news-releases/low-income-housing-tax-credit-program-needs-more-attention-irs-report-finds

Clarke, R. (2015). The Low-Income Housing Tax Credit (LIHTC): Challenges Presented by the Onset of Year 15 in the St. Louis Region.

Deng, L. (2005). The cost-effectiveness of the low-income housing tax credit relative to vouchers: Evidence from six metropolitan areas. Housing Policy Debate, 16(3-4), 469-511.

Desai, M., Dharmapala, D., & Singhal, M. (2010). Tax Incentives for Affordable Housing: The Low-Income Housing Tax Credit. 24(1), 181-205.

Diamond, D. (1980). The Relationship between Amenities and Urban Land Prices. Land Economics, 56(1), 21-32.

DiPasquale, D. (2011). Rental housing: Current market conditions and the role of federal policy. Cityscape, 57-70.

Eadrick, A., Cavin, A., Cunningham, G., Van Moorsel, P., Whitaker, E., Thomas, E., & Konopaski, K. (2019). Analyzing Development Costs for Low-Income Housing (Rep.). Retrieved March 13, 2019, from https://deptofcommerce.app.box.com/s/dtojhkppbfw55l0xzzk0mi62mjtelv5w

Goetz, E. (2011). Where have all the towers gone? The dismantling of public housing in U.S. cities. Journal of Urban Affairs, 33(3), 267-287.

Hettinger, W. S. (2005). Low Income Housing Tax Credits: strategies for year 15. Communities and Banking, (Sum), 12-19.

Housing Tax Credit Investments: Investment and Operational Performance (Rep.). (2018, April). Retrieved March 15, 2019, from CohnReznick website: file:///C:/Users/Owner/Downloads/CR_LIHTC_MARCH2018_Interactive.pdf

Johnson, A., & Green-Taylor, L. (2018). Bond Cap Allocation Program Biennial Report to the Legislature (Rep.). Retrieved March 13, 2019, from https://deptofcommerce.app.box.com/v/bond-cap-report-2018

Khadduri, J., Climaco, C., Burnett, K., Gould, L., & Elving, L. (2012). What happens to low-income housing tax credit properties at year 15 and beyond?. US Department of Housing and Urban Development, Office of Policy and Development Research.

Low-Income Housing Tax Credits. (2018, June 6). Retrieved March 13, 2019, from https://www.huduser.gov/portal/datasets/lihtc.html#data. HUD Office of Policy Development and Research.

Manisalidis, I., Stavropoulou, E., Stavropoulos, A., & Bezirtzoglou, E. (2020). Environmental and Health Impacts of Air Pollution: A Review. Frontiers in Public Health, 8, 14.

Maritz, B., & Wagle, D. (2020). (rep.). Why does prosperous King County have a homelessness crisis? McKinsey & Company. Retrieved November 24, 2021, from https://s3.documentcloud.org/documents/6766901/Why-Does-Prosperous-King-County-Have-a.pdf.

McCarty, M. (2014). Introduction to Public Housing. Washington, DC: Congressional Research Service.

Meléndez, E., Schwartz, A. F., & Montrichard, A. D. (2008). Year 15 and preservation of tax-credit housing for low-income households: An assessment of risk. Housing Studies, 23(1), 67-87.

National Low Income Housing Coalition. (2021). (rep.). Out of Reach 2021. Retrieved November 24, 2021, from https://nlihc.org/sites/default/files/oor/2021/Out-of-Reach_2021.pdf.

Norbäck, D. (2019). Future Directions of Research on Indoor Environment, Indoor Air Quality (IAQ), and Health. In Indoor Environmental Quality and Health Risk toward Healthier Environment for All (Current Topics in Environmental Health and Preventive Medicine, pp. 321-333). Singapore: Springer Singapore.

Norris, R., George, R., & Ostrow, E. (2018, September 15). Major Tax-Exempt Bond and Loan Executions for 100% Affordable and Mixed-Use Apartment Projects (Rep.). Retrieved September 13, 2019, from Norris George & Ostrow PLLC website: https://d2oc0ihd6a5bt.cloudfront.net/wp-content/uploads/sites/2453/2018/09/09-15-18-Major-Tax-Exempt-Bond-and-Loan-Executions.pdf

Puget Sound Regional Council. (2009). (rep.). VISION 2040 Part II: Regional Growth Strategy. Retrieved November 24, 2021, from https://www.psrc.org/sites/default/files/part_ii_regional_growth_strategy.pdf.

U.S. Census Bureau (2019). Selected housing characteristics, 2014-2019 American Community Survey 5-year estimates. Retrieved from:

https://data.census.gov/cedsci/table?q=dp04&g=310M600US42660&tid=ACSDP5Y2019.DP04&hidePreview=true

U.S. Census Bureau (2020). QuickFacts, Population, Census, April 1, 2020. Retrieved from: https://www.census.gov/quickfacts/fact/table/seattlecitywashington/POP010220

Walter, R. J., Wang, R., & Jones, S. (2018). Comparing opportunity metrics and locational outcomes in the Low-Income Housing Tax Credit program. Journal of Planning Education and Research, 38(4), 449-462.

Wang, R., Walter, R., Arafat, A., Ding, X., & Naji, A. (2017). Examining Neighborhood Opportunity and Locational Outcomes for Housing Choice Voucher Recipients: A Comparative Study between Duval County, Florida, and Bexar County, Texas. City & Community, 16(4), 421-446.

Weaver, J. (2015, August 31). Feds: Miami developers, contractor to plead guilty in $36 million affordable-housing scam. Miami Herald. Retrieved March 13, 2019, from https://www.miamiherald.com/news/local/crime/article32880609.html

Wood, E. (1982). The beautiful beginnings, the failure to learn: Fifty years of public housing in America. The Center.