UNIVERSITIES AND URBAN DEVELOPMENT: THE EFFECTS OF ANCHOR INSTITUTION INITIATIVES ON GENTRIFICATION

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ABSTRACT

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Universities, as anchor institutions and keystones of the post-industrial economy, are assuming leading roles in cities' economic and social development, often leveraging university capital directly for purposes of neighborhood revitalization in projects referred to herein as anchor institution initiatives. Such initiatives, however, may be attracting higher income individuals and displacing lower income residents rather than building community capacity. This dissertation utilizes decennial United States census data from 1970 to 2010 to examine the effects on gentrification of anchor institution initiatives in multiple cities across the country. Using a difference-in-differences approach, a gentrification composite variable for census tracts targeted by anchor institution initiatives is compared to the composite for similar tracts within the same core-based statistical area, providing plausibly causal estimates of the relationship between gentrification and the initiatives. Further research questions explore how the nature of the initiative differentially affects gentrification and whether treatment assignment is determined by the vulnerability of the targeted neighborhood to be gentrified. There is evidence anchor initiatives have a negative effect on gentrification, though the negative effect is not large enough to override the larger, positive trends in gentrification across time. Additionally, financial strategies tend to slow gentrification the most, while physical strategies may accelerate gentrification. Finally, the vulnerability of a tract to be gentrified does predict whether a tract is targeted by an initiative. These results in part answer the call for quantitative analyses of the community outcomes of university community engagement, and the research can inform and

guide university community engagement in efforts to build community wealth without displacement.

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Chapter 1: Introduction

Universities and cities are intertwined in a dense web of people, resources, and information exchange. There is growing interest among scholars, policymakers, and university decision-makers in leveraging the community connections and local economic footprint of universities for purposes of urban revitalization (Dubb, McKinley, & Howard, 2013; Hodges & Dubb, 2012; Sladek, 2017). Through universities' large economic footprint, development decisions, and community engagement projects, they act as anchor institutions within communities, providing reliable capital to local economies for growth and overall well-being. Anchor institutions are defined as organizations economically and socially tied to specific locations, the most common examples being universities and hospitals (Porter, 2016). Targeted projects meant to leverage university resources for purposes of urban development, referred to herein as anchor institution initiatives, are growing more common as civic leaders search for strategies to cope with a post-industrial economy and university leaders look to form community engaged institutions. Universities engaging in neighborhood revitalization projects are heralded as stewards of place (Saltmarsh et al., 2014) or even saviors (Dobelle, 2009). In many cases, however, university-led urban development results in community displacement (Baldwin, 2017). The University of Pennsylvania reshaped West Philadelphia to better fit an image of a world class university (Etienne, 2012), Columbia University demolished swathes of New Manhattanville in the name of urban revitalization (Gregory, 2013), and the Auraria Higher Education Center in Denver displaced entire Latinx communities to make way for a new campus (Page & Ross, 2016; Walker & East, 2018), gentrifying rather than revitalizing neighborhoods. Gentrification is a process of investment and in-migration of relatively well-off residents into neighborhoods resulting in the displacement of previous residents. As engaged universities

emphasize their roles as anchor institutions and direct local development, they are complicit or even active participants in gentrification, fundamentally changing the character of neighborhoods and displacing current residents.

Urbanization, or the long-term trend of urban population growth, is accelerating to historic levels as people seek employment within the large commercial sectors cities offer (Batty, 2014; United Nations, Department of Economic and Social Affairs, Population Division, 2015; World Bank, 2009), but inequality is also growing as deindustrialization and globalization concentrate wealth across individuals and space (Broad & Cavanagh, 2009; Florida, Gulden, & Mellander, 2008; Webber & Karlström, 2009). Anchor institutions are one of the proposed solutions to the problems of urban inequality (Alperovitz, 2013; Hodges & Dubb, 2012; Porter, 2016). Scholars (Harkavy et al., 2009; Hodges & Dubb, 2012; Porter, 2016) and policymakers are pushing for universities to become more productively engaged in their regional economies and local communities to develop neighborhoods and build local wealth through anchor institution initiatives. Given the conflicts surrounding university-led urban development, however, anchor institution initiatives are plausibly acting as catalysts of gentrification, displacing low-income residents in favor of the White middle-class. Universities may be catalyzing gentrification by focusing development in specific neighborhoods to attract middle-class students and faculty, increasing the rates of gentrification beyond national trends. Instead of anchoring existing communities, economically engaged universities could be fundamentally altering neighborhoods, reifying inequality and shaping the world in the image of the powerful.

This dissertation aims to study the effects on gentrification of university anchor institution initiatives using US Census panel data and a difference-in-differences method. The study is situated within broader discussions of universities, urbanization, and gentrification.

Causal theories of gentrification generally emphasize either supply or demand. Supply-side arguments claim low real estate prices attract developers, and demand-side arguments claim the changing preferences of the White middle-class for urban amenities explain the in-migration of relatively well-off residents to previously low-income neighborhoods. Using conceptual frames of both supply-side and demand-side gentrification, I hypothesize anchor institution initiatives will have statistically positive effects on gentrification in targeted neighborhoods. Quantitatively examining universities and gentrification will contribute to research on anchor institutions, urban universities, and the effects on communities of university engagement. The results can also inform future community wealth-building efforts by universities. Though conclusions from this study cannot make prescriptions for equitable university-led development, the results can guide proscriptions for avoiding community displacement by providing generalizable evidence of the connections between gentrification and anchor institution initiatives. Urban development that grows local wealth and capacity rather than displacing communities is possible, and this research can inform universities as they engage with their regional economies.

Problem Statement

As capital in the form of new construction, monetary investments, and high-skilled workers moves into cities, and as universities play a role in attracting and spatially positioning this capital, universities may be actively contributing to processes of community displacement through anchor institution initiatives. Such initiatives are ostensibly meant to develop local capacity, aiding current residents in improving their overall quality of life, but too often urban renewal and revitalization mean pricing out communities in favor of wealthier residents. The relationship between universities and gentrification lies at the superposition of three closely related trends. First, capital is moving to cities in the form of physical capital, monetary

investments, and people (Batty, 2014; Florida, Mellander, & Gulden, 2012). Second, neighborhoods previously made up of residents of low socioeconomic status are experiencing gentrification to a greater degree than any previous period in which the concept of gentrification was widely studied (Baum-Snow & Hartley, 2016; Hwang & Lin, 2016). Finally, urban universities are acting as key components of economic growth in cities (Etienne, 2012; Hodges & Dubb, 2012; Wiewel & Perry, 2008). Given the growing role of anchor institutions in urban development, this study intends to examine the effect of university anchor institution initiatives on trends in gentrification.

Universities and Urbanization

Universities are connected to urbanization through complex economic, political, and historic mechanisms (Bender, 1988; Wiewel & Perry, 2008). Globally, there are strong associations between urbanization and gross enrollment ratios in higher education (Cantwell, Marginson, & Smolentseva, 2018). The parallel growth of city populations and higher education enrollments are likely due to the centrality of both cities and universities to the knowledge economy. As postsecondary degrees become essential for participation in the knowledge economy (Carnevale, Smith, & Strohl, 2010; Mokyr, 2005), knowledge-based firms and industries are clustering in cities (Cortright, 2006; Youtie & Shapira, 2008). Economic considerations of individuals, firms, and universities converge spatially within cities. Individuals seek credentials for high-paying jobs, firms seek qualified employees and productivity-enhancing innovations, and universities seek students and high-quality faculty. All serve to attract people to cities and organize spatially based on their preferences and wealth.

Politically, colleges and universities, as major organizations within the civic structure of a city, are key components of civic leadership in many cities. Massification of higher education, the shifting nature of urban economies from industrial to informational, and emphasis on

workforce development by economists and policymakers all pushed universities into influential positions in modern cities (Perry & Wiewel, 2008; Taylor, Luter, & Miller, 2018). As the importance of universities as a whole grow for cities, individual decision-makers within universities are also becoming more important city-wide. Through strategic plans, local political connections, development decisions, or global perspectives, university leaders' actions and ambitions take on larger implications than a single organization (Lyall, 2013; Maurrasse, 2007). The ramifications of university decisions are not contained by the artificial boundaries of campus but extend throughout surrounding neighborhoods.

Urban universities and cities are intertwined in a complex political economy of space scarcity and economic activity. University land use and development decisions are not made in a vacuum in which universities identify academic needs and match them with available funds. These decisions shape and are shaped by hyper local contexts of policy and community identity (Perry & Wiewel, 2008; Taylor et al., 2018). For example, Temple University made an intentional decision in the 1950s to transition from a commuter school to a more residential model, but the university lacked the necessary space. The city council changed zoning laws to allow Temple to appropriate private property, and a coordinated media campaign portrayed neighborhoods surrounding Temple, largely Black communities, to be blighted and in desperate need of revitalization (Hyatt, 2010). In this way, Temple and other civic institutions negotiated and coordinated to shape Temple's expansion and gentrify local communities. Universities and communities share decades of history, centuries in some cases, of multifaceted relations, investments, and disinvestments (Hyatt, 2010). With such a multitude of actors and structures, the influence of one on the other can be difficult to distinguish (Etienne, 2012).

This morass of historical and contemporary relations is additionally scaffolded by larger political economic structures. Federal and state governments set the stage for much activity in both universities and cities, generally without conceptualizing the two as interlinked, and macro market trends catalyze or depress local conditions (Morris, Jones, & Wright, 2010). Simultaneously, universities and global cities combine to form the geographies of academic mobility in which some higher education organizations are competing against universities across the world to recruit and retain talent, mobilizing local environments to meet these global goals (Perry & Wiewel, 2008).

As universities and cities grew closer together in the 20th century, two societal trends dealt enormous blows to U.S. cities. First, deindustrialization and globalization moved physical and financial capital outside of cities, shuttered factories, reduced banks' local investments, and merged local utilities into larger corporations (Webber & Karlström, 2009). Capital returned to cities in the form of physical capital, monetary investments, and people in the latter part of the 20th century (Batty, 2014; Florida, Mellander, & Gulden, 2012), but the nature of the high-skilled, high-wage jobs drawing new residents intensified wealth inequality (Baum-Snow, Freedman, & Pavan, 2018). Second, public sentiment with racist undertones made policies for equitable urban renewal politically unpopular, forcing policymakers and civic leaders to search for new, creative ways to build community wealth (Persons, 2004; Wolf-Power, 2010). As cities struggled to adapt to the realities of post-industrialism in the 21st century, several potential solutions to these dual problems centered on a democratized economy in which multiple local institutions collaborated and operated in ways that engage and develop communities (Alperovitz, 2013; Iuviene, Stitely, & Hoyt, 2010). For example, Alperovitz (2013) and Alperovitz and Bhatt (2013) highlighted coordinated initiatives in Cleveland, namely the Evergreen Cooperatives and

the University Circle. The Evergreen Cooperatives are a loose organization of employee-owned businesses in Cleveland that purchase goods from each other when possible, and the University Circle is a partnership of several universities and hospitals that also purchase from the employee-owned businesses and otherwise focus economic capital locally. Such solutions focus on building community wealth, defined as enhancing local capacity, financial capital, and ownership (Dubb, 2015). Universities, as anchor institutions, act as cornerstones in these strategies due to their large economic footprint (Wittman & Crews, 2012), exemplified by the University Circle in Cleveland.

Anchor Institutions

The concept of anchor institutions grew from the work of business professor Michael Porter (1990, 1997, 2016) on inner-city competitiveness in the 1990s. Cities, particularly densely populated areas near central business districts, were spaces of massive, untapped economic potential. Rather than focus on deficits such as a lack of traditional financial capital, Porter argued developers and policymakers should emphasize the community and economic assets inner cities had to offer. One of the assets he believed inner cities should center were anchor institutions. Anchor institutions, such as universities or hospitals, provide relatively dependable sources of capital and thus are invaluable for development plans.

The term anchor institution is rhetorically useful for two reasons and maps onto the two main themes of common definitions of the term. First, these institutions are *anchored to* a specific location and cannot easily move. Whereas factories or retail stores tied to multi-national corporations can change location relatively easily to pursue cheaper labor and lower taxes, anchor institutions face much steeper barriers (Maurasse, 2007). In one of the most widely used definitions, Webber and Karlström (2009) used this conceptualization, describing anchor institutions as “those nonprofit or corporate entities that, by reason of mission, invested capital,

or relationships to customers or employees, are geographically tied to a certain location" (Webber & Karlström, 2009, p. 6). Dubb and Howard (2012) and the Initiative for a Competitive Inner City (2011) also emphasized inherent ties to specific locales in their definitions. Maurasse (2007) described university resources as "sticky capital" (p. 2) due to the high mobility cost universities face. Mobility cost is the additional cost of moving a good. Universities face incredibly steep mobility costs for several reasons: (a) entire campuses are expensive to rebuild in different locations, (b) public universities receive some degree of state appropriations and are expected to remain located within the state and possibly within specific locales of the state, (c) universities rely heavily on alumni who often hold sentimental value to the neighborhoods near their alma maters, and (d) moving a brick-and-mortar campus also requires moving an entire student body in some way. The high mobility cost forces universities to deal with local problems rather than moving to other regions more amenable to their goals, and it also entails university capital is relatively reliable compared to private businesses with lower mobility costs.

Second, the communities surrounding an anchor institution are reliant to some degree on that institution, and thus communities are *anchored by* the institution. Morris et al. (2010) and Hoyt's (2013) definitions emphasize the essential capital anchor institutions provide to surrounding neighborhoods and communities, which suggests communities can rely upon university capital to a certain degree. This theme assumes a more proactive stance by anchor institutions. Hodges and Dubb (2012), in their discussion of anchor institutions and community development, coined the phrase anchor institution mission, which is "to consciously and strategically apply their long-term, place-based economic power, in combination with their human and intellectual resources, to better the welfare of the communities in which they reside" (pp. xix – xx). In summation, anchor institutions are geographically tied to certain communities

and are reliable sources of different forms of capital. The communities in which anchor institutions reside can thus expect and rely upon a certain degree of economic activity and overall community vitality. While these definitions are inclusive of organizations such as businesses with strong familial or historical ties to a city, anchor institutions most commonly refer to universities and hospitals due to the large employment and purchasing these sectors offer (Breznitz & Feldman, 2012). The term anchor institution is also occasionally used in reference to stadiums, museums, and public libraries (Crane, Harter, & Trehan, 2010; Manjarrez, Cigna, & Bajaj, 2007).

The anchor institution mission as described by Hodges and Dubb (2012) connects anchors with community engagement in a way that is not necessarily inherent to anchor institutions. A university can employ large numbers of people without itself being an engaged university. Community engagement is "the collaboration between institutions of higher education and their larger communities (local, regional/state, national, global) for the mutually beneficial exchange of knowledge and resources in a context of partnership and reciprocity" (Driscoll, 2008, p. 39). As anchor institutions became seen as potential strategic actors in urban development, hospitals and universities faced increased pressure from policy-makers and community leaders to become less cloistered and more productively engaged in their communities and cities (Fitzgerald, Bruns, Sonka, Furco, & Swanson, 2012; Hoyt, 2013; Wittman & Crews, 2012). With the anchor institution mission, Hodges and Dubb (2012) argued for universities to purposefully leverage their anchor resources for community and economic development, contributing to larger efforts to build community wealth and acting as keystones in a post-industrial economy.

There is a key distinction necessary to clarify the unit of analysis in this study. Anchor institutions and anchor institution initiatives are distinguishable. The definitions of anchor institutions do not necessitate purposeful economic engagement. Universities and hospitals can easily make significant regional economic contributions simply through their daily operations; almost every university is inherently an anchor institution by definition, whether they leverage their local impact or not. Anchor institutions that do proactively strive to fulfill the anchor mission of increasing or targeting their local impact (Hodges & Dubb, 2012) do so through specific organizational actions such as programs, projects, or articulated strategies, referred to as anchor institution initiatives. The anchor institution is the entire organization; the anchor institution initiative is the specific program, project, or strategy that leverages anchor capital for purposes of urban economic growth and development. For example, Syracuse University is an anchor institution because it has strong ties to the city of Syracuse and is a reliable source of capital for surrounding communities. Syracuse University's Connective Corridor project is an anchor institution initiative. The Connective Corridor is an intentional, targeted project to develop a path between Syracuse University and downtown into an arts district (CEOs for Cities with Living Cities, 2010). The project consists of multiple service-learning courses, landscaping and bike pathways, and mortgage incentives for faculty to live in the area. As an anchor institution initiative, the Connective Corridor leverages university capital for economic and community development. Being housed within an anchor institution is a necessary but not sufficient prerequisite for an anchor institution initiative. Anchor institution initiatives, defined as the programs, projects, or articulated strategies meant to leverage anchor capital, are the treatment variable in this study.

Postsecondary organizations, particularly urban colleges and universities, are embracing their roles as anchor institutions for purposes of economic development and neighborhood change (Dubb, McKinley, & Howard, 2013; Etzkowitz, 2014; Hodges & Dubb, 2012; Sladek, 2017). Such initiatives are often couched in rhetoric of democratizing regional economies and building community wealth. The degree to which anchor institution initiatives are democratizing economies, however, is essentially unknown. A possible alternative explanation for economic growth, rather than building wealth in existing residents, is universities are creating environments desirable to higher income individuals, thus pricing out low-income residents through gentrification processes. Analyses of the effects of anchor institution initiatives must critically examine who the growth is benefiting.

Gentrification

The concept of gentrification is a useful theory for understanding and complicating neighborhood change. Smith (1998) provides a technical definition of gentrification, defining it as a "process by which central urban neighborhoods that have undergone disinvestments and economic decline experience a reversal, reinvestment, and the in-migration of a relatively well-off middle- and upper middle-class population" (p. 198). This definition, while useful for understanding the mechanisms of gentrification, omits the racial connotations of gentrification, which is problematic because historically narratives of blighted communities in desperate need of renewal or revitalization referred almost exclusively to poor communities of Color (Taylor et al., 2018). Williams (1988) understands gentrification as purely the migration of White middle-class individuals into predominantly minority neighborhoods, thus displacing people of Color. For Williams, issues of class and income are secondary to race and culture. Gregory (1993) connects these two divergent perspectives, seeing neighborhood change as economic in nature though with racialized motivations, justifications, and geographies. For all these definitions,

displacement is a key component. Marcuse (2015) centers displacement prominently in the definition used in this dissertation, defining gentrification as, "the displacement of a lower-income population by a higher-income one through some combination of three forms of upgrading: Economic upgrading—*uppricing*, Physical upgrading—*redevelopment*, Social upgrading—*upscaling*" (p. 1264, italics in original). This dissertation utilizes Marcuse's (2015) definition because it foregrounds displacement and provides causal mechanisms relevant to anchor institution initiatives. Uppricing refers to increased market value such as through investments or additional incentives to live in a certain location, redevelopment refers to physical upgrades or construction, and upscaling refers to environmental changes preferred by the White middle-class (Marcuse, 2015). Operationally, the definition used herein also draws from Gregory (1993) and Williams (1988) to emphasize the role of race in gentrification.

Rates of gentrification in cities are reaching record highs as the availability of high-paying, high-skilled jobs increase and urban amenities become more desirable (Baum-Snow & Hartley, 2016; Hwang & Lin, 2016). Urban economies are no longer dependent upon large factories, relying instead upon technology firms and industries based on knowledge workers (Mokyr, 2005). As economies shifted, jobs requiring high levels of education and offering high salaries attracted workers from upper social classes and left many former workers unemployed, unable to afford rising rents and costs of living (Baum-Snow & Hartley, 2016; Edlund, Machado, & Sviatschi, 2015). Concurrently, the preferences of the White middle-class for urban amenities such as short commute times, walkability, and chic restaurants are changing, attracting higher income residents to previously low-income neighborhoods (Anderson & Sternberg, 2012; Couture & Handbury, 2017). Demand for housing increases as people move to attain these amenities, then prices adjust accordingly, thus low-income residents can no longer afford rent.

Anchor institution initiatives for purposes of economic development and neighborhood change are potentially acting as catalysts of gentrification (Taylor et al., 2018; Walker & East, 2018). As universities strive to develop new technology firms, train entrepreneurial students, and foster environments conducive to middle-class ideals of urban living, they may be displacing the very residents they claim to be helping in their rhetoric of community engagement and inclusive economies. This displacement may be occurring outright through eminent domain, gradually by being priced out, or even non-economically as they no longer feel welcome in their neighborhood. These potential outcomes run contrary to anchor institutions' stated goals of local development. Understanding the effects of anchor institution initiatives on neighborhood change is essential to inform university-led development in the future as universities and cities continue to grow more intertwined.

Purpose of Study

This study aims to use a quantitative, generalizable method to test the hypothesis anchor institution initiatives are contributing to gentrification. Given the potential dissonance between the rhetoric and reality of university-led urban development, additional empirical evidence is needed to inform economic engagement. The ideal goal of community engagement in this context is for colleges and universities to be productively engaged with regional economies in ways that build community wealth rather than displace current residents. Assuming universities are causing gentrification unintentionally due to information deficits, this study can begin to guide such initiatives in a more productive manner.

Several scholars used qualitative case studies to connect university-led development and gentrification, but to my knowledge no quantitative study exists with generalizable, causal conclusions. The lack of quantitative studies on this topic is concurrent with repeated calls for

quantitative measures of the community outcomes of anchor initiatives and community engagement more broadly (Dubb, McKinley, & Howard, 2013; Sladek, 2017; Stoecker, Beckman, & Min, 2010). This study therefore contributes directly to the literature on universities as anchor institutions and indirectly to the larger field of the scholarship of university community engagement by quantitatively measuring the effects of university projects on neighboring communities.

This study also provides causal estimates of the effects of anchor institution initiatives on gentrification. Causality is conceptualized here, as it is in econometrics, as the difference between the current state of some characteristic and the current state of that characteristic in an imagined world where some prior intervention did not occur, known as a counterfactual (Angrist & Pishke, 2009; Murnane & Willett, 2011). Since the counterfactual is unknown, econometrics relies on experimental evidence and natural experiments to approximate the counterfactual. This dissertation uses propensity score matching to identify a control group similar to the treatment group and following parallel trends in gentrification, followed by a difference-in-differences approach to determine the change in gentrification as a result of being targeted by an anchor institution initiative. The results are a causal estimate of the average treatment effect on the treated census tracts.

Research Questions

This study utilizes US Census panel data and a difference-in-differences approach to test the hypothesis that anchor institution initiatives are causing increased rates of gentrification in the targeted neighborhoods. Identifying intentional, targeted, and cohesive neighborhood revitalization initiatives by universities will allow for rigorous examination of the effects of anchor institutions on gentrification. Ideally this study can add to a body of literature drawing

clear connections between economic engagement initiatives of the university and effects on local communities.

To test the veracity of the claim anchor institution initiatives are gentrifying neighborhoods, I ask the following questions:

1) What is the effect of anchor institution initiatives on gentrification in the targeted neighborhoods?
2) How does the effect on gentrification vary by the type of anchor institution initiative?
3) Do neighborhoods' vulnerability to gentrification prior to treatment predict whether a university targets a neighborhood for an anchor institution initiative?

Hypothesis

Given increasing rates of gentrification and urbanization overall, the argument presented here predicts anchor institution initiatives will have an additional positive effect on gentrification, indicating increased rates of gentrification and evidence of displacement. I expected gentrification to increase through time across many sampled neighborhoods, but neighborhoods targeted by anchor institution initiatives will experience larger increases all else equal. I also expected to find anchor institution initiatives focused on real estate development and/or financial investments would have a larger effect than initiatives focused solely on human capital development or academic community engagement. Existing literature on universities and gentrification tend to emphasize physical and financial capital in their analyses (Etienne, 2012; Gregory, 2013; Walker & East, 2018), and intuitively these types of initiatives seem more likely to have direct effects on local rents and neighborhood change.

Conceptual Framework

Gentrification itself is a theoretical construct to make sense of neighborhood change. The conceptual framework undergirding the causal mechanisms of this study is based upon both

supply-side and demand-side causal explanations of gentrification. Hackworth and Smith (2001) and Smith (1998) provided summative descriptions of supply-side gentrification in which neighborhoods undergo cycles of disinvestment, thus lower property values, which attracts entrepreneurial investors and development. More recent evidence, however, indicates changing consumer preferences for urban amenities such as walkability or chic restaurants are the leading causes of gentrification (Baum-Snow & Hartley, 2016; Hwang & Lin, 2016). This demand-side explanation deemphasizes developers and centers the choices of potential residents. Under this model, gentrification is the result of wealthier individuals choosing to reside in previously low-income neighborhoods to participate in a metropolitan lifestyle. As demand grows, rents and overall costs of living increase, thus pricing out previous residents. Charles (2003) further argued residential mobility, or the capacity to make and act on residential preferences, is determined by economic capital. Therefore, the changing preferences of the White middle-class, coupled with their relative capacity for residential mobility, drive demand in urban neighborhoods, thus increasing prices.

Anchor institution initiatives' role in gentrification is causally situated within supply-side and demand-side explanations. On the supply-side, universities target low-income neighborhoods or neighborhoods experiencing disinvestment for development. One of the key motivations for universities to become engaged in economic and urban development is to recruit and retain students and faculty by improving the perceived quality of local neighborhoods (Etienne, 2012; Morris et al., 2010; Taylor et al., 2018). Universities direct efforts to specific types of neighborhoods to achieve these ends, particularly neighborhoods susceptible to gentrifying. Susceptible neighborhoods are areas with residents at high risk of displacement during economic shifts. High levels of poverty, large communities of Color, low educational

attainment, and low levels of home ownership all indicate a neighborhood is vulnerable to gentrification (Bates, 2013). Local place-based investments by municipal governments such as new parks or better schools can increase rates of gentrification (Banzhaf & Walsh, 2013), so anchor institutions can plausibly have the same effect. The supply-side assumption of this study will be tested through the third research question, asking if neighborhoods' susceptibility to gentrification predicts treatment selection.

In these efforts to recruit and retain students and faculty, universities also play a role in demand-side gentrification. Anchor institution initiatives, by leveraging university resources for neighborhood change, create environments and amenities desirable to the White middle-class. Members of the White middle-class, with high residential mobility capacities as a function of economic capital, are more likely to move to a neighborhood targeted by an anchor institution initiative than a neighborhood not targeted by an anchor institution initiative, all else equal. Herein lies the core hypothesis to be tested in this study. If this hypothesis proves tenable, that anchor institution initiatives are not building wealth of existing residents but attracting different residents and fundamentally changing the nature of neighborhoods, universities must take steps to reevaluate their motivations and actions concerning urban development.

Chapter 2: Literature Review

Higher education was originally an urban institution in Europe (Bender, 1988), and though it assumed pastoral ideals in the United States (Geiger, 2016), urbanity is once again a defining feature of modern higher education. Universities, cities, and economic development are closely connected in a complex political economy that shapes university community relations and molds neighborhood change (Etienne, 2012; Wiewel & Perry, 2008). In understanding universities as anchor institutions and their effects on neighborhoods, this chapter reviews the anchor institution literature to identify the known economic effects on local communities of universities, clarify the types of economic activity by universities that constitute an anchor institution initiative, examine the internal and external pressures on universities to adopt these strategies, and posit the causal mechanisms connecting anchor institution initiatives and gentrification. The second section frames gentrification as a theory for understanding neighborhood change and reviews recent evidence of the causal forces driving gentrification. The final section reviews the literature on higher education and gentrification, situating this study as providing generalizable, causal evidence of the effects of anchor institution initiatives on gentrification to strengthen existing arguments that universities are attracting White middle-class residents through desirable amenities.

Anchor Institutions and Economic Development

Anchor institutions provide reliable capital locally that can be further leveraged in regional development strategies (Porter, 1997, 2016). Existing studies in economics estimating the effects of universities on local markets generally examine the establishment of new universities. Several studies utilized specific historical circumstances resulting in new postsecondary organizations to identify the effects of universities on local economies. Cantoni

and Yuchtman (2014) and Liu (2015) drew from particularly dated eras to understand the role of universities and higher education in the economic development and social organization of Germany and the United States. Cantoni and Yuchtman (2014) drew from data on a uniquely feudal political economic system. Incorporated cities in the Holy Roman Empire required market grants from the emperor or a lord to host a market or festival. Multiple markets or festivals required a corresponding number of grants. The authors used issued-market grants as a proxy for commercial activity and leveraged the papal schism as an exogenous shock in the establishment of universities. Prior to the schism, most German scholars and students were in France. The Catholic church, however, split in 1309 with France proclaiming allegiance to one wing and the Holy Roman Empire the other. As German scholars and students returned to Germany, the wing to which they were pledged began to relax restrictions on new universities. These coinciding events related directly to the schism resulted in establishing several new universities. Cantoni and Yuchtman (2014) analyzed these data using a difference-in-differences strategy with the establishment of a new university near an incorporated city as the treatment variable and receipt of market grants as the outcome. The authors found approximately 40 new markets were established due to proximity to new universities, reversing a negative trend in market grant receipt. Cantoni and Yuchtman (2014) speculate the causal mechanism is universities trained students in law, bolstering local legal institutions and providing merchants with the human capital necessary to navigate increasingly complex organizations.

Liu (2015) designed a similar study in the United States using an event-study framework. Drawing largely on historical census data, Liu's (2015) identification strategy rests on the exogeneity of decision-making related to the Morrill Act of 1862. The Morrill Act established land-grant universities in every state, and the location of each university often held a degree of

randomness. To address any endogeneity in university location, Liu (2015) used a synthetic control rather than a single counterfactual. The establishment of a land-grant university increased local population density by 45% over 80 years. Additionally, though the relative size of the manufacturing sector remained unchanged, manufacturing output increased by 57% per worker. This finding is somewhat contrary to Cantoni and Yuchtman's (2014) result that markets themselves expanded, not just output, but it intuitively follows from arguments that universities foster innovation and productivity enhancements.

In a more contemporary era, Andersson, Quigley, and Wilhelmsson (2009) examined the effects of new universities in Sweden. Leveraging Swedish decentralization of higher education in 1987 that created new universities across the country, Andersson et al. (2009) used a natural experiment, comparing the efficacy of post-graduate researchers at new universities as compared to old universities, and fixed effects to isolate the effect of universities on local worker productivity and innovations as measured by patents. The authors found new universities increased productivity by approximately 4% per 100 post-graduate researchers and increased patent receipt by 2.3% per 10 research technicians. Approximately half of all productivity gains were located within 3 to 5 miles of the university. This supports Liu's (2015) findings of universities as local productivity-enhancing organizations, a claim largely supported by literature on the spillovers of human capital investments (Moretti, 2004).

Though this dissertation focuses specifically on higher education organizations, the economic effects of other types of anchor institutions offer analogous opportunities for understanding universities as actors in local development. The most commonly cited type of anchor institution other than universities are hospitals (Dubb & Howard, 2012; Hodges & Dubb, 2012). Mandich and Dorfman (2017) studied the relationship between hospitals and local labor

markets using individual-level census data and county-level hospital employment data. The analysis focused on wage premiums and job growth. The authors calculated wage premiums using multiple regression, regressing log wage on a dummy indicator of whether the individual was employed at a hospital, individual characteristics, and level of education. Mandich and Dorfman (2017) find hospitals offer high wage premiums for not only doctors but bachelor and associate degree holders as well. The authors also examined the relationship between the number of hospitals and local employment using fixed effects. County employment was regressed on county-level characteristics, the number of hospitals in the county, and year and county-level fixed effects. Job growth in non-health related sectors tended to be higher in areas with hospitals (Mandich & Dorfman, 2017). Lacking a strong identification strategy, Mandich and Dorfman's (2017) estimates should not be interpreted causally, but their results match with the anchor literature broadly.

Sports stadiums, though lacking the continuous activity of universities or hospitals, have similar spatial footprints. This distinction results in slightly different impacts on the local economy. Ahlfeldt and Maennig (2009) examined the effects on land values of opening three stadiums in Berlin, Germany. Using block-level data on 376 blocks from 1992 to 2006, the authors isolated the effect using a difference-in-differences method, with treatment being the construction of a stadium. Land value growth increased by approximately 2% following the construction of a stadium (Ahlfeldt & Maennig, 2009). Evidence on other economic markers is less encouraging, however. Coates and Depken (2009) examined monthly sales tax revenue in four cities with major college football teams in Texas from 1984 to 2008, combined with information on home games and opponents. Including fixed effects and time trends in the models, Coates and Depken (2009) found no effects on tax revenue of hosting sporting events.

Lertwachara and Cochran (2007) use an event study on city-level data to estimate the effect of professional sports teams on income. Again, there was no detectable effect, even with multiple teams. Finally, Miller (2002) used employment data on construction companies in St. Louis for regressions based on lagged dependent variables. Employment levels did not change based on stadium construction. In summation, though stadiums tend to increase rents and land values, there is no evidence of changes in income, employment rates, or tax revenues.

Military bases also have significant effects on local economies. Zou (2018) examined the effects of military personnel contractions using census data, county-level economic data, and base locations from the Department of Defense. The identification strategy utilized synthetic control groups and instrumented for base personnel contractions. The instrument was composed of the product of the initial personnel-overall population ratio and the nationwide personnel contraction. Zou (2018) found eliminating 1 military worker costs 0.68 civilian jobs in locally traded industries, but only small effects on industries traded globally. Anchor institutions thus have powerful and complex effects on their local neighborhoods and economies.

Internal and External Pressures

Though universities and other anchor institutions are not necessarily engaged in activities and initiatives developing their surrounding communities, they face pressure to do such work from various sources. Internally, university officials often support initiating or engaging with existing urban development efforts because they recognize the close connection between the city and the university and their intertwined fates (Dalton, Hajrasouliha, & Riggs, 2018; Maurrasse, 2007). Wittman and Crews (2012) and the Initiative for a Competitive Inner City (2011) described this mutual benefit as shared value, or strategies that improve the competitiveness of an organization while also benefiting local communities. Much of university concerns' relative

to local economic development deal with recruiting and retaining students and faculty (Morris et al., 2010; Taylor et al., 2018). Etienne (2012) described in detail the University of Pennsylvania's anxieties of losing their global prominence due to local conditions of poverty and crime. Administrators at the University of Pennsylvania feared high quality faculty would choose to work at other universities solely because of surrounding neighborhoods. Maurrasse (2007) also transcribed a quote from a University of Cincinnati official claiming parents pulled their children from the school after visiting campus. The university began anchor institution initiatives when administrators decided local conditions were affecting admissions.

There are also external pressures for universities to economically engage with their cities. Federal agencies such as the Department of Housing and Urban Development and the Small Business Administration urge universities to adopt development strategies, and the Bayh-Dole Act and Small Business Technology Transfer program highly incentivize universities and researchers to translate their results into marketable products for purposes of regional development (Kochenkova, Grimaldi, & Munari, 2016; O'Shea, Fitzgerald, Chugh, & Allen, 2014). Local governments also exert pressure on universities, though municipalities often lack the strong incentive capabilities of the federal government. Despite taking advantage of municipal services such as utilities and fire and police services, universities are largely exempt from paying property taxes, leading to tensions between municipalities and universities (Kenyon & Langley, 2010; Maurrasse, 2007). The tax exemption is to partially offset the externalities of higher education, but these externalities often benefit geographic areas beyond the municipality losing revenue (Kenyon & Langley, 2010). For example, universities are exempt from paying local property taxes to help subsidize education, but students do not necessarily stay within the same city of the university following graduation, so the city subsidizes a large number of

students who do not benefit the city in any way after they leave the university. Many local leaders thus lobby universities to pay payments in lieu of taxes (PILOTs) or provide other forms of local development aid.

Beyond official governance structures, community activists also pressure universities to take a leading role in urban development (Alperovitz, 2013; Hoyt, 2013; Wolf-Powers, 2010). Community benefits agreements leverage universities to invest in negotiated ways, and civic leaders exert influence as they seek methods to improve living standards. Additionally, foundations and economic development research groups write extensively about the potential of anchor institutions to facilitate local development, arguing for universities to take central roles in urban growth (CEOs for Cities with Living Cities, 2010; Crane et al., 2010; Initiative for a Competitive Inner City, 2011; Morris et al., 2010). The Democracy Collaborative in particular is one of the leading organizations pushing for universities to adopt anchor institution missions, convening multiple universities to evaluate and discuss their anchor strategies and partnering with the Coalition of Urban and Metropolitan Universities to disseminate findings (Democracy Collaborative, 2018).

Not all external pressures are supportive of university-led development, however. Community organizers and residents are often suspicious of university intentions as specific projects are emphasized over others or university investments are inconsistent (Etienne, 2012; Wolf-Power, 2010). The concept of shared value may be built on ideas of mutuality, but it does not specify the differential costs or benefits associated with development. There are also tensions inherent to the transitory student model of higher education. As enrollment grows, more students move to be close to campus and live in off-campus housing. Residents must deal with the noise, higher rents, and traffic of students (Smith, 2008: Smith & Holt, 2007). Conversely, university

expansion to accommodate more on-campus housing also meets resistance as people often view universities as greedy, cloistered organizations (Maurrasse, 2007; Rooney & Gittleman, 2003). Such concerns rarely warrant more than cursory mentions in literature arguing for anchor institutions as key components of economic growth and urban development.

Anchor Institution Initiatives

The literature on anchor institutions points to four major types of capital universities possess that can be invested in regional economies: (a) financial capital, (b) physical capital, (c) intellectual capital, and (d) human capital (Dalton et al., 2018; Maurrasse, 2007; Morris et al., 2010; Walker & East, 2018). Financial capital is the money held by universities either as cash-on-hand or liquid assets. Physical capital is the buildings, roads, and other infrastructural construction necessary for university operation (Dalton et al., 2018). Intellectual capital is the capacity for productivity-enhancing innovation. Finally, human capital is additional productivity due to investments – predominantly educational – in individuals' abilities (Arteaga, 2017; Clark & Martorell, 2014). Anchor institution initiatives leverage these resources through various methods described below and strategically invest them to facilitate neighborhood change.

Financial capital. Universities leverage financial capital through three main types of anchor institution initiatives. First, housing programs aim to improve housing stock and raise the market value of homes in a neighborhood (Appleseed, 2003; Webber & Karlström, 2009). Strong housing markets are generally used to incentivize higher income residents and faculty to live in specific neighborhoods (Etienne, 2012; Maurrasse, 2007). The University of Pennsylvania (Penn) and Syracuse University offer mortgages backed by the university to faculty who live in specific neighborhoods, and both universities also purchased and renovated property for resale within those neighborhoods (Etienne, 2012; Hodges & Dubb, 2012; Wittman & Crews, 2012).

Second, anchor institutions may prioritize local businesses when purchasing goods and services (Hodges & Dubb, 2012; Initiative for a Competitive Inner City, 2011; Webber and Karlström, 2009; Wittman & Crews, 2012). Not only can purchasing have direct impacts on local businesses, housing endowments in local banks can have more indirect effects as local financial institutions gain strength (Dubb & Howard, 2012). Indiana University-Purdue University Indianapolis, Penn, Yale University, and Lemoyne-Owen College all mandate some percentage of annual purchasing must be local (Hodges & Dubb, 2012). There is some question, however, about the degree to which economic gains from purchasing are locally sourced growth versus a transfer of jobs from other regions (Appleseed, 2003; Dubb & Howard, 2012).

The final type of anchor institution initiative that utilizes financial capital is PILOTs. Whereas local purchasing is payments made to private sector organizations, PILOTs are payments to municipal governments to offset revenue lost to the property tax exemption. There is no comprehensive national tracking of PILOTs, but nonprofits made PILOTs to municipal governments in at least 117 municipalities and 18 states, generally making up about 0.5% of the municipalities' total budgets (Kenyon & Langley, 2010). PILOTs are often negotiated ad hoc between universities and cities, and they lack a strong legal precedent for enforcement (Kenyon & Langley, 2010). Additionally, higher PILOT rates tend to discourage non-profit activity. Fei, Hines, and Horwitz (2016) explored the relationship between PILOT rates and property taxes using a Nash bargaining game, testing the hypothesis that higher property taxes are associated with higher PILOT rates. By regressing PILOT rates on local property taxes and a vector of other town characteristics, Fei et al. (2016) found a 1 percentage point increase in PILOT rates for each 5 percentage point increase in property taxes. Fei et al. (2016) also found higher PILOT rates were associated with lower property ownership, fewer assets, and lower revenues for

nonprofits. Higher PILOT rates may deter nonprofit activity, but this does not necessarily outweigh the problem that local municipalities are subsidizing universities without fully reaping the rewards. If universities are serious about urban development, strong local governments are essential.

Physical capital. Real estate development is perhaps the most visible component of anchor institution initiatives in urban development. Campus planning occurs within a complex political economy that is instantiated at the campus, campus-community interface, and campus district levels (Dalton et al., 2018). Issues such as aesthetics, utility, and sustainability must all be met by the buildings and overall campus design. To incorporate economic development further complicates the decisions to be made, but many campuses are attempting to do so (CEOs for Cities with Living Cities, 2010). Johns Hopkins sold approximately 100 properties to a development nonprofit to be transformed into mixed-use housing and biotechnology labs (Initiative for a Competitive Inner City, 2011). Arizona State University and the University of Washington both built entirely new campuses and reshaped downtown neighborhoods (CEOs for Cities with Living Cities, 2010; Dalton et al., 2018). Other urban universities are also expanding intentionally to achieve larger goals of economic development, such as Georgia State, Clark University, Worcester Polytechnic, and Northeastern University (CEOs for Cities with Living Cities, 2010; Dalton et al., 2018).

Intellectual capital. Some anchor institution initiatives employ the expertise and discovery capabilities of students and faculty to foster competitive business hubs through technology transfer or business incubators (Appleseed, 2003; Maurrasse, 2007; Webber & Karlström, 2009; Wittman & Crews, 2012). Technology transfer was historically operationalized as patents for marketable discoveries transferring from faculty and universities to existing firms

specializing in the relevant market (Etzkowitz, 2014). More recently, however, technology transfer increasingly takes the form of firm creation (Etzkowitz, 2014; Geiger & Sá, 2005). In this model, faculty create new firms based on their discoveries. Faculty own and operate their own firms, and universities receive some percentage of royalties or hold some degree of equity (Wright, Lockett, Clarysse, & Binks, 2006). Productivity gains through university innovation, while dispersed somewhat spatially, are primarily concentrated within several miles of the university (Andersson et al., 2009).

Kantor and Whalley (2014) isolated the knowledge spillovers from universities using an instrumental variables strategy. Drawing from federal data on universities and national stock exchange data from Standard & Poor, the authors interacted initial university endowment values with stock exchange shocks to estimate university budgets and instrument for university activity. Local wages in noneducation sectors drawn from census data were then regressed on the instrument to estimate spillovers from the university. Kantor and Whalley (2014) found a 10% increase in higher education spending increased noneducation sector wages by 0.8%. The sectors that experienced the highest increases in wages tended to rely on university patents, overlap with university labor markets, or require postsecondary degrees for their positions.

A strategy to both aid faculty in commercializing their research and help students create new firms is to establish business incubators. Business incubators facilitate commercialization and innovation through three main methods (Gulbranson & Audretsch, 2008). First, they provide seed funding for new firms, helping them survive the early years in which most firms fail. Second, incubators serve as an advising resource for students and faculty to overcome knowledge deficits. Faculty who hope to commercialize research or students new to the field often are not knowledgeable about the intricacies of the private market. Third, incubators

connect students and faculty to relevant industry partners, fostering the social capital needed for successful firms. University business incubators can operate using one, all three, or any combination of these strategies (Gulbranson & Audretsch, 2008).

Academic engagement can also apply faculty expertise for purposes of community and economic development (Hodges & Dubb, 2012; Initiative for Competitive Inner Cities, 2011; Rooney & Gittleman, 2003; Wittman & Crews, 2012). Academic engagement is composed of projects usually discussed under the label of community engagement or engaged scholarship (Hodges & Dubb, 2012). Doberneck, Glass, and Schweitzer (2010) categorize academic engagement into four typologies: (a) service learning, (b) engaged research, (c) consulting activities, and (d) commercialized research, which encompasses the activities discussed above such as technology transfer. While academic engagement can be more difficult to coordinate and target to specific neighborhoods due to the reliance on individual faculty-community partnerships, it can be extraordinarily cost effective compared to other anchor institution initiatives (Hodges & Dubb, 2012). Large public universities, particularly land-grants, tend to emphasize this type of engagement, but targeted anchor institution initiatives at schools such as Penn or Syracuse use academic engagement to supplement larger projects leveraging financial or physical capital (Hodges & Dubb, 2012). For example, Syracuse led an anchor institution initiative called the Near Westside Initiative to develop a poor neighborhood near the university. A substantial portion of the initiative involved buying and renovating vacant homes and warehouses, but more than 350 students also participated in the initiative through service learning courses that focused on various aspects of the neighborhood such as designing parks, fundraising for local projects, or identifying potential homes to receive mini-grants from the university (CEOs for Cities with Living Cities, 2010).

Human capital. Universities invest their own financial, physical, and intellectual capital in anchor institution initiatives for local economic development. Universities also invest various resources in local communities' human capital to achieve the same ends. Such investments can include partnerships with health organizations, support for local K-12 school systems, prioritizing local applicants in hiring decisions, crime reduction, or offering public events to foster cultural vitality (Appleseed, 2003; Hodges & Dubb, 2012; Initiative for Competitive Inner Cities, 2011; Maurrasse, 2007; Rooney & Gittleman, 2003; Webber & Karlström, 2009; Wittman & Crews, 2012). Many universities have partnerships with local health organizations or schools, and some even have their own hospitals, clinics, or charter schools (Hodges & Dubb, 2012). For example, North Carolina State University created a community counseling center in 2015, housed in a location off-campus to be more accessible to community members (Grimmett, Lupton-Smith, Beckwith, Englert, & Messinger, 2018). Whereas health and K-12 partnerships, local hiring, and cultural events are directly tied to specific actions, crime reduction is often more difficult to achieve for universities, but improved lighting or partnerships between municipal police and campus police are steps universities took in the past (Etienne, 2012). There are other examples of initiatives to improve human capital in surrounding neighborhoods, but these are the most commonly cited in the anchor literature.

Initiative Assessments

The futures of anchor institution initiatives are far from certain. The title of Hodges' and Dubb's (2012) book is *The Road Half Traveled*, referring in part to the lack of systematic assessment or sharing of best practices that accompanies other trends in higher education. Rutheiser (2012) responded to the book by saying the title was likely overly optimistic, extending the metaphor to claim, "the road ahead exists only as dotted lines on a map charting

multiple possible rights of ways" (para. 6). Given the complex political economy of universities and cities, Rutheiser's assessment is apt, and it begins to hint at the larger question advocates of university-led urban development must face: are anchor institution initiatives appropriate strategies for democratizing economies (Iuviene, Stitely, & Hoyt, 2010)?

The answer may be more complicated than most anchor literature assumes. Morris et al. (2010) are wary of the domineering political and economic influence anchor institutions hold in their cities, and Walker and East (2018) are explicitly skeptical anchor institution initiatives are building local capacity as opposed to contributing to gentrification processes. The reality is very little work to date attempts to distinguish whether increases in neighborhood vitality measures are due to improvements in community members' lives or because community members were replaced by higher income residents. These potential gentrification processes are occurring at a time when universities and coalitions are searching for ways to assess their impact (Democracy Collaborative, 2018). As universities develop assessment tools and design anchor institution initiatives, evidence on the effects of prior initiatives on gentrification is vital to inform future, equitable development efforts.

Gentrification

Gentrification is the displacement of low-income communities by an in-migration of high-income residents, accompanied by economic, physical, and social upscaling (Marcuse, 2015). Classic causal theories of gentrification offer two explanations: supply-driven and demand-driven gentrification (Ley, 1986; Smith, 1982). Supply-driven gentrification, particularly as delineated by Hackworth and Smith (2001), emphasizes cyclical markets and depressed property values that attract investors and developers. Hackworth and Smith (2001) identified three different historical waves of gentrification widely used to conceptualize physical

capital and urban renewal. The first wave, beginning in the 1950s and lasting until the economic recession in 1973, saw irregular gentrification in select cities. State-led initiatives to reverse trends of disinvestment in inner cities led to gains in physical capital among upper class investors and residents. Hackworth and Smith's (2001) second wave began in the late 1970s, following the recession. During this wave, gentrification grew into a global phenomenon. Wealthy investors began purchasing real estate at prices that had yet to fully recover, and artists and young professionals started moving into low-income neighborhoods to take advantage of lower rents. The third wave began in the mid-1990s, characterized by heavy investment by large corporations, little activist resistance, and implicit state support through disinvestment in public housing and other welfare programs and investment in business zones and entrepreneurial programs. Supply-driven conceptualizations of gentrification chart these periods of investment, disinvestment, and gradual dismantling of the federal role in housing and welfare, tying these trends to neoliberal reforms and accumulation of capital (Harvey, 2002). This corporate expansion and development needed a justification to displace communities. By painting predominantly minority resident neighborhoods as in perpetual crisis, dilapidated, blighted, and poverty-stricken, developers advertised gentrification as urban renewal or urban revitalization, a far cry from displacement and destruction of existing communities (Goode & Schneider, 1994).

While the supply-driven explanation is intuitively appealing and maps well onto the economic cycles of the latter half of the 20th century, recent evidence suggests the demand-driven explanation is a more accurate predictor of gentrification (Baum-Snow & Hartley, 2016; Hwang & Lin, 2016). The demand theory argues preferences of the middle-class have changed to value amenities associated with urban neighborhoods as opposed to the faux bucolic of suburbia (Lloyd, 2006; Zukin, 2016). The cyclical market predictions of supply-driven gentrification

would expect slowed rates of gentrification in the beginning of the 21st century, followed by acceleration after the 2008 financial crisis. During this period, however, gentrification accelerated to previously unseen rates and maintained these trends through and beyond 2008 (Hwang & Lin, 2016), indicating macroeconomic trends were not the driving force. Rather than national economic conditions dictating local upscaling and displacement, rates of gentrification continued unabated, so a causal theory beyond supply-side gentrification is necessary. Empirical evidence largely suggests the causal explanation to be consumer demand. The availability of high-paying, high-skilled jobs is growing in cities, attracting individuals with large amounts of human and financial capital (Baum-Snow & Hartley, 2016; Edlund, Machado, & Sviatschi, 2015). As knowledge economy jobs become more prevalent in downtown areas, a preference for living near employment is also growing (Brown-Saracino, 2004). Amenities also play a role in attracting gentrifiers to urban neighborhoods. The attraction of amenities is constituted and indicated by the increase in amenities in downtown areas (Baum-Snow & Hartley, 2016) as well as the increased social value placed on certain amenities by high socioeconomic status residents, such as theaters, museums, walkability, or perceived racial and/or cultural diversity (Anderson & Sternberg, 2012; Brown-Saracino, 2004; Couture & Handbury, 2017).

Spatial assimilation theory further elucidates demand-driven gentrification and the role of race. This theory argues housing and overall neighborhood quality is a function of the economic capital and cultural preferences held by residents, so the systemic economic oppression of people of Color logically resulted in residential segregation (Charles, 2003; Clark, 1986). Spatial assimilation was largely used to explain out-migration from poor neighborhoods as people of Color became more socially mobile, but Pearman and Swain (2017) slightly reinterpreted the theory to be less deterministic and applied to gentrification in a manner that more accurately

tracks with existing data on capital and displacement. Rather than economic capital structuring neighborhood quality, Pearman and Swain (2017) place residential mobility as a function of economic capital, thus individuals with a higher socioeconomic status will have the capacity to move to neighborhoods that match their preferences. Gentrification, therefore, is a result of the changed preferences of the White middle-class for urban amenities and their relative capacity for residential mobility. The core hypothesis of this study is anchor institution initiatives create amenities and environments desirable to the White middle-class, increasing rates of gentrification in the targeted neighborhoods.

Anchor Institution Initiatives and Gentrification

The mechanisms connecting anchor institution initiatives and gentrification are simultaneously opaque and clear. Walker and East (2018) argued anchor institution initiatives are little more than neoliberal co-optations of the language of community engagement to justify schemes of prestige-maximization and marketability. Even if intentions are magnanimous, the power structures are too favorable to universities and the White middle-class for anything but gentrification as the logical conclusion (Walker & East, 2018). This political economy argument does not specify how these power structures are operationalized across multiple cases of universities, but it does identify the foundational problems of anchor institution initiatives and neighborhood change.

Beyond the amorphous political economy critique, the specific types of initiatives identified in this literature review are tied to gentrification. Housing programs, such as employer assisted housing or renovations of vacant properties, enhance demand and attract highly educated residents (Webber & Karlström, 2009), especially in cases where universities incentivize faculty to live in certain neighborhoods. University-operated or partnered schools are often perceived to

be of a greater quality than other schools, leading middle-class families to move within the school's catchment area and increase housing prices (Etienne, 2012). Even local hiring, a seemingly excellent strategy to build community wealth, is susceptible to acting as a catalyst for gentrification. Relatively high paying university jobs such as faculty or mid- to upper-level administration are conducted through regional, national, or even global searches and hiring processes, recruiting talent with few geographic constraints. Local hiring largely only applies to minimum wage jobs or comparable positions (Hyatt, 2010).

Real estate development also causes significant tensions as universities expand to meet growing student demand. Universities may strive for a degree of shared value by prioritizing urban development in their decisions, but rhetoric of shared value by the city elite may overshadow community concerns of displacement and disempowerment (Dalton et al., 2018; Walker & East, 2018). Many public-use buildings intended by universities to stimulate cultural vitality or fill a niche in amenities are beyond the means of residents or discordant with their daily experiences (Etienne, 2012). For example, Penn planned to demolish a McDonald's near the campus and replace it with a mixed-use building with multiple restaurants that fit more with the local and artisanal food preferences that are expected in metropolitan regions. Residents of West Philadelphia, who watched Penn make major retail changes to the neighborhood through the years, felt this McDonald's was one of the few spaces they maintained ownership as a community. Community activists organized and convinced Penn to leave the McDonald's alone in one of the only major victories of West Philadelphians against Penn (Etienne, 2012). Ideas of blight, culture, and land use priorities are heavily determined by class. University planners and the White middle-class often fail to differentiate between their cultural knowledge and what they know is beneficial for a community.

Universities and Gentrification

Existing empirical literature on universities and gentrification is scant and to my knowledge entirely qualitative or historical. Taylor et al. (2018) provide an historical overview of university civic engagement and community displacement in post-WWII United States. They argue the movement from an industrial economy to the knowledge economy was driven by the Cold War, which centered universities as essential components of cities and marginalized communities of Color. As universities expanded to meet the scientific needs of the military-industrial complex and later the needs of global economic competitiveness in the late 20th and early 21st centuries, racialization and urban renewal provided the justification for destroying existing communities to create vibrant university neighborhoods (Taylor et al., 2018).

Most studies of higher education and gentrification are case studies of complex relations between communities and universities. Etienne (2012) interviewed Penn officials and West Philadelphian residents to compare perceptions of Penn's economic impact through anchor initiatives. Somewhat in contrast to Taylor et al.'s (2018) conclusion, Etienne (2012) claimed Penn's effects on West Philadelphia were impossible to isolate from broader national trends of urbanization. This impossibility, however, was based on general observations of crime reduction and higher home valuations that vaguely mapped onto similar national trends. Rigorous quantitative analysis could easily control for such endogenous factors. Walker and East (2018) and Page and Ross (2016) both examined the Auraria Higher Education Center in Denver, a joint campus of three separate schools that displaced a largely Latinx community in its construction. Walker and East (2018) concluded, much like Taylor et al. (2018), the displacement was an inevitable result of the logics of neoliberalism as the White middle-class searched for sources of capital accumulation. Page and Ross (2016) took a less deterministic approach, arguing local

Chicano movements exerted continuous pressure on the development that did not halt the project but succeeded in shaping it to a degree. Another case study of Columbia University's real estate development in Manhattanville also argued the expansion was part of a larger political economic project of attracting the White middle-class to build a more attractive university neighborhood (Gregory, 2013).

Hyatt (2010) and Rich and Tsitsos (2016) utilized ethnography to study Temple University and an arts district, respectively. Hyatt (2010), like most of the case studies, argued Temple invested heavily in its local neighborhood to create amenities preferred by gentrifiers. The arts district examined by Rich and Tsitsos (2016) was a partnership of several universities and community development corporations in Baltimore. Ironically, the environment and amenities attracted higher income residents, pricing out the very artists the district was meant to highlight.

Though less directly relevant to the discussion of anchor institution initiatives, there is a relatively vibrant literature in geography on the concept of studentification, primarily based in the United Kingdom. Studentification is a form of gentrification in which the gentrifiers, rather than high income individuals searching for housing that matches their preferences, are students looking for housing near their university (Smith & Holt, 2007). As higher education enrollment expanded, more students began searching for off-campus housing, fundamentally altering many neighborhoods in shifting, transitory ways (Duke-Williams, 2009; Hubbard, 2009; Sage, Smith & Hubbard, 2013; Smith, 2008). Developing on-campus housing can be equally destructive, however, as students abandon their off-campus neighborhoods and leave ghost towns behind (Kinton, Smith, & Harrison, 2016).

There is a severe lack of studies that measure the effect of anchor institution initiatives on gentrification in a generalizable way. A strong identification strategy that isolates the effects of university initiatives could counter Etienne's (2012) concerns about distinguishing between local impacts and national trends. This study also will support or refute the arguments made in the literature that universities are creating amenities that are attractive to the White middle-class, thus contributing to gentrification. The type of evidence, however, will be generalizable across cases in a way the case studies and ethnographies are not. Such a study will serve as strong evidence as to the effect of university-led urban development on neighborhood change to better inform universities and community activists as they engage and grow with cities.

Chapter 3: Methods

As universities become increasingly engaged in urban development, rates of gentrification are accelerating. The role of universities as active participants in the spatial organization of cities is understudied, particularly how university anchor institution initiatives may be contributing to gentrification. This dissertation tests the hypothesis anchor institution initiatives have a statistically positive effect on gentrification, using a difference-in-differences method to estimate the effect. Drawing from decennial census data from 1970 to 2010 of census tracts targeted by anchor institution initiatives and control group tracts within the same cities, the estimates offer strong evidence as to the effects of anchor institution initiatives and can guide universities as they continue to engage with surrounding communities.

Given the complexity of neighborhood change as a social and economic process, measuring gentrification is not simple. A causal analysis of gentrification must address three core challenges. First, proxying for gentrification with a single variable, such as housing values or average income, will almost assuredly result in bias and fail to capture the essence of gentrification as a fundamental shift in neighborhoods' overall character. Second, the effects of the treatment variable must be isolated from the host of confounding factors such as overall economic growth, housing markets, and urbanization. Finally, longitudinal analyses using census data must standardize the geographic units across time to correct for the official redrawing of tracts that occurs with every decennial census. I address each of these challenges in turn below.

The first concern, creating an outcome variable that sufficiently captures a process of gentrification, is resolvable using a form of composite variable made up of various measures associated with gentrification. Pearman and Swain (2017) standardized housing prices and percentage of White college-educated residents into a single composite variable, and Bardaka,

Delgado, and Florax (2018) utilized four separate proxy variables, looking for common trends in their discussion. Another approach that yields more interesting results is to utilize principle component analysis on several variables to derive a new outcome variable that captures the common variance within the factors, in this case gentrification (Baker & Lee, 2019; Ley, 1986; Meligrana & Skaburskis, 2005). In this dissertation, I use the latter method of principle component analysis.

The second challenge is an econometric issue. A proper identification strategy will isolate confounding variables. Recent studies utilized longitudinal regressions to estimate effects of different forms of public investment on gentrification. Baker and Lee (2019) examined the effects of transportation development on gentrification, regressing a neighborhood change index derived from principle component analysis on a series of covariates and an indicator of whether a public transportation station was present. Pearman and Swain (2017), in a study of the effects of school choice policies on gentrification, included fixed effects at the school and neighborhood level to further account for time-invariant characteristics. Bardaka et al. (2018) chose to utilize a difference-in-differences (DiD) model in their study of the effects of transportation development on gentrification. DiD is a form of natural experiment that does not require treatment and control groups be entirely equal in expectation but instead relies upon assumptions the treatment and control group exhibit parallel trends in the variables of interest. For this method, the researcher collects pre-treatment and post-treatment data for all treatment and control groups. The first difference is calculated within groups, indicating the change through time each group experienced. The second difference is calculated between the treatment and control groups, subtracting the control group's change through time from the second group's change through time. This value indicates the change in the treatment group at the time of the treatment *relative*

to the change in the control group at the time of the treatment. If both groups were following parallel trends in the outcome variable prior to treatment and would have continued along these same trends without treatment, DiD will provide a causal estimate of the treatment. DiD is a more rigorous identification strategy than simple longitudinal regressions because it more fully accounts for potential confounding factors such as citywide economic conditions or municipal policies (Angrist & Pischke, 2009; Murnane & Willett, 2011) and is the empirical strategy utilized in this dissertation.

The final concern of geographic standardization is more complicated, but several databases developed using proprietary software exist that standardize previous census data to 2010 tracts. This dissertation utilizes the Longitudinal Tract Database (LTDB) as developed by Logan, Xu, and Stults (2012). Couture and Handbury (2017) and Baker and Lee (2019) use the LTDB in their causal analyses of gentrification. The LTDB contains census data from 1970 to 2010, aggregated to boundaries as delineated in the 2010 census (Logan, Xu, & Stults, 2014). The most basic method for standardizing tracts is to adjust the population estimates proportionally based on the share of land that was gained or lost. The LTDB takes an additional step of accounting for whether the land that changed tracts was populated by linking data indicating if the land is covered by water, resulting in lower estimation errors compared to other databases that only adjust based on the share of land (Logan, Stults, & Xu, 2016). The National Historical Geographic Information Systems (NHGIS) standardized database uses a similar method as the LTDB with more adjustments such as road networks in 2010, so the NHGIS has stronger estimates overall than the LTDB, but the LTDB is generally more accurate in urban areas experiencing rapid growth (Logan et al., 2016). Therefore, the LTDB is more accurate and preferable to other available standardized databases for the purposes of this dissertation.

Data

The data are collected through the decennial census and the American Community Survey (ACS). The census historically was composed of short-form and long-form surveys. The federal government sent the short-form survey to every known household in the United States asking for basic demographic and household information. The long-form survey was sent to 1 out of every 6 households, asking more detailed socioeconomic information to provide estimates for the larger population. This dissertation uses the long-form survey data from 1970, 1980, 1990, and 2000. In the 2010 decennial census, the long-form survey was replaced by the ACS. The ACS began in 2005 and collects data on a rolling basis, producing 5-year estimates. Therefore, data from 2010 are composed of the ACS's 2008-2012 5-year estimates. The LTDB standardizes all data to fit within 2010 geographic boundaries.

Sampling Procedure

The intervention to be studied is intentional, targeted, and cohesive neighborhood revitalization efforts by universities: (1) intentional, in that a clear and explicit decision, either in writing or through some formal announcement, was made at a particular time that the university would become productively engaged in neighborhood revitalization, (2) targeted, in that specific neighborhoods were selected to receive treatment and others were not, and (3) cohesive, in that individual development/revitalization projects are guided by an overarching plan. I identified revitalization efforts through a three-step process. First, I identified potential universities by cross-referencing university members of the Coalition for Urban and Metropolitan Universities (CUMU) and the Coalition for Urban Serving Universities (USU) with universities that received the Carnegie Classification for Community Engagement and/or were named to the President's Higher Education Community Service Honor Roll. Universities that are CUMU/USU members

and recipients of the Carnegie Classification or President's Honor Role are potential cases. CUMU and USU are member organizations dedicated specifically to urban universities, and both organizations demonstrated interest through sponsored publications and reports in university-led urban development (Friedman, Perry, & Menendez, 2014; Sladek, 2019). The Carnegie Classification for Community Engagement is based upon a voluntary application demonstrating a university's commitment to curricular engagement and place-based outreach and service, and the President's Honor Roll was an award for exemplary service and campus community partnerships granted to universities from 2008 to 2015 from the Corporation for National and Community Service (AmeriCorps & Senior Corps, 2015). Hodges and Dubb (2012) similarly relied upon the Carnegie Classification and the President's Honor Roll to demonstrate their selected cases were engaged universities.

The second step of the sampling process is to identify any anchor institution initiatives at the universities. Through overview of university websites and official announcements, I searched for intentional, targeted, and cohesive neighborhood revitalization efforts. Key terms to search included engagement, outreach, town-gown, economic development, urban development, revitalization, neighborhood, initiative, and anchor institution. If these terms do not result in matches, I searched university organizational charts to find the chief engagement officer if such a position existed. This then allowed me to find the relevant office and search announcements from this office.

The third step of the sampling process augmented the initiatives sampled through steps one and two by including initiatives identified in the literature and by foundations supporting anchor institution work such as the Democracy Collaborative or CEOs for Cities. For example, Syracuse University's anchor institution initiatives are commonly cited by these foundations and

fall within my selection criteria of intentional, targeted, and cohesive, but Syracuse would not be included through the first two steps of the sampling process as it is not a member of USU or CUMU. To avoid problems with clustering inherent to the difference-in-differences method, the sample required at least 25 cases.

Anchor institution initiatives by universities across the country thus formed the basis of the treatment group. Using secondary sources such as university websites or media outlets, I delineated the spatial areas where the anchor institution initiative was focused, identifying the boundaries of the area being targeted by the initiative. I then identified the census tracts corresponding to these boundaries using the U.S. Census Bureau's (n.d.) American FactFinder map tool, which overlays tracts and street maps. These initiatives are unlikely to align perfectly with census tracts, but a high degree of spillover is to be expected from urban development. Spillover refers to situations in which effects of a treatment disseminate to spatial areas not specifically targeted by the treatment. If anchor institution initiatives have significant effects on neighborhoods, housing prices and resident characteristics are likely to change in areas near the targeted area as well, so imperfect estimations via tracts still capture relevant and interesting data. I selected comparable tracts from within the same core-based statistical area (CBSA) to serve as a control group. CBSAs are official U. S. Census designations that roughly encompass entire metropolitan areas, not just the legal boundaries. Each CBSA is composed of at least one area with more than 10,000 people and all adjacent areas with heavy commuting between the two areas (United States Census Bureau, 2016). Boundaries of CBSAs are delineated by counties or the state's equivalent. Keeping the CBSA of control groups consistent with the treatment groups further controls for citywide factors such as municipal policy or overall economic and spatial organization trends. Control tracts were selected through a propensity-score matching procedure

in which a logistic regression predicts whether a tract receives treatment (i.e., targeted by an anchor institution initiative). The regression is modeled as:

$$Anchor_i = \beta_0 + \mathbf{X}_{ijkt}\mathbf{\Gamma} + \varepsilon_{ijt}$$

in which $Anchor_i$ is a dummy variable equal to 1 if tract *i* was targeted by an anchor institution initiative, and **X** is a vector of covariates related to gentrification and possibly treatment selection. These covariates are pre-treatment log median home value, pre-treatment log median rent, pre-treatment percentage of the population that identifies as White, pre-treatment percentage of the population over the age of 25 with a 4-year degree, pre-treatment log income per capita, pre-treatment percentage of the population in poverty, pre-treatment percentage of the population employed in a professional field, pre-treatment log population density, distance to the nearest university conducting an anchor institution initiative, pre-treatment percentage of owner-occupied housing, pre-treatment percentage of vacant lots, pre-treatment percentage of multi-family units, pre-treatment percentage of structures more than 30 years old, pre-treatment percentage of households in the neighborhood for 10 years or less, pre-treatment percentage of residents 17 and under, and pre-treatment percentage of residents 60 and older. The regression computes a propensity score for each tract indicating that tract's propensity to be targeted by an anchor institution initiative. Each tract that receives treatment is then paired with the tract that did not receive treatment that has the nearest propensity score. For the purposes of this analysis, paired tracts were all calculated to also be within the same city. All paired tracts that did not receive treatment form the control group.

Variables

The dependent variable is a constructed gentrification index composed of multiple measures of gentrification. Though this variable is difficult to interpret in itself, it allows for

comparisons within and across neighborhoods in a meaningful way. Independent variables include an indicator of whether the neighborhood was targeted by an anchor institution initiative at the time of the observation, indicators of the year of the observation, and a series of covariates to enhance precision of the estimates. This specification allows for plausibly causal analysis as the natural experiment should control for potentially confounding, unobserved variables. The data as a whole, at the very least, provide interesting observations on the relationship between anchor institutions and gentrification.

Dependent variable. Gentrification is a vastly complex topic, so a single observable proxy variable, such as housing values, is inadequate to capture broader neighborhood change. Following from the definitions of gentrification as investment in neighborhoods and displacement of residents, contemporarily driven by the changing preferences of the White middle-class, I build upon the principle component analysis method utilized by Ley (1986), Meligrana and Skaburskis (2005), and Baker and Lee (2019) to construct a gentrification outcome variable. This method distills multiple observable variables that compose gentrification into a single summative variable. Baker and Lee (2019) include housing values, rent, percentage of the population that is White, percentage of the population over the age of 25 with a 4-year degree, income, poverty rate, and percentage of the population employed in a professional field. These variables will also form the basis of the analysis in this study as they adequately represent the upscaling, displacement, and racial dynamics of gentrification as conceptualized here. Housing values and rent capture the economic uppricing and physical upgrading of Marcuse's (2015) definition. The remaining variables (percentage of the population that is White, percentage of the population over the age of 25 with a 4-year degree, income, poverty rate, and

percentage of the population employed in a professional field) proxy for the in-migration of high-income residents and the displacement of low-income residents.

The variables are analyzed through principle component analysis without factor rotation, extracting only one factor. The variables are then standardized and weighted based on the component loading of the principal component analysis. Each of these transformed variables are then added together into a composite variable. The resulting value serves as an observable gentrification variable in which increases indicate increases in gentrification (Baker & Lee, 2019). For the purposes of this study, the variables are constructed at the tract level, so all values refer to a census tract. Housing values are the median home value across a single tract, rent is the median rent of the tract, race is measured by the percentage of the population that is White across the tract, education level is the percentage of the population within the tract with a 4-year degree, income is the per capita income of the tract, poverty rate is the percentage of the population within the tract under the poverty level, and professional employment is the percentage of the population within the tract employed in a professional field. Census tracts are relatively stable geographic units, generally following identifiable physical features, that are composed of between 1,200 and 8,000 people (U.S. Census Bureau, 2018).

Independent variables. The treatment variable and coefficient of interest is a binary indicator of whether the tract was targeted by an anchor institution initiative or not at time *t*. Congruent with other difference-in-differences analyses with treatments across multiple time periods (Goodman-Bacon, 2018), tract level fixed effects and binary time variables indicating the year of the observation are also included. Tract level fixed effects control for time-invariant variance specific to neighborhoods, possibly due to government policies or prominent industries in the region. Year fixed effects control for variance common across all observations but varying

through time, thus natural trends in gentrification are controlled for. Covariates to enhance precision are also drawn from the LTDB. Treatment is not determined randomly, and though the propensity-score method attempts to select control neighborhoods as similar to treatment neighborhoods as possible, endogenous treatment selection may still occur. To further control for possible selection bias and other potential observable variables endogenous to anchor institutions and gentrification, I included the same covariates used in the sampling process, namely population density, distance to the nearest university conducting an anchor institution initiative, percentage of owner-occupied housing, percentage of vacant lots, percentage of multi-family units, percentage of structures more than 30 years old, percentage of households in the neighborhood for 10 years or less, percentage of residents 17 and under, and percentage of residents 60 and older.

Empirical Strategy

To isolate the effects of anchor institution initiatives on gentrification, I utilized a DiD framework in which the presence of anchor institution initiatives targeting specific neighborhoods acts as the treatment variable affecting gentrification. DiD leverages plausible exogenous variation in the precise timing of treatment to create a natural experiment. Two groups are created within the sample: (a) the treatment group, composed of neighborhoods targeted by anchor institution initiatives, and (b) the control group, composed of comparable neighborhoods in the same cities. The difference within-neighborhood pre- and post-treatment is found first, then those results are differenced across treatment and control neighborhoods. The results thus provide the effect of the treatment relative to the control neighborhoods.

Table 1:

Dependent and independent variables

Dependent variable	**Independent variables**
Log median housing values	*Anchor institution initiative*
Log median rent	*Post-treatment*
% population white	*Log population density*
% population >25 with 4-year degree	*Distance from nearest university conducting an anchor institution initiative*
Per capita income	*% owner-occupied housing*
% in poverty	*% vacant lots*
% population employed in professional field	*% multi-family units*
	% structures > 30 years old
	% households in neighborhood for <10 years
	% residents <17 years old
	% residents >60 years old
	Tract and year fixed effects

The first and primary specification becomes:

$$\theta_{it} = \beta_0 + \beta_1(Anchor_i \times Post_t) + \alpha_i + \alpha_t + \varepsilon_{jt}$$

in which θ is the gentrification variable for tract *i* in year *t*, $Anchor_i$ is a dummy variable equal to 1 if the neighborhood is in the treatment group, $Post_t$ is a dummy variable equal to 1 if year *t* is after the implementation of the anchor institution initiative, α_i is tract level fixed effects, and α_t is year fixed effects. β_1 is the estimate of interest, indicating the effect of the anchor institution

initiative on the gentrification trend relative to the control neighborhoods. Standard errors are robust and clustered by city across all specifications.

The second specification adds covariates to increase precision of the estimates and test the robustness of DiD as an identification strategy. Included covariates are observable characteristics of the neighborhoods that may affect both gentrification and treatment selection. This is modeled as:

$$\theta_{it} = \beta_0 + \beta_1(Anchor_i \times Post_t) + \alpha_i + \alpha_t + \mathbf{X}_{ijt}\mathbf{\Gamma} + \varepsilon_{ijt}$$

in which **X** is the vector of covariates for tract *i* and city *j* at time *t*.

Once I determined the overall effect of anchor institution initiatives, I tested for variations in the effect based on the type of initiative, as categorized by capital. Each initiative is described using four binary categorical variables: financial capital, physical capital, intellectual capital, and human capital. Initiatives may be composed of multiple forms of capital. These forms of capital were derived from the literature review and map broadly onto the different strategies universities use for neighborhood revitalization. Analyzing the effects of initiatives in this way allows for meaningful observations in the differences between different strategies. The treatment variable in the first three specifications is replaced by these four categorical variables, modeled as:

$$\theta_{it} = \beta_0 + \beta_1(Financial_i \times Post_t) + \beta_2(Physical_i \times Post_t) + \beta_3(Intellectual_i \times Post_t) + \beta_4(Human_i \times Post_t) + \alpha_i + \alpha_t + \varepsilon_{jt}$$

The coefficients on the interaction terms are the effect of the respective type of initiative relative to the control groups.

The fifth and final specification tests whether universities target neighborhoods based upon the vulnerability of that neighborhood to gentrification, drawing from Bates's (2013)

gentrification vulnerability scale and including tract and year fixed effects to account for potential context specific factors.

$$Anchor_i = \beta_0 + \beta_1 vulnerability_i + \alpha_i + \alpha_t + \varepsilon_{ijt}$$

Regressing treatment on the scale provides evidence if universities make decisions about whether to engage in neighborhood revitalization based on factors related to gentrification vulnerability. Bates's (2013) scale gives a score to each census tract from 0 to 4 based upon four metrics: percentage of households occupied by renters, percentage of the population that identifies as part of a community of Color, percentage of the population older than 25 without a bachelor's degree, and percentage of the population at or below 80% of the national median family income. Thresholds are developed for each metric by finding the mean. If a tract exceeds the threshold for percentage of renters, population that identifies as part of a community of Color, or without a bachelor's degree, or if the tract is at or below the threshold for percentage of the population at or below 80% of the national median family income, the tract receives one point on the vulnerability scale. Tracts with a score of 3 or 4 are considered vulnerable to gentrification. A statistically significant finding here potentially indicates endogenous treatment selection, so prior specifications should also include the vulnerability scale to control for any selection bias.

Robustness Analyses

The DiD identification strategy is founded on the assumption treatment assignment is exogenous to trends in the outcome (Murnane & Willett, 2011). While treatment assignment is likely related to levels of perceived poverty, it is plausibly exogenous to trends in gentrification. I conducted two robustness checks, in addition to the inclusion of covariates and fixed effects above, to test the validity of the identification strategy. The first test is a balance test, in which the outcome variable is replaced by the covariates in the regression to check if the treatment

groups or control groups are systematically different in a manner that may affect the outcome. The results are potentially useful information, but I must proceed with caution as anchor institution initiatives can plausibly affect some of the covariates, such as population density or tract level fixed effects. The second robustness check utilizes Frank, Maroulis, Duong, and Kelcey's (2013) causal inference framework to calculate the percentage of the sample that would need to be biased by a confounding variable to lose a statistically significant result. If a large percentage of the sample would need to be biased, this provides support for a causal claim with the model.

Limitations

The natural experimental design described here holds several limitations. First, the longitudinal data are spaced far apart in time. Much occurred between 1970 and 2010. Five points of observation to cover this entire period may result in large standard errors compared to hypothetical data available annually. Anchor institution initiatives could have significant effects in reality that are lost in the noise of the census data. If effects are lost in larger citywide or national economic trends, however, the estimates are likely to be smaller than the true values, analytically preferable to overestimating.

A second concern is these data fail to provide the level of displacement occurring due to the anchor institution initiatives. Displacement is a key component of gentrification as defined here, so results should be interpreted carefully. The outcome variable does include race, which is unlikely to change within individuals through time, but the other components could potentially change without any migration. Running the regression with percentage of the population that is White as the sole outcome variable can provide supportive evidence of demographic changes due to the treatment, but displacement itself will not be directly measured.

A third concern is the exogeneity of treatment assignment. Causal interpretations of the results depend on universities' selection of targeted neighborhoods to be exogenous to the model. If there is a variable that affects trends in gentrification and whether the neighborhood is targeted by an anchor institution initiative, the results could be biased. The included covariates attempt to control for plausibly endogenous variables, and the robustness analyses and the gentrification vulnerability analysis provide evidence the treatment and control groups are not systematically different. Using the propensity-score matching procedure to select control neighborhoods also attempts to select neighborhoods similar to the treatment neighborhoods, and the plausibly exogenous timing of anchor institution initiatives' implementation (i.e., a high degree of randomness relative to gentrification in the particular time period in which an initiative begins) further suggests assignment is truly exogenous. This natural experiment thus controls for a wide variety of bias concerns to a degree that causal interpretations are carefully possible, but I cannot conclusively rule out the existence of all confounding variables.

Propensity score matching has been subject to some critique. In particular, propensity score matching only conditions treatment assignment on observed variables included in the logistic regression model, thus not accounting for any unobserved confounders and failing to meet the threshold of approximating an experimental design (Smith & Todd, 2005). If the logistic regression is correctly modeled, however, and the argument as to why treatment assignment is based upon these observed covariates is sound, propensity score matching will accurately control for the differential treatment assignment (Angrist & Pischke, 2009; Dehejia & Wahba, 1999). More recently, King and Nielsen (2019) found propensity score matching could actually increase imbalance in a sample rather than decrease imbalance as the procedure is intended. While King and Nielsen (2019) do not suggest abandoning matching as an analytical

tool, they do recommend presenting pre-matching and post-matching evidence to bolster the argument the final sample is more balanced. Figure 1 presents the standardized percent bias of all covariates included in the logistic regression prior to the matching, comparing the treated and untreated tracts. The percent bias is the difference in the means of the treated and untreated groups, expressed as a percentage of the standard deviation of the whole sample (Rosenbaum & Rubin, 1985). For example, the pre-treatment percentage of the population below the poverty level (preppov) had a mean difference of 18 percentage points between treatment tracts and all other tracts, with treatment tracts being more likely to have higher levels of poverty. Expressed as a percentage of the standard deviation, the standardized percent bias was 136%. Prior to the matching procedure, pre-treatment poverty levels were major predictors of treatment selection. The bias ranged approximately between -150% and 150% overall. Figure 2 presents the same test after eliminating all tracts that did not match with a treated tract. The bias here was reduced to a range between -15% and 15%, significantly reducing the endogeneity of treatment selection (Rosenbaum & Rubin, 1985). The balance of the sample across covariates is further supported by the balance tests presented in Chapter 4.

Figure 1:

Balance of sample prior to propensity score matching

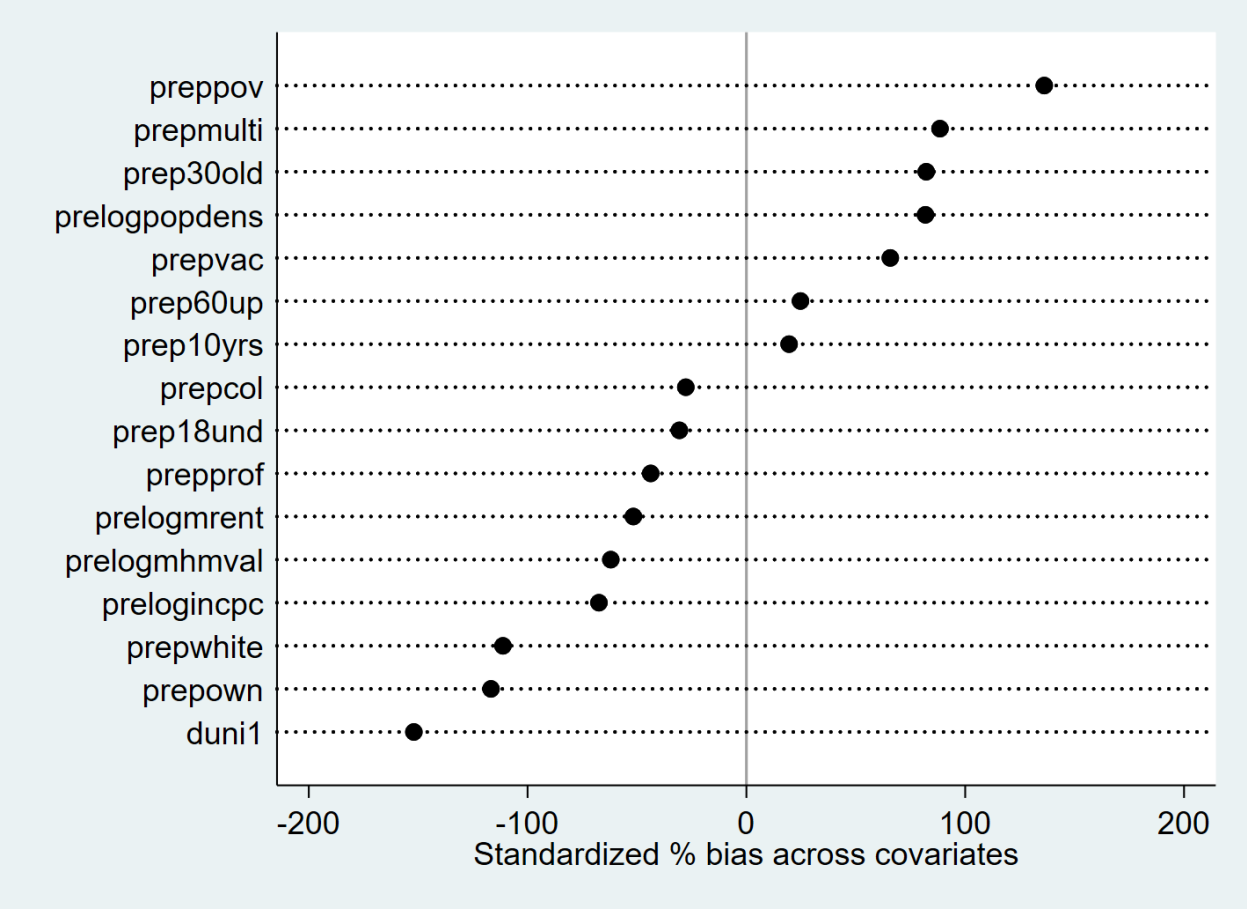
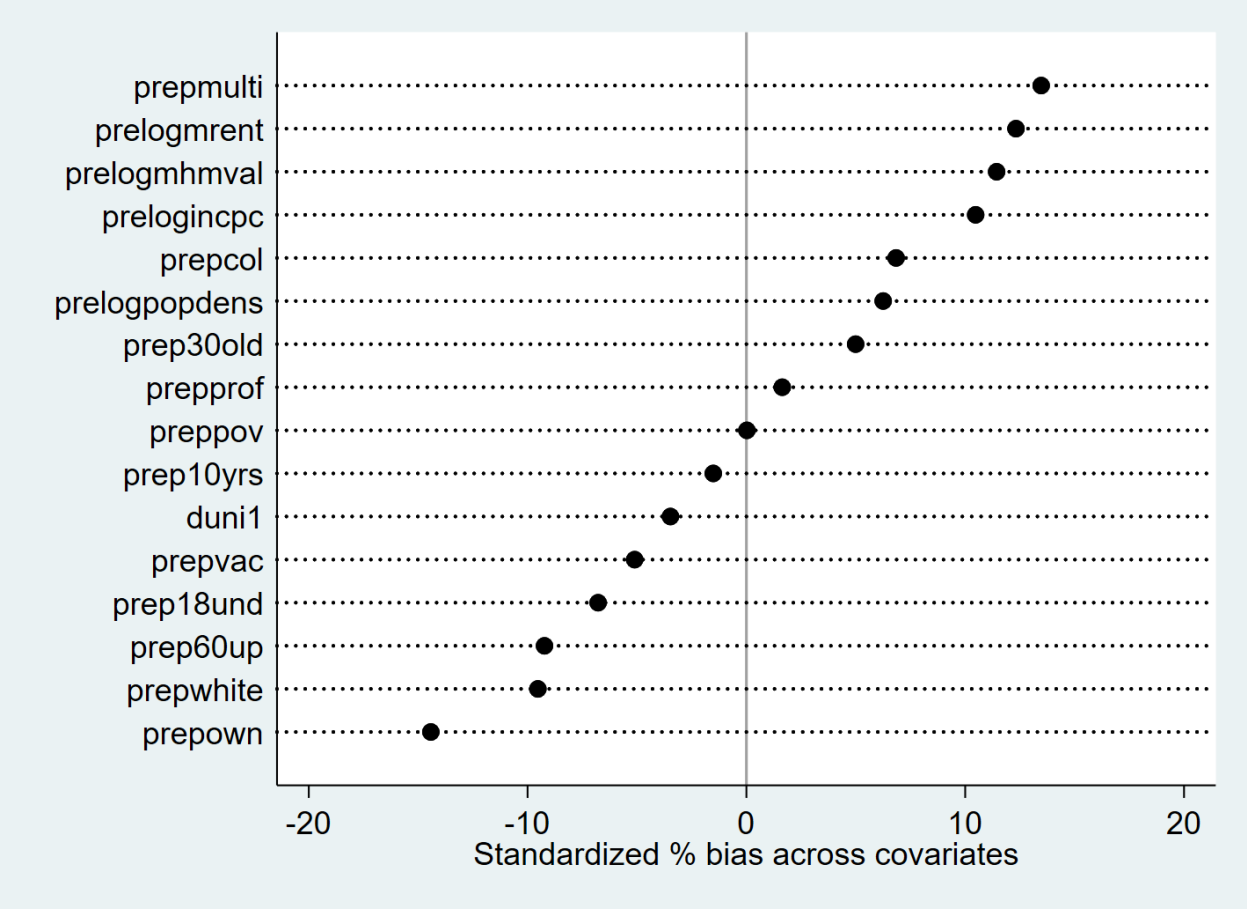


Figure 2:

Balance of sample following propensity score matching



Finally, a fourth concern is the validity of the data themselves. Given the nature of the LTDB as estimating tract populations standardized to 2010, some amount of measurement error is to be expected. Generally between 55% to 70% of the tract estimates contain less than 1% of error, and only 1% to 10% of the tract estimates contained more than 10% of error, but the possibility of measurement error cannot be entirely discounted (Logan et al., 2016). The measurement error of the LTDB, however, is comparable to other standardized census databases and is more accurate in rapidly expanding urban areas (Logan et al., 2016).

Selected Treatment Case Descriptions

Of the 44 universities and the accompanying anchor institution initiatives that form the treatment group, I describe nine particularly representative cases here. Further descriptions of all 44 of the cases are included in Appendices II, III, and IV. Each initiative is categorized using the capital typology derived in the literature review: financial, physical, intellectual, and/or human.

The first case, and perhaps the most widely referenced in the literature, is the West Philadelphia Initiatives by the University of Pennsylvania. The university invested financial capital by offering mortgage incentives to faculty and staff who lived in West Philadelphia and purchasing and renovating apartment buildings and vacant homes (Etienne, 2012). The homes were then resold, though the university maintained ownership of the apartment buildings. The University of Pennsylvania also expanded the physical campus by building new retail developments on the outskirts of campus. The Netter Center for Community Partnerships further leveraged the university's intellectual capital by coordinating service-learning courses and engaged research within West Philadelphia (Hodges & Dubb, 2012). Finally, the university invested in local human capital through a new charter school and expanding the scope of the university's police force beyond the campus (Etienne, 2012).

The next four anchor institutions each only committed a single form of capital in their initiatives. LeMoyne-Owen College in Memphis created the LeMoyne-Owen Community Development Corporation, or a CDC, in 1989 to direct financial investments within the neighborhood of Soulsville, formerly known as LeMoyne Gardens before a rebranding by the development corporation (Hodges & Dubb, 2012). The CDC is managerially independent from the college though it is funded by the university. The CDC hosts small business loans, workforce and entrepreneurial training, and some real estate development, all indirectly funded by

LeMoyne-Owen College. Arizona State University, in the largest physical expansion project analyzed in this dissertation, built an entirely new campus in downtown Phoenix in 2006. The stated purpose of the construction, both at the time of planning and in later retrospectives, was to encourage local development and attract the creative class to the urban center of Phoenix (CEOs for Cities with Living Cities, 2010). The University of San Diego relied entirely upon intellectual capital in its goals of serving as an anchor of the Linda Vista neighborhood (University of San Diego, 2020). In particular, the Mulvaney Center for Community, Awareness, and Social Action organizes and coordinates service-learning and volunteer opportunities in Linda Vista through local partnerships. The Mulvaney Center was established in 1985 and has consistently leveraged academic engagement to improve quality of life in Linda Vista and center the University of San Diego as a local actor. The University of San Francisco similarly focused entirely on investing in local human capital in the Western Addition neighborhood since 2004. Literacy programs and programs for youth transitioning into full-time employment aimed to develop local human capital (University of San Francisco, 2020), though not relying upon the university's intellectual capital to the same degree as the University of San Diego.

The remaining cases described here used combinations of strategies. First, Youngstown State University committed financial resources to revitalization in the Smoky Hollow neighborhood by purchasing land then gifting it to developers (Bromley & Kent, 2006). Youngstown State also intentionally expanded the physical campus into Smoky Hollow by building new student housing. Syracuse University similarly invested financially in neighborhoods, complemented by intellectual capital. Through the Near Westside Initiative and Connective Corridor, Syracuse University purchased property for renovation and resale, offered mortgage incentives for faculty and staff to live in the Near Westside neighborhood, and

prioritized local businesses in making purchasing decisions. A host of service-learning courses and coordinated engaged research projects supported the financial investments (Hodges & Dubb, 2012). Finally, Trinity College made large physical changes in Hartford along with investments in local human capital. The college purchased and redeveloped an industrial district into a complex largely devoted to community partnerships. The new complex included charter schools, workforce development centers, a police station, theaters, and new housing (Reardon, 2006).

These cases are demonstrative of the types of development work being recommended by scholars and municipal policymakers. Before more universities adopt anchor strategies for targeted, local growth, however, urban planners and university officials must fully understand the effects on communities. The results presented in the following chapter offer a first step in identifying the role of anchor institution initiatives in gentrification. The results also serve as an example of how to quantitatively measure community outcomes of university community engagement using publicly available, secondary data, extending beyond the research questions here to a broader methodological call for quantitative assessment in the subfield of university community engagement. Universities are important actors in the civic and physical landscape of cities. The effects they have on communities are vital to understand as the connections between urbanity and universities continues to grow.

Chapter 4: Results

As policymakers and scholars point to universities as sources of growth and development, surprisingly little is known about the effects of university-led urban development on local neighborhoods. This chapter presents some of the first causal evidence of the relationship between anchor institution initiatives and gentrification. I examined three main research questions:

1) What is the effect of anchor institution initiatives on gentrification in the targeted neighborhoods?
2) How does the effect on gentrification vary by the type of anchor institution initiative?
3) Do neighborhoods' vulnerability to gentrification prior to treatment predict whether a university targets a neighborhood for an anchor institution initiative?

Counter to my hypothesis, I found anchor institution initiatives have a negative effect on the gentrification index, driven largely by changes in the percent of the population with a 4-year degree, percent change in income per capita, and percent of the population below the poverty level. The strategies anchor initiatives use, however, matter a great deal. I also found neighborhoods' vulnerability to gentrification prior to treatment does predict whether the neighborhood is selected for an anchor institution initiative, though this selection bias is adequately accounted for through the covariates and fixed effects.

I begin by describing the results of the propensity-score matching procedure and detail the components of the gentrification index. Following the procedural discussion, I provide descriptive statistics for the sample and offer evidence supporting the parallel trends assumption, a vital piece of difference-in-differences (DiD) for causal inference. Next, I present the results

for each specification across all three research questions and conclude with robustness checks for evidence of the main specifications' validity.

Propensity-Score Matching and Gentrification Index

The sampling procedure began by identifying intentional, targeted, and cohesive anchor institution initiatives and the targeted tracts. This process uncovered 49 discrete initiatives at 44 universities across 36 core-based statistical areas (CBSA). Of the initiatives, 12 utilized financial strategies, 29 used physical expansion for development, 14 leveraged intellectual capital, and 17 developed human capital within the community. Each strategy was not mutually exclusive.

Once the treated tracts were identified, I used propensity-score matching to select control tracts within the same CBSAs as the treatment tracts. I used a logistic regression with treatment status as the dependent variable to model the propensity-score. The results are displayed below (see Table 2). All untreated tracts within the core-based statistical areas that did not match with a treatment tract were deleted from the sample. I deleted a total of 24,451 tracts in this manner. Following the propensity-score matching, the sample contained a total of 830 tracts, each with 5 points of observation across time.

The next step was to develop the gentrification index. I used principal component analysis without factor rotation and extracted a single factor, consistent with previous studies using this method (Baker & Lee, 2019; Pomeroy, Pollnac, Katon, & Predo, 1997). The dependent variables are standardized and weighted based upon their component loading value (see Table 3). As evidenced by Table 3, most of the dependent variables were highly correlated with the notable exceptions of the percentage of the population that identifies as White and the percentage of the population below the federal poverty level. The lower weight attributed to these variables in the gentrification index accommodates for the relatively lower correlation.

Table 2:

Propensity-score-matching logistic regression

Variable	**Odds Ratio (std err)**	**p-value**
pre-treatment log median home value	.67*** (.05)	.00
pre-treatment log median rent	.84* (.08)	.06
pre-treatment % population White	.21*** (.03)	.00
pre-treatment % population > 25 with 4-year degree	.65 (.36)	.43
pre-treatment log income per capita	1.11 (.15)	.47
pre-treatment % in poverty	13.93*** (5.38)	.00
pre-treatment % employed population in a professional field	1.62 (1.02)	.44
pre-treatment log population density	.95 (.03)	.16
distance from nearest anchor university	.65*** (.02)	.00
pre-treatment % owner-occupied housing	3.21*** (1.32)	.00
pre-treatment % vacant lots	.39 (.23)	.12
pre-treatment % multi-family units	.6** (.14)	.03
pre-treatment % structures > 30 years old	.86 (.15)	.39
pre-treatment % households in neighborhood for <10 years	6.06*** (2.33)	.00
pre-treatment % residents <18 years old	.01*** (.00)	.00
pre-treatment % residents >60 years old	.35 (.24)	.13

Notes: * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$

Table 3:

Gentrification index formulation

Variable	Factor
log median home value	.88
log median rent	.85
% population White	.34
% population > 25 with 4-year degree	.87
log income per capita	.92
% in poverty	-.48
% employed population in a professional field	.89

Descriptive Statistics

A key concern with the sample is ensuring the control tracts are not receiving treatment from another university. Community colleges in particular may be engaged in productive partnerships in their respective neighborhoods, and any university expanding its physical campus for goals unrelated to urban development may confound the coefficient estimates. This concern is addressed in two ways. First, I obtained some degree of certainty treatment is appropriately assigned through the sampling procedure as any large initiatives would have been vetted by me. Second, to account for physical expansion or other forms of economic spillovers from universities in control tracts, I developed two samples. The first sample is purely the treatment tracts and all matched control tracts from the propensity-score procedure, and the second sample removes all control tracts that contain a community college or 4-year college or university. Seventy-six tracts were dropped in the second sample. Descriptive statistics for both samples are shown in Table 4. Generally speaking, dropping the control tracts did not result in largely different means. The percentages of residents below the age of 18 or above the age of 60 were the largest changes with much lower percentages when all tracts are included, an intuitive result given the age ranges higher education typically serves and employs.

Table 4:

Summary statistics

	With Colleges in Control			*Without Colleges in Control*		
Variables	**Observations (n)**	**Mean**	**Std Dev**	**Obs**	**Mean**	**Std Dev**
Dependent Variables						
gentrification index	4,058	.014	4.21	3,691	.013	4.23
log median home value	4,064	10.92	1.19	3,692	10.9	1.19
log median rent	4,135	5.6	.87	3,760	5.59	.87
% population white	4,149	.41	.35	3,769	.4	.35
% population > 25 with 4-year degree	4,145	.2	.19	3,765	.19	.19
log income per capita	4,145	9.12	.81	3,765	9.11	.8
% in poverty	4,144	.27	.17	3,764	.27	.17
% employed population in a professional field	4,143	.26	.17	3,763	.26	.16
Control Variables						
log population density	4,149	9.19	1.09	3,769	9.2	1.1
distance from nearest anchor university	4,150	3.62	3.04	3,770	3.67	3.06
% owner-occupied housing	4,147	.37	.24	3,767	.38	.24
% vacant lots	4,149	.11	.08	3,769	.11	.08
% multi-family units	4,145	.56	.3	3,765	.54	.3
% structures > 30 years old	4,142	.7	.25	3,763	.71	.25
% households in neighborhood for <10 years	4,142	.69	.15	3,762	.68	.15
% residents <18 years old	4,149	.11	.11	3,769	.25	.1
% residents >60 years old	4,149	.08	.08	3,769	.17	.08

Beyond comparing the different samples, Table 4 offers basic information about the dependent and control variables across tracts and across time. The average change in median home value was 11%, and the average change in median rent was approximately 6%. Income per capita increased an average of approximately 9%. The residents of tracts across time were an average of 41% White and 27% below the federal poverty level. Of those employed within tracts, an average of 26% worked in a professional field, and of those over the age of 25,

approximately 20% held a 4-year degree. This information, however, is aggregated across time, making inferences about changes through time difficult.

Figure 3 offers more information on the changes in gentrification through time. This graph plots the average gentrification index score by year of all tracts in the sample. The y-axis should be interpreted with the note that all of the included variables were standardized and weighted, so a negative score simply indicates some or all of the individual variables were below the overall mean, not that gentrification is decreasing in any way at that point in time. Gentrification, at least as conceptualized through this index based on Marcuse's (2015) upscaling framework, is clearly on an upward trajectory, with a particularly large increase between 1980 and 1990. This period falls within Hackworth and Smith's (2001) second wave of gentrification following the recession of the 70s. This wave was characterized by developers purchasing properties at prices not yet fully recovered and the in-migration of artists to low-income neighborhoods. The sample therefore offers compelling evidence in line with previous scholarship gentrification is continuing relatively unabated and cities are upscaling at steady rates, likely at even higher rates over the last decade as the 2010 estimates were probably muted by the recession of 2008, then accelerated shortly thereafter as developers purchased foreclosed and other cheap properties.

Figure 4 begins to examine the role of anchor institution initiatives in urban development and upscaling. To isolate the effect of anchor institution initiatives, a key assumption of DiD is the treatment and control groups follow parallel trends prior to treatment and would continue to follow the same trends were it not for the treatment. As is visually apparent in Figure 4, the treatment and control groups run parallel with slight divergences as some tracts begin to receive treatment. Though the mean gentrification index is slightly different in the base year for the

treatment and control groups, the important characteristic is the trends are the same, an assumption this Figure 4 supports.

Figure 3:

Mean gentrification index by year

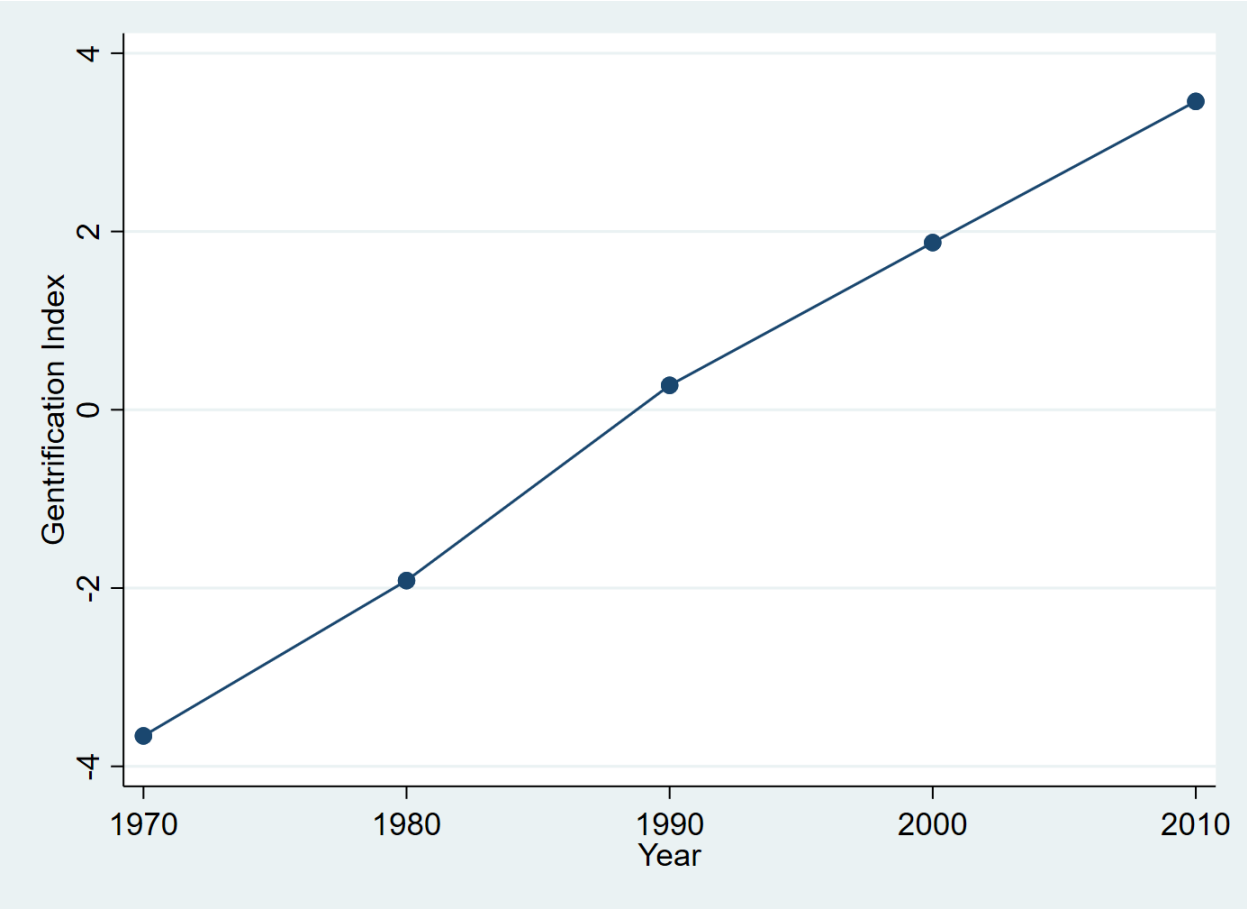
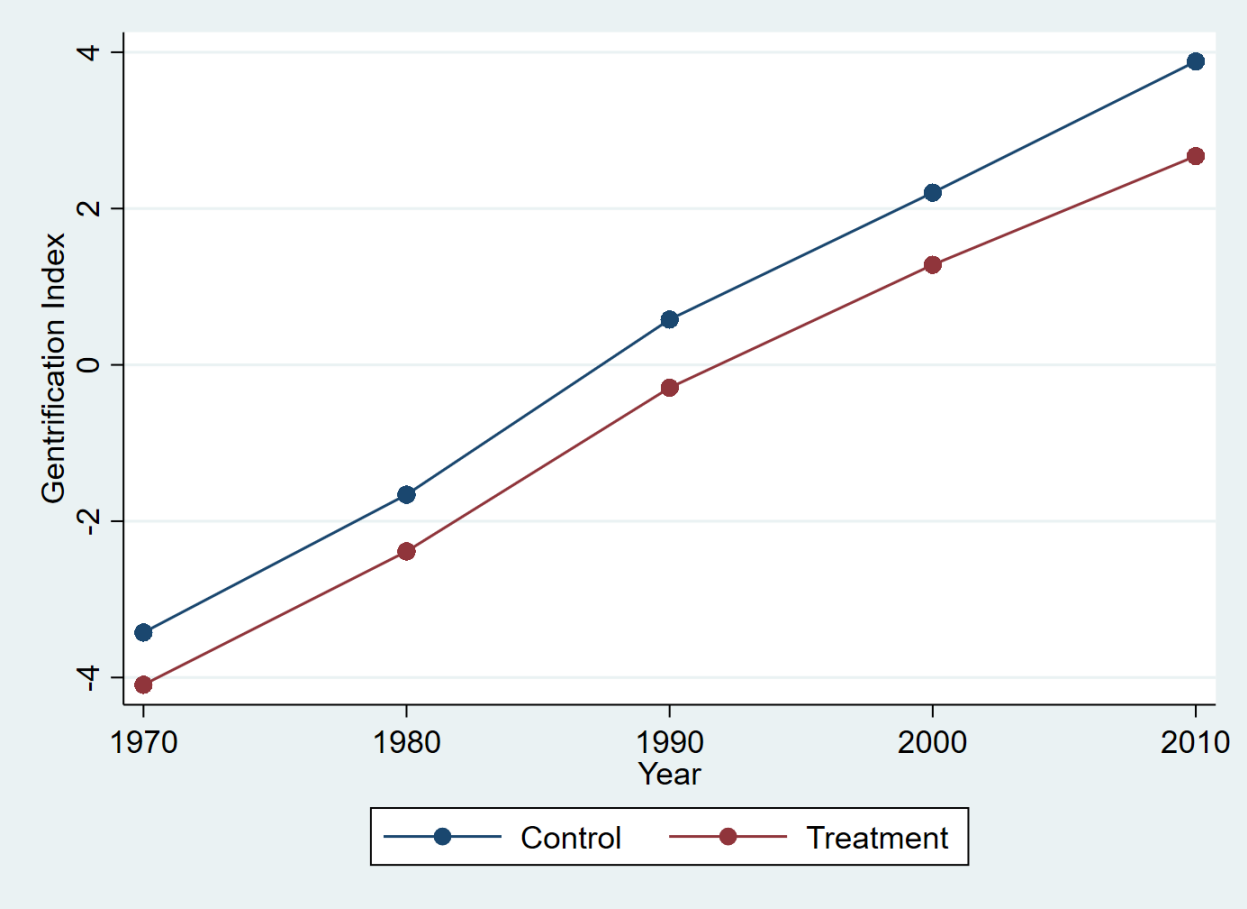


Figure 4:

Mean gentrification index of treatment and control groups by year



Difference-in-Differences

While illuminating about the state of gentrification and neighborhoods targeted by university-led urban development, these descriptive analyses do not allow for causal claims. The DiD specifications provide more robust estimates of the effect of being targeted by an anchor institution initiative relative to neighborhoods in the same CBSA that were not targeted. The basic structure of the DiD analysis of the sample is graphically illustrated in Figure 5 with the mean gentrification index of the control and treatment groups during the pre-treatment and post-treatment periods. Table 5 lists the coefficients from the primary DiD specifications with and

without covariates for both samples. The coefficients and adjusted R^2 are generally similar across both samples, so though I display both samples, I will focus this discussion on the estimates that include community colleges and 4-year colleges and universities in the control group. The sample without colleges in the control group is presented as evidence for the robustness of these specifications across different control groups.

Figure 5:

Mean gentrification index of treatment and control groups by pre- and post-treatment status

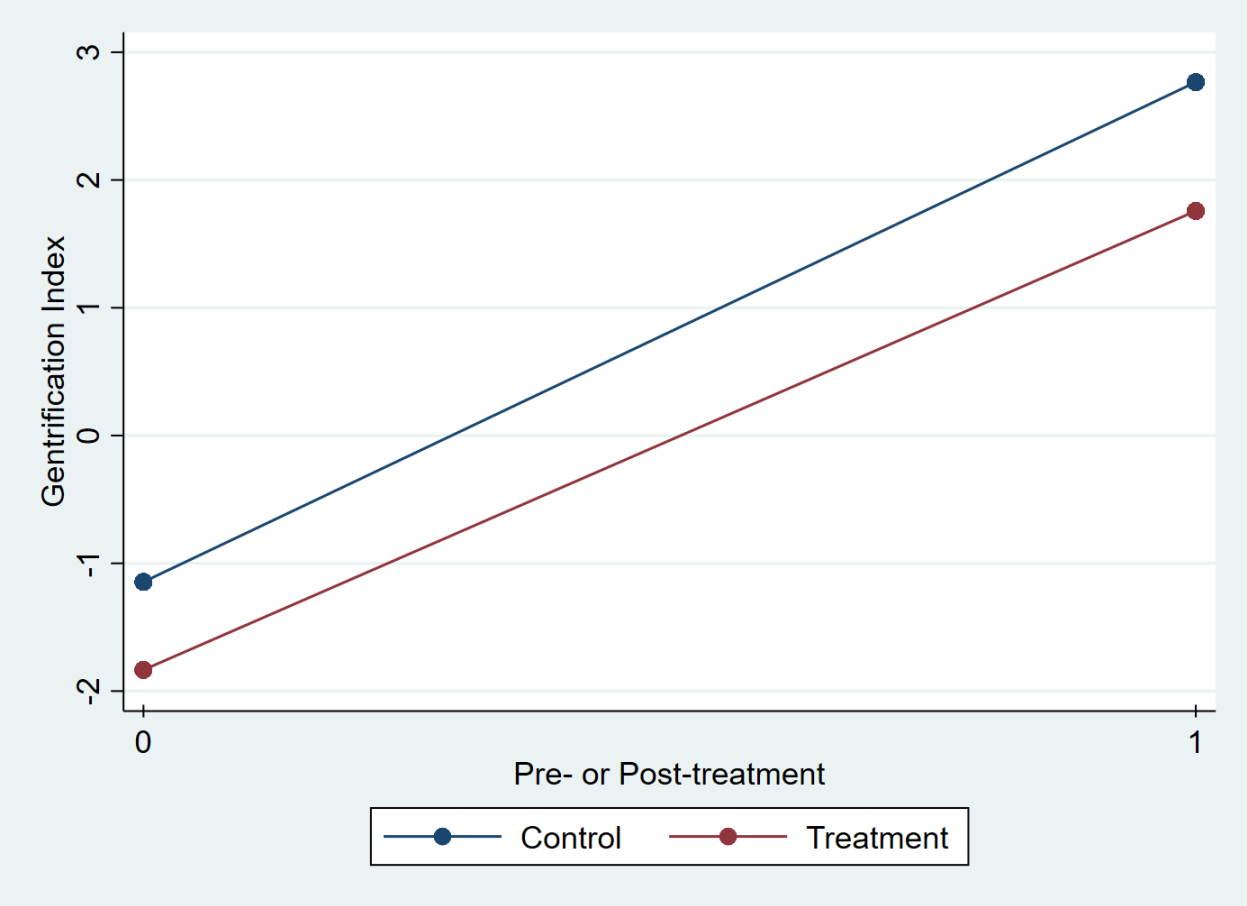


Table 5:

Gentrification difference-in-differences of being targeted by an anchor institution initiative

	With Colleges in Control		*Without Colleges in Control*	
Variables	**Coefficients[1] (std err)**	**Coefficients[2] (std err)**	**Coefficients[1] (std err)**	**Coefficients[2] (std err)**
DiD	-.28*	-.29***	-.23	-.31***
	(.16)	(.11)	(.15)	(.12)
1980	1.71***	1.35***	1.67***	1.31***
	(.13)	(.09)	(.14)	(.1)
1990	3.91***	3.53***	3.87***	3.51***
	(.21)	(.15)	(.22)	(.17)
2000	5.56***	5.15***	5.53***	5.17***
	(.32)	(.19)	(.34)	(.21)
2010	7.19***	6.64***	7.13***	6.63***
	(.35)	(.24)	(.37)	(.27)
log population density	--	.07	--	.09
		(.15)		(.17)
% owner-occupied housing	--	8.41***	--	8.25***
		(.62)		(.68)
% vacant lots	--	-3.75***	--	-4.07***
		(.49)		(.54)
% multi-family units	--	2.15***	--	2.1***
		(.45)		(.54)
% structures >30 years old	--	-1.21***	--	-1.1***
		(.26)		(.28)
% households in neighborhood for <10 years	--	1.69***	--	1.77***
		(.34)		(.37)
% residents <18 years old	--	-12.29***	--	-13***
		(1.09)		(1.04)
% residents >60 years old	--	-4.02***	--	-4.22***
		(1.52)		(.76)
Adjusted R^2	.82	.89	.82	.89

Notes: Coefficients[1] exclude covariates beyond unit-level fixed effects and year fixed effects. Coefficients[2] include all covariates. Standard errors are robust and clustered at the city level.
* p≤0.1, ** p≤0.05, *** p≤0.01

The first regression included only the DiD indicator, year fixed effects, and tract-level fixed effects. The coefficient of interest was not statistically significant at the α=0.05 significance level. Once covariates were included, however, decreasing the standard error while keeping the coefficient roughly the same, the effect was statistically significant at the α=0.001

significance level. Surprisingly, the effect was negative, indicating intentional, targeted, and cohesive anchor institution initiatives slow gentrification relative to neighborhoods in the same CBSA, the opposite effect of the hypothesized relationship. This coefficient cannot be interpreted in isolation from the overall trajectory of gentrification noted in figures 1, 2, and 3. Anchor institution initiatives are not reversing the upward trend in the gentrification index, merely slowing it.

To better understand what is driving the negative effect on the gentrification index and to produce estimates with more concrete interpretations beyond the index, I ran regressions with the separate components of the index as the dependent variables (see Table 6). The components that were statistically significant for the DiD estimator were the percentage of residents 25 or older with a 4-year degree, log income per capita, and the percentage of residents under the poverty level. When a neighborhood is targeted by an anchor institution initiative, the percentage of residents 25 or older with a 4-year degree decreases on average by 2 percentage points relative to other neighborhoods in the same CBSA, all else equal. Similarly, anchor institution initiatives decrease a tract's income per capita on average by 8% compared to control tracts all else equal and increase the percentage of residents under the poverty level by almost 2 percentage points. An important reminder is these measures are generally increasing overall through time, but the initiatives are slowing their growth in the targeted neighborhoods. While this analysis cannot conclusively differentiate between whether existing residents are becoming poorer or whether initiatives are altering the in- and out-migration of residents of different socioeconomic statuses, I argue the latter is far likelier to be the case for two reasons. First, the percentage of 4-year degree holders is decreasing. Assuming no systematic difference across time with the census' data collection methods for this question, this is a status unlikely to change from affirmative to

negative within individuals. Second, existing literature supports the claim anchor institution initiatives may be altering migration flows, but there is no causal mechanism to my knowledge that can explain how these initiatives could decrease income per capita or 4-year degree holders within individuals in a neighborhood. The far likelier causal mechanism, based on prior research reviewed in this dissertation, is these initiatives are building community capacity and ownership within existing residents who are then able to better resist the economic pressures of gentrification and remain within their neighborhoods. An alternative explanation is anchor initiatives are neither making individuals poorer nor building capacity but are instead stifling market growth. While more plausible than the within-individual change explanation, there still is no causal mechanism in the literature to support this argument.

Heterogeneous Analyses

The prior specifications provided evidence anchor institution initiatives overall have a negative effect on gentrification. The specific strategies these initiatives use, however, vary. To better understand how the effect varies based on the initiative's overarching strategies, I categorized each case based on the capital typology developed in the literature review. Every initiative was labeled as using financial, physical, intellectual, and/or human capital. The categories were not mutually exclusive. Table 7 presents a crosstabulation of the initiatives by capital typology. I repeated the analyses above using DiD indicators for every type of strategy (see Table 8). The results illuminate and complicate the narrative of anchor institution initiatives.

Table 6:

Gentrification index disaggregated

Variables	log med. home value	log med. rent	% white	% college	log income per cap	% in pov.	% in prof. field
DiD	-.02	-.01	.01	-.02***	-.08***	.02**	-.01
	(.04)	(.02)	(.02)	(.01)	(.02)	(.01)	(.01)
1980	.84***	.61***	-.22***	.04***	.36***	.08***	-.01*
	(.06)	(.02)	(.01)	(.01)	(.02)	(.01)	(.00)
1990	1.59***	1.3***	-.28***	.08***	.97***	.1***	.03***
	(.09)	(.03)	(.02)	(.01)	(.03)	(.01)	(.01)
2000	1.95***	1.67***	-.33***	.11***	1.41***	.08***	.11***
	(.08)	(.03)	(.02)	(.01)	(.03)	(.01)	(.01)
2010	2.57***	2.06***	-.36***	.16***	1.69***	.12***	.14***
	(.07)	(.04)	(.02)	(.01)	(.04)	(.01)	(.01)
log pop.	.03	.09***	-.09***	.02**	-.03	-.00	-.01
density	(.06)	(.03)	(.02)	(.01)	(.02)	(.01)	(.01)
% owner-	1.08***	.59***	.42***	.39***	1.39***	-.41***	.38***
occupied	(.24)	(.13)	(.05)	(.04)	(.11)	(.04)	(.04)
housing							
% vacant	-1.64***	-.1	-.08*	-.18***	-.5***	.14***	-.1***
lots	(.25)	(.13)	(.04)	(.03)	(.14)	(.03)	(.04)
% multi-	.36**	.02	.09	.14***	.55***	-.06*	.1**
family	(.16)	(.12)	(.06)	(.04)	(.13)	(.03)	(.04)
units							
% struct.	-.24***	-.17***	-.1***	-.01	-.16***	.03*	-.09***
>30 years	(.08)	(.05)	(.03)	(.02)	(.05)	(.02)	(.01)
old							
% hh.	.42***	.3***	.04	.1***	.15*	-.03	.07***
<10 years	(.12)	(.07)	(.05)	(.02)	(.08)	(.02)	(.02)
% <18	-1.78***	-1.22***	-1.24***	-.61***	-1.56***	.5***	-.5***
years old	(.27)	(.16)	(.14)	(.07)	(.23)	(.06)	(.06)
% >60	-.98***	-.48***	.23***	-.41***	-.13	-.02	-.19***
years old	(.22)	(.14)	(.08)	(.06)	(.15)	(.28)	(.04)

Notes: Each column is a separate regression with the column header as the dependent variable.
* p≤0.1, ** p≤0.05, *** p≤0.01

Table 7:

Crosstabulations of strategy types

	Initiatives leveraging financial capital	Initiatives leveraging physical capital	Initiatives leveraging intellectual capital	Initiatives leveraging human capital
Initiatives leveraging financial capital	12	7	3	6
Initiatives leveraging physical capital	7	29	6	7
Initiatives leveraging intellectual capital	3	6	14	9
Initiatives leveraging human capital	6	7	9	17

The main drivers of the negative coefficient are anchor institution initiatives leveraging financial capital. Financial initiatives use strategies such as funding community development corporations, local purchasing, PILOTs to local governments, mortgage incentives, or purchasing land then gifting it to independent parties. These strategies are in line with the conclusion from the previous analyses that the initiatives are slowing gentrification by building local capacity. Financial strategies involve investing university resources directly in communities, often providing an origin for wealth-building the neighborhood has little access to elsewhere. For example, the Lemoyne-Owen College Community Development Corporation offers small business loans at credit levels large banks likely would not support (Hodges & Dubb, 2012). Such direct transactions like this seem like plausible explanations for how residents would be better equipped to stay in their neighborhoods.

Table 8:

Gentrification difference-in-differences for different types of anchor institution initiatives

	With Colleges in Control		*Without Colleges in Control*	
Variables	**Coefficients[1] (std err)**	**Coefficients[2] (std err)**	**Coefficients[1] (std err)**	**Coefficients[2] (std err)**
DiD Financial	-1.3***	-.62**	-1.3***	-.61**
	(.36)	(.28)	(.36)	(.27)
DiD Physical	.73**	.09	.76**	.09
	(.34)	(.19)	(.34)	(.19)
DiD Intellectual	-.63	-.24	-.62	-.25
	(.4)	(.31)	(.41)	(.3)
DiD Human	.22	.1	.26	.1
	(.34)	(.25)	(.35)	(.25)
1980	1.7***	1.37***	1.66***	1.32***
	(.13)	(.1)	(.14)	(.11)
1990	3.91***	3.54***	3.85***	3.5***
	(.22)	(.16)	(.23)	(.18)
2000	5.59***	5.17***	5.52***	5.16***
	(.32)	(.2)	(.34)	(.22)
2010	7.21***	6.66***	7.11***	6.6***
	(.34)	(.24)	(.36)	(.28)
log pop. density	--	.05	--	.06
		(.16)		(.17)
% owner-occupied housing	--	8.28***	--	8***
		(.6)		(.64)
% vacant lots	--	-3.76***	--	-4.04***
		(.48)		(.53)
% multi-family units	--	2.12***	--	2.04***
		(.44)		(.51)
% struct. >30 years old	--	-1.22***	--	-1.1***
		(.25)		(.27)
% hh. <10 years	--	1.72***	--	1.79***
		(.31)		(.33)
% <18 years old	--	-11.99***	--	-12.5***
		(1.1)		(1.02)
% >60 years old	--	-3.98***	--	-4.1***
		(.7)		(.75)
Adjusted R^2	.83	.89	.824	.89

Notes: Coefficients[1] exclude covariates beyond unit-level fixed effects and year fixed effects. Coefficients[2] include all covariates. Standard errors are robust and clustered at the city level.
* p≤0.1, ** p≤0.05, *** p≤0.01

This heterogenous specification also provides insights into why the DiD estimator was not statistically significant at the α=0.05 significance level without including the covariates in the

previous analyses. Initiatives that utilized physical strategies had a relatively strong positive coefficient (see Table 8) when covariates were not included, which in the previous specification with all strategies combined was counteracting the negative effect of the financial strategies and creating noise in the data. When covariates were included in the heterogenous specification, the coefficient on the physical strategies is drastically reduced, allowing the negative effect to come out more clearly. The smaller coefficient on the physical strategy treatment indicator is potentially due to the complicated relationship between university enrollments, campus expansion, and local housing. Including covariates such as the percentage of vacant lots may have explained away some of the true effect of physical developments by universities. Regardless, the data do not provide evidence strategies leveraging intellectual or human capital have any effect on gentrification.

I again regressed each variable that formed the gentrification index on the independent variables used in this specification to provide more easily interpretable understandings of the effects of anchor institution initiatives (see Table 9). The financial strategies estimator was statistically significant on log median home value, log median rent, log income per capita, and the percentage of the population under the poverty level. Anchor institution initiatives leveraging financial capital on average decrease the median home value by approximately 18% and decrease median rent by 8% relative to other tracts in the same CBSA all else equal. The slower growth in rent and home values are plausibly due to investments from universities stabilizing housing markets, allowing owners and renters to maintain their residencies. Financial strategies also decreased income per capita by 10% and increased the percentage of the population under the poverty level by 8 percentage points, though similarly to the first specification this is more

likely due to lower in-migration of wealthier individuals than a change in the poverty status within individuals.

Gentrification Vulnerability

To answer my final research question, whether universities target neighborhoods based upon their gentrification vulnerability, I adapted Bates' (2013) scale for Portland to this sample and assigned each pre-treatment observation a score from 0 to 4 based upon the percentage of households occupied by renters, percentage of the population that identifies as part of a community of Color, percentage of the population older than 25 without a bachelor's degree, and percentage of the population at or below 80% of the national median family income. I then regressed the indicator of whether the tract was targeted by an anchor institution initiative or not on the gentrification vulnerability scale with and without covariates. The results are displayed in Table 10. The gentrification vulnerability scale was a statistically significant predictor of whether the tract would be targeted by an anchor institution initiative, with each additional point on the scale increasing the likelihood of treatment by approximately 5%. While this result could raise some concerns about selection bias, there is nothing included in the vulnerability scale that has not been captured in some way either through the unit-level fixed effects, propensity-score matching process, or through the covariates. In the specifications run here the vulnerability score is subsumed by the unit-level fixed effects, adequately adjusting for the selection bias identified by this scale.

Table 9:

Gentrification index disaggregated and regressed by initiative type

Variable	log med. home value	log med. rent	% White	% college	log income per cap	% in pov.	% in prof. field
DiD	-.18***	-.08**	-.00	-.00	-.1**	.05***	-.01
Financial	(.07)	(.04)	(.03)	(.02)	(.04)	(.02)	(.01)
DiD	.08	.01	.01	-.01	-.02	-.00	-.00
Physical	(.06)	(.03)	(.03)	(.01)	(.04)	(.01)	(.01)
DiD	.05	-.02	.01	-.04**	-.05	.01	.00
Intellectual	(.07)	(.04)	(.03)	(.02)	(.04)	(.02)	(.02)
DiD	-.01	.04	.01	.01	-.00	-.01	-.01
Human	(.05)	(.03)	(.03)	(.02)	(.04)	(.02)	(.01)
1980	.84***	.62***	-.22***	.04***	.36***	.08***	-.01
	(.06)	(.02)	(.01)	(.01)	(.02)	(.01)	(.00)
1990	1.59***	1.3***	-.28***	.08***	.98***	.1***	.033***
	(.09)	(.04)	(.02)	(.01)	(.03)	(.01)	(.01)
2000	1.95***	1.67***	-.33***	.11***	1.42***	.08***	.11***
	(.08)	(.03)	(.02)	(.01)	(.03)	(.01)	(.01)
2010	2.57***	2.06***	-.36***	.16***	1.69***	.12***	.14***
	(.08)	(.04)	(.02)	(.01)	(.04)	(.01)	(.01)
log pop.	.03	.09***	-.09***	.02*	-.04*	-.00	-.01
density	(.06)	(.03)	(.02)	(.01)	(.02)	(.00)	(.01)
% owner-occupied housing	1.05***	.58***	.42***	.38***	1.36***	-.4***	.38***
	(.23)	(.13)	(.05)	(.04)	(.11)	(.04)	(.04)
% vacant lots	-1.63***	-.1	-.08*	-.18***	-.51***	.14***	-.1***
	(.26)	(.13)	(.04)	(.03)	(.14)	(.03)	(.04)
% multi-family units	.35**	.02	.1	.14***	.54***	-.06*	.1**
	(.16)	(.12)	(.06)	(.04)	(.13)	(.03)	(.04)
% struct. >30 years old	-.24***	-.17***	-.1***	-.01	-.17***	.03**	-.09***
	(.08)	(.05)	(.03)	(.02)	(.05)	(.01)	(.01)
% hh. <10 years	.42***	.31***	.04	.1***	.15**	-.03	.07***
	(.12)	(.08)	(.05)	(.02)	(.08)	(.02)	(.02)
% <18 years old	-1.73***	-1.2***	-1.24***	-.6***	-1.5***	.48***	-.49***
	(.27)	(.16)	(.15)	(.06)	(.24)	(.06)	(.06)
% >60 years old	-.99***	-.5***	.23***	-.4***	-.13	-.02	-.19***
	(.23)	(.13)	(.08)	(.06)	(.15)	(.04)	(.04)

Notes: Each column is a separate regression with the column header as the dependent variable.
* p≤0.1, ** p≤0.05, *** p≤0.01

Table 10:

Gentrification vulnerability

Variables	**Coefficients[1] (std err)**	**Coefficients[2] (std err)**
gentrification vulnerability	.04***	.05***
	(.01)	(.01)
log pop. density	--	-.01
		(.01)
distance to university	--	-.01***
		(.00)
% owner-occupied units	--	-.05
		(.11)
% vacant lots	--	-.16
		(.15)
% multi-family units	--	-.02
		(.08)
% struct. >30 years old	--	-.04
		(.04)
% hh. <10 years	--	-.17
		(.1)
% <18 years old	--	-.26**
		(.13)
% >60 years old	--	-.45***
		(.14)

* p≤0.1, ** p≤0.05, *** p≤0.01

Robustness Checks

To provide evidence as to the comparability of the control and treatment tracts and support the parallel trends assumption, I conducted balance tests in which I ran the DiD model with the covariates as the outcome variable. The results of the balance tests are displayed in Table 11. The DiD estimator was not statistically significant across any of the covariates, indicating the control and treatment tracts were comparable. The balance tests also address any concerns about multicollinearity between the DiD estimator and the other independent variables. The adjusted R^2 statistics were between .8 and .9 across all specifications, indicating there may be some collinearity. The balance tests show any collinearity is not between the DiD estimator and covariates, however, and as there is not any perfect collinearity to violate the assumptions of

ordinary least squares, the models are robust to any multicollinearity (Wooldridge, 2016). I also utilized Frank et al. (2013) inference framework and the accompanying KonFound-It! application (Rosenberg, Xu, & Frank, 2018) to provide further evidence the estimates presented in this dissertation are causal. The KonFound-It! application calculates the percentage of a statistically significant result that would need to be due to bias in the model for the coefficient to no longer be statistically significant. The application also calculates the number of observations that would need to change the effect to 0 for the coefficient to no longer be statistically significant. I ran this robustness check on the DiD estimators for the main specifications (the specifications displayed in Tables 5 and 8). The results are in Table 12. Between 9% – 46% of the bias across the specifications would need to be due to confounding variables, indicating unless there is a major set of variables overlooked in this dissertation and previous literature, these estimates are very likely causal. For the main specification of interest, the effect of anchor institution initiatives overall on gentrification, 1079 observations would need to change the effect to 0 for the result to no longer be statistically significant.

Conclusion

The analyses presented here offer compelling evidence as to the effects on gentrification of anchor institution initiatives. Overall, anchor institution initiatives tend to decrease rates of gentrification in the targeted census tracts relative to similar control tracts, largely due to decreases in the percentage of the population over the age of 25 with a 4-year degree, decreases in the percent change in income per capita, and increases in the percent of the population under the poverty level. When the treatment is disaggregated by strategy type, however, the story becomes more complicated. Universities leveraging physical campus expansion had a positive effect on gentrification in the targeted census tracts, indicating these initiatives were contributing to the upscaling and potential displacement in the neighborhoods. This positive effect was

subsumed and overridden by the larger negative effect of financial strategies. Finally, the vulnerability of a tract to be gentrified was a statistically significant predictor of being targeted by an anchor institution initiative. These results have important implications for university-led urban development and university community engagement, as well as future research into universities as anchor institutions. The final chapter discusses how these analyses confirm or complicate past research on anchor institutions, directions for future research into universities and urban development, and implications for universities that aim to leverage their capital for local growth.

Table 11:

Balance tests

Variable	**log. pop density**	**% owner-occupied housing**	**% vacant lots**	**% multi-family units**	**% struct. >30 years old**	**% hh. <10 years**	**% <18 years old**	**% >60 years old**
DiD	-.04	-.00	.01	-.01	-.00	-.00	-.01	.00
	(.04)	(.01)	(.01)	(.01)	(.03)	(.01)	(.01)	(.01)
1980	-.14***	.00	.04***	.01	.04**	-.04***	-.06***	.02***
	(.03)	(.01)	(.01)	(.01)	(.02)	(.01)	(.00)	(.00)
1990	-.18***	.01	.05***	-.01	.09***	-.06***	-.07***	.01**
	(.05)	(.01)	(.01)	(.01)	(.02)	(.01)	(.00)	(.01)
2000	-.19***	.01	.05***	-.01	.18***	-.03***	-.06***	-.01*
	(.06)	(.01)	(.01)	(.01)	(.03)	(.01)	(.01)	(.01)
2010	-.21***	.00	.07***	-.02	.21***	-.01	-.09***	-.01*
	(.08)	(.01)	(.01)	(.01)	(.03)	(.01)	(.00)	(.01)

* p≤0.1, ** p≤0.05, *** p≤0.01

Table 12:

Konfound-It!

Specification	Without Covariates	With Covariates
DiD	--	26.62% 1079 obs
DiD Financial	45.89% 1860 obs	12.55% 509 obs
DiD Physical	9.23% 374 obs	--

Chapter 5: Discussion and Implications

The results presented in the previous chapter began to illuminate the relationship between anchor institution initiatives and gentrification. While these results are among the first quantitative, causal evidence of this relationship, previous literature informs the conditions around anchor institutions and targeted neighborhoods as well as the nature of the interactions between the two. This chapter contextualizes the results within previous literature in economics, urban geography, and higher education and offers recommendations for both practice and research. Finally, I argue universities should carefully consider their role in urban development and draw from data-based evidence to make decisions about how best to serve their local communities.

Summary of Study

Universities, as anchor institutions, are key actors in local economies, and a growing number of universities are seeking to leverage their capital directly to catalyze development in targeted neighborhoods (Sladek, 2017). Concurrently, however, rates of gentrification have increased relatively unabated over the last two decades as high paying, high skilled jobs become available in downtown areas and preferences of the White middle-class change to favor urban amenities (Baum-Snow & Hartley, 2016; Hwang & Lin, 2016). These two trends in urban development give cause to consider whether anchor institution initiatives may be contributing to gentrification in the targeted neighborhoods as opposed to more equitable growth without displacement. This dissertation aimed to test the hypothesis that anchor institution initiatives increased rates of gentrification in the targeted neighborhoods relative to increases in untreated neighborhoods within the same core-based statistical areas (CBSA).

I defined gentrification as the in-migration of relatively well-off residents and the out-migration of previous residents, facilitated and accompanied by economic, physical, and social upgrading (Marcuse, 2015). Anchor institution initiatives are targeted, intentional, and cohesive projects that leverage one or more forms of university capital for purposes of university-led urban development. Following from my hypothesized relationship between anchor institution initiatives and gentrification, I asked three research questions:

1) What is the effect of anchor institution initiatives on gentrification in the targeted neighborhoods?
2) How does the effect on gentrification vary by the type of anchor institution initiative?
3) Do neighborhoods' vulnerability to gentrification prior to treatment predict whether a university targets a neighborhood for an anchor institution initiative?

I utilized tract-level decennial census data standardized to 2010 tract boundaries to answer these questions. I identified treated tracts by examining university websites of Coalition of Urban-Serving Universities and Coalition of Urban and Metropolitan Universities members who also received the Carnegie Classification for Community Engagement. After identifying these tracts, I drew additional cases from the literature and foundations that emphasize anchor institution initiatives. Data were analyzed using difference-in-differences, in which the tract-level difference in a gentrification index was found between pre- and post-treatment, then the difference was found between the differences of treated and control tracts. Assuming treated and control tracts would have followed parallel trends in the gentrification index were it not for the anchor institution initiatives, the estimates from this process will be causal. Pictorial evidence in Figure 4 of Chapter 4 and the results of the balance checks offer support for the parallel trends assumption.

The effect of being targeted by an anchor institution initiative was statistically significant in the primary specification when covariates were included, though the effect was negative, contrary to the hypothesized relationship. The negative effect was driven by a relative decrease in the percent of the population with a college degree, a relative decrease in the percent change in income per capita, and a relative increase in the percentage of the population under the poverty level. For the second research question, allowing the treatment to differ based on the type of strategy revealed the negative effect was largely due to initiatives that were leveraging financial strategies. Physical strategies, such as purposeful campus expansion, had a positive effect on gentrification that was explained away with the inclusion of covariates, likely due to the percentage of vacant lots and percentage of owner-occupied housing unit covariates. Finally, the gentrification vulnerability scale was a statistically significant predictor of treatment selection in the third research question, though I argue the fixed effects and propensity score matching adequately control for this in the analyses.

Discussion

The most important results from the analyses presented here are anchor institution initiatives, as a whole, have a negative effect on rates of gentrification. When the treatment is allowed to differ based on strategy, financial strategies have a negative effect, but physical strategies have a smaller, positive effect. These results are in direct contrast to the arguments of Taylor et al. (2018), Walker and East (2018), and Baldwin (2017) that gentrification is an inherent result of anchor initiatives. While individual case studies like those conducted by Gregory (2013) or Page and Ross (2016) found gentrification occurred in specific neighborhoods, a more encompassing analysis with a larger sample size indicates the opposite.

Two plausible causal mechanisms could explain these results. First, anchor institution initiatives, particularly those using financial strategies, could be enhancing targeted communities' capacity to resist displacement by increasing incomes or wealth. The negative effect observed on wages still makes sense through this explanation as wages for a census tract would likely increase at a higher rate if there is displacement than if wages are increasing within individuals. Second, these same initiatives could be crowding out potential private developers who otherwise would provide more housing or higher paying jobs, potentially attracting new residents. The positive effect of physical strategies aligns with the theoretical connection drawn between anchor initiatives and gentrification in the literature review, i.e. new construction by universities creates amenities and/or high-skilled jobs attractive to the White middle-class. More evidence is needed with shorter time intervals and smaller units of measurement to parse out the causal mechanisms with more precision, but these results are some of the first causal, quantitative evidence of community outcomes of anchor institution initiatives. With this dissertation, I began to answer the question about the connection between anchor institution initiatives and gentrification. This research can now be used to focus future work on anchor institution initiatives. Universities are continuing to leverage their capital for purposes of neighborhood revitalization. As the relevant census data become more frequent with the American Community Survey (ACS) and a new decennial census in 2020, researchers should continue to assess community outcomes of anchor initiatives.

In the primary specification, anchor institution initiatives were found to have a negative effect on the gentrification index. Specifically, being targeted by an anchor institution initiative decreased the change in the gentrification index by 0.29 points relative to control tracts. For context, tracts tended to increase in the gentrification index each decade by approximately 1.5 to

2 points. This result is somewhat counter to the speculations of conceptual work tying anchor institution initiatives inherently to gentrification (Taylor et al., 2018; Walker & East, 2018). Taylor et al. (2018) and Walker and East (2018) argued university efforts to be productively engaged in local neighborhoods are almost invariably corrupted by market forces or universities' inabilities to act in ways not in their self-interest, thus resulting in pricing out poor communities. The negative effect on gentrification, however, provides evidence anchor initiatives tend to slow gentrification rather than inherently enhance the process. Discrete examples of initiatives and gentrification studied in qualitative work are not discounted, such as the Auraria Higher Education Center's displacement of a Chicano/a neighborhood (Page & Ross, 2016; Walker & East, 2018). On average, however, there does not appear to be upscaling and displacement occurring at accelerated paces in targeted neighborhoods. Upscaling is rather slowed. There is evidence, therefore, gentrification is not an inherent and inevitable outcome of anchor institution initiatives. Universities may be building community capacity or depressing growth. Either way, gentrification is slowed.

The drivers of the effects on the gentrification index elucidate what aspects of neighborhoods are being altered by anchor institution initiatives. There were null effects for all the dependent variables except for (a) percentage of the population with a college degree, (b) percent change in income per capita, and (c) percentage of the population below the poverty level. This result certainly calls into question the capacity of universities to leverage capital in targeted ways to facilitate urban development. Porter's (1997; 2016) core thesis of anchor institutions is they are vital, stable components of urban development, and development strategies should center anchor institutions. Harkavy et al. (2009) further argued for anchor institutions to leverage capital for local growth. This dissertation provides evidence, however,

intentionally leveraging anchor capital leads to lower education levels, lower increases in income, and higher poverty levels, the opposite of what would be expected if anchor initiatives were catalyzing development. Previous studies tended to focus on the institutionalization and implementation of anchor initiatives (Hodges & Dubb, 2012; Maurrasse, 2007; Webber & Karlström, 2009; Wittman & Crews, 2012), implicitly assuming the economic outcomes were meaningful and beneficial. With decreased income, higher poverty levels, and lower education levels, the economic benefits may not be as powerful as previously thought.

The causal mechanism, however, matters a great deal here and is not fully clear in the available data. One interpretation is anchor initiatives are depressing private development and wage growth, thus slowing upscaling. The mechanism in this interpretation is crowdout, a concept in economics in which public subsidies decrease consumption of privately provided, non-subsidized goods (Peltzman, 1973). Universities may be crowding out private developers or employers, offering jobs with lower wages, or limiting the amount of space available to be purchased by prospective buyers. For example, Trinity College purchased an entire abandoned industrial complex and renovated the buildings into charter schools, adult education centers, a police substation, theaters, and new housing (Reardon, 2006). Had Trinity not purchased and renovated the complex, private developers may have done so and provided higher paying jobs, more expensive housing, or amenities more attractive to the White middle-class. The new renovations may also have reduced consumption of other privately provided goods in the census tract, thus reducing the price/value of those goods. In the Trinity example, the new housing supply likely reduced the increase in rents in other housing complexes in the tract. This explanation for the negative effects is supported by the results associated with financial strategies. Financial strategies tended to decrease the percent change in median home value and

median rent, supporting the claim private developers were crowded out. The negative effects on wages and education levels also make sense in this explanation as crowding out private developers would likely decrease in-migration, thus slowing increases in overall wages and education levels.

Conversely, the slower rate of upscaling may be because anchor initiatives are succeeding in building local capacity and wealth as assumed by most literature on anchor institutions. Hodges and Dubb's (2012) core argument for anchor institution best practices was built upon the premise universities had powerful and equitable economic effects, an assumption also implicitly held by many articles across the anchor literature (for example Harkavy et al., 2009; Initiative for a Competitive City, 2011; Maurrasse, 2007). In one of the few studies empirically examining community outcomes of investments by anchor institutions, Ehlenz (2019) found neighborhoods targeted by anchor institution investments tended to experience increases in land values but no other indicators of socioeconomic change, which Ehlenz interpreted as indicating economic growth without gentrification. Growth without displacement could plausibly result in slower growth relative to neighborhoods where low-income residents are replaced by high-income residents. Income per capita and higher education levels would intuitively change at a faster rate with displacement than with within-resident changes. Though the results here differ from Ehlenz (2019) in that there were statistically significant effects on socioeconomic indicators, the equitable growth interpretation is the same. The negative effects may have emerged in this dissertation due to a larger sample and longer time periods. Additional research exploring the competing hypotheses of crowdout or equitable growth are necessary to more fully understand the causal mechanisms.

The heterogeneous analysis in which the treatment is allowed to differ based on anchor strategy provides further insight into how anchor initiatives are affecting neighborhoods. Universities leveraging financial capital decreased the gentrification index in targeted tracts by 0.62 points when covariates were included, approximately a third of the average decennial increase in the index. The main drivers of this decrease were a decrease in the percent change in median home value, a decrease in the percent change in median rent, a decrease in the percent change in income per capita, and an increase in the percentage of the population under the poverty level. Again, the causal mechanisms could be crowdout or local growth without displacement. Either explanation, or both, are plausible explanations for financial strategies. These strategies include directing university purchasing to local businesses, funding community development corporations, and buying land or buildings for renovation and resale, all of which might be reducing consumption of privately-provided goods, thus depressing wage growth and home values, or the strategies might be providing residents with the financial resources necessary to resist economic pressures to relocate. Prior literature tended to assume anchor initiatives were contributing to equitable growth, supporting the second causal mechanism (Hodges & Dubb, 2012; Harkavy et al., 2009; Maurrasse, 2007), as does the small amount of empirical work on community outcomes of anchor institutions (Andersson et al., 2009; Ehlenz, 2019; Zou, 2018). Crowdout, however, remains a distinct possibility. Etienne's (2012) descriptions of the community outcomes of the West Philadelphia Initiatives in particular indicate potential crowdout. The University of Pennsylvania purchased and renovated several large apartment buildings, which then led to landlords lobbying for their own buildings to be purchased by the university. Similarly, the university purchased and renovated vacant homes for resale. The resale value was typically lower than the costs of renovation, despite the quality reputation of the

houses as being "'Penn' houses" (Etienne, 2012, p. 57). Buyers were purchasing the houses subsidized by the university over private houses. Etienne (2012) attributed a rise in rents in home values in the area to these financial investments by the university. The evidence presented here, however, suggests tracts targeted by financial strategies experience slower growth in rent and home value than they would otherwise, contradicting Etienne's claim. If the university had not purchased the apartment buildings or vacant homes, other private developers may have. These private developers may have either then provided goods and services attractive to gentrifiers, or they may have offered jobs with higher wages to existing residents. More evidence is needed to determine precisely which causal mechanism is at work and in what conditions these mechanisms operate.

The negative effects on log median home values, log median rent, and income differ from results in previous literature on other types of anchor institutions. Sport stadiums tend to increase land values and rents upon construction (Ahlfeldt & Maennig, 2009), and hospitals tend to provide high wage premiums for industries near the hospital (Mandich & Dorfman, 2017). The results here indicate direct attempts to leverage university financial capital have opposite effects of stadiums and hospitals. The difference between sport stadiums, hospitals, and financial investments by universities may be the permanency of stadiums and hospitals. The static constructions and the constant flow of employees and patients at hospitals, as well as the high-paying jobs offered by hospitals, are the likely drivers of higher land values and higher wages near stadiums and hospitals, whereas financial investments lack the same consistency of capital flow. Anchor institutions inherently affect local markets just through their day-to-day operations, and the effects on local markets of anchor institutions' sheer existence may be different than the effects from intentionally investments as in the initiatives studied here.

The positive effect of physical strategies obscured the stronger, negative coefficient in the primary specification in which all strategy types were combined but was explained away with the inclusion of covariates, most likely due to the percentage of vacant lots and percentage of owner-occupied unit covariates. Changes in physical environment covariates such as vacant lots could plausibly be affected by anchor strategies such as campus expansion, so the null effect of physical strategies requires more evidence. From what is available here, however, the positive coefficient on physical strategies confirms some of the prior anchor literature. First, several of the case studies on university-led urban development and gentrification focused on universities using physical strategies, particularly the Auraria Higher Education Center in Denver (Page & Ross, 2016; Walker & East, 2018) and Columbia's New Manhattanville campus in New York City (Gregory, 2013). Both projects involved purchasing land, removing existing housing and/or businesses, and building completely new campuses despite local opposition.

Along with the direct displacement described in the case studies, the economic literature on anchor institutions and the urban geography literature on studentification provide insights into less direct ways physical strategies could contribute to gentrification. Building new sports stadiums increased surrounding land values (Ahlfeldt & Maennig, 2009), and employment in anchor institutions have positive spillover effects on employment (Zou, 2018) and wages (Mandich & Dorfman, 2017) in other local industries. While simply expanding an existing campus may not create new jobs, the anchor initiatives in which brand-new campuses are built would certainly serve as a shock to local labor markets. The Auraria Higher Education Center, the New Manhattanville campus, Arizona State University's downtown Phoenix campus, and the University of Washington's downtown Tacoma campus were all cases included in the sample of entire campuses built in neighborhoods.

Campus expansions also could have accelerated studentification in the targeted neighborhoods, which may accelerate gentrification. Studentification is a process of neighborhood change in which students move into a neighborhood, thus shaping it to their preferences. A new campus will assuredly bring students to new neighborhoods, and those students often will be looking for off-campus housing (Duke-Williams, 2008; Sage et al., 2012). In cases where a campus expands into a new neighborhood, such as with a new residence hall, the enhanced student foot traffic may alter the types of businesses that are able to thrive in that area. Though the results presented here do not support the claim gentrification is an inevitable result of anchor initiatives, physical expansions such as these appear to be more likely accelerate gentrification than the other anchor strategies.

The null effects on intellectual and human capital strategies provide interesting interpretations as well. While not significantly altering rates of gentrification, strategies leveraging intellectual and human capital had no effect on any individual markers, contrary to some conceptual literature on universities and the knowledge economy. Specifically, Etzkowitz (2014) argued research entrepreneurialism such as technology transfer could be a major way universities engage in economic development. Geiger and Sá (2005) also described how states attempted to capture economic benefits from research for regional development. The null effects found here, however, indicate investments of intellectual capital like technology transfer or business incubators may not be the economic drivers universities are looking for, at least at a local level. If intellectual capital development work by universities had effects on local economies, the effects likely would have been seen in changes in wages, percent of the population with a 4-year degree, or the percent of the population employed in a professional field, as new businesses are built marketizing university knowledge (Etzkowitz, 2014). Instead,

there were no measurable gains as a result of being targeted by an initiative using intellectual strategies. This analysis cannot discount any regional economic gains, nor can it discount any gains from the research enterprise that are not targeted specifically toward a neighborhood, but there do not appear to be any meaningful changes at the neighborhood-level. Similarly, academic engagement and investments in local human capital had no visible effects on gentrification or any individual markers of upscaling. This result is not entirely surprising as the fundamental goals of academic engagement are not to shape market growth but to democratize knowledge production and direct research toward complex problems (Fitzgerald et al., 2012). Universities should consider the desired community outcomes before designing community engagement infrastructure, informed by research on anchor institutions and the scholarship of engagement.

The final research question asked whether a tract's vulnerability to gentrification prior to treatment predicted if the tract was targeted by an anchor institution initiative. The vulnerability scale ranged from 0 to 4 based on several socioeconomic markers. An increase of 1 point on the scale was associated with an increase of .05 in the odds the tract was targeted by an anchor initiative. This result supports previous literature on internal pressures for universities to become engaged in local development. Rationales for anchor initiatives are often tied to university concerns about the effect of perceived neighborhood quality on the prestige of the university (Dalton et al., 2018; Maurrasse, 2007). The West Philadelphia Initiatives at the University of Pennsylvania and the Greater University Circle initiative at the University of Cincinnati were explicitly formed due to concerns about recruiting students and faculty with surrounding neighborhoods that were conceptualized as being of poor quality (Etienne, 2012; Maurrasse, 2007). The analysis in this dissertation cannot attribute causal claims to this question or parse the exact motivations for initiative formations, but there is evidence of a relationship between

gentrification vulnerability and being targeted by an initiative. Qualitative work is particularly warranted here to further examine why universities select certain neighborhoods for development and to what extent perceptions of neighborhood quality are viewed through a racial or class lens.

Overall, these analyses present a somewhat complex relationship between anchor institution initiatives and gentrification. On average, anchor initiatives slow rates of gentrification all else equal, but financial strategies tend to slow gentrification while physical strategies tend to accelerate it. This evidence stands in contrast to prior literature based on individual case studies that found anchor initiatives were major forces of gentrification. The analyses presented here cannot determine the precise causal mechanism at work. I have speculated based on prior literature and the available data either crowdout or developed resident capacity, but additional research is needed to parse the two potential mechanisms. The data also do not provide much insight into why certain neighborhoods and strategies are chosen over others, the conditions in which initiatives change and develop over time, or the extent to which resident displacement is occurring. The answer to the first question seems very likely to be due to perceived poverty levels, as argued by Etienne (2012) and supported by my finding that gentrification vulnerability predicted being targeted by an anchor institution. More research is needed to answer the second and third questions. The results offer an initial understanding of the causal relationship between anchor initiatives and gentrification, but further work is necessary to more fully inform university-led urban development.

Implications

This dissertation is a first step toward a clear picture of anchor initiatives and the associated community outcomes. From these results, universities can glean information to guide future anchor initiative work, and researchers can build toward stronger and more precise

models. Continued robust, rigorous research can guide data-driven work by anchor initiatives to ensure university-led urban development is both equitable and efficient. I therefore offer implications for anchor institution initiatives and recommendations for future research.

Anchor Institution Initiatives

Given universities seem likely to continue to serve as anchor institutions, they should carefully consider how they are leveraging their capital and shaping the cities around them. This dissertation provides evidence to help universities make informed decisions in how to engage with communities to build local wealth without displacement. I make three main recommendations for how universities should interpret the results: they should consider outcomes beyond the confines of the campus, the strategy universities deploy matters, and any physical expansion should be carefully considered to avoid displacement.

First, universities should carefully consider the community outcomes of their work. Anchor institution initiatives, as defined here, had explicit goals of local development, but universities have yet to fully assess effects beyond the campus. This dissertation finds anchor initiatives tend to slow growth in income per capita and education levels. If the causal mechanism is enhanced community capacity to resist displacement, universities should continue to invest capital directly in targeted neighborhoods to build local wealth and contribute to an equitable distribution of economic growth. If the causal mechanism is crowdout, however, universities should approach anchor work more carefully, because initiatives may be crowding out private developers who otherwise would build new housing or offer higher-paying jobs that may be beneficial to existing residents. Previous evidence suggests additional housing units do reduce rent in existing units (Glaeser & Gyourko, 2018; Li, 2019), although there are concerns new housing attracts new amenities that then increase rents. These concerns seem well founded

as urban amenities are major drivers of gentrification (Hwang & Lin, 2016). There was not a statistically significant effect on median rent in the primary specification. When the treatment was disaggregated, financial strategies had a negative effect on median rent. Private employers may have been crowded out from the targeted neighborhoods, thus were unable to build or otherwise provide new amenities. If crowdout is the mechanism, quality of life of residents may or may not be improving. The crowdout may be preventing private developers from creating housing or amenities attractive to higher-income individuals. In this case, crowdout may be slowing gentrification without an inherent negative effect on socioeconomic measures of current residents. Conversely, anchor initiatives may actually be depressing wage growth within individuals by crowding out potential employers. Universities should conduct closer assessments in partnership with local community members and other stakeholders to determine the conditions in targeted neighborhoods and how the initiatives may be empowering or repressing communities. The evidence presented here, however, is promising in that centering universities in development strategies can slow gentrification and build community wealth without displacement.

Second, depending on the goals of the university, the chosen strategy matters for outcomes. Financial strategies, whatever the mechanism, are most likely to slow gentrification. These strategies include programs such as mortgage incentives for faculty and staff, prioritizing local businesses in purchasing decisions, PILOT agreements with local governments, purchasing land for renovation and resale, and funding community development corporations. Universities that are serious to their commitment to build local wealth should work with stakeholders to identify how to invest financial resources in effective ways that will build capacity without stifling equitable growth. The null effects on intellectual and human capital indicate universities

should consider what their intended outcomes of these types of activities are. Any potential effects of technology transfer or business incubators on neighborhood development are not captured at this scale, though there may be benefits at the regional level. Academic engagement also had no effects on development, but the economic measures used in this dissertation may not represent universities' goals for community engaged scholarship. The common purpose of engaged scholarship is to democratize knowledge production and apply research directly to complex problems (Fitzgerald et al., 2012). These goals may lead to projects that are not captured within housing, income, and other economic measures. For example, a public health awareness campaign, while possibly effective in its own right, may not result in statistically significant changes in other neighborhood change metrics. Universities can use the results of this dissertation to guide their strategies and align them with their intended outcomes. If universities are truly devoted to supporting current residents and building wealth equitably to pursue goals of social justice, financial strategies are the most promising strategy. Rather than emphasizing intellectual and human capital investments such as service-learning days or individual faculty projects as evidence of comprehensive community development, universities should directly invest their financial resources in local neighborhoods in mutually beneficial exchanges. Service-learning and engaged research are not mutually exclusive of more direct financial investments, but direct financial investments have a much clearer effect on economic measures of community wealth. Some financial strategies universities have used include purchasing from local businesses, prioritizing purchasing from minority and women-owned businesses to confront underlying wealth inequities based on race and gender, housing university endowments in local banks, and prioritizing local applicants in hiring decisions to the extent possible while continuing the universities' missions (Hodges & Dubb, 2012).

Finally, when choosing strategies, universities should be careful in how physical expansion is leveraged. Physical strategies involve development of university-owned properties. These strategies had a positive effect on gentrification. Though the effect disappeared with the inclusion of covariates, this may have been due to conditioning on variables that were also affected by the treatment, such as percentage of vacant units in the tract. Universities need to be intentional and work closely with community stakeholders, such as existing residents, when expanding the physical campus to avoid displacement not only from the area of construction but any potential increases in rents in the surrounding areas.

Before creating a new initiative or re-evaluating an existing project, universities should identify intended outcomes, match the outcomes to an appropriate strategy, and assess the work as it is ongoing to ensure displacement is not accelerating, all in deep collaboration with community stakeholders. This dissertation also presents a method for universities to assess their own work, particularly as the American Community Survey now releases data more frequently than every decade, so universities can draw from census data regularly to assess projects every few years as opposed to every decade. A combination of census data, additional survey questionnaires, and interviews with residents, all in partnership with local stakeholders, can provide a clear assessment of anchor initiatives for universities to inform their future work by measuring economic gains and ensuring these gains are not resulting in displacement.

Future Research

Beyond assessment for individual projects, this dissertation serves as an initial exploratory study into a potentially fruitful line of inquiry into the causal relationship between anchor institution initiatives and gentrification. Additional research is essential to further understand how universities and urban development are connected. I identify five overarching questions for future inquiry: research delving further into each particular strategy, research

parsing out the two potential causal mechanisms, further examination of the role of institutional type or the size of the anchor initiative, the role of students and student housing, and qualitative work on the motivations behind creating an anchor initiative.

First, future research should more closely examine each strategy as its own treatment. This dissertation gave a sense of the effects of the different strategies, but narrowing the focus would allow for more precise causal identification. For example, one study could estimate the effect of mortgage incentives on home values. Another study could examine the effect of university-funded community development corporations on income. These studies could use data at a smaller scale than the census tract, perhaps by leveraging tax data to obtain individuals as the unit of analysis. With a smaller scale, these studies could also use causal identification strategies with a more random delineation between the treatment and control groups in a way that is as good as random on all unobserved variables. The propensity-score matching technique used here can only condition on the observed variables. Though the proposed studies would be less generalizable and speak only to specific types of anchor initiatives, they would offer more precise information to guide universities in community development work.

Second, more research is needed to parse out which causal mechanism is at work, community capacity building or crowdout. Several methodological approaches could answer this question. Quantitatively, structural modeling as opposed to the reduced form modeling of this dissertation would provide a better understanding of the causal mechanism. Including additional unobserved parameters, such as the turnover rate in housing units, could also give a better idea of whether displacement is occurring. Qualitatively, in-depth case studies could build stronger theoretical understandings of the causal link between anchor initiatives and neighborhood

change. Knowing why and under what conditions anchor initiatives slow or accelerate gentrification is essential for moving forward in university-led urban development.

Third, prior research on anchor institutions found qualitative differences in anchor initiatives based upon institution type of the host university. More specifically, wealthier universities were more likely to be engaged in comprehensive revitalization efforts focused on enacting neighborhood change, generally to aid in student and faculty recruitment efforts (Hodges & Dubb, 2012). Intuitively, wealthier universities would therefore be more likely to contribute to gentrification at a greater magnitude than, say, community colleges. Historically Black Colleges and Universities may also have different effects than Predominantly White Institutions, particularly given the importance of race in prior literature on gentrification. More research is needed to parse out the heterogenous effects on gentrification based on institution-type and organization resources. Similarly, the size and intensity of the initiative likely plays a role in the magnitude of the effect. Wealthier schools can afford to take larger, more sustained action than poorer schools. For example, the University of Pennsylvania devoted enormous amounts of resources to West Philadelphia over the course of more than a decade, buying apartment buildings and homes as well as subsidizing mortgages. A less wealthy school could not make such commitments and may rely on either short-term projects or cheap, in-kind services like business consulting. Size and intensity are important indicators that should be explored more. One way to examine these indicators is to regress the gentrification index on some continuous measure of the size and intensity of the anchor initiatives. Two potential measures are university expenditures on the project or, in the case of physical campus expansions, each additional square foot of new buildings.

Fourth, the roles of students, student movements, and student housing in patterns of neighborhood change are understudied in U.S. literature. Studentification is a promising conceptual frame for analyzing how changes in enrollment affect nearby neighborhoods as students seek off-campus housing, food, and entertainment. Future research should build upon the work on studentification in the U.K. to study how in-migrations of students affect different measures such as home values or rent.

Finally, future qualitative work should study university motivations for creating and sustaining anchor institution initiatives. The final research question answered in this dissertation found the vulnerability of a tract to be gentrified was a statistically significant predictor of being targeted by an anchor institution initiative. This estimate is not causal, but the most intuitive interpretation based upon prior literature is universities create and target initiatives based on perceived poverty. Case studies with interviews of key decision-makers could shed light on the conditions in which universities choose to invest resources in certain neighborhoods. These case studies could be analytically useful by looking for language coded by race and class and examining how race and class shape university perceptions of neighborhood quality, which then in turn shape the anchor initiative strategies universities deploy.

With this combination of quantitative and qualitative research, universities will be better informed to economically engage with local communities. The results presented here offer an introductory idea of the causal relationship between anchor initiatives and gentrification, but more work is needed, not only on gentrification but on university-led urban development writ large. Understanding the nature of this relationship and steps universities can take in partnership with local stakeholders to build equitable wealth can improve anchor initiatives and the associated community outcomes.

Conclusion

Higher education as an urban institution is an understudied, underestimated phenomenon. As capital flows into cities at increased rates, scholars of higher education must grapple with how universities are implicated in directing these flows and the spatial organization of cities. This study examined anchor institution initiatives between the years 1970 and 2010 using difference-in-differences analyses. Anchor initiatives as a whole have negative effects on gentrification through decreases in the percentage of the population with a college degree, decreases in the percent change in income per capita, and increases in the percentage of the population under the poverty level. The causal mechanisms could be either enhanced community capacity to resist displacement or crowdout of potential private developers and amenities. Financial strategies were the main drivers of the negative effect, but physical strategies had a positive effect on gentrification, so universities should be careful when expanding the physical campus. This study offers some of the first causal evidence of anchor initiatives and community outcomes, but more work is required to fully understand the connection between anchor initiatives and the associated communities. Universities have been inextricably tied to cities since their inception in the Middle Ages, and there is no indication this will change in the future. Research should continue to examine the nature of universities and cities, and universities should strive to be productively engaged with their cities but in constructive, equitable ways.

APPENDICES

APPENDIX A: VARIABLE CODEBOOK

Table 13:

Codebook for variables

Variable Label	Variable Name	Variable Description
Median housing values	mhmval	Median house value
Median rent	mrent	Median monthly contract rent
% population White	white	Percentage
Per capita income	incpc	Per capita income
% in poverty	ppov	Percentage
% population employed in a professional field	pprof	Percentage
Anchor institution initiative	anchor	0=no, 1=yes
Post-treatment	post	0=no, 1=yes
Initiative leverages financial capital	financial	0=no, 1=yes
Initiative leverages physical capital	physical	0=no, 1=yes
Initiative leverages intellectual capital	intellectual	0=no, 1=yes
Initiative leverages human capital	human	0=no, 1=yes
Gentrification vulnerability scale	vulnerability	0-2=not vulnerable, 3-4=vulnerable
Population density	popdens	Total population divided by square miles of the tract
Distance from central business district	dcbd	Miles as the crow flies
% owner-occupied housing	pown	Percentage
% vacant lots	pvac	Percentage
% multi-family units	pmulti	Percentage
% structures > 30 years old	p30old	Percentage
% households in neighborhood for <10 years	p10yrs	Percentage
% residents <17 years old	p18und	Percentage
% residents >60 years old	p60up	Percentage

APPENDIX B: ANCHOR INSTITUTION INITIATIVES

Table 14:

Anchor institution initiatives and targeted census tracts

University	Initiative	City	Census Tracts	1st Treatment Year
Case Western Reserve University	Cleveland's Greater University Circle Initiative	Cleveland	1131.01, 1135, 1136, 1183.01, 1186.02, 1187, 1188, 1189, 1191, 1413	2005
Georgetown University	Ward 7 Initiative	Washington, D.C.	68.04, 76.03, 76.04, 77.03, 77.07, 77.08, 77.09, 78.03, 78.04, 78.06, 78.07, 78.08, 78.09, 96.01, 96.02, 96.03, 96.04, 99.01, 99.02, 99.03, 99.04, 99.05, 99.06, 99.07	1989
Loyola University Chicago	Lake Shore Campus	Chicago	104, 105.03	2006
Metropolitan State University	Place-Making	St. Paul	317.01, 331, 344, 345, 346.01, 346.02	2004
Missouri State University	IDEA Commons	Springfield	1, 7	2004
Ohio State University	Campus Partners, University District	Columbus	6, 10, 11.1, 12, 13, 16, 17, 18.1	1995
Rutgers University – Newark	University Heights Science and Technology Park	Newark	10, 11, 64, 81, 82, 229	1992
St. Louis University	Revitalize Midtown	St. Louis	1184, 1186, 1193, 1211, 1275	2005
University of Arkansas at Little Rock	University District Partnership	Little Rock	18, 19, 21.02, 21.03	2006

Table 14 (cont'd)

University of Louisville	Sustainable Urban Neighborhoods	Louisville	2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 21, 23, 24, 27, 28, 30, 35, 51	1994
University of Louisville	Signature Partnership	Louisville	2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 18, 21, 23, 24, 27, 28, 30, 35, 51	2007
University of Nevada, Las Vegas	Midtown UNLV	Las Vegas	25.04, 25.06	2004
University of North Carolina, Charlotte	University Place	Charlotte	55.23	1985
University of San Diego	Mulvaney Center	Linda Vista	86, 87.01, 88, 89.01, 90	1985
The University of Utah	University Neighborhood Partners	Salt Lake City	1001, 1003.06, 1003.07, 1003.08, 1005, 1006, 1025, 1026, 1027.01, 1027.02, 1028.01, 1028.02, 1029, 1140, 1147	2001
Virginia Commonwealth University	Carver-VCU Partnership	Richmond	402	1996
San Jose State University	CommUniverCity	San Jose	5014.01, 5014.02, 5015.02	2004
San Jose State University	Joint University-Public Library	San Jose	5009.01	2003
Wayne State University	Office of Economic Development	Detroit	5173, 5175, 5180, 5202, 5203, 5204, 5225	1991
University of San Francisco	Engage San Francisco	San Francisco	151, 152, 153, 154, 155, 157, 158.01, 158.02, 159, 160, 161,	2004

Table 14 (cont'd)

			162, 163, 164, 165	
Syracuse University	Near Westside Initiative	Syracuse	30, 39, 40	2007
Syracuse University	Connective Corridor	Syracuse	30, 32, 34, 43.02	2005
California State University, Monterey Bay	Chinatown Renewal Project	Salinas	18.02	2007
Cleveland State University	District of Design	Cleveland	1077.01, 1078.02, 1083.01, 1087.01	2006
Harvard University	One Brigham Circle	Boston	809	2003
Emerson College	Midtown Cultural District	Boston	701.01	1998
Northeastern University	Davenport Commons	Boston	806.01	2001
Johns Hopkins University	East Baltimore Redevelopment, Inc.	Baltimore	603, 604, 703, 704, 808	2003
Arizona State University	Downtown Phoenix Campus	Phoenix	1130, 1131, 1141, 1142	2006
Georgia State University	Downtown Atlanta Revitalization	Atlanta	19, 21, 26, 28, 35, 36, 119	1992
University of Cincinnati	Uptown Consortium	Cincinnati	17, 18, 22, 23, 25, 26, 27, 29, 30, 32, 33, 66, 68, 69, 70, 71	2003
Trinity College	Learning Corridor	Hartford	5028, 5029, 5030	1996
Indiana University-Purdue University at Indianapolis	Downtown Revitalization	Indianapolis	3910	1982
Indiana University-Purdue University at Indianapolis	Great Indy Neighborhoods Initiative	Indianapolis	3406, 3412, 3416, 3564, 3907	1997

Table 14 (cont'd)

University of Washington, Tacoma	New Downtown Campus	Tacoma	616.01, 616.02	1995
Auraria Higher Education Center	New Auraria Campus	Denver	19.02	1971
Youngstown State University	Smoky Hollow Revitalization	Youngstown	8140	2003
Portland State University	Urban Center Project	Portland	56	1995
Clark University	University Park Partnership	Worcester	7312.02, 7312.03, 7312.04, 7313	1995
Clark University	Gateway Park	Worcester	7305	2000
University of Pennsylvania	West Philadelphia Initiatives	Philadelphia	77, 78, 79, 80, 81.01, 81.02, 82, 83.01, 83.02, 84, 85, 86.01, 86.02, 87.01, 87.02, 88.01, 88.02, 90, 91, 92, 93, 94, 95, 96, 98.01, 98.02, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 117, 118, 119, 120, 121, 122.01, 122.03, 122.04, 369, 375, 9800, 9808	1994
Columbia University	Manhattanville Campus	Harlem	209.01, 211, 213.03, 215, 219, 223.02	2006
LeMoyne-Owen College	LeMoyne-Owen Community Development Corporation	Memphis	46, 59, 115, 116	1989
Massachusetts Institute of Technology	University Park	Cambridge	3531.01, 3532	1975

Table 14 (cont'd)

San Francisco State University	Visitacion Valley	San Francisco	258, 259, 264.01, 264.02, 264.03, 264.04, 605.02, 9805.01	1996
Xavier University	Xavier Triangle Neighborhood Development Corporation	New Orleans	70, 72, 124, 128	1991
Temple University	Temple Town	Philadelphia	139, 140, 147, 148, 152, 153, 377	1984
Indiana University Northwest	University Park	Gary	123, 124	2003
Duke University	Duke-Durham Partnership	Durham	5	2001

APPENDIX C: ANCHOR INSTITUTION INITIATIVE DESCRIPTIONS

Case Western Reserve University - Financial, Physical, Human

Cleveland

1. Cleveland's Greater University Circle Initiative
    a. Uptown housing Project: building the Museum of Contemporary Art and physical development of a Main Street.
    b. Transportation infrastructure: Gathering funding for transportation projects
    c. Evergreen Cooperatives: Cooperative businesses from which anchors purchase
    d. NewBridge education and training effort: Free art and tech after-school activities for k-12 students and job training for adults
    e. Greater Circle Living: employer-assisted housing program for anchor employees who buy, rent, or renovate property in Greater University Circle.

Georgetown University - Intellectual, Human

Washington, D.C.

1. Ward 7 Initiative
    a. DC Reads: elementary school tutoring
    b. After School Kids: tutoring and mentoring for justice-involved students
    c. Institute for College Preparation: Pre-college program for middle and high schoolers
    d. Kids2College: early college awareness program
    e. D.C. Street Law High School Clinic: High school course taught by Georgetown law students
    f. KIDS Mobile Medical Clinic: mobile pediatric clinic
    g. HOYA Clinic: free clinic run by Georgetown med students providing care to homeless and uninsured families

Loyola University Chicago - Physical, Intellectual

Chicago

1. Lake Shore Campus
    a. Off-campus property development and retail partnerships
    b. Service-learning and community service

Metropolitan State University - Financial, Physical, Human

St. Paul

1. Place-making
    a. Library in partnership w/ St. Paul to also be a public library
    b. Local purchasing
    c. Education pipelines

Missouri State University – Physical

Springfield

1. IDEA Commons
    a. Urban innovation park: residential, retail, commercial and entertainment facilities

Ohio State University - Financial, Physical

Columbus

1. Campus Partners, University District
    a. Homeownership incentives for faculty/staff
    b. New facilities
    c. Purchasing and renovating homes for resale
    d. Mixed use facility

Rutgers University - Physical, Intellectual, Human

Newark

1. University Heights Science and Technology Park
    a. Start-up incubator
    b. New homes and renovations to existing homes
    c. New Science Park High School

St. Louis University – Physical

St. Louis

1. Revitalize Midtown
    a. New arena and research building

University of Arkansas at Little Rock - Financial, Physical

Little Rock

1. University District Partnership
    a. Coleman Creek greenway restoration
    b. University Plaza redevelopment into academic space
    c. New intramural fields near student housing
    d. Created a CDC

University of Louisville - Intellectual, Human

Louisville

1. Sustainable Urban Neighborhoods
    a. Led a coalition in building renovations
2. Signature Partnership
    a. Early Learning Campus: early child development center

b. J. B. Atkinson Academy for Excellence: student teachers and teacher candidates placed here for enhanced academic performance
c. Law and Government Magnet high school partnered with Law School
d. Upward Bound to enhance college enrollment
e. Small Business counseling and consulting
f. Improved access to mental health services
g. Parental involvement programs
h. Youth Violence Prevention Research Center
i. Teen pregnancy prevention programs
j. Recruit professionals for medically underserved areas
k. Arts and cultural research

University of Nevada, Las Vegas – Physical

Las Vegas

1. Midtown UNLV
    a. Mixed use development and pedestrian infrastructure

University of North Carolina, Charlotte – Physical

Charlotte

1. University Place
    a. Land swap to give university-owned land to a developer: Pedestrian boardwalk around a lake with shops, offices, residences and a hotel

University of San Diego – Intellectual

Linda Vista

1. Mulvaney Center
    a. Community engagement center focused on Linda Vista neighborhood

The University of Utah - Intellectual, Human

Salt Lake City

1. University Neighborhood Partners
    a. Education pipelines
    b. Community capacity building
    c. Community engaged scholarship
    d. Community leadership

Virginia Commonwealth University – Human

Richmond

1. Carver-VCU Partnership
    a. Neighborhood policing

b. Health programs
c. Carver elementary school
d. Community and economic development programs

San Jose State University - Physical, Intellectual

San Jose

1. CommUniverCity
    a. Service learning for greenscaping
2. Joint university-public library

Wayne State University - Intellectual, Human

Detroit, *USU, Carnegie*

1. Office of Economic Development
    a. Placemaking
    b. Business support
    c. Leadership fellowships

University of San Francisco – Human

San Francisco

1. Engage San Francisco
    a. Literacy programs
    b. Transitional programming for youth moving into full-time employment

Syracuse University - Financial, Intellectual

Syracuse

1. Near Westside Initiative
    a. Property acquisition and renovation
    b. Local purchasing
    c. Home ownership grants and mortgages
    d. Service learning and engaged research projects within Near Westside
2. Connective Corridor
    a. Linking cultural spots along urban pathway using urban landscaping, bike paths, hot spots, and free shuttle services
    b. Largely done through service-learning.

California State University, Monterey Bay – Intellectual, Human

Salinas

1. Chinatown Renewal Project
    a. Community learning center
    b. Student-run garden

Cleveland State University – Intellectual

Cleveland

1. District of Design
    a. Product showrooms and design studios

Harvard University – Physical

Boston

1. One Brigham Circle
    a. Mixed-use development built in partnership with Harvard school of medicine

Emerson College – Physical

Boston

1. Midtown Cultural District
    a. Investments of close to $170 million in redevelopment strategies
        i. New structures
        ii. Rebuilt sidewalks
        iii. Outdoor café
        iv. Rebuilt neighborhood playground

Northeastern University – Physical

Boston

1. Davenport Commons
    a. Dormitory with units available to area residents

Johns Hopkins University – Physical

Baltimore

1. East Baltimore Redevelopment, Inc.
    a. Created EBRI and deeded 100 acres of land owned by JHU to EBRI
    b. Developing space into housing units, life science and biotech labs, retail, a cultural center, and public spaces

Arizona State University – Physical

Phoenix

1. Downtown Phoenix Campus
    a. Built a new campus for purposes of encouraging local development and attracting creative class

Georgia State University – Physical

Atlanta

1. Downtown Atlanta revitalization
    a. Real estate development

University of Cincinnati - Financial, Human

Cincinnati

1. Uptown Consortium
    a. Created multiple community development corporations
    b. Education and healthcare partnerships
    c. Money for local police forces to target crime hot spots
    d. Street cleaning
    e. Rehabilitating vacant and office-spots

Trinity College - Physical, Human

Hartford, *Why Community Investment is Good for Nonprofit Anchor Institutions*

1. Learning Corridor (1996 – 5028, 5029, 5030, Hartford County)
    a. Redevelop a bus depot and industrial buildings into magnet schools, theaters, workforce development centers, police sub-station, youth development center, and housing

Indiana University-Purdue University at Indianapolis - Physical, Intellectual, Human

Indianapolis

1. Downtown revitalization
    a. Used eminent domain to seize land for campus expansion (primarily sports facilities) as part of a large downtown revitalization strategy
2. Great Indy Neighborhoods Initiative
    a. Service-learning, faculty engagement
    b. School partnerships
    c. Later involvement in city-wide revitalization efforts, taking leadership in Near Westside

University of Washington, Tacoma – Physical

Tacoma

1. New downtown campus
    a. Purchased land in warehouse district and built new campus

Auraria Higher Education Center – Physical

Denver

1. New Auraria Campus
    a. Purchased land using eminent domain, relocated residents, and built new campus

Youngstown State University - Financial, Physical

Youngstown

1. Smoky Hollow revitalization
    a. Purchased land in Smoky Hollow, gifted much of it for revitalization
    b. Built new student residences

Portland State University – Physical

Portland

1. Urban Center Project
    a. New academic facility and public square to interface campus and downtown

Clark University - Financial, Physical, Intellectual, Human

Worcester

1. University Park Partnership
    a. Acquiring, rehabilitating, and reselling homes and other buildings
    b. Homeownership incentives for faculty/staff
    c. Four-year scholarships for residents of University Park
2. Gateway Park, in partnership with Worcester Polytechnic Institute
    a. Brownfields clean-up
    b. Life Science and Bioengineering Center for research labs
    c. Biotech incubator
    d. Housing developments

University of Pennsylvania - Financial, Physical, Intellectual, Human

Philadelphia

1. West Philadelphia Initiatives
    a. Mortgage incentives and loans for renovations for faculty and staff living in target area
    b. Purchase vacant homes for renovation and resale
    c. Purchase apartment buildings for renovation
    d. Campus expansion with mixed-use, public-facing buildings
    e. Engaged research and service-learning
    f. University-administered charter school
    g. Expansion of university police beyond campus and safety measures such as streetlights

Columbia University – Physical

Harlem

1. Manhattanville campus
    a. Purchased land and used eminent domain for new campus

b. Campus designed intentionally to blend with surrounding neighborhood

Lemoyne-Owen College – Financial

Memphis

1. LeMoyne-Owen Community Development Corporation
    a. Investments in Soulsville through the CDC

Massachusetts Institute of Technology – Physical

Cambridge

1. University Park
    a. Purchased land, demolished existing buildings to create a research park, condominiums, hotel, and supermarket

San Francisco State University – Human

San Francisco

1. Visitacion Valley
    a. Training and employment center in a public housing project
    b. Connected residents to city officials and agencies, co-authored different proposals
    c. Literacy and writing workshops for children

Xavier University - Financial, Human

New Orleans

1. Xavier Triangle Neighborhood Development Corporation
    a. Xavier began the CDC with seed funding from a Ford Foundation grant.
    b. Home rehabilitation
    c. Promoting cooperative home ownership
    d. Seed funding for small businesses in the target area
    e. Beautification and public safety partnerships

Temple University – Physical

Philadelphia

1. Temple Town
    a. University expansion
    b. Attracting businesses
    c. Sports center and entertainment complex

Indiana University Northwest – Physical

Gary

1. University Park

a. Convened multiple stakeholders in district planning
b. Built a new medical building

Duke University – Financial

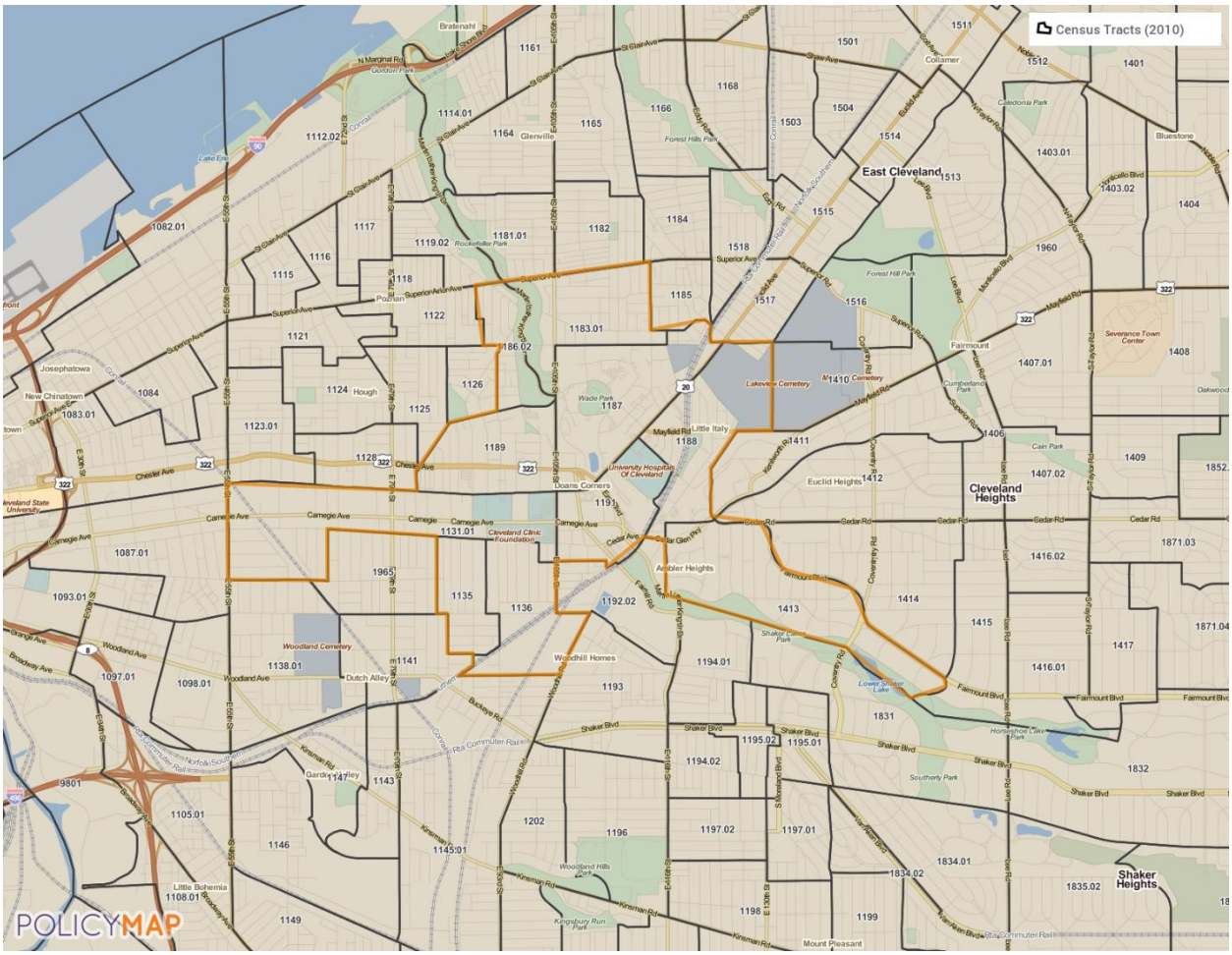
Durham

1. Duke-Durham Partnership
    a. Created "Quality of Life" nonprofit
    b. QoL, using loans from Duke, purchased land then resold at-cost to affordable housing developers

APPENDIX D: ANCHOR INSTITUTION INITIATIVES MAPS BY CENSUS TRACT

Figure 6:

Census tracts containing the Cleveland's Greater University Circle Initiative



Note: All maps created through PolicyMap software (PolicyMap, 2020).

Figure 7:

Census tracts containing the Ward 7 Initiative

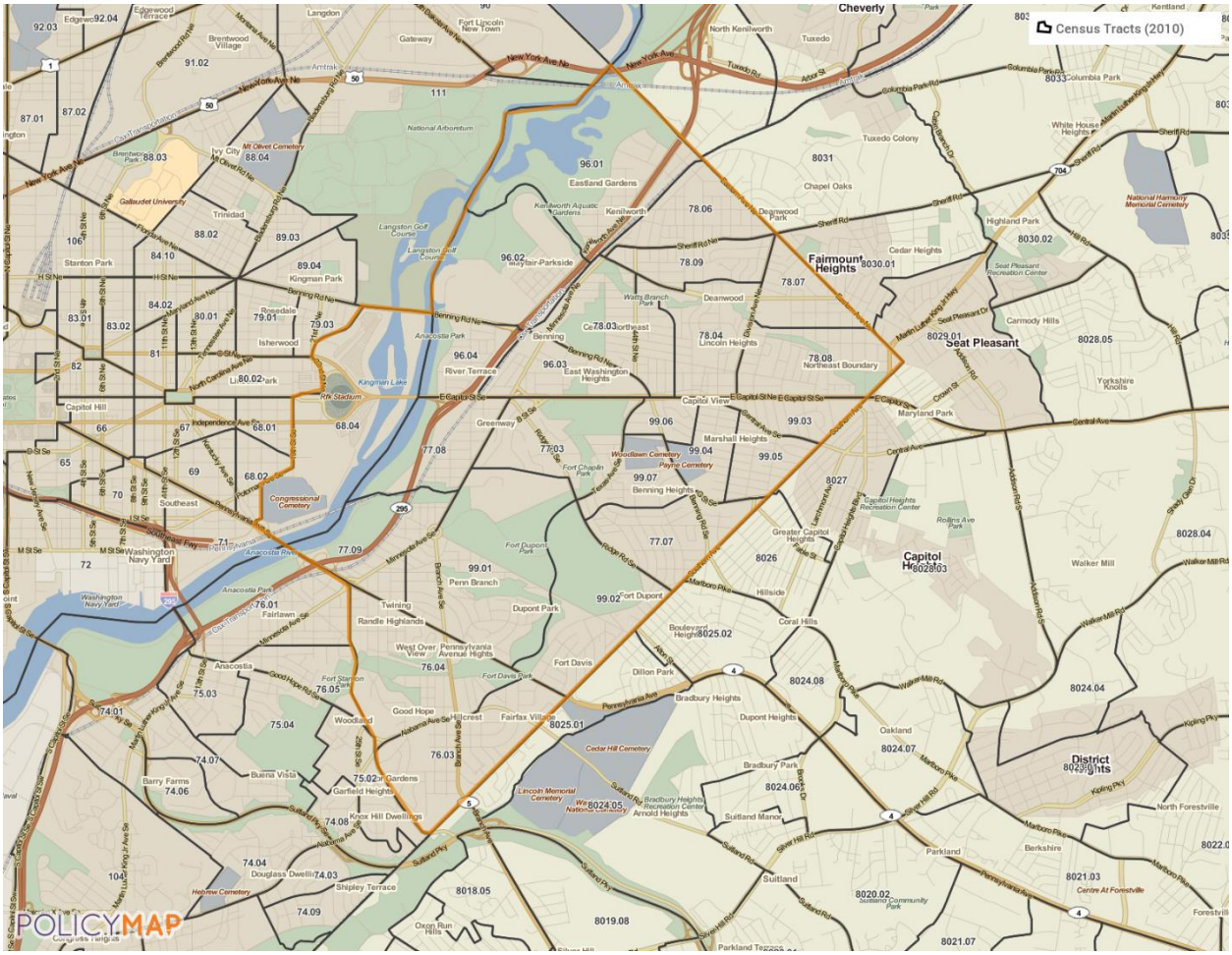


Figure 8:

Census tracts containing the Lake Shore Campus

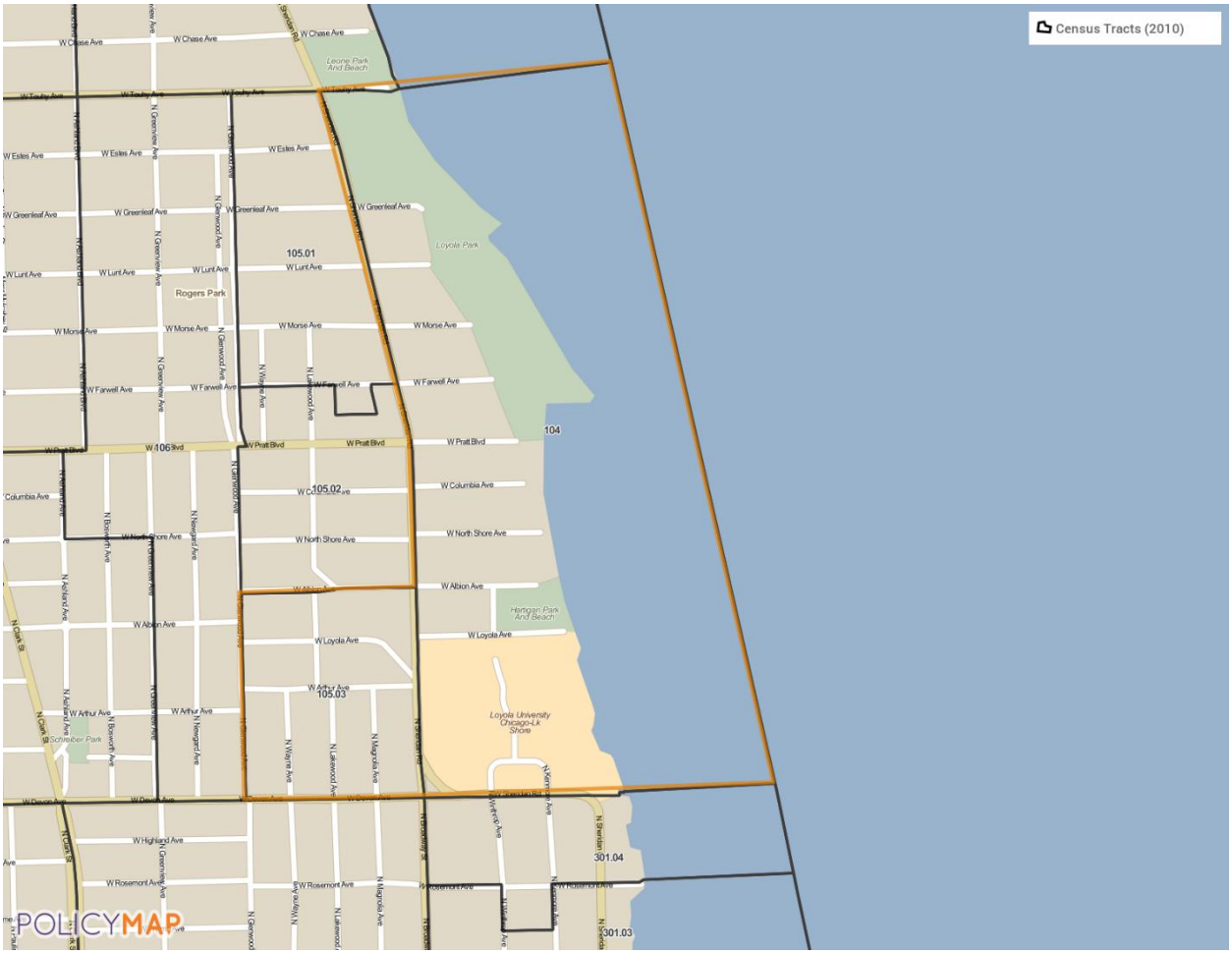


Figure 9:

Census tracts containing the Place-Making initiative by Metropolitan State University

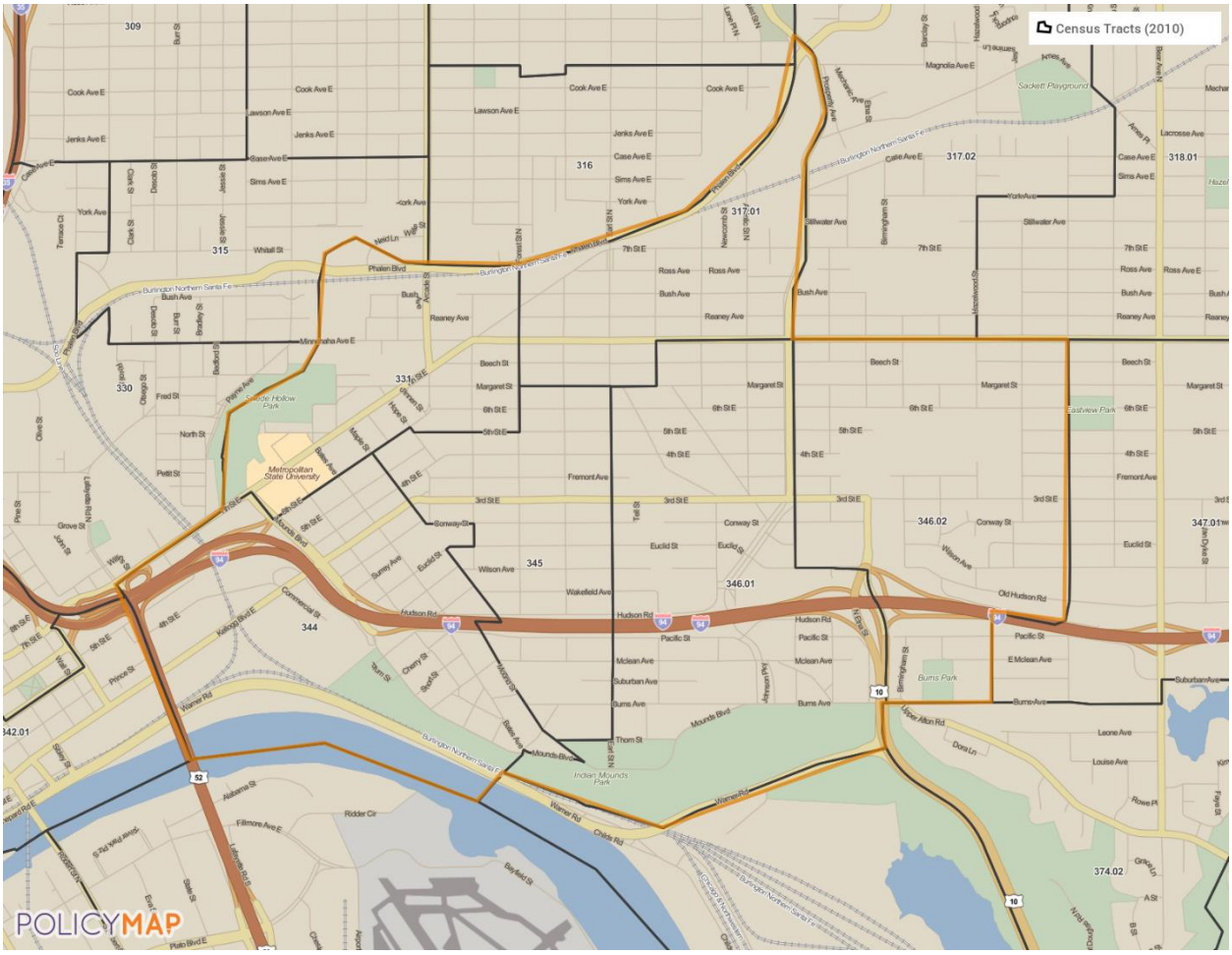


Figure 10:

Census tracts containing the IDEA Commons initiative by Missouri State University

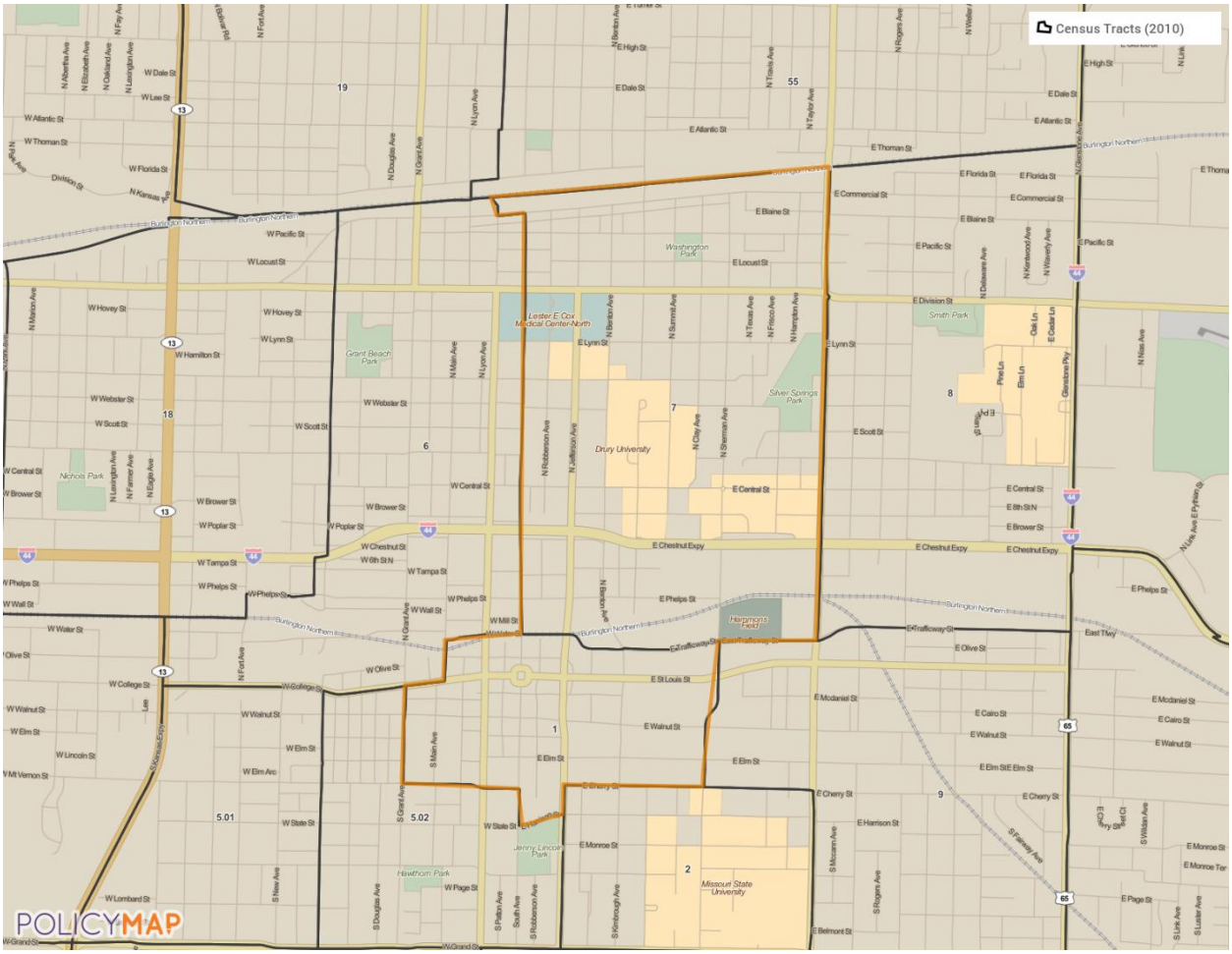


Figure 11:

Census tracts containing the Campus District, University Park initiative by Ohio State University

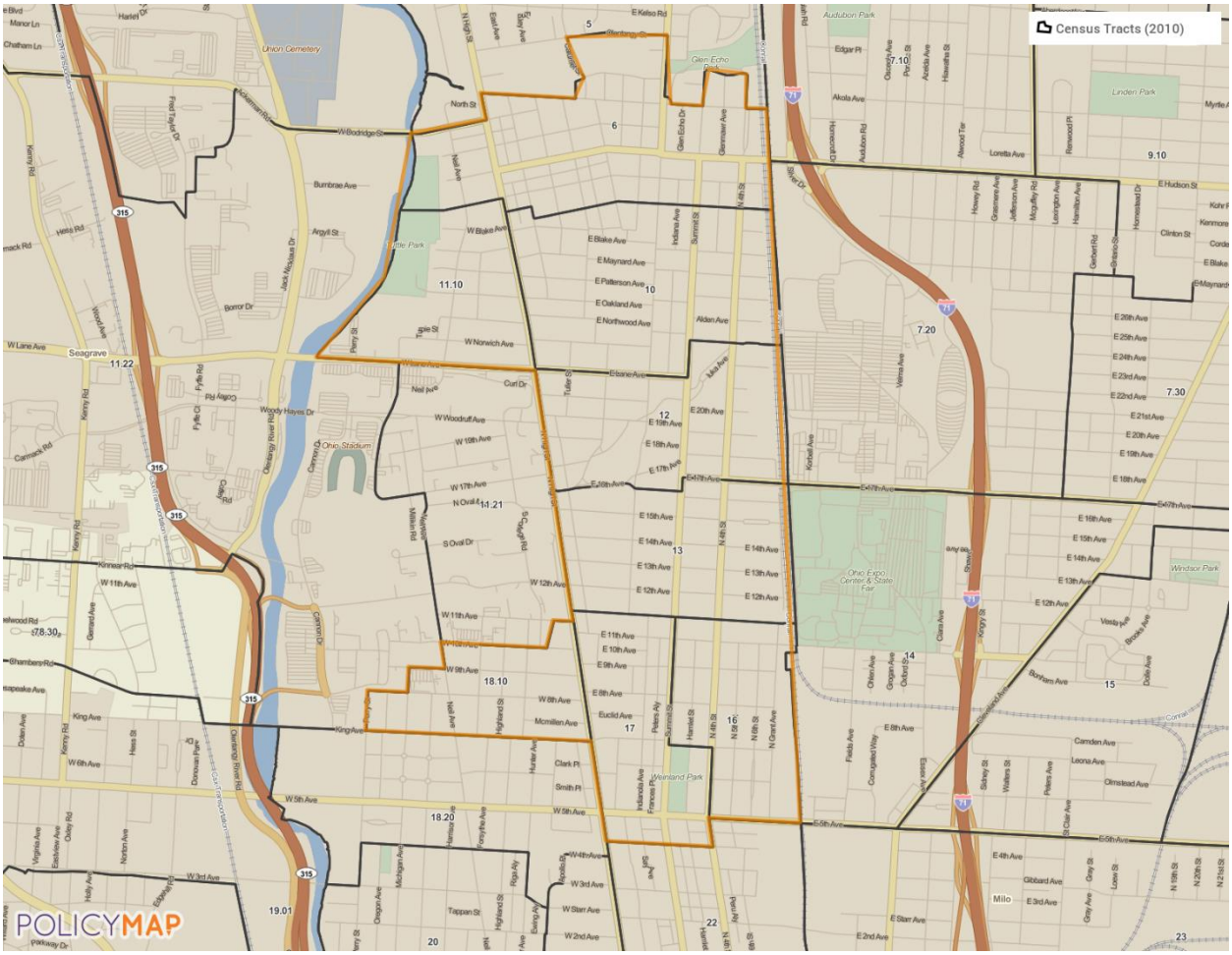


Figure 12:

Census tracts containing the University Heights Science and Technology Park initiative by Rutgers University – Newark

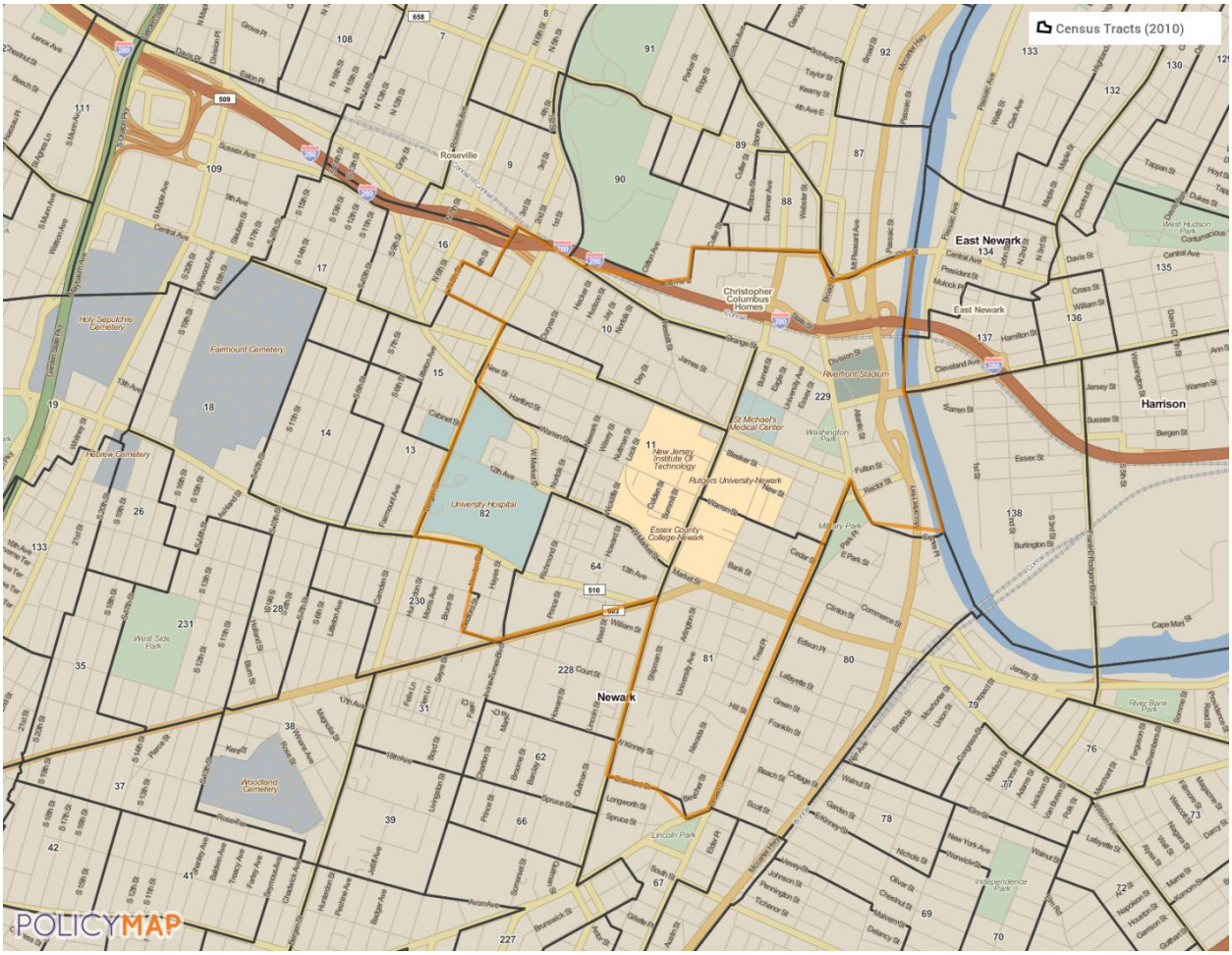


Figure 13:

Census tracts containing the Revitalize Midtown initiative by St. Louis University

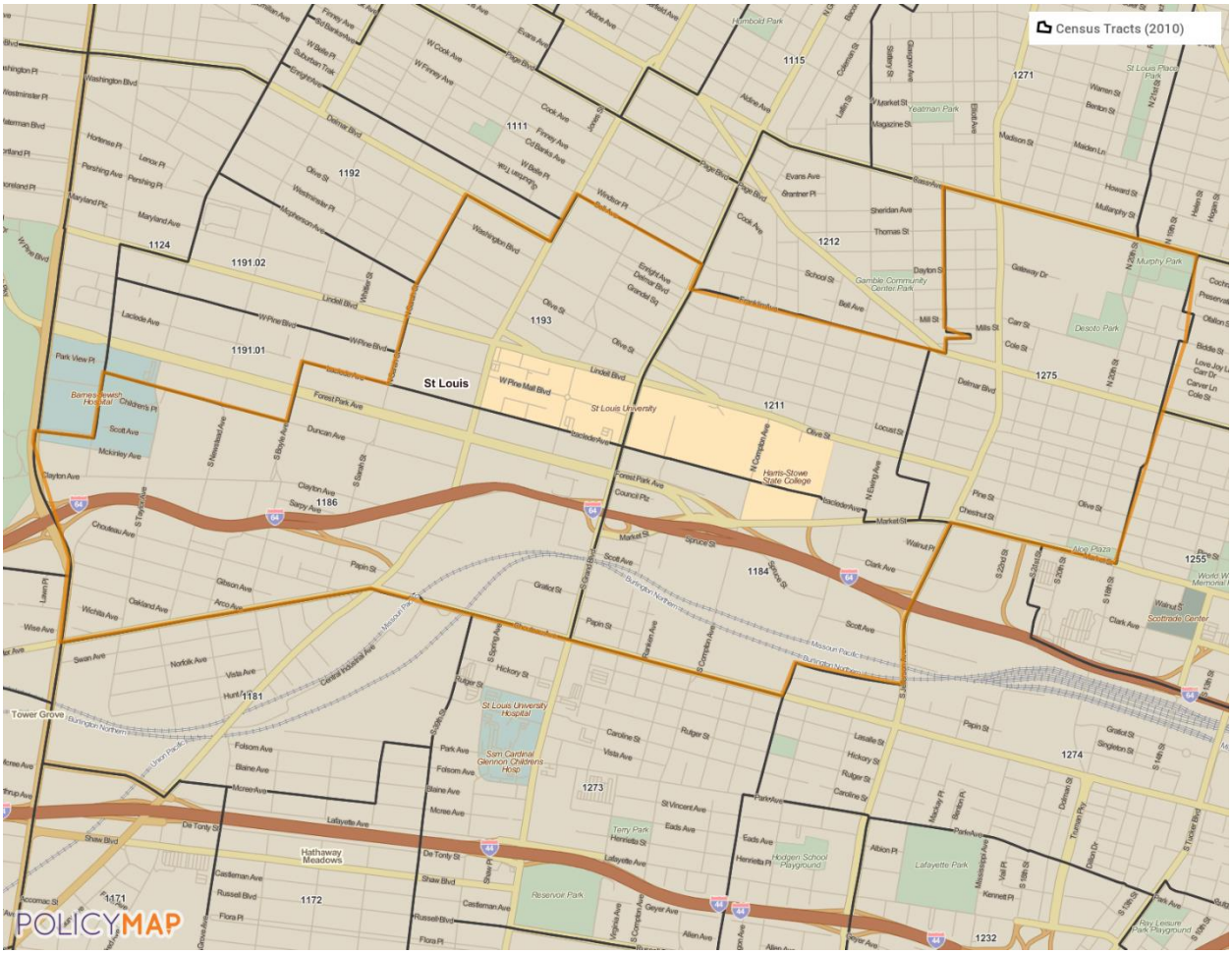


Figure 14:

Census tracts containing the University District Partnership initiative by the University of Arkansas at Little Rock

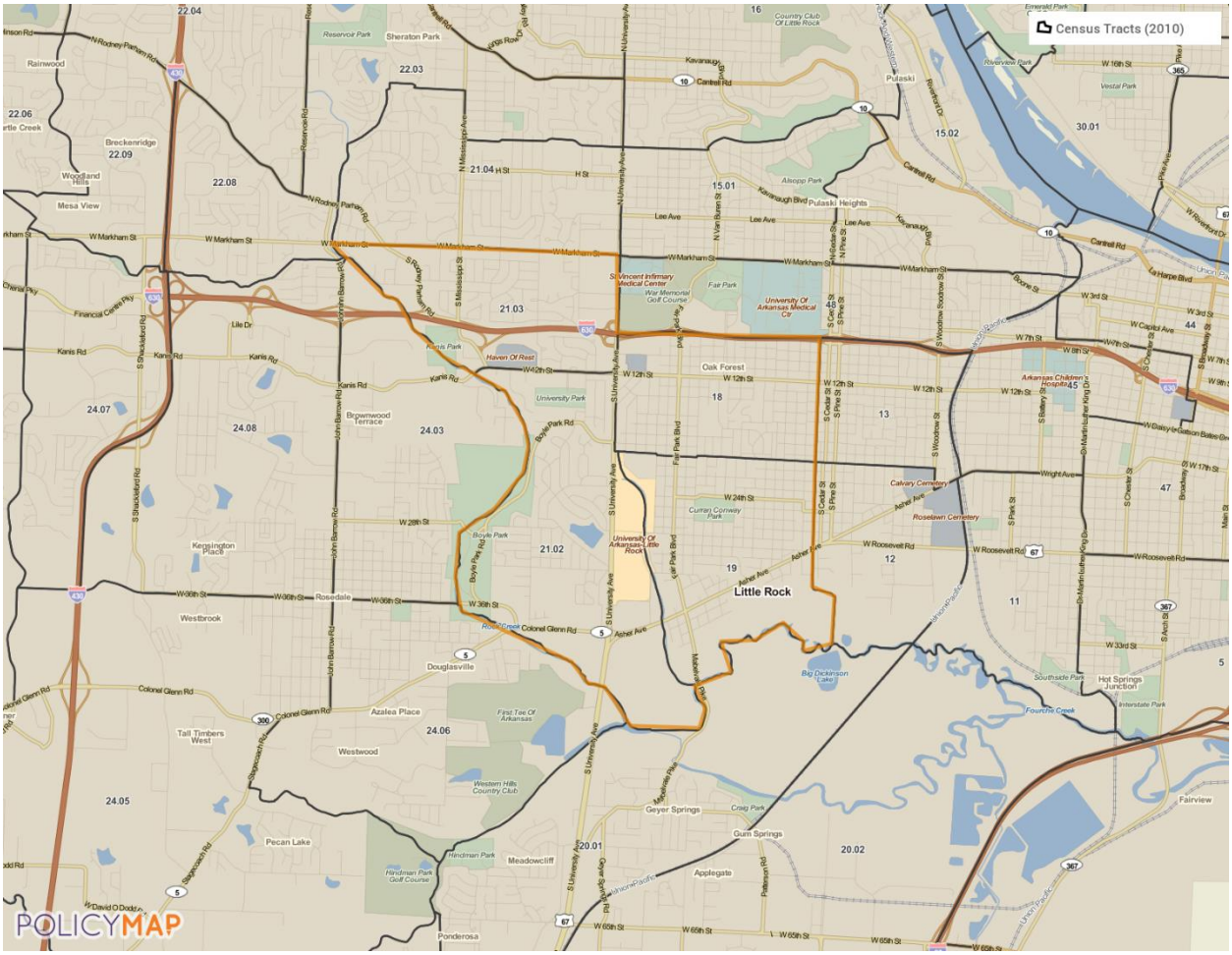


Figure 15:

Census tracts containing the Sustainable Urban Neighborhoods initiative and Signature Partnership initiative by the University of Louisville

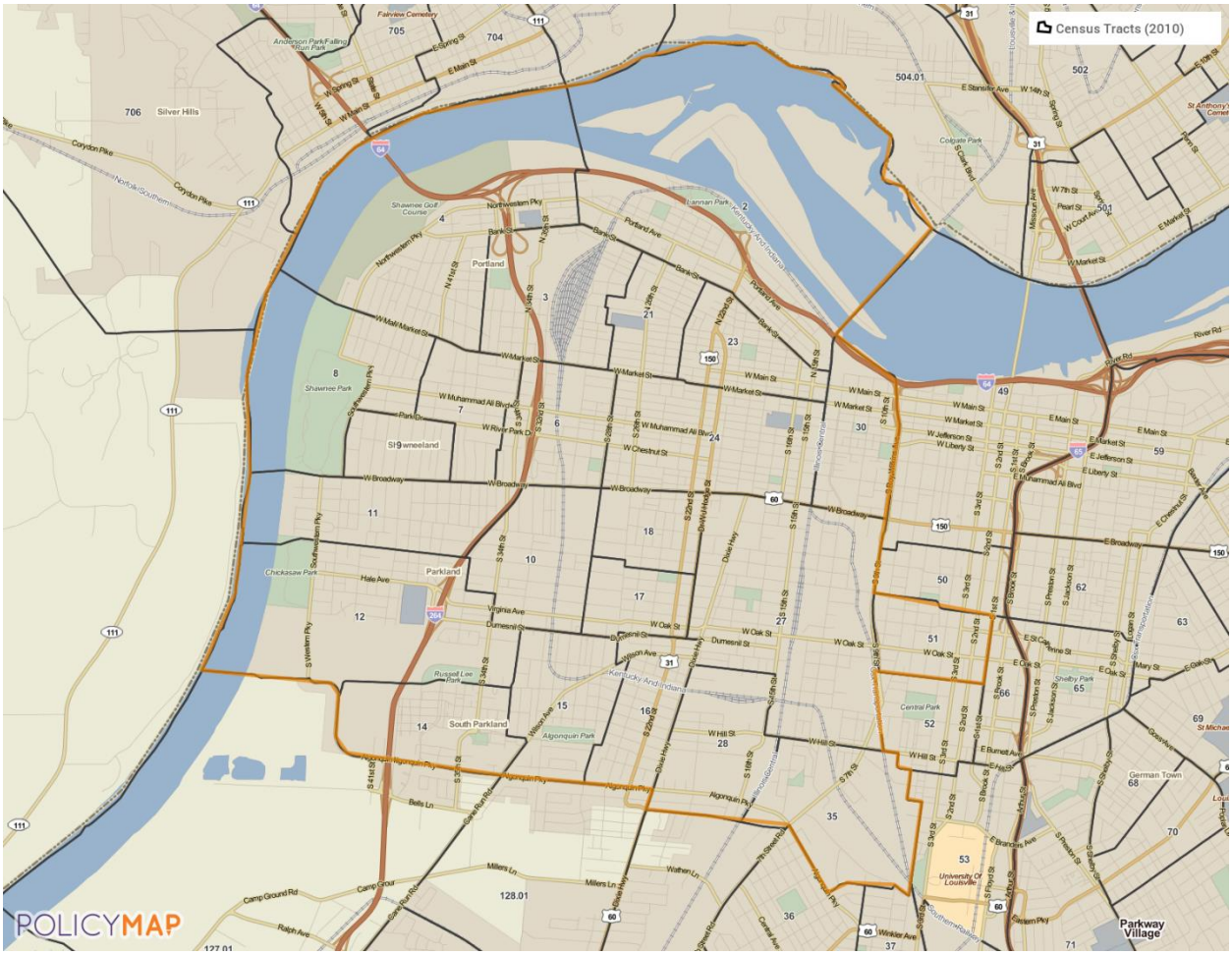


Figure 16:

Census tracts containing the Midtown UNLV initiative by the University of Nevada, Las Vegas

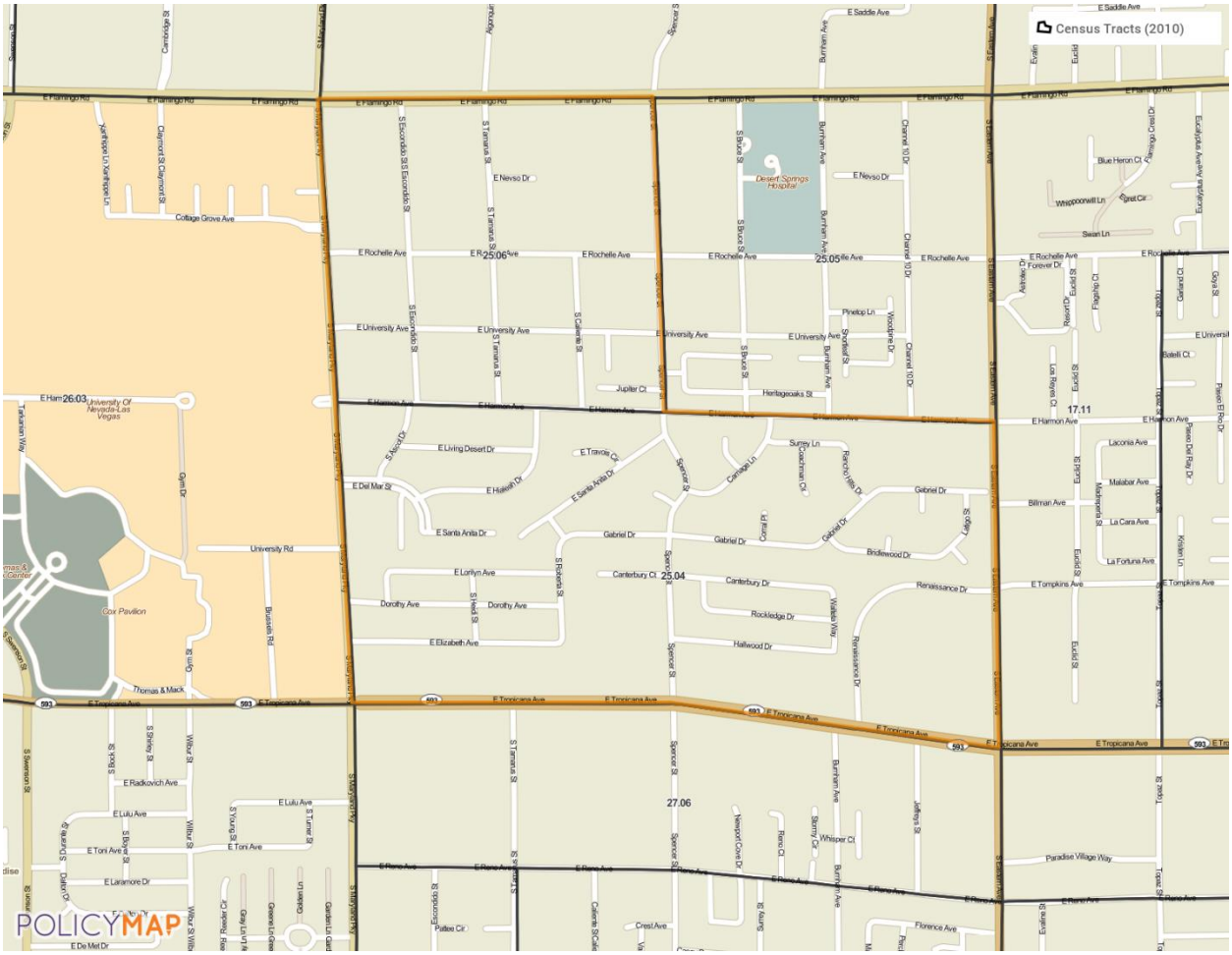


Figure 17:

Census tracts containing the University Place initiative by the University of North Carolina, Charlotte

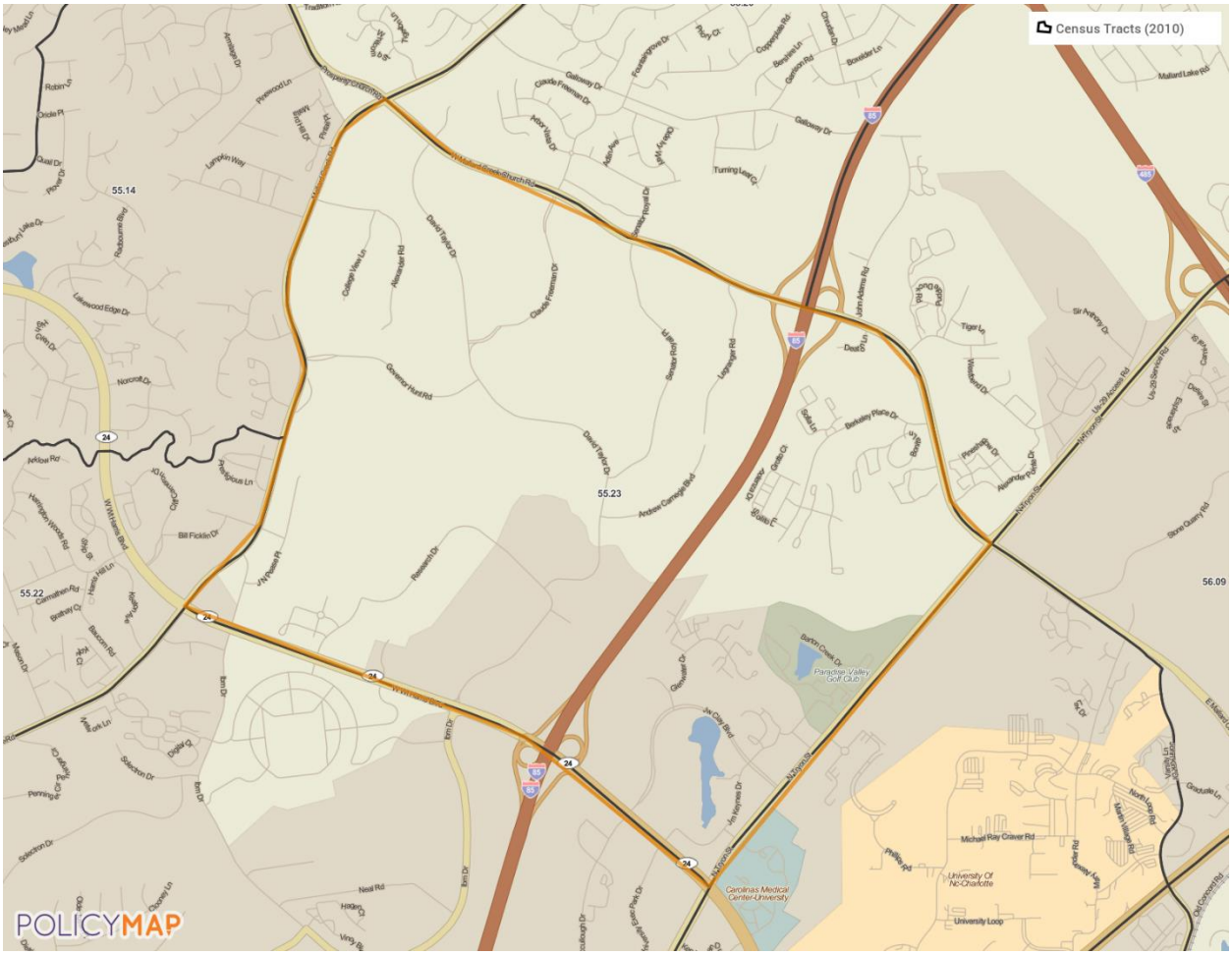


Figure 18:

Census tracts containing the Mulvaney Center initiative by the University of San Diego

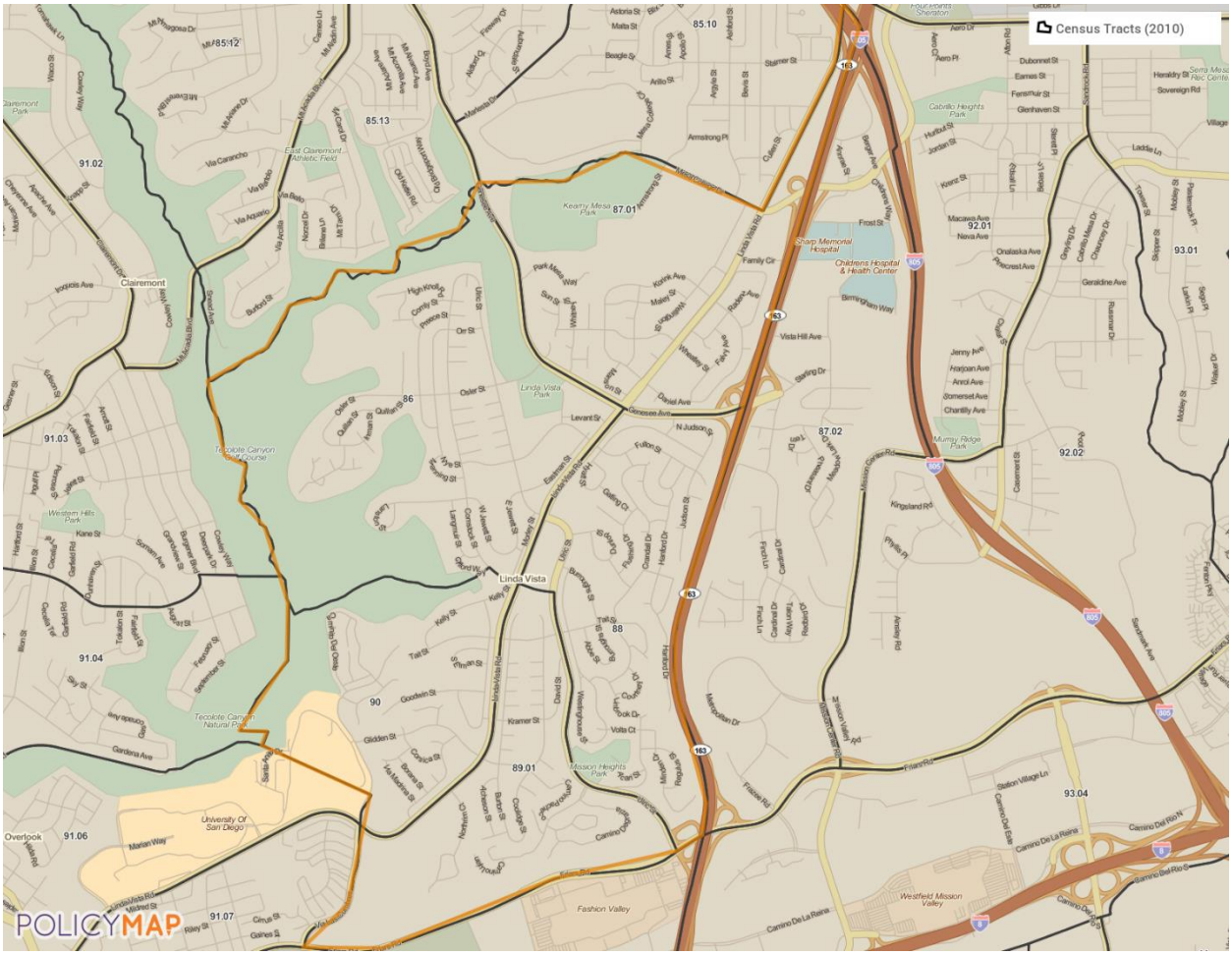


Figure 19:

Census tracts containing the University Neighborhood Partners initiative by the University of Utah

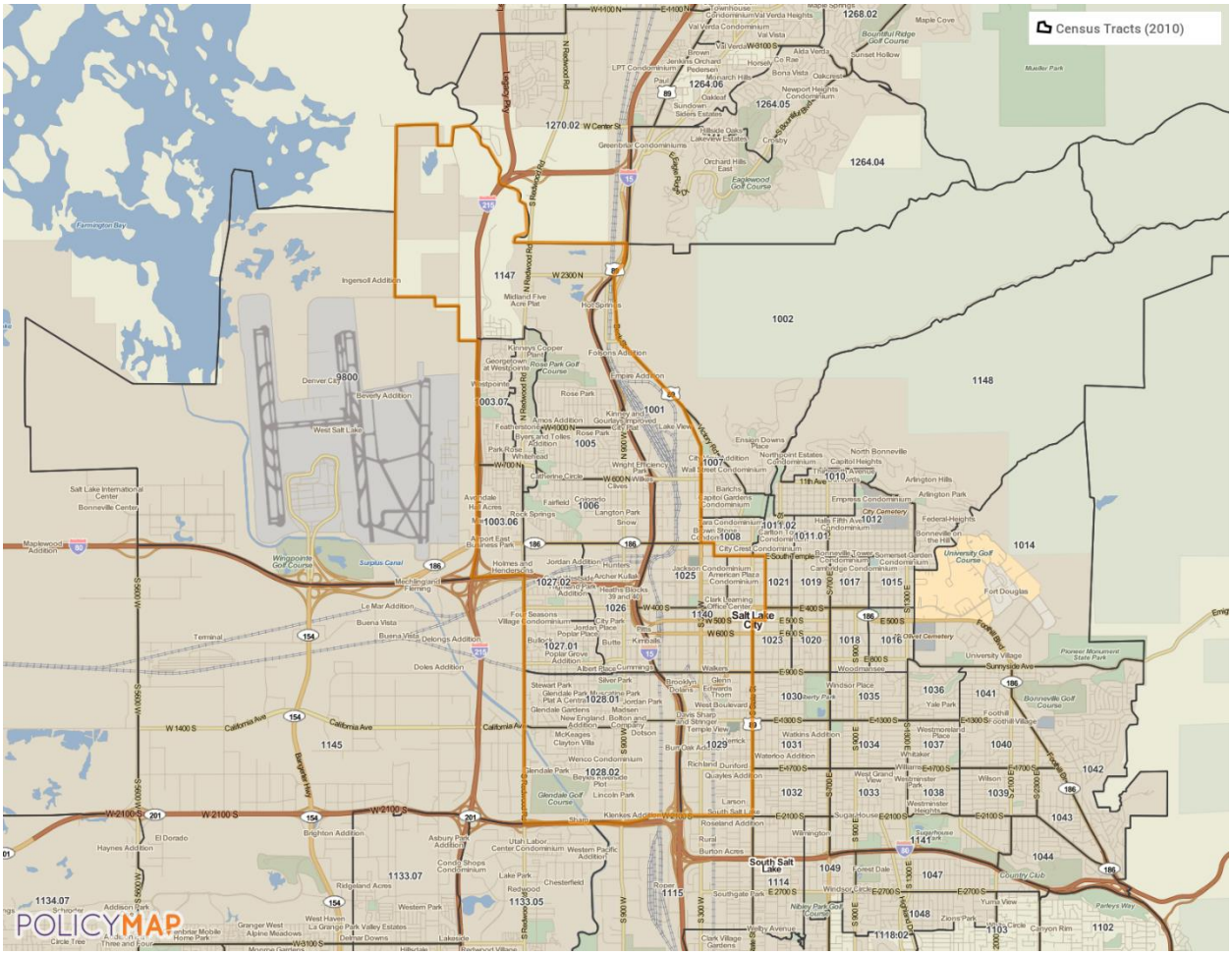


Figure 20:

Census tracts containing the Carver-VCU Partnership initiative by Virginia Commonwealth University

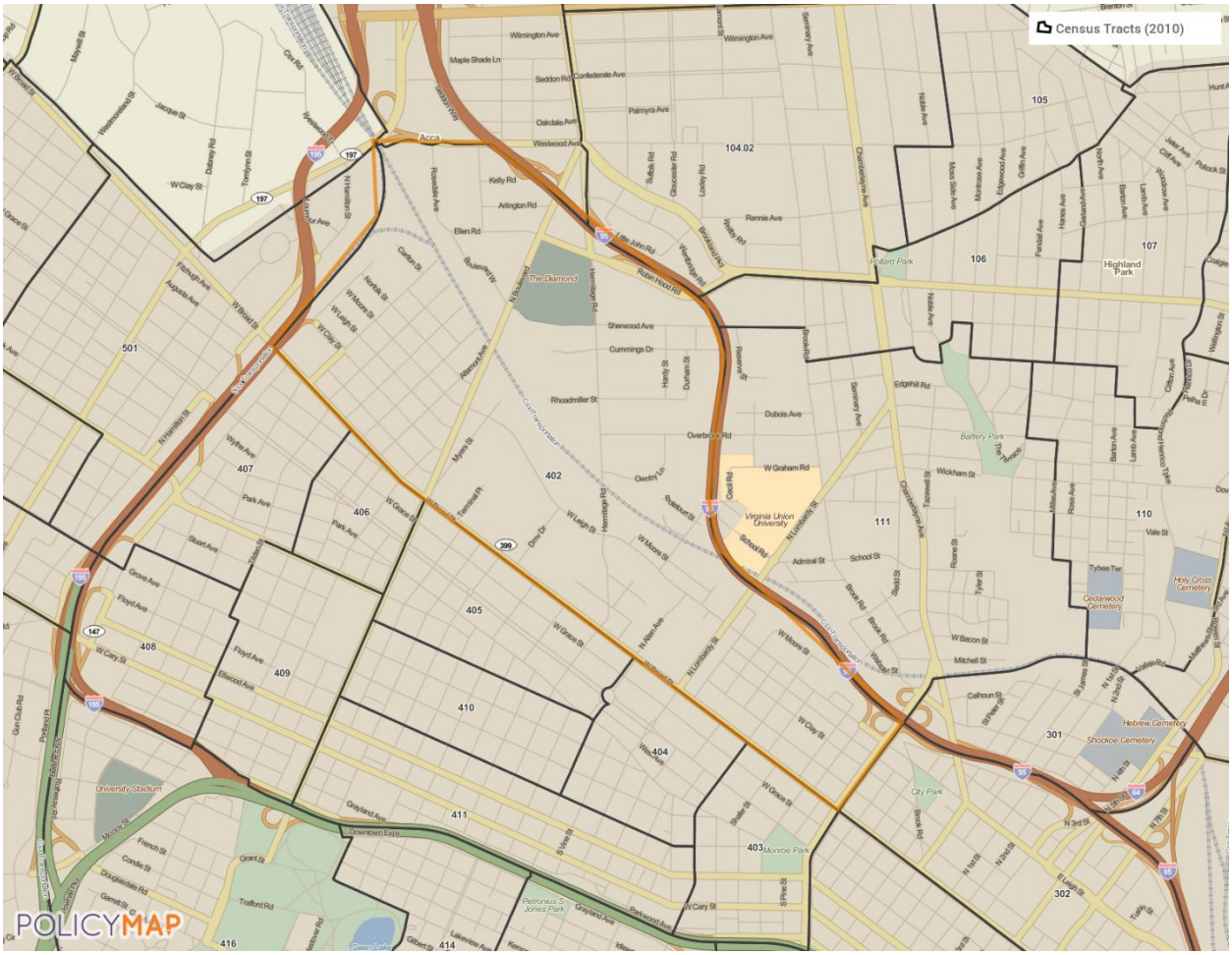


Figure 21:

Census tracts containing the CommUniverCity initiative by San Jose State University

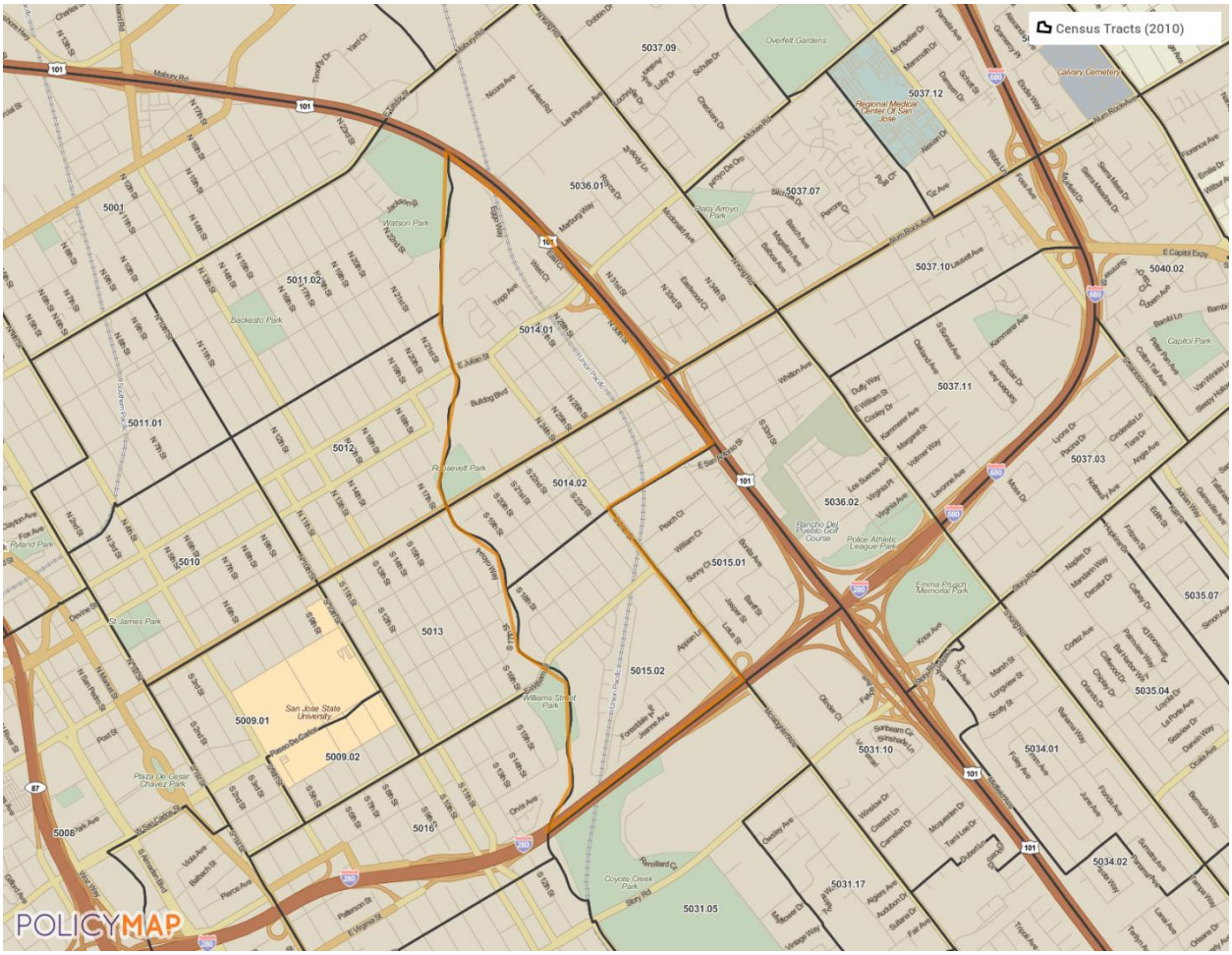


Figure 22:

Census tracts containing the Joint University-City Library initiative by San Jose State University

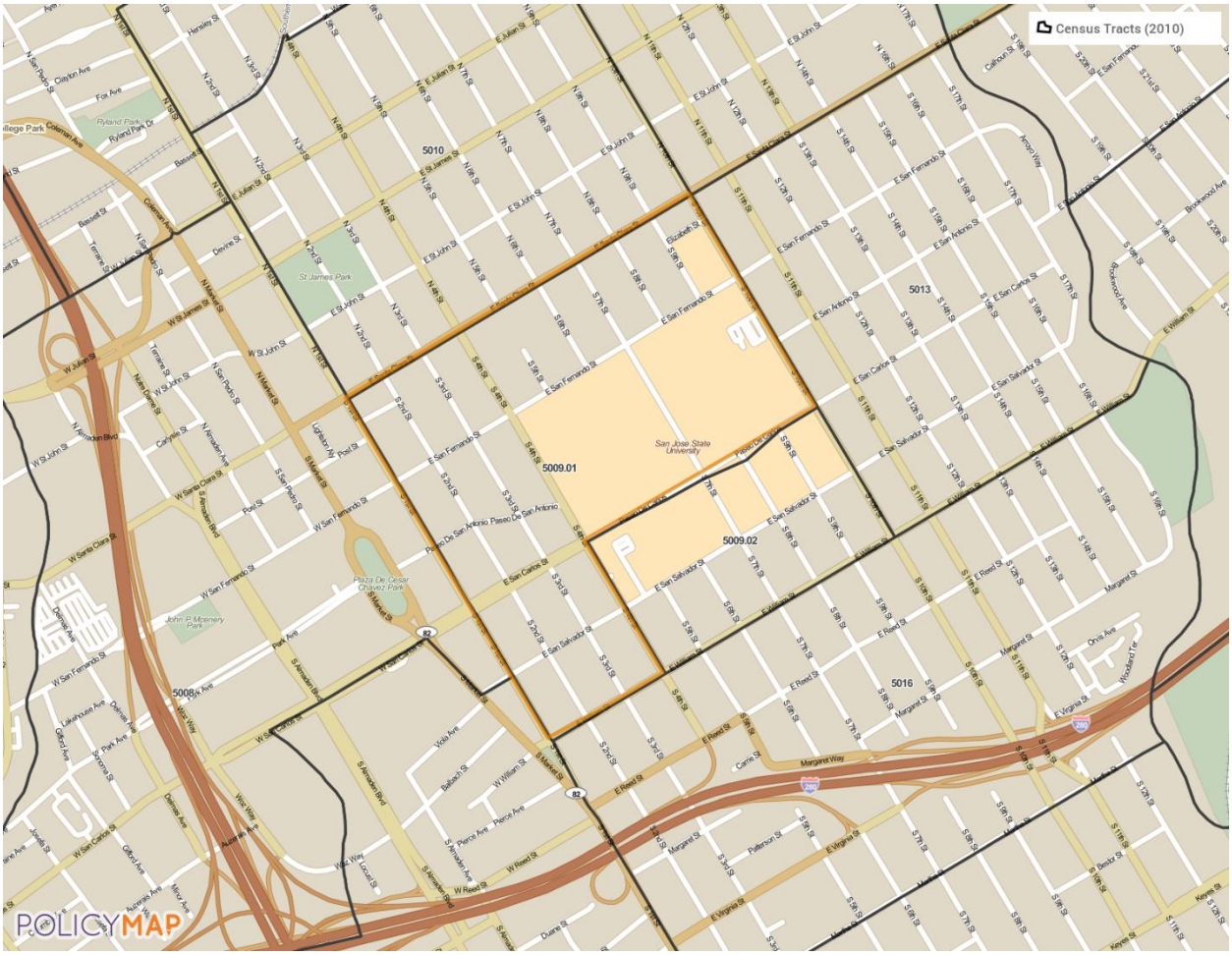


Figure 23:

Census tracts containing the Office of Economic Development initiative by Wayne State University

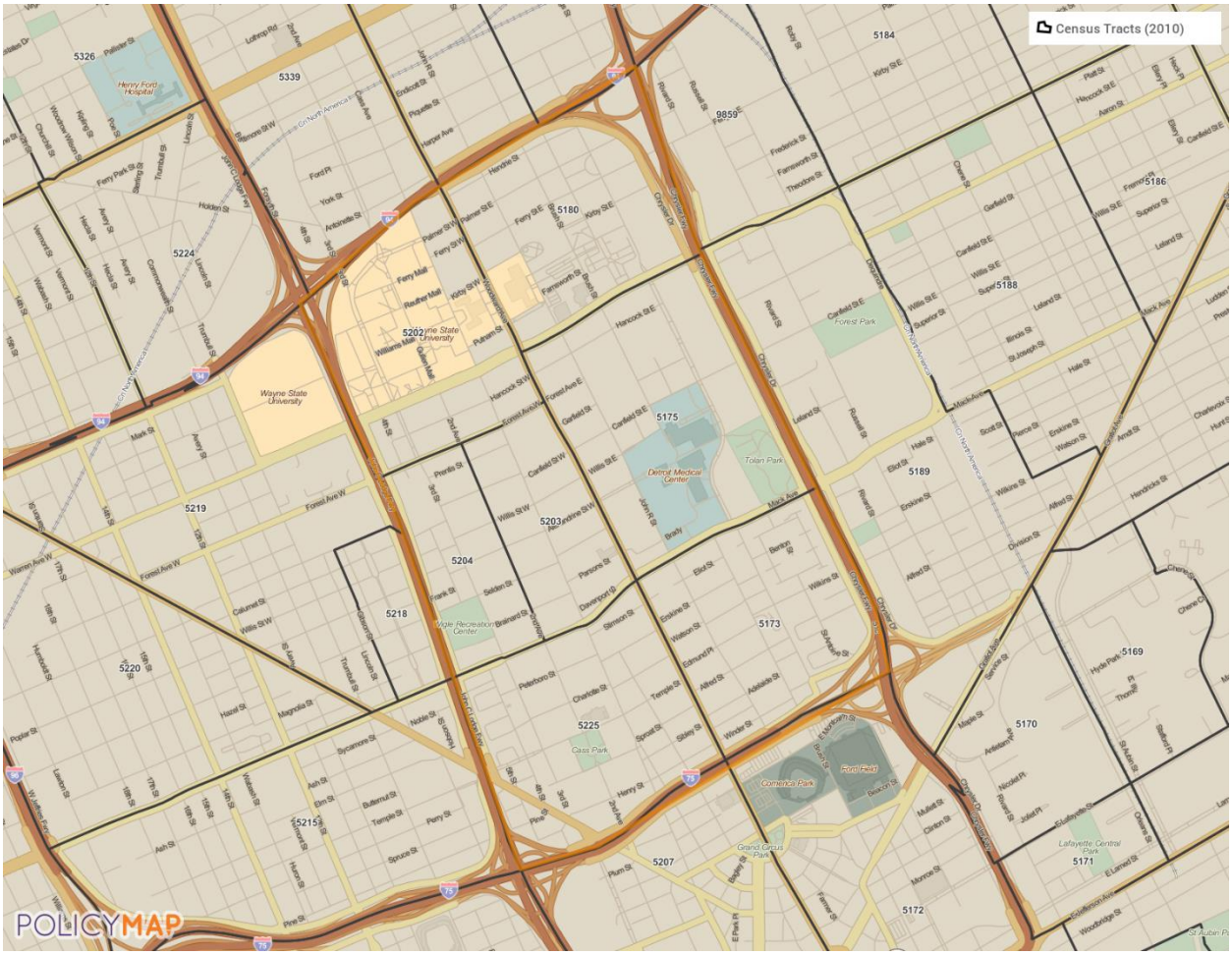


Figure 24:

Census tracts containing the Engage San Francisco initiative by the University of San Francisco

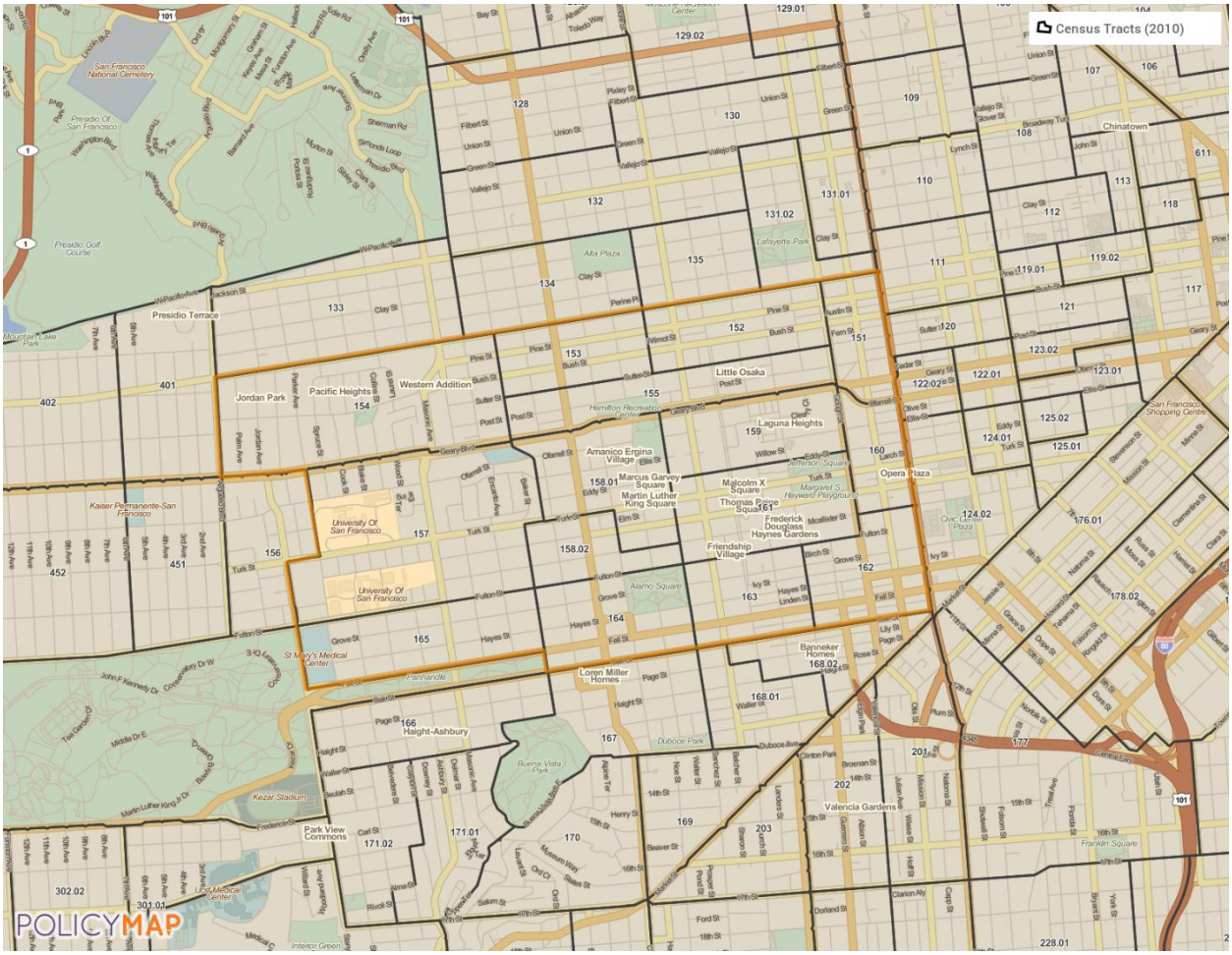


Figure 25:

Census tracts containing the Near Westside initiative by Syracuse University

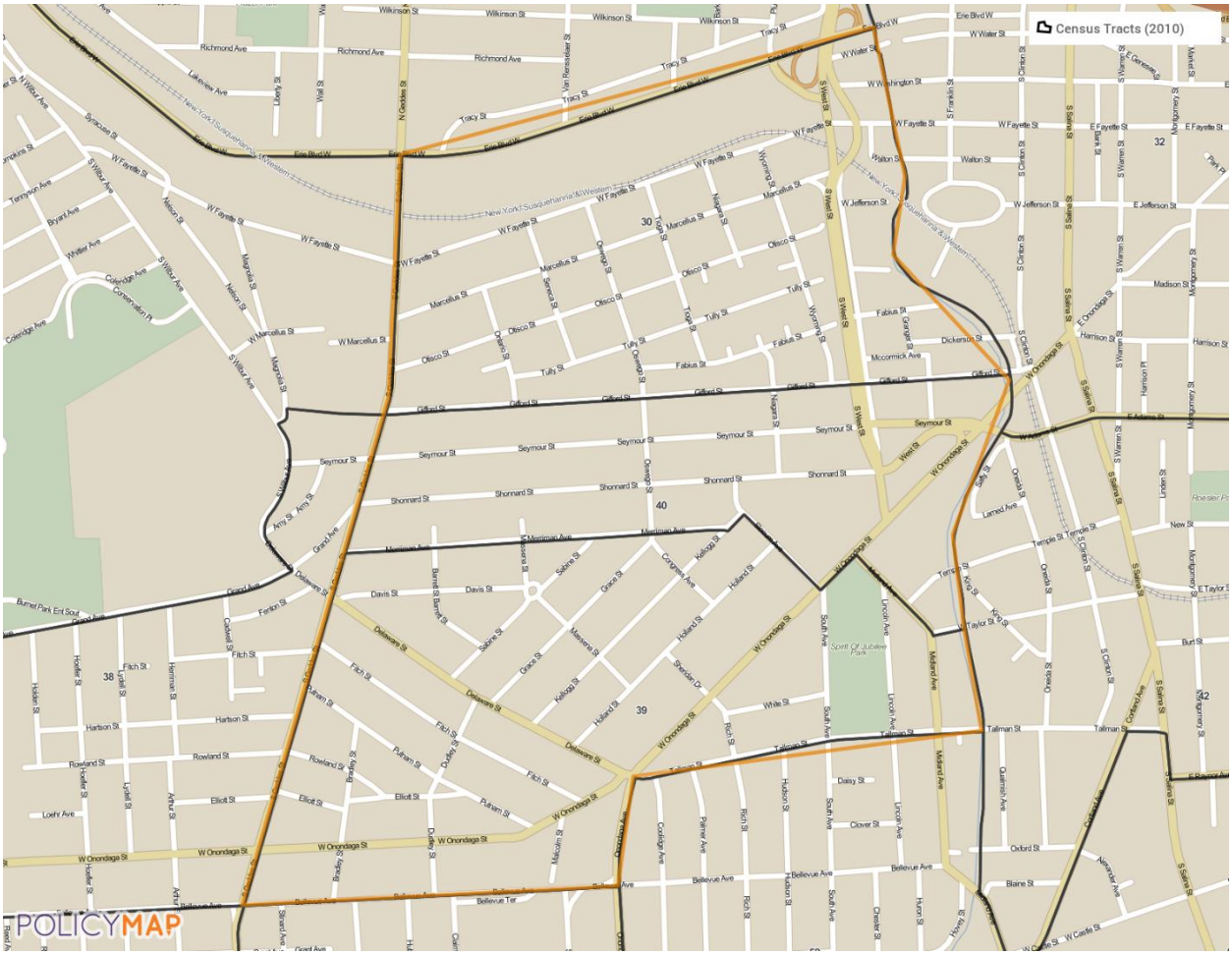


Figure 26:

Census tracts containing the Connective Corridor initiative by Syracuse University

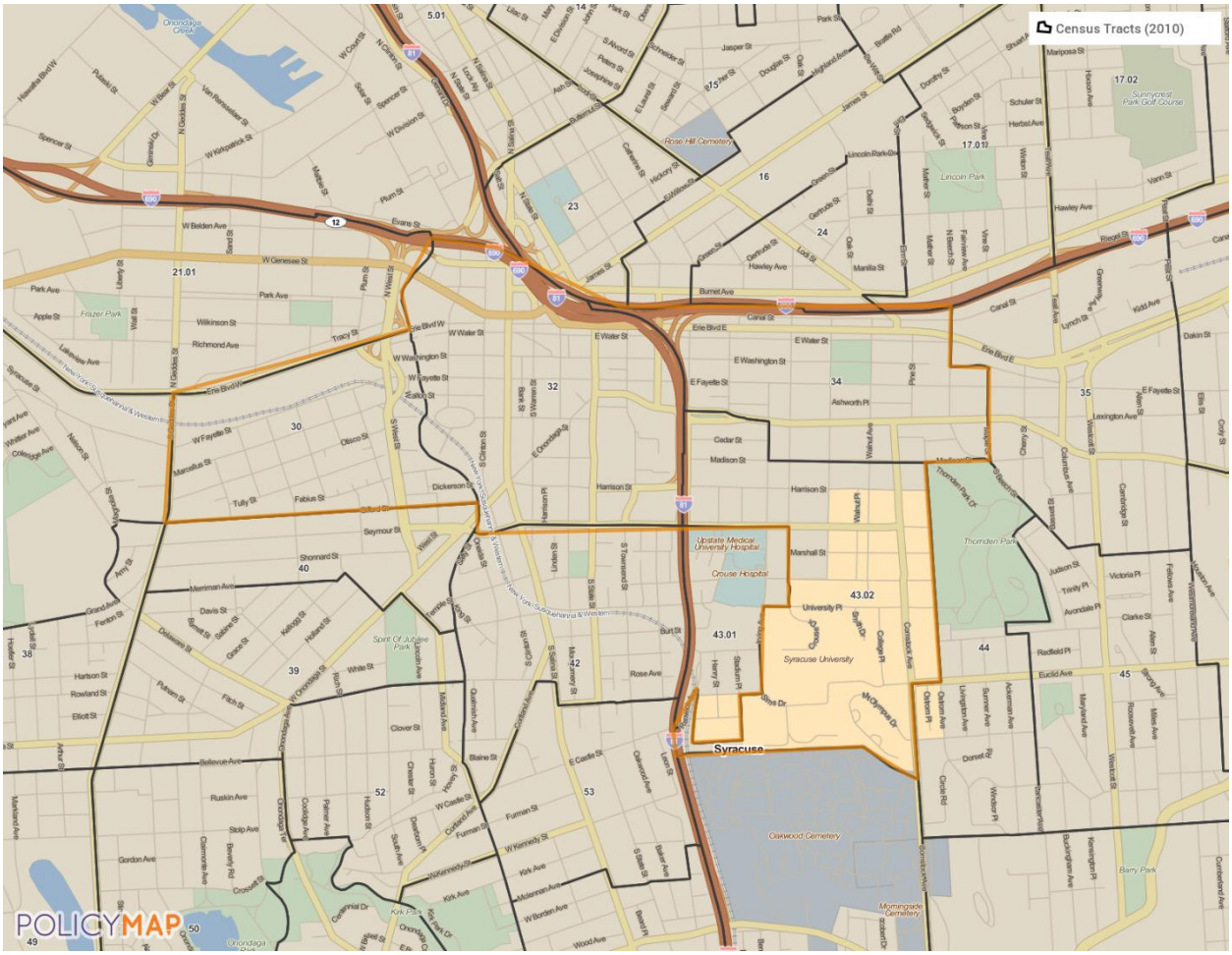


Figure 27:

Census tracts containing the Chinatown Renewal Project initiative by California State University, Monterey Bay

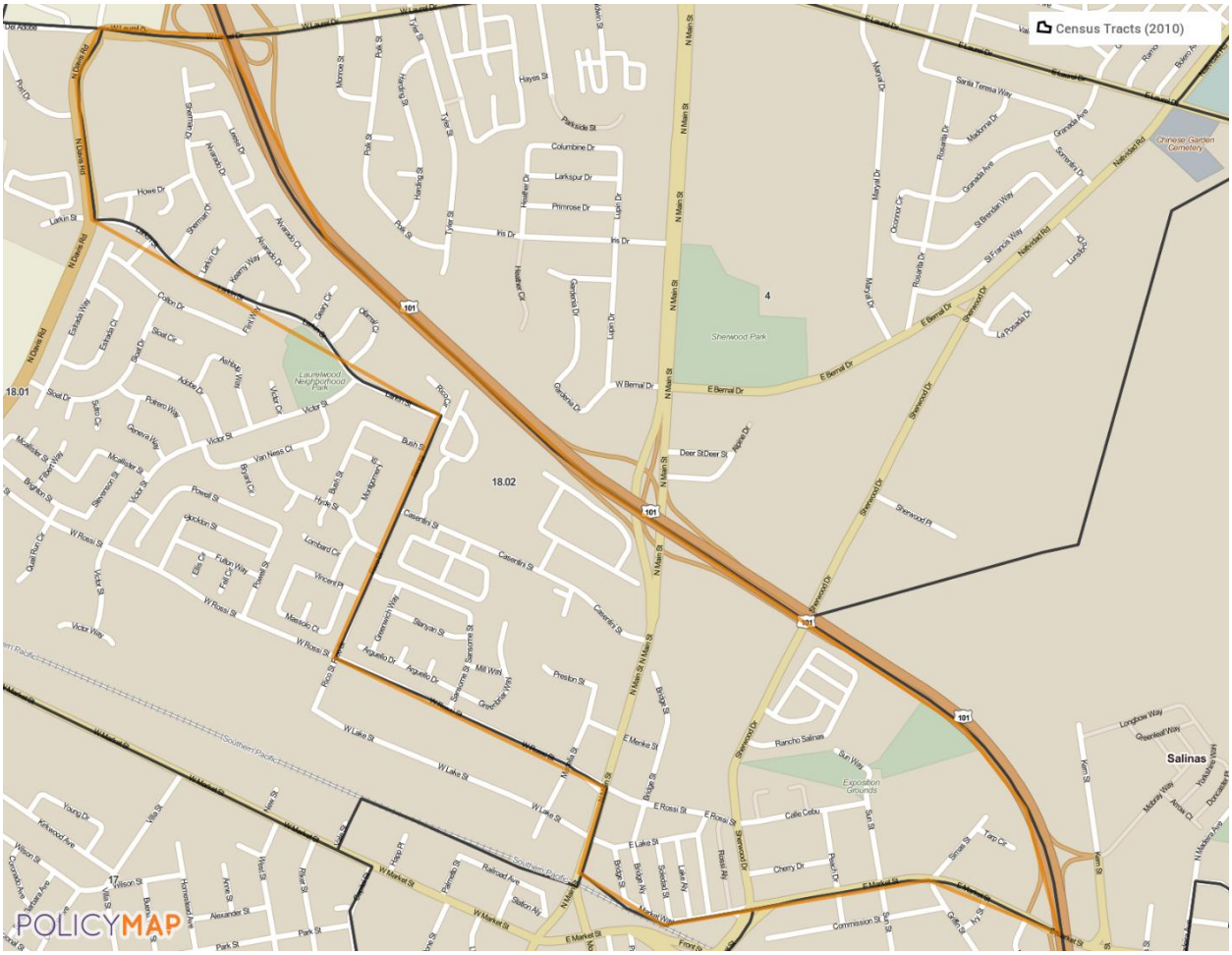


Figure 28:

Census tracts containing the District of Design initiative by Cleveland State University

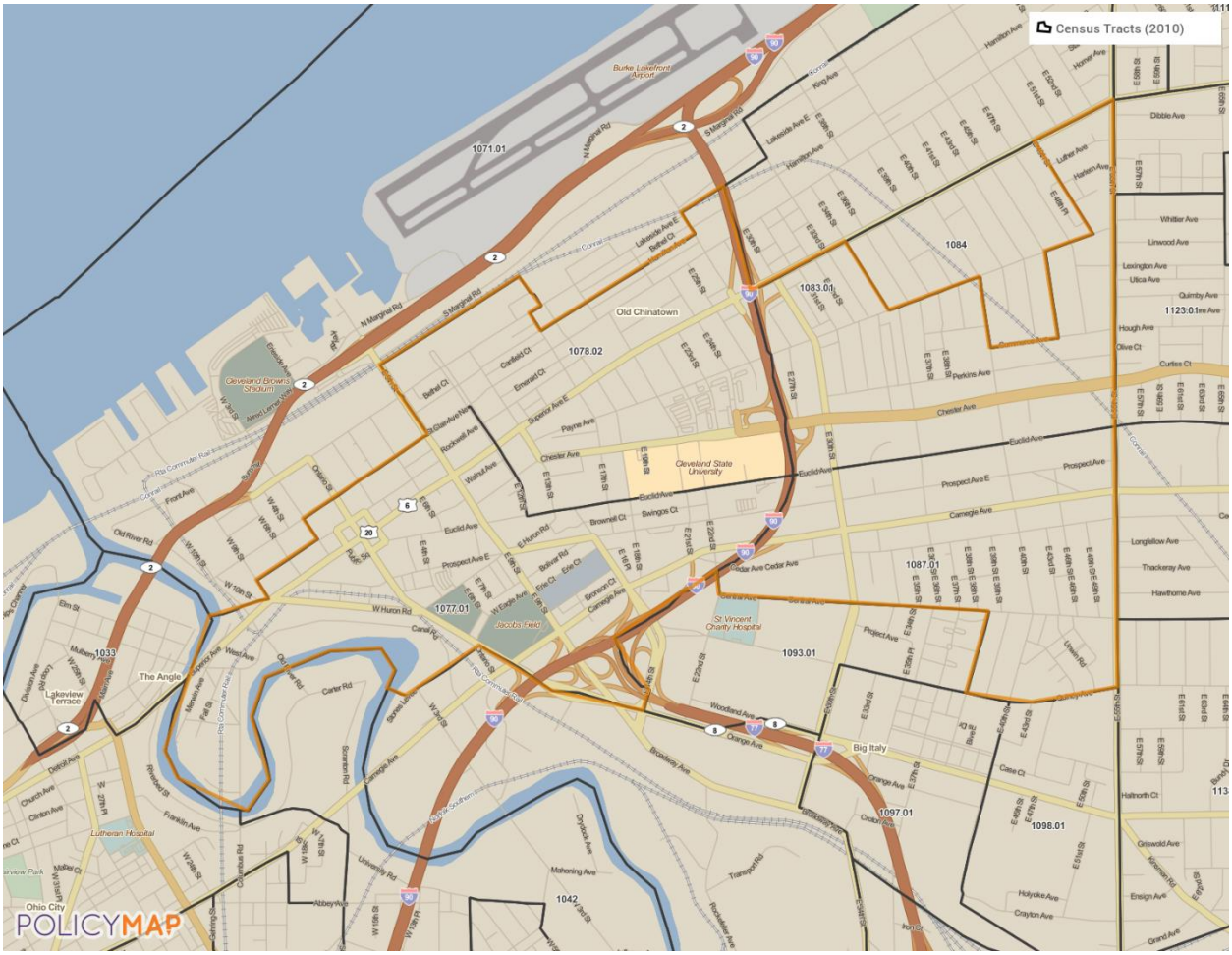


Figure 29:

Census tracts containing the One Brigham Circle tracts by Harvard University

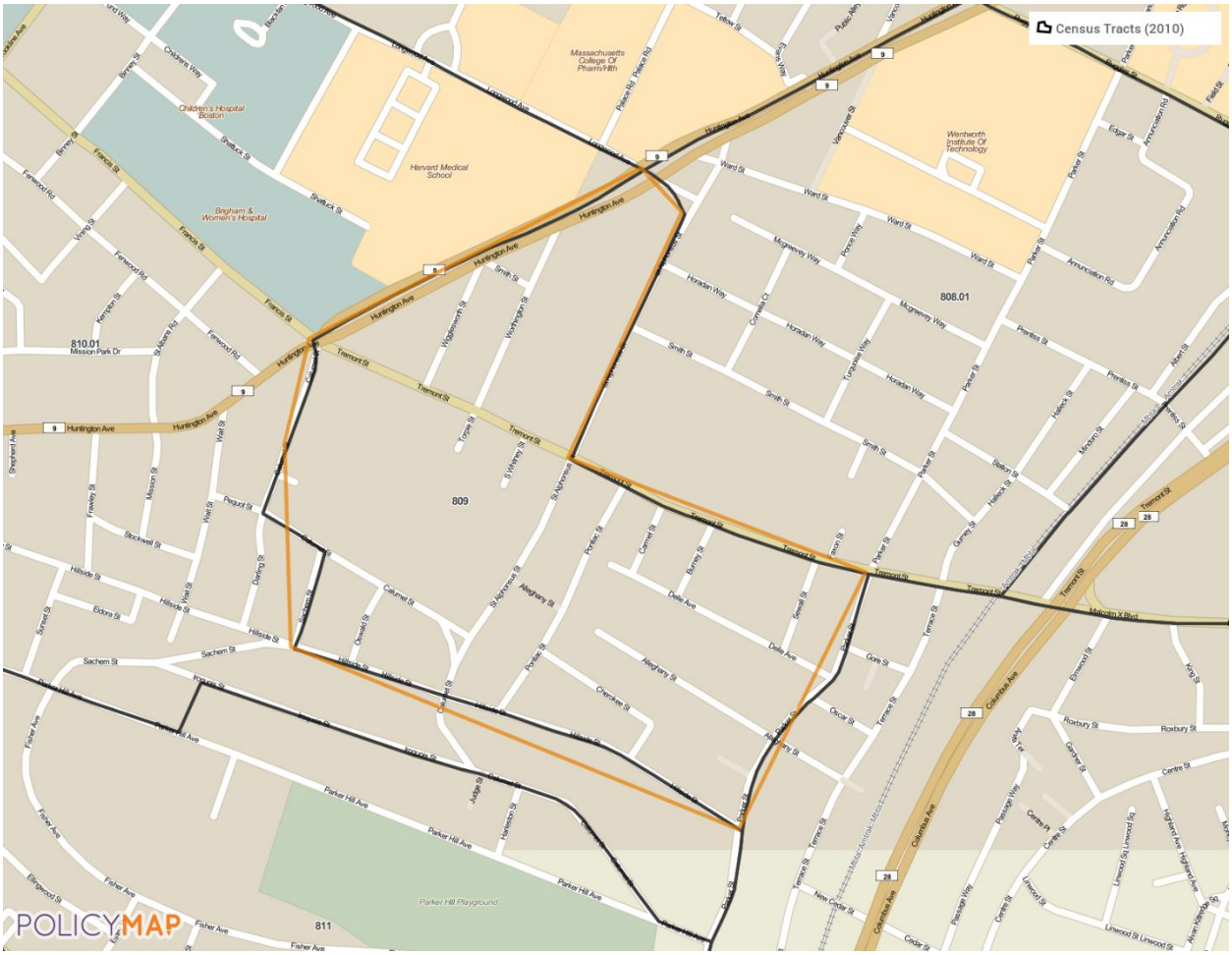


Figure 30:

Census tracts containing the Midtown Cultural District initiative by Emerson College

Figure 31:

Census tracts containing the Davenport Commons initiative by Northeastern University

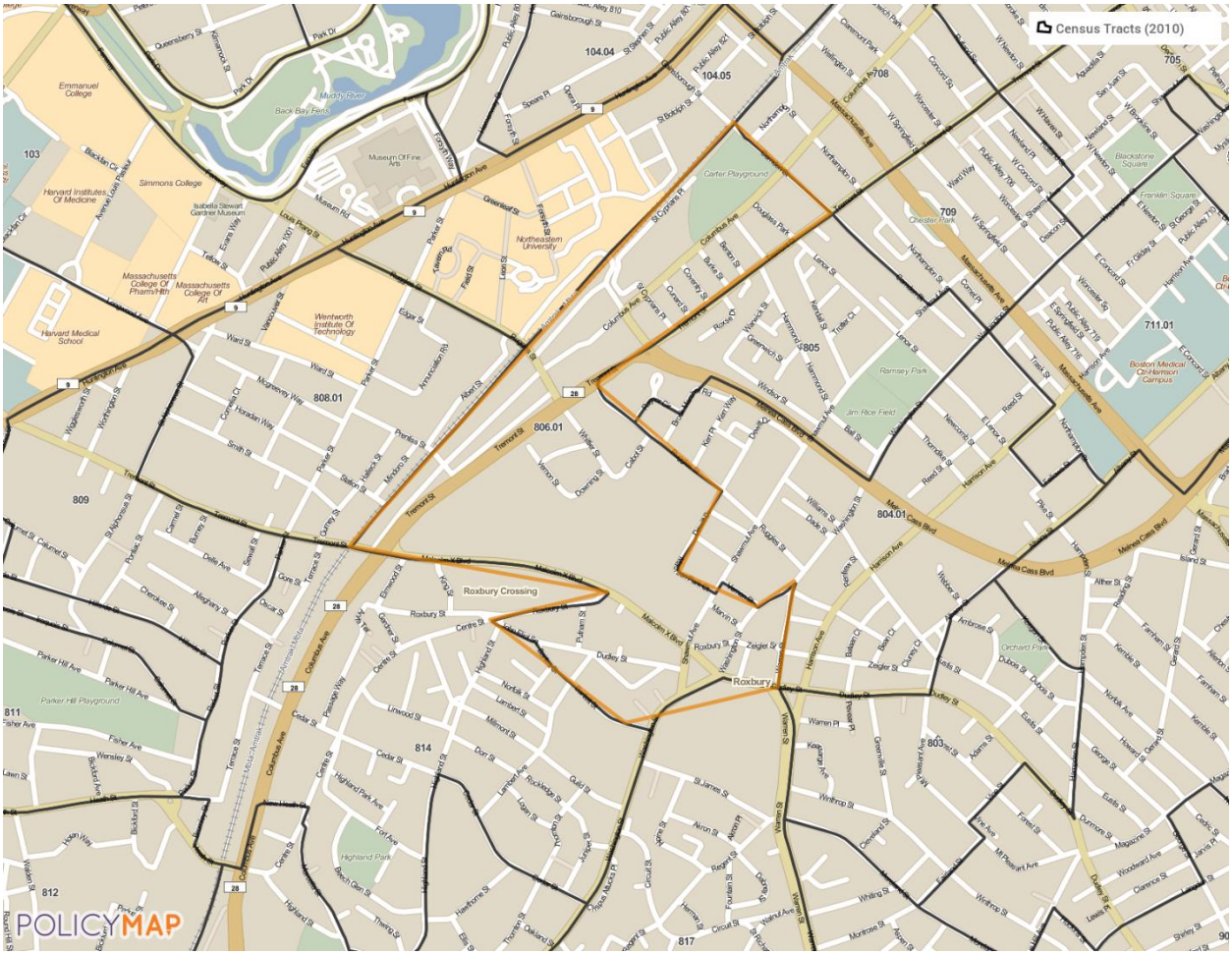


Figure 32:

Census tracts containing the East Baltimore Redevelopment initiative by Johns Hopkins University

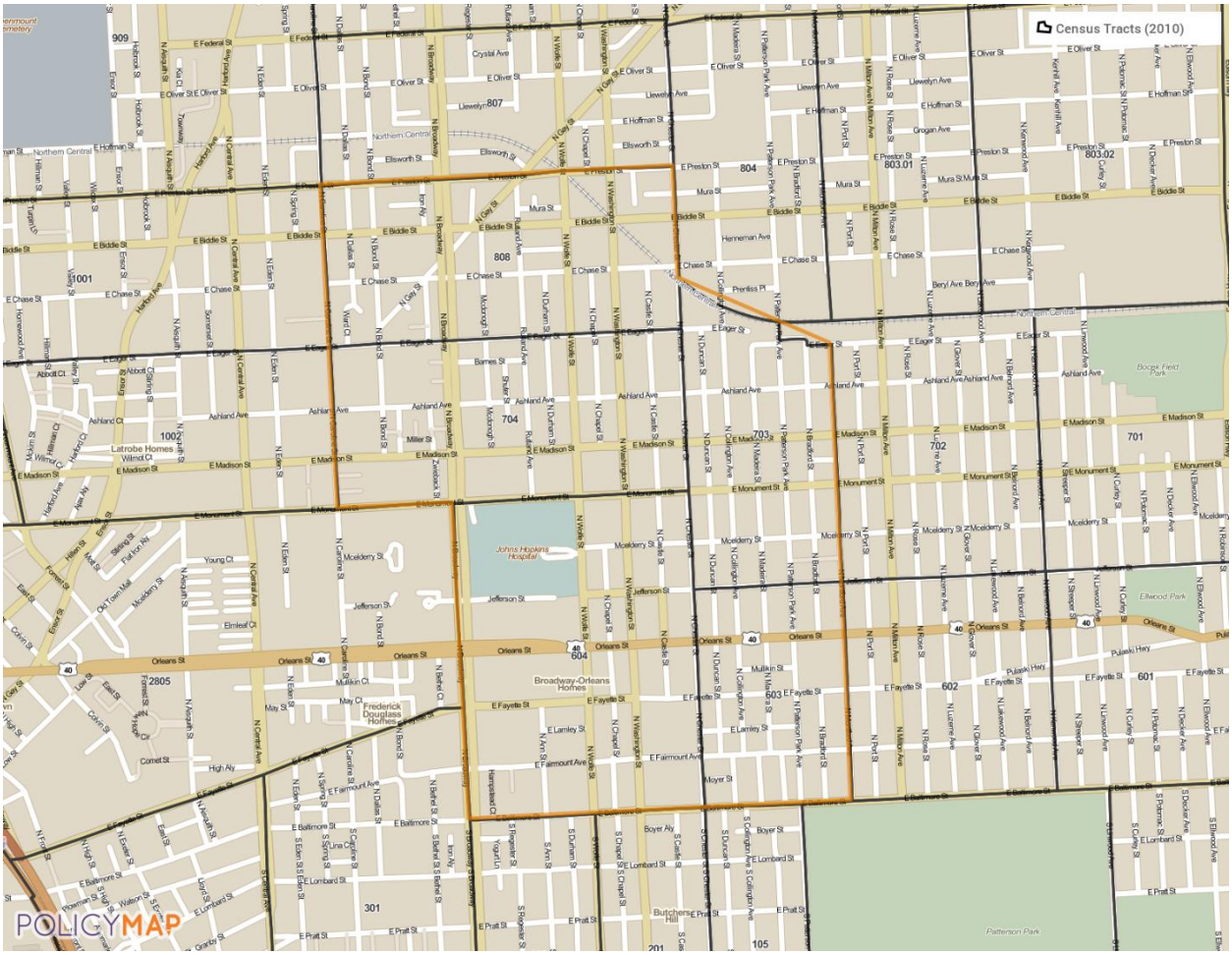


Figure 33:

Census tracts containing the Downtown Phoenix Campus initiative by Arizona State University

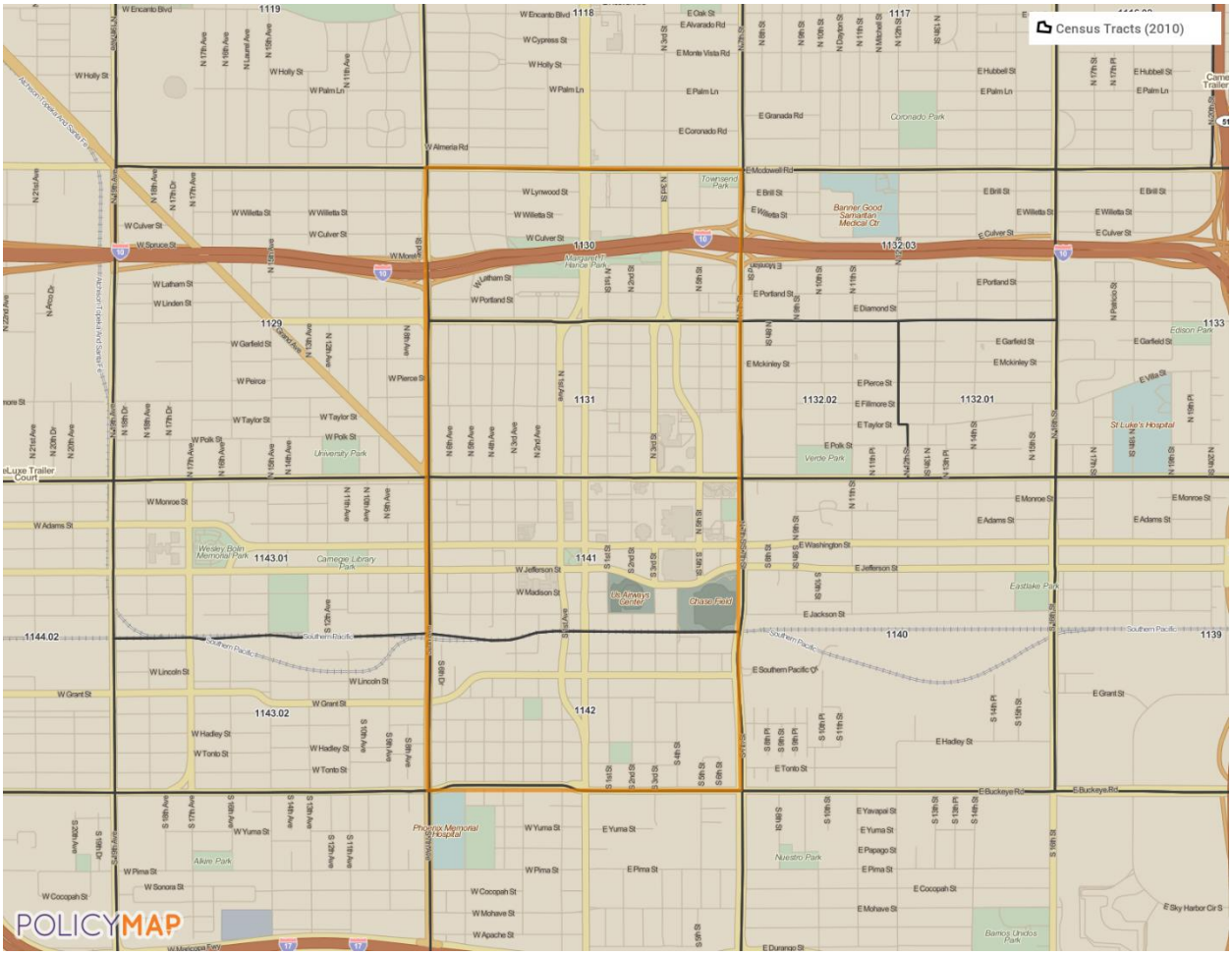


Figure 34:

Census tracts containing the Downtown Atlanta Revitalization initiative by Georgia State University

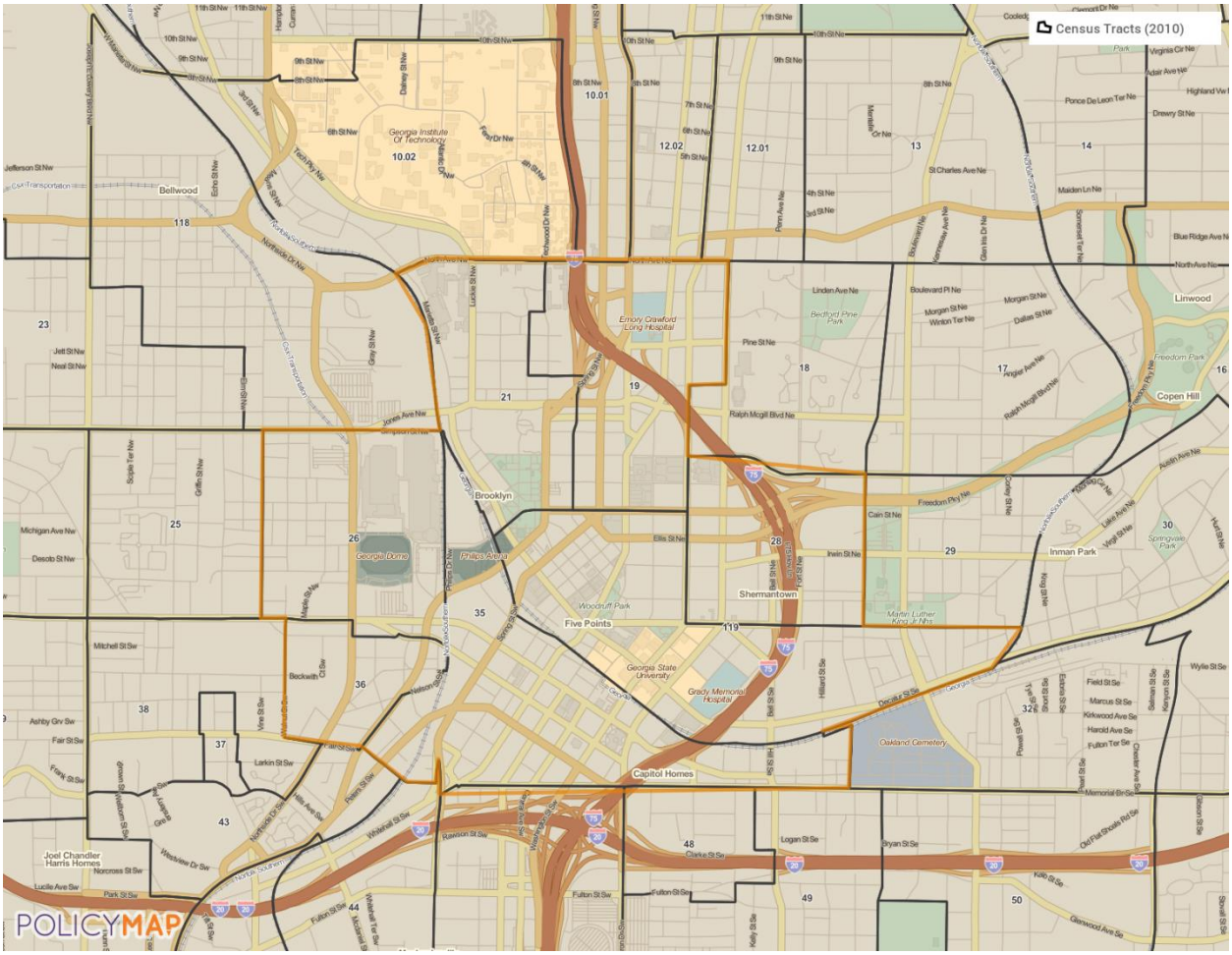


Figure 35:

Census tracts containing the Uptown Consortium initiative by the University of Cincinnati

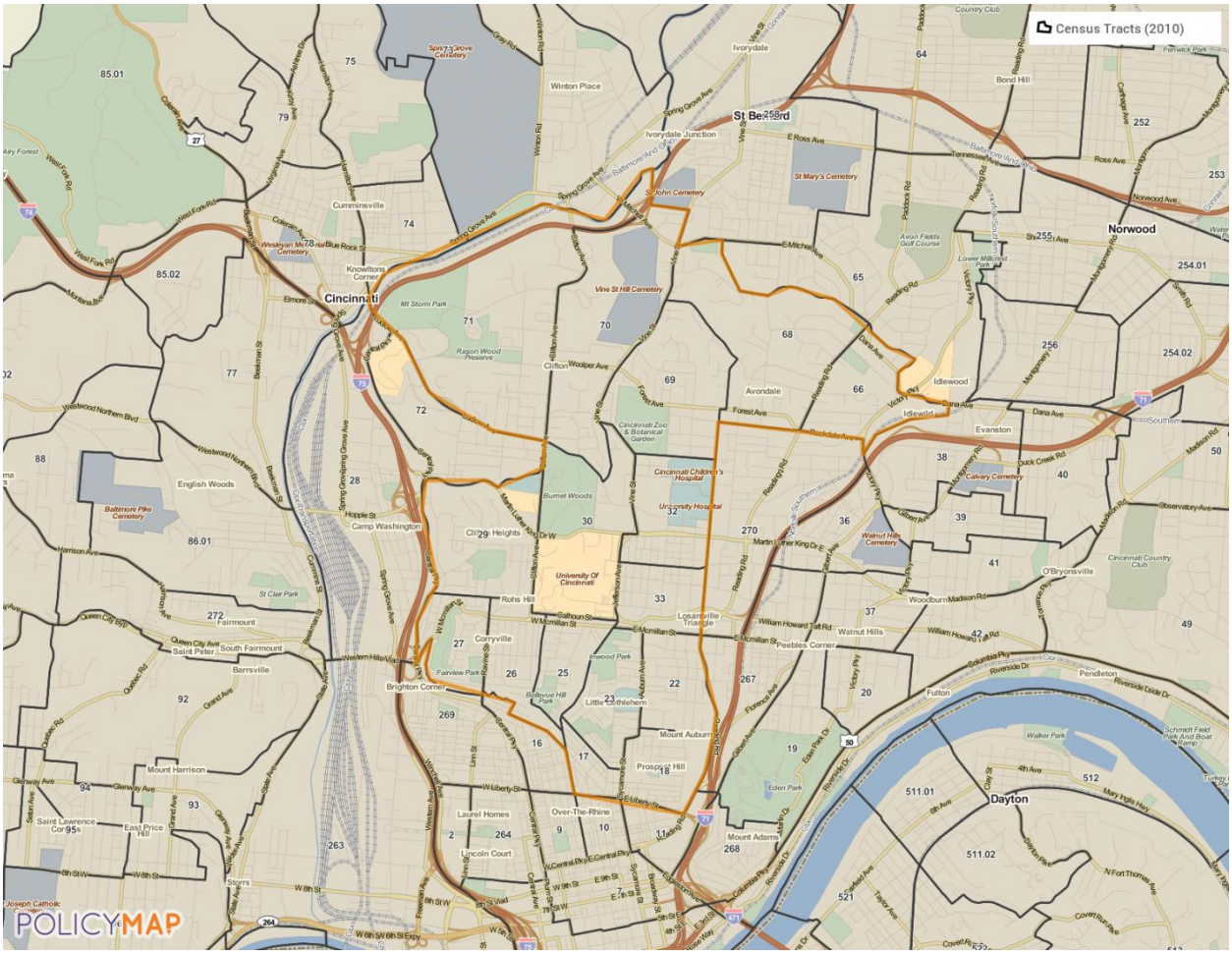


Figure 36:

Census tracts containing the Learning Corridor initiative by Trinity College

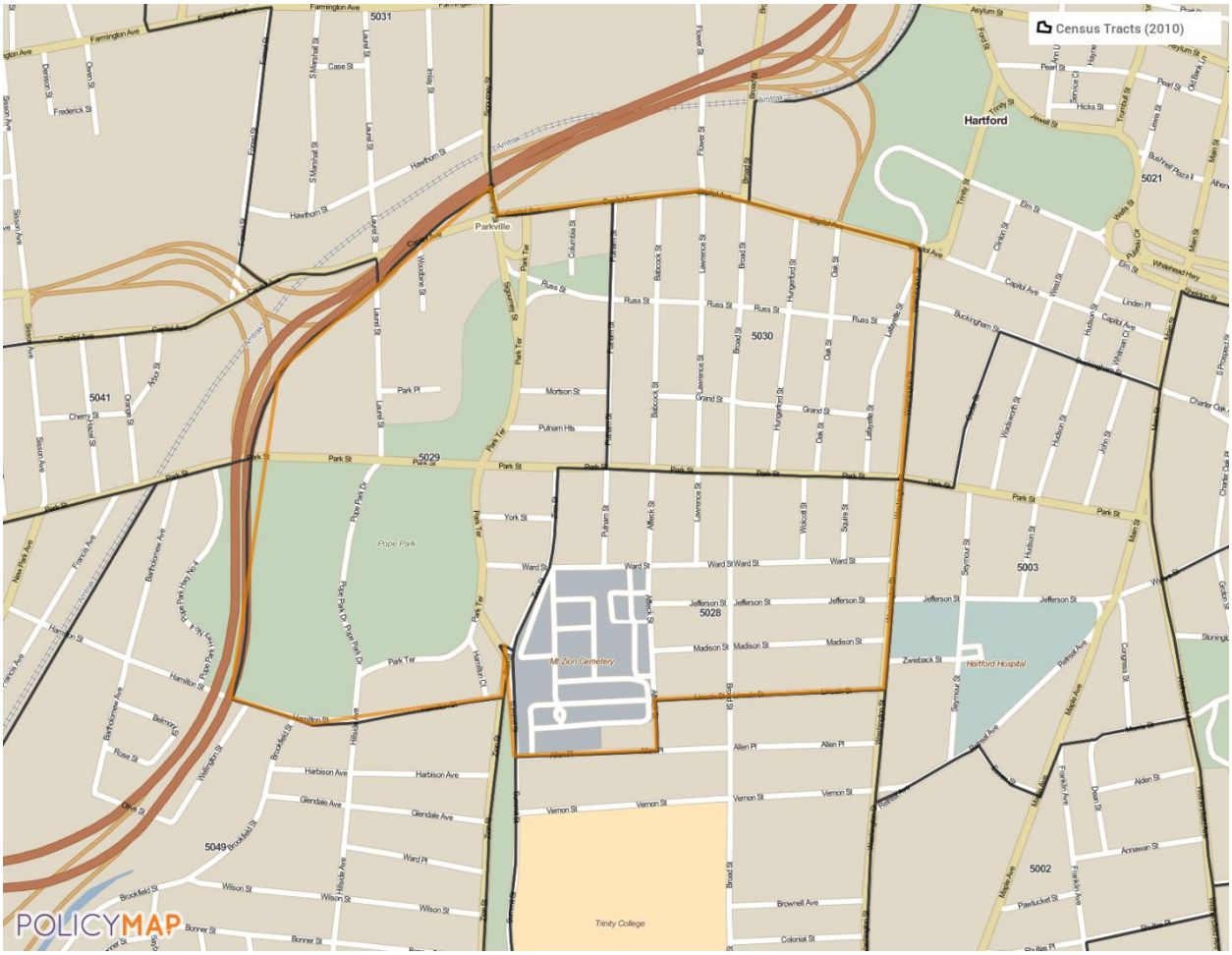


Figure 37:

Census tracts containing the Downtown Revitalization initiative by Indiana University-Purdue University at Indianapolis

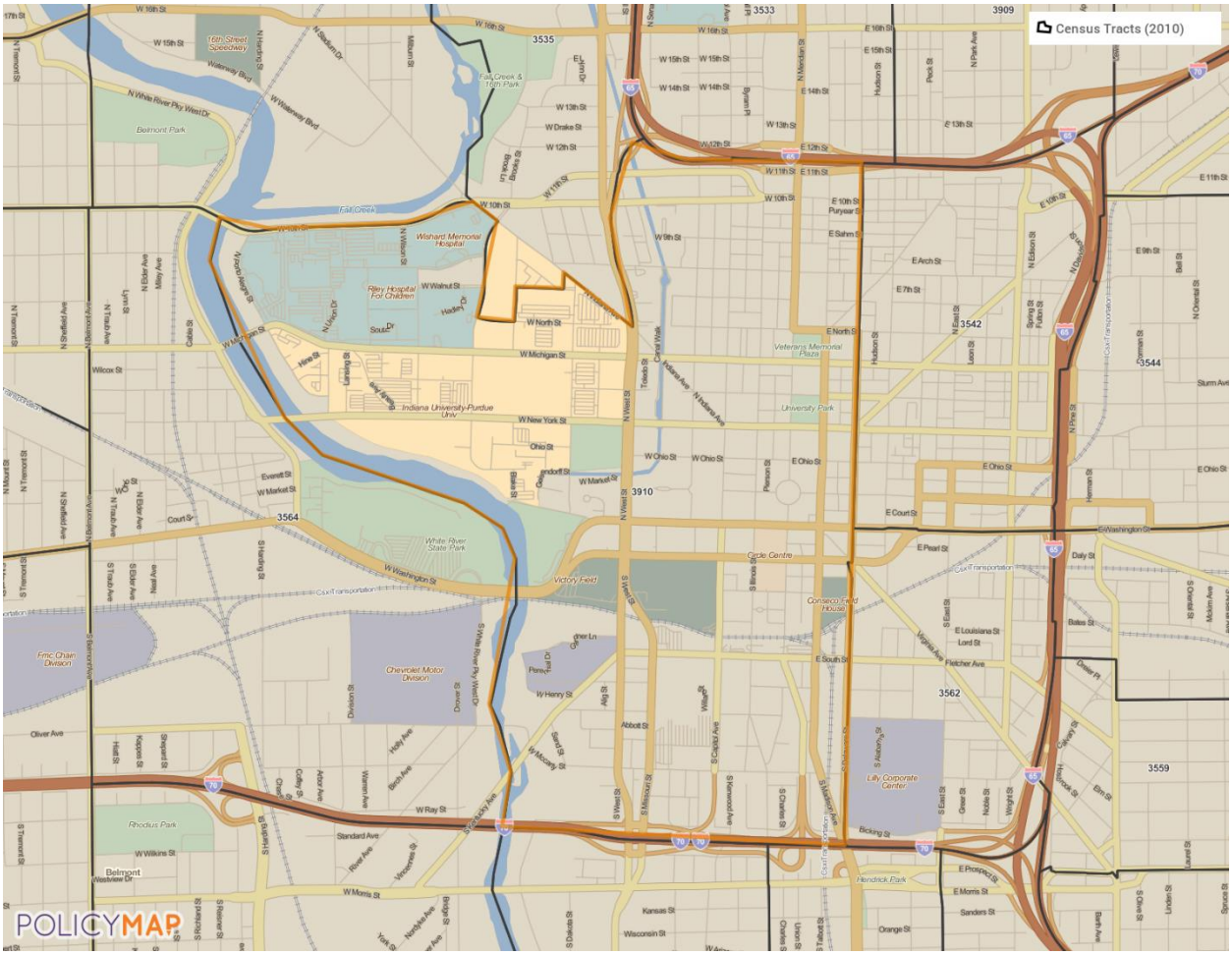


Figure 38:

Census tracts containing the Great Indy Neighborhoods initiative by Indiana University-Purdue University at Indianapolis

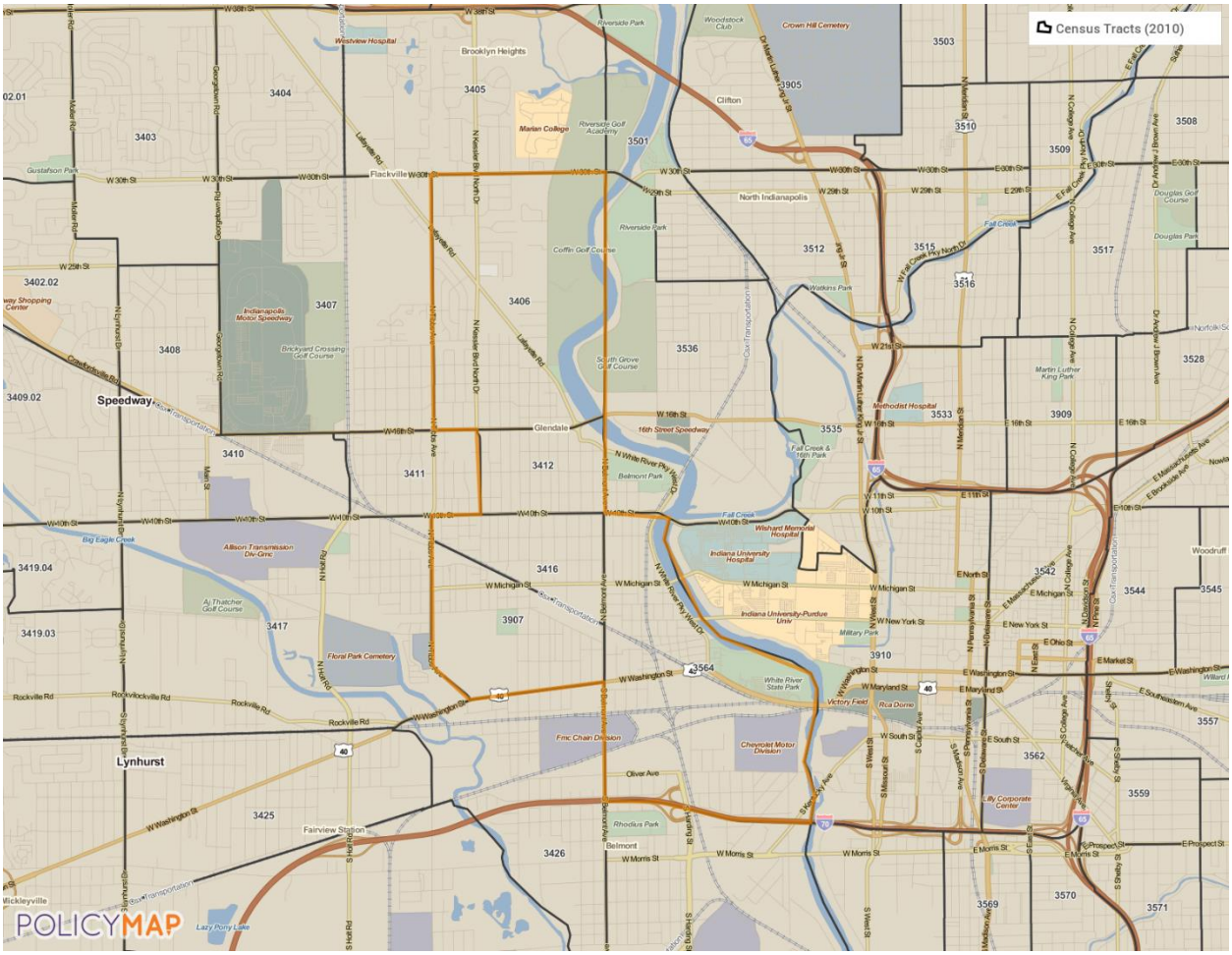


Figure 39:

Census tracts containing the New Downtown Campus initiative by the University of Washington, Tacoma

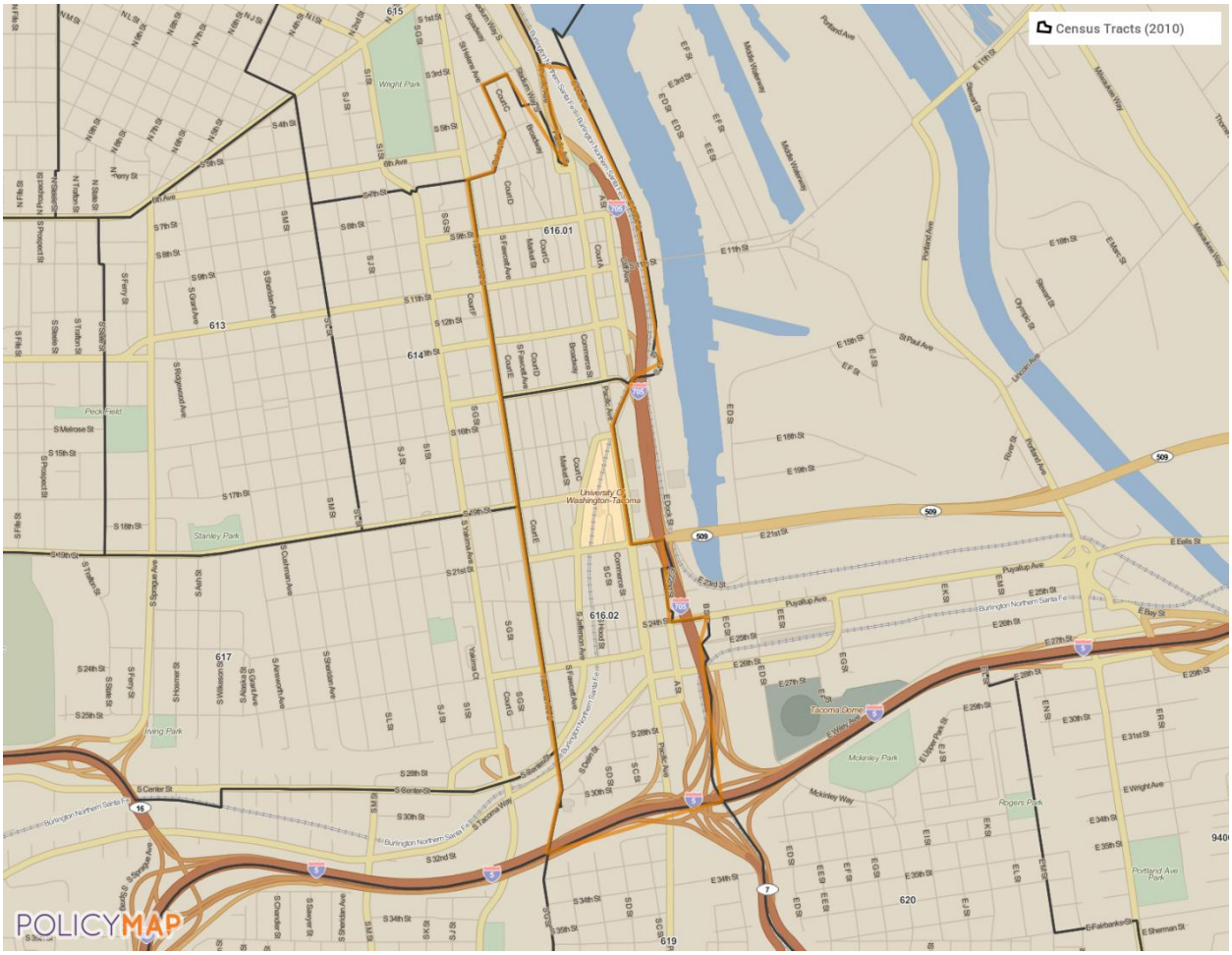


Figure 40:

Census tracts containing the New Auraria Campus by the Auraria Higher Education Center

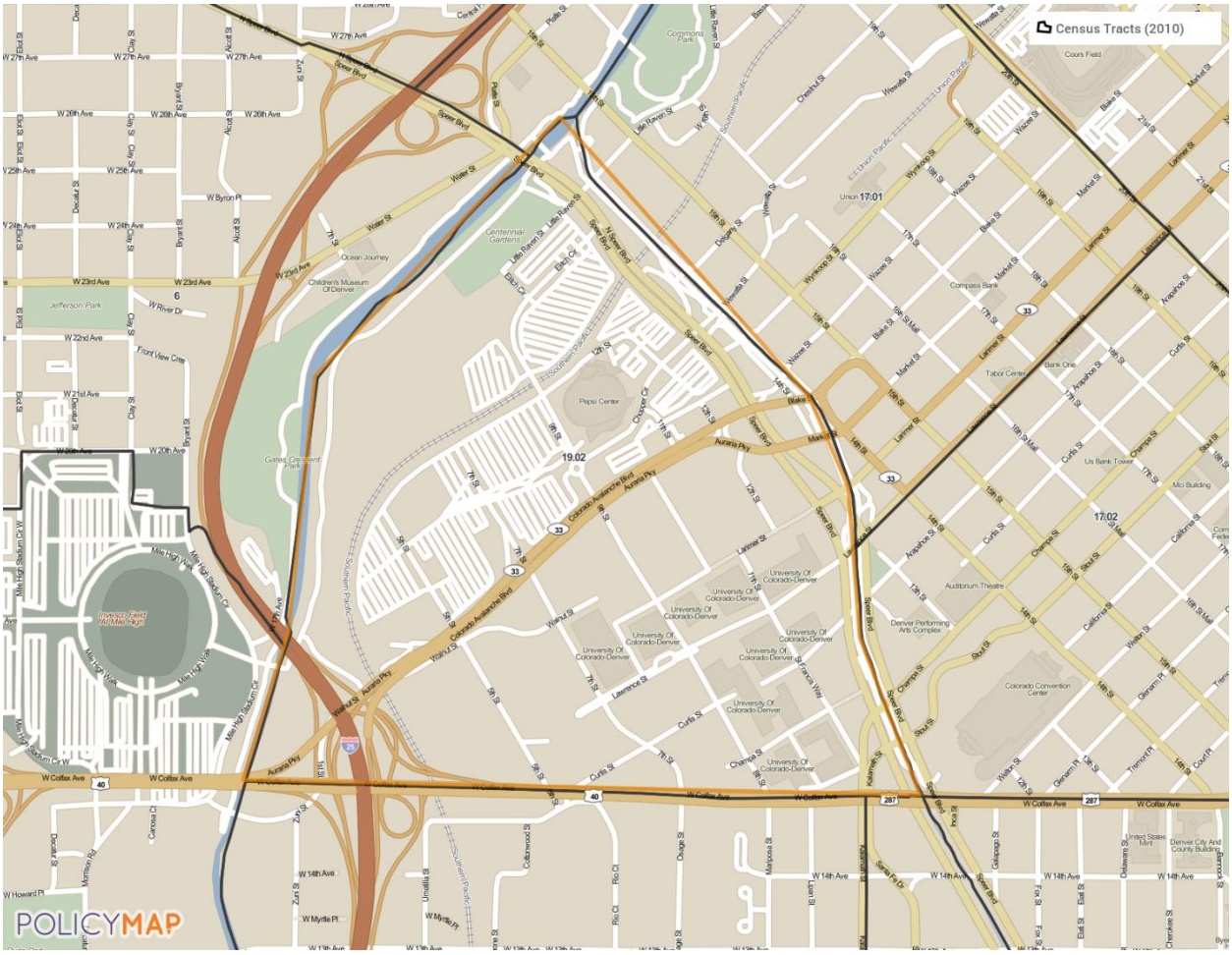


Figure 41:

Census tracts containing the Smoky Hollow Revitalization initiative by Youngstown State University

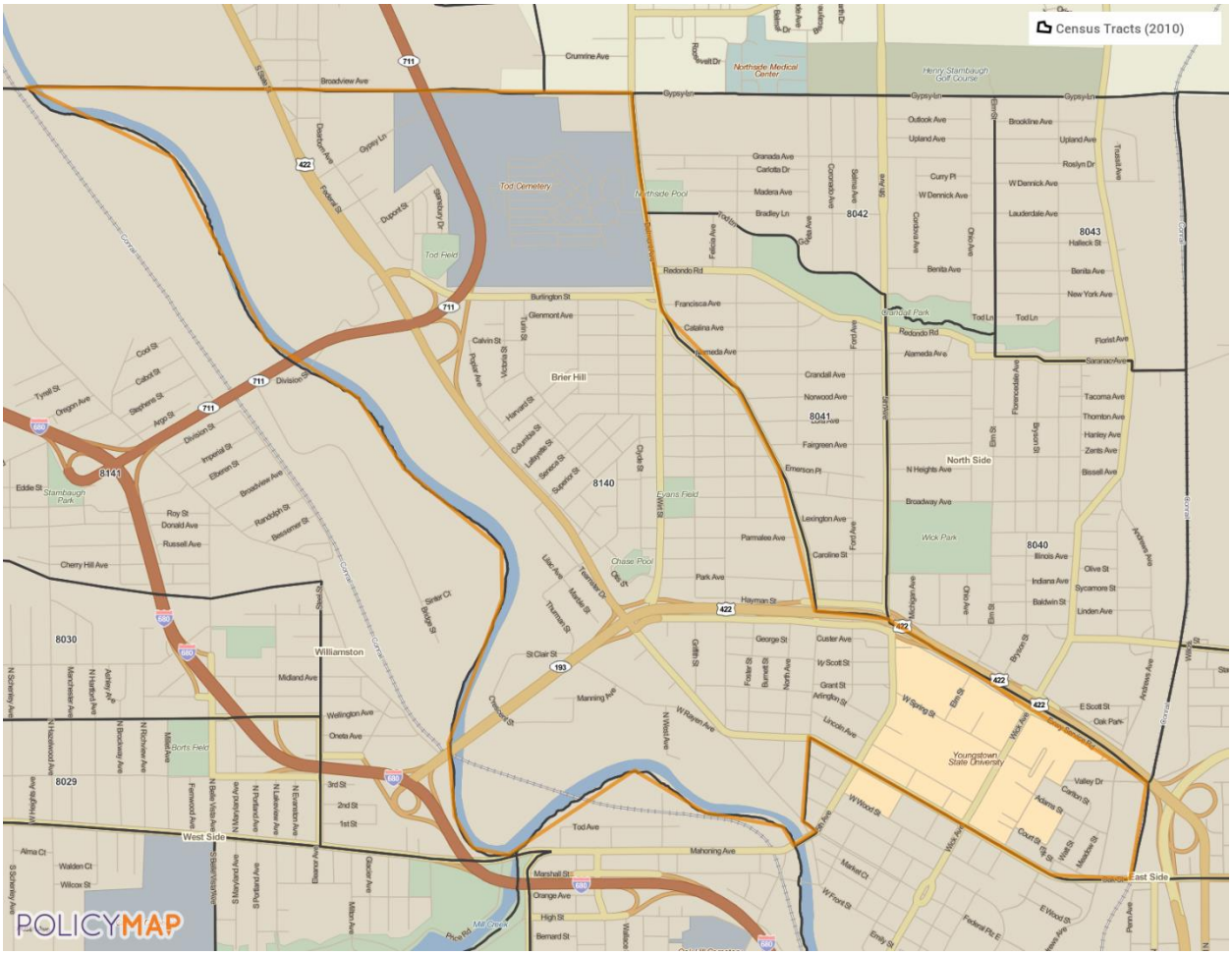


Figure 42:

Census tracts containing the Urban Center Project by Portland State University

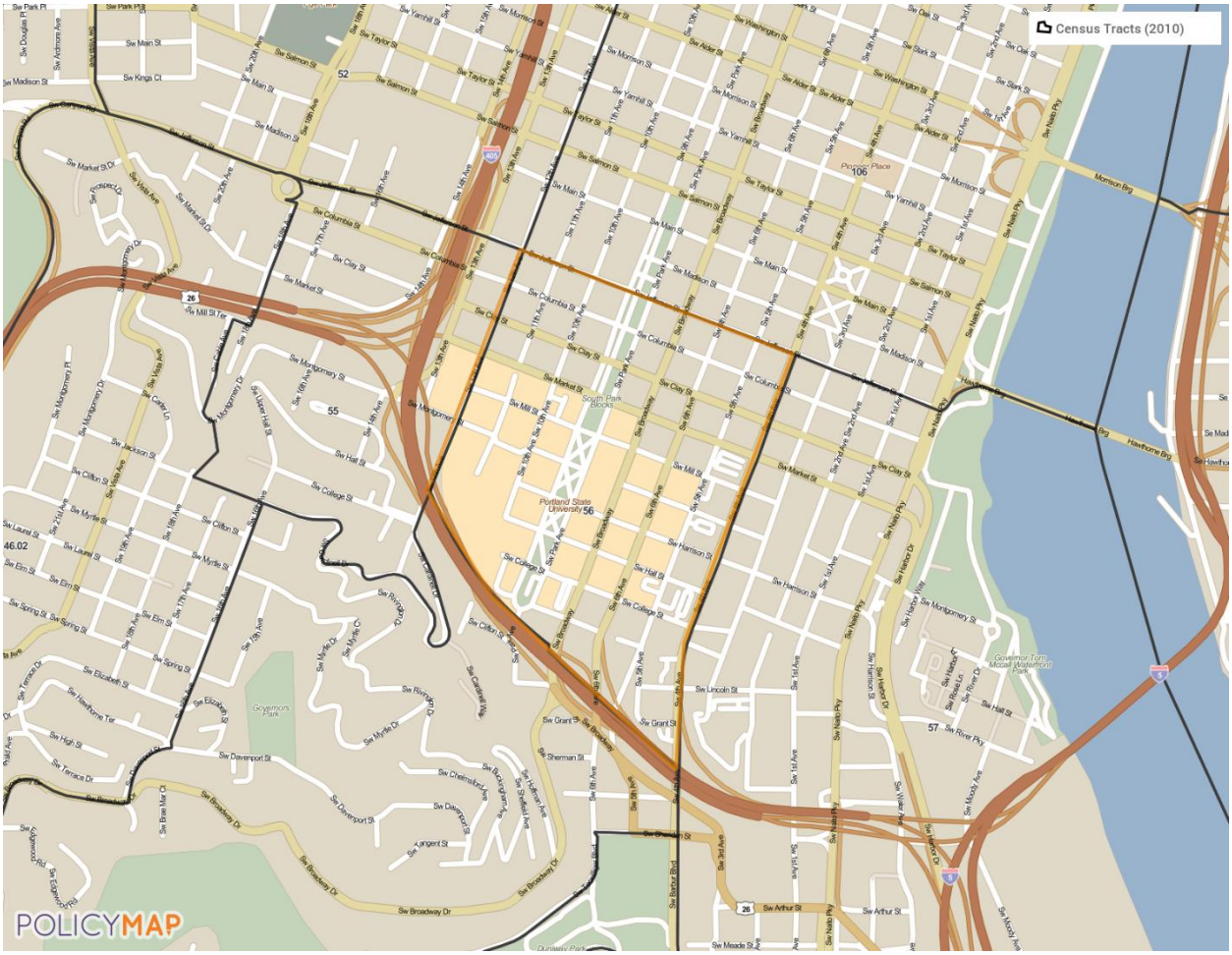


Figure 43:

Census tracts containing the University Park Partnership initiative by Clark University

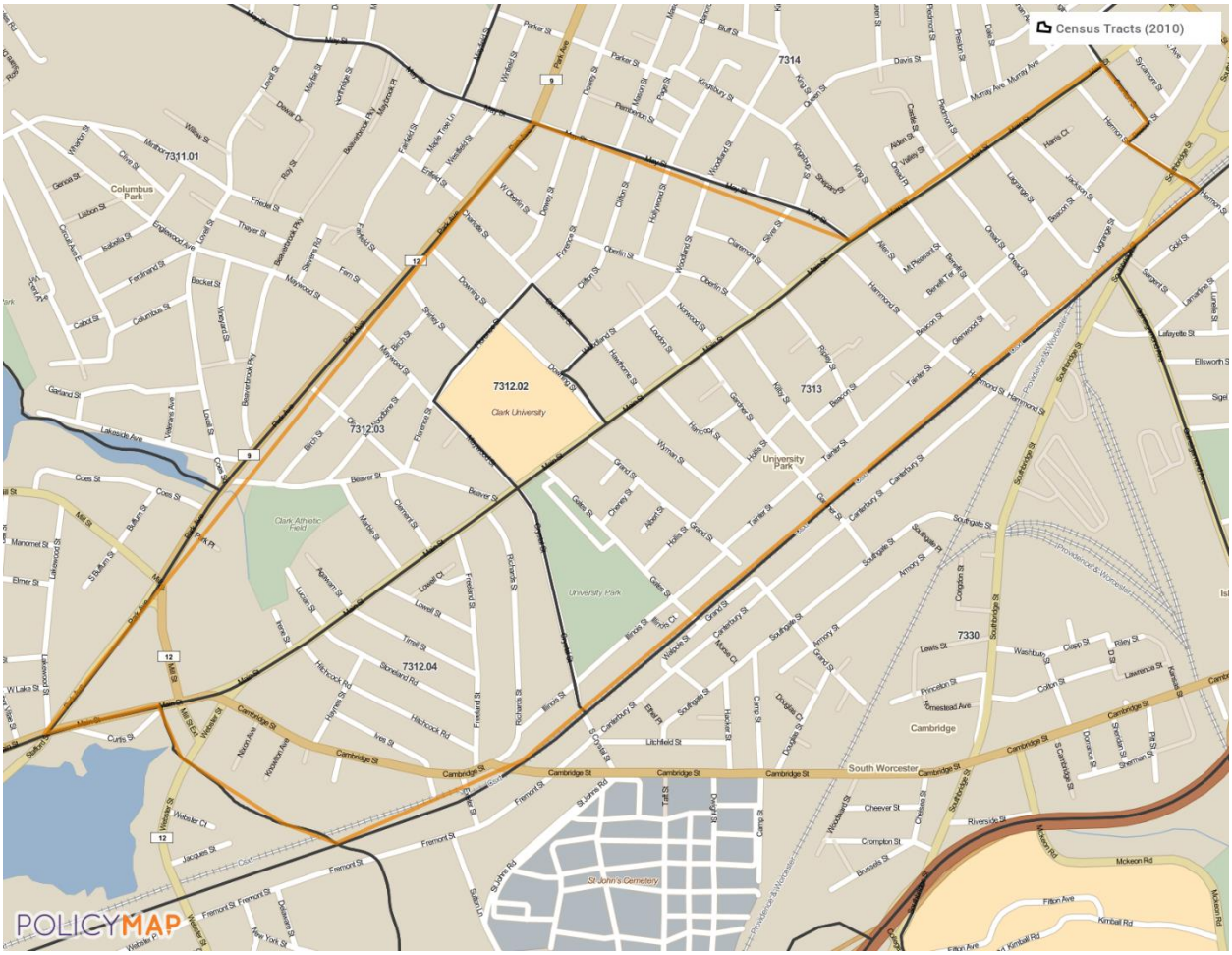


Figure 44:

Census tracts containing the Gateway Park by Clark University

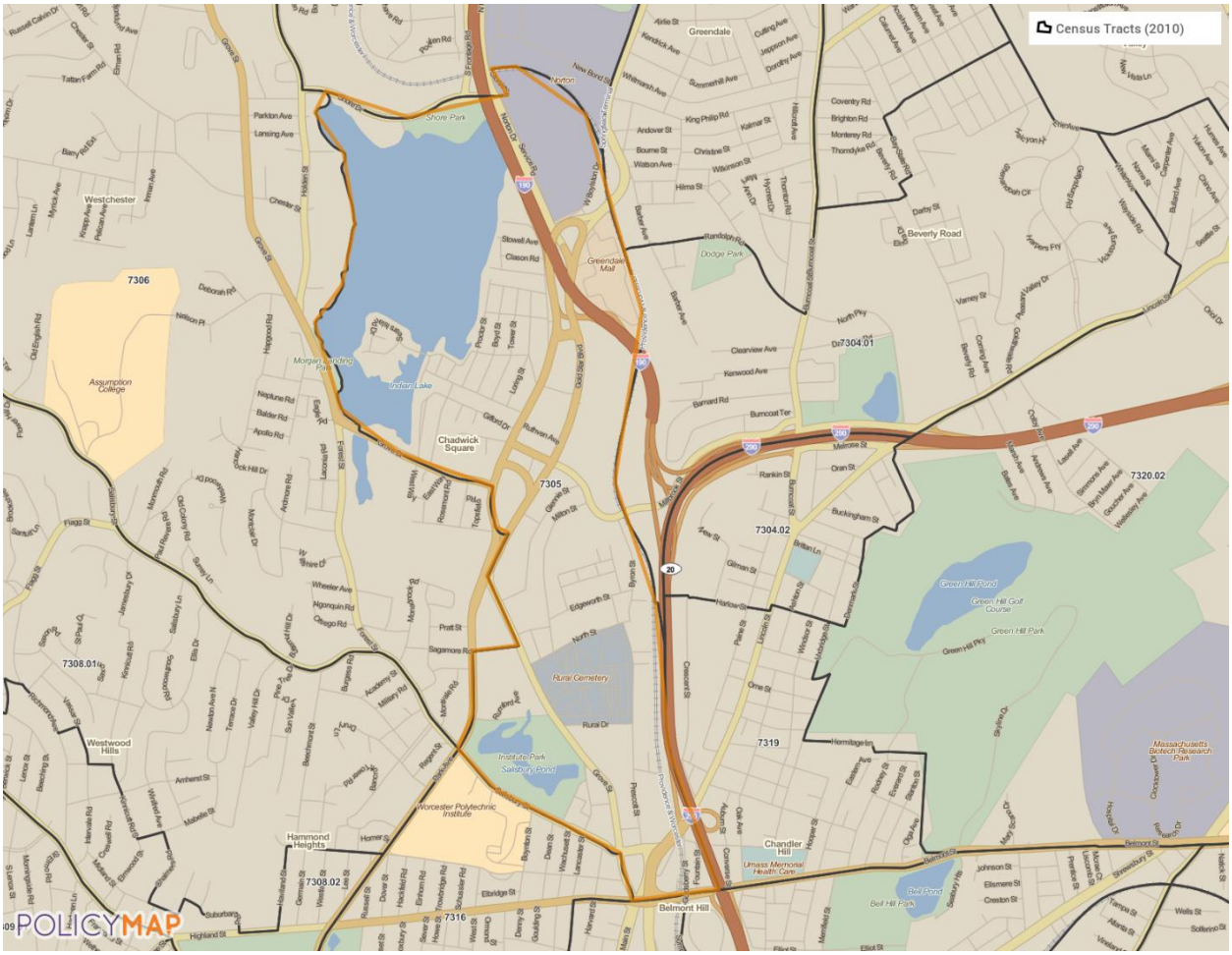


Figure 45:

Census tracts containing the West Philadelphia Initiatives by the University of Pennsylvania

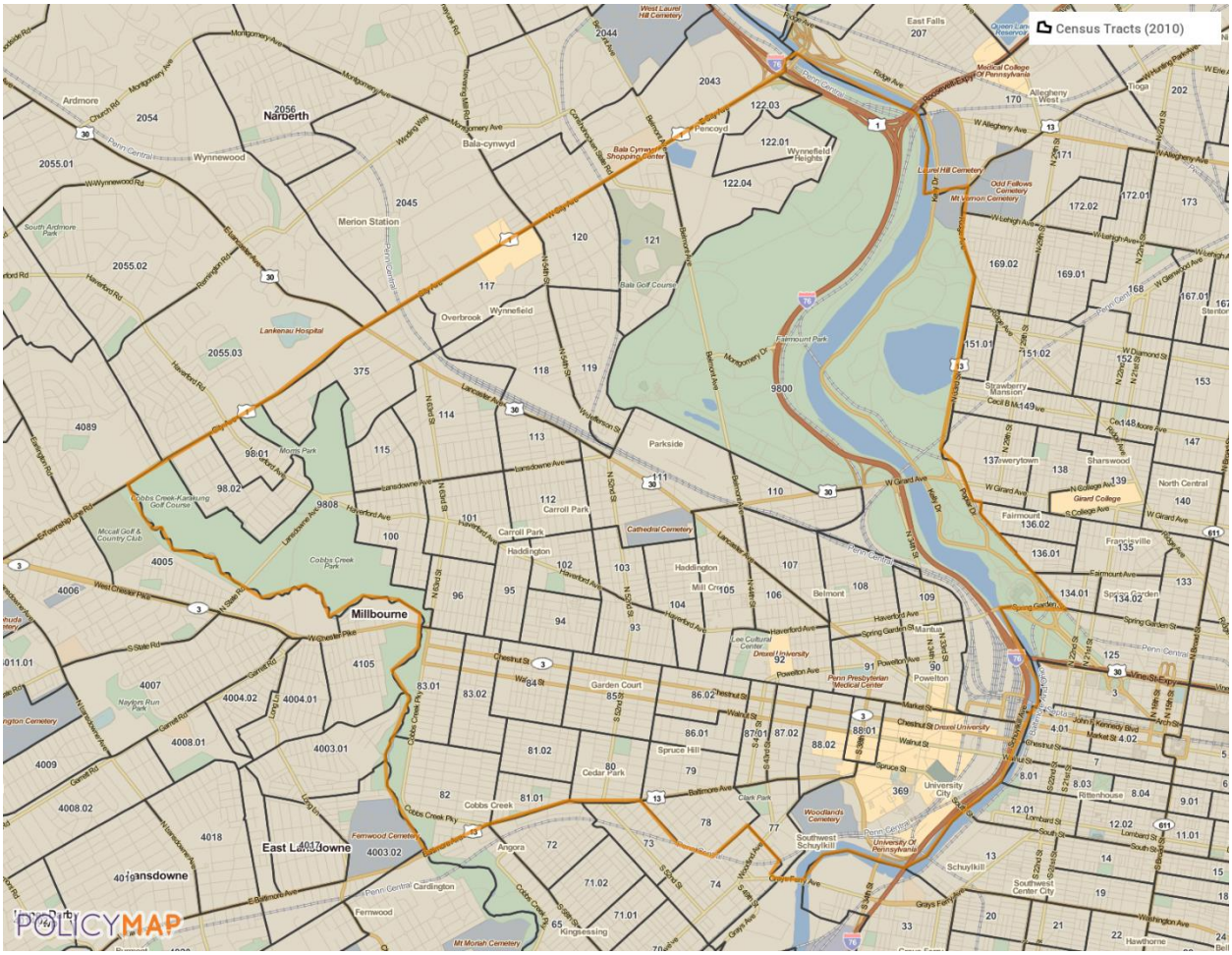


Figure 46:

Census tracts containing the Manhattanville Campus initiative by Columbia University

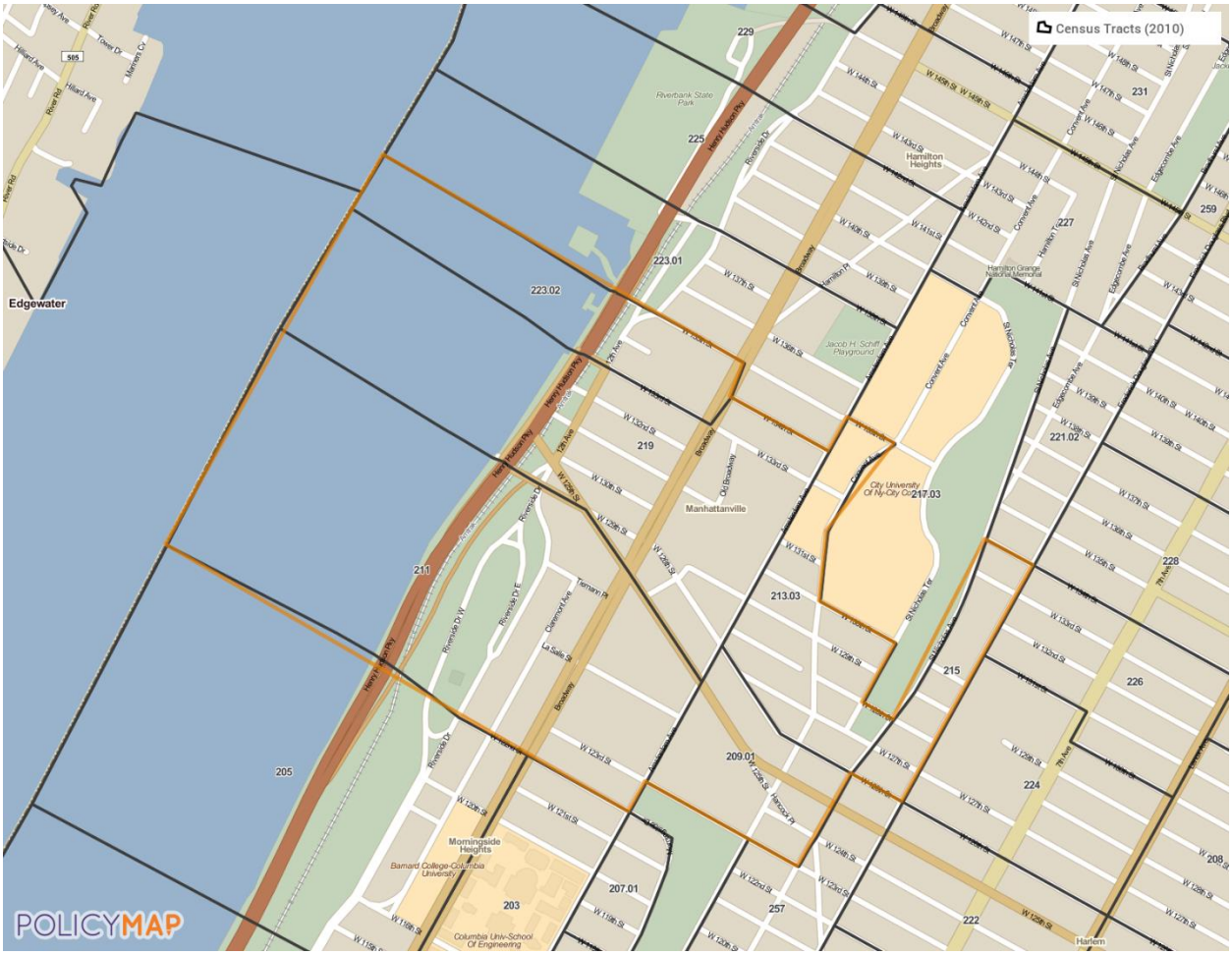


Figure 47:

Census tracts containing the LeMoyne-Owen Community Development Corporation initiative by LeMoyne-Owen College

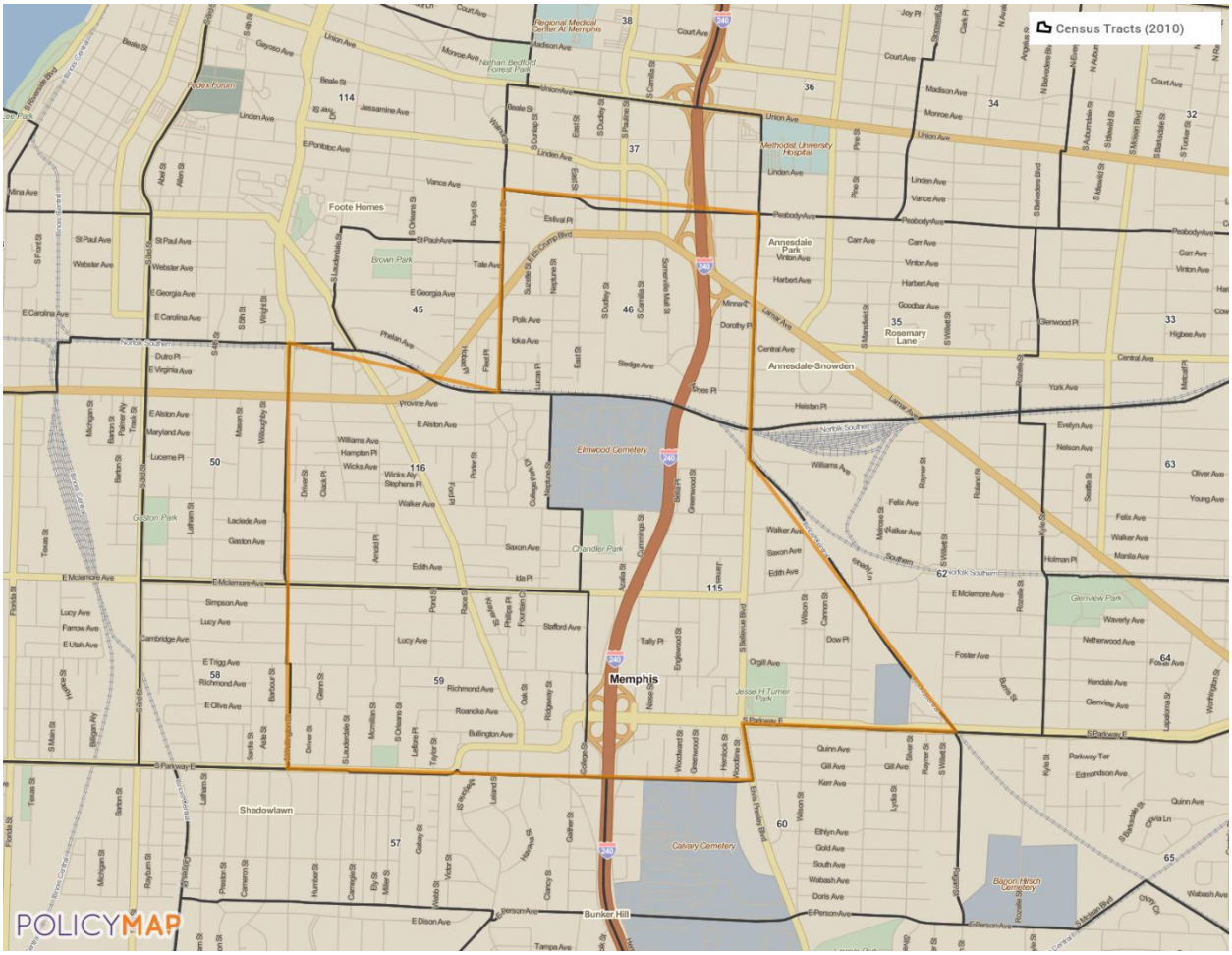


Figure 48:

Census tracts containing the University Park initiative by the Massachusetts Institute of Technology

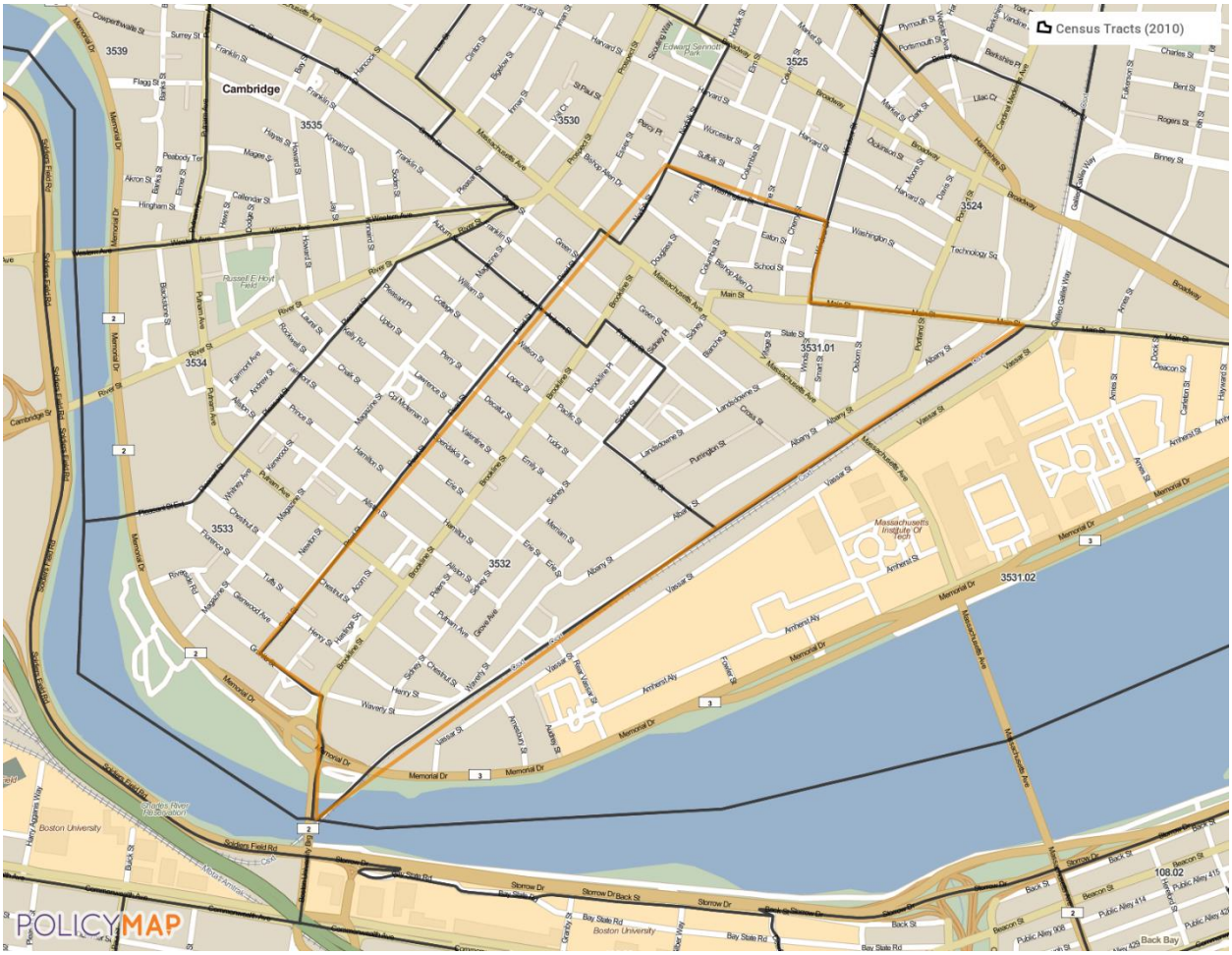


Figure 49:

Census tracts containing the Visitacion Valley initiative by San Francisco State University

Figure 50:

Census tracts containing the Xavier Triangle Neighborhood Development Corporation by Xavier University

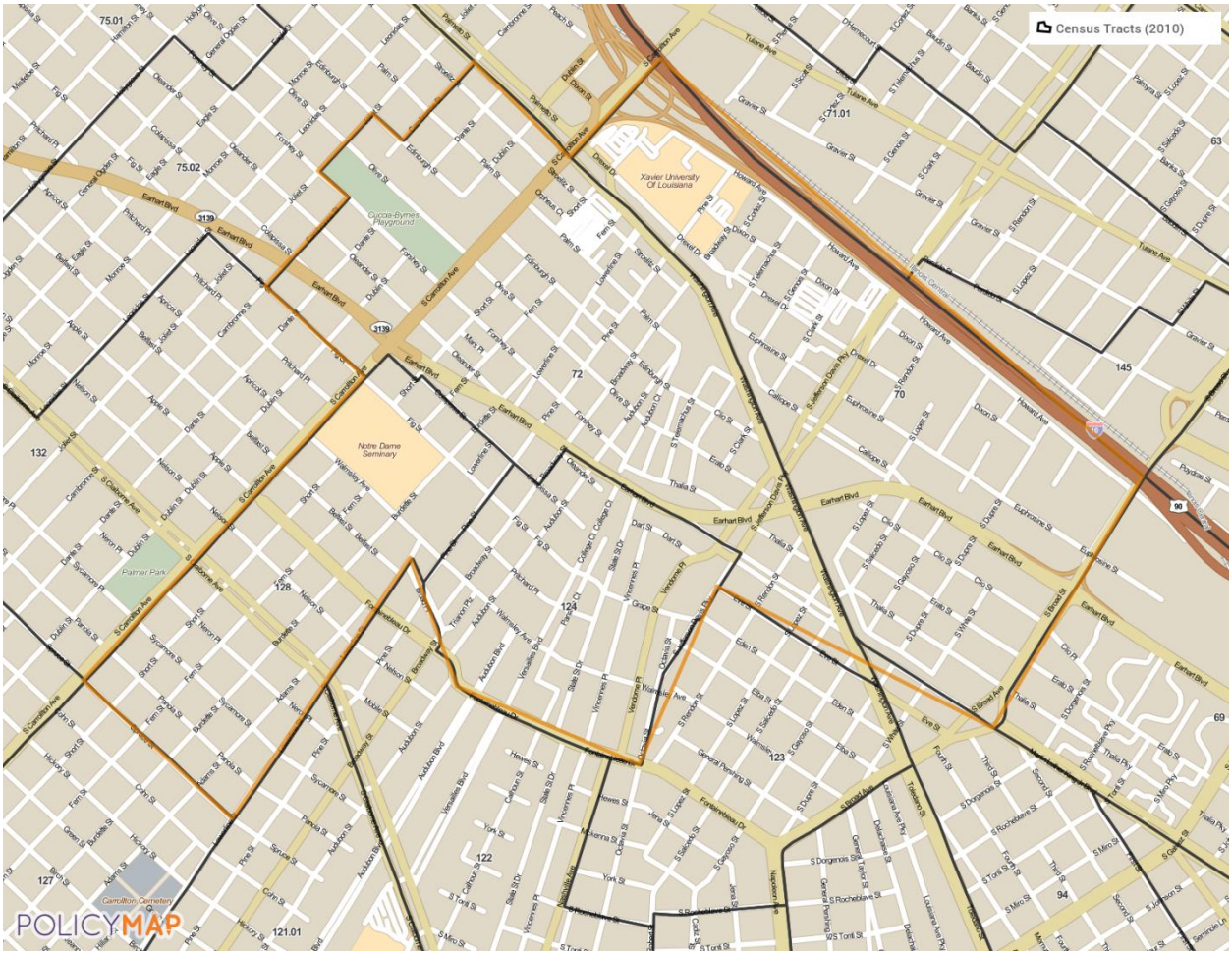


Figure 51:

Census tracts containing the Temple Town initiative by Temple University

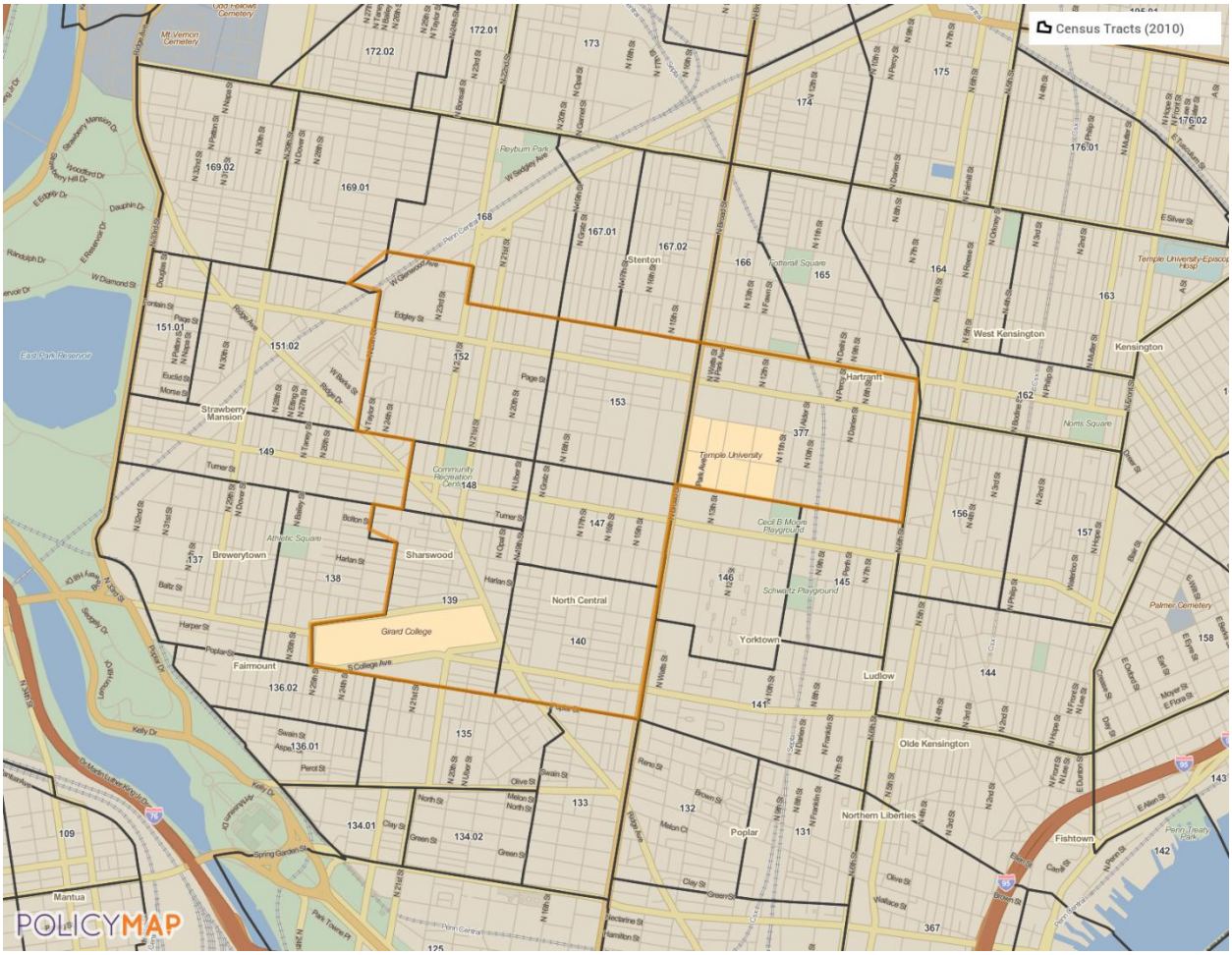


Figure 52:

Census tracts containing the University Park initiative by Indiana University Northwest

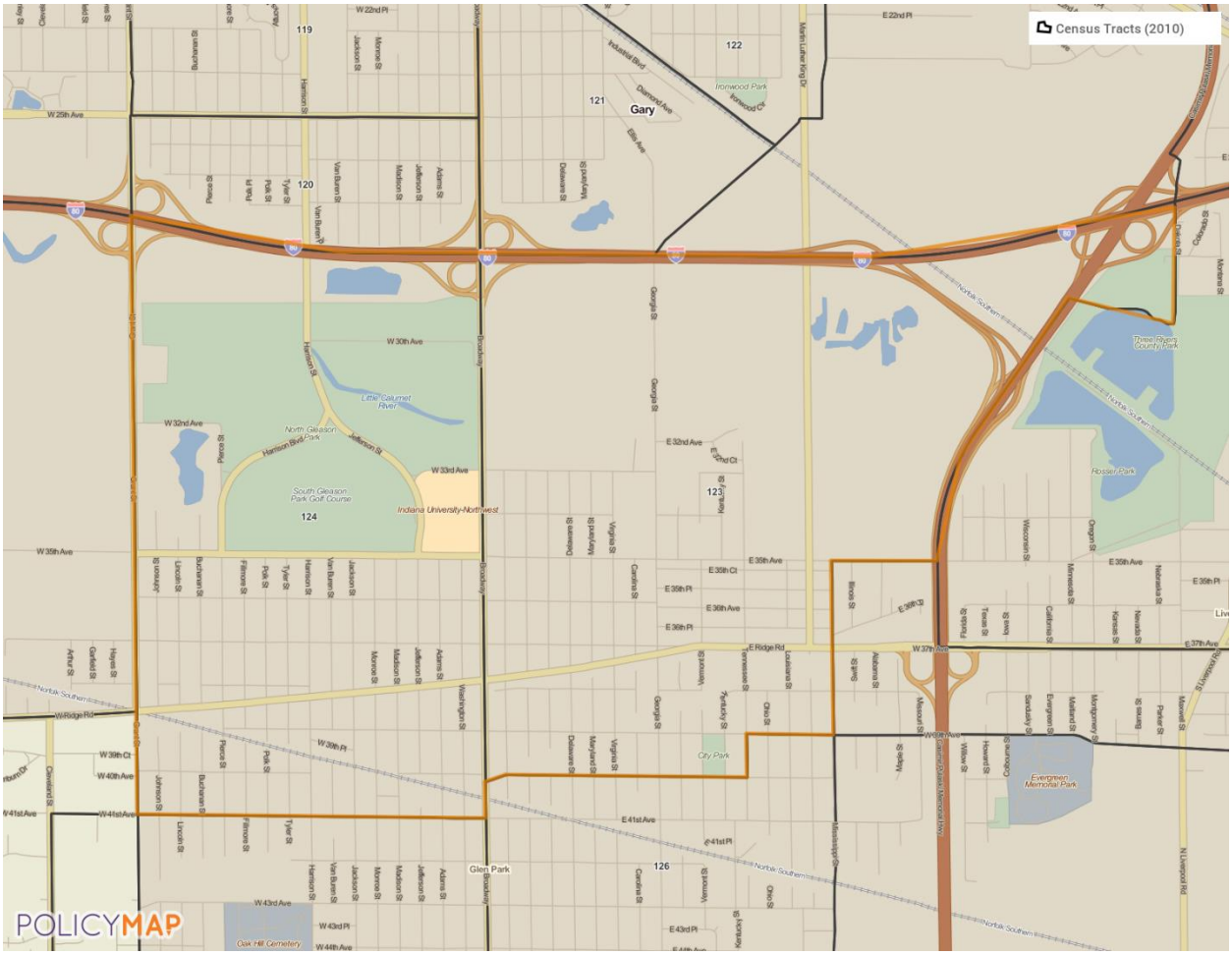
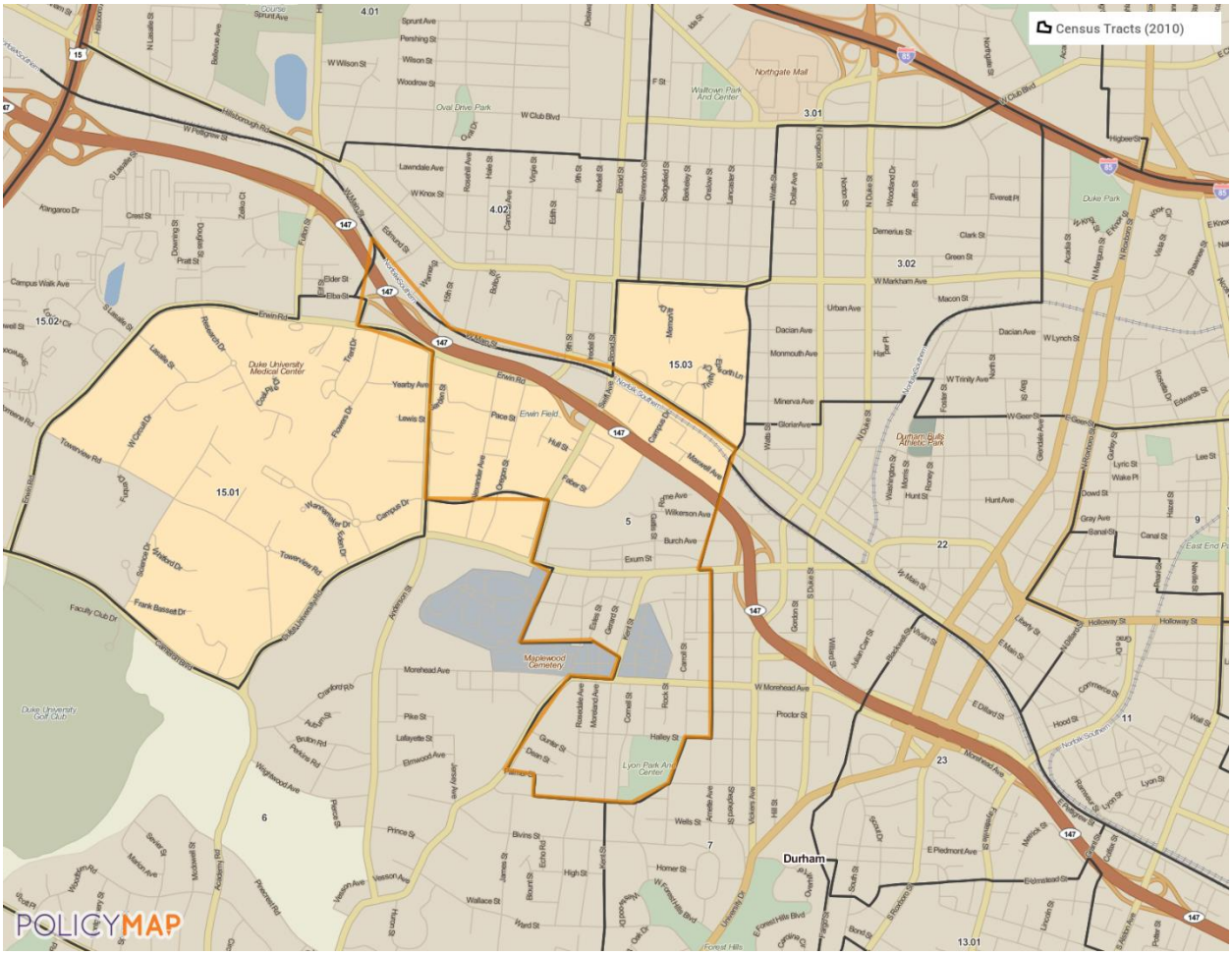


Figure 53:

Census tracts containing the Duke-Durham Partnership initiative by Duke University



REFERENCES

REFERENCES

Ahlfeldt, G. & Maennig, W. (2009). Arenas, arena architecture and the impact on location desirability: The case of 'Olympic arenas' in Prenzlauer Berg, Berlin. *Urban Studies, 46*(7), 1343 – 1362. doi: 10.1177/0042098009104569.

Ahlfeldt, G. & Maennig, W. (2010). Impact of sports arenas on land values: Evidence from Berlin. *The Annals of Regional Science, 44*, 205 – 227. doi: 10.1007/s00168-008-0249-4.

Alperovitz, G. (2013). *What then must we do? Straight talk about the next American Revolution*. White River Junction, VT: Chelsea Green.

Alperovitz, G. & Bhatt, K. (2013, September 24). What then can I do? Ten ways to democratize the economy. *Truthout*. Retrieved from https://truthout.org/articles/what-then-can-i-do-ten-steps-toward-transforming-the-system/.

AmeriCorps & Senior Corps. (2015). President's higher education community service honor roll. Retrieved from https://www.nationalservice.gov/partnerships/honor-roll.

Anderson, M. B. & Sternberg, C. (2012). "'Non-White' gentrification in Chicago's Bronzeville and Pilsen: Racial economy and the intraurban contingency of urban redevelopment. *Urban Affairs Review, 49*(3), 435 – 467. doi: 10.1177/1078087412465590.

Andersson, R. Quigley, J. M., & Wilhelmsson, M. (2009). Urbanization, productivity, and innovation: Evidence from investment in higher education. *Journal of Urban Economics, 66*, 2 – 15. doi: 10.1016/j.jue.2009.02.004.

Angrist, J. D. & Pischke, J. (2009). *Mostly harmless econometrics: An empiricist's companion*. Princeton, NJ: Princeton University Press.

Appleseed. (2003). *Engines of economic growth: The economic impact of Boston's eight research universities on the metropolitan Boston area*. Boston, MA: Appleseed.

Arteaga, C. (2018). The effect of human capital on earnings: Evidence from a reform at Colombia's top university. *Journal of Public Economics,157*, 212 – 225.

Baker, D. M. & Lee, B. (2019). How does light rail transit (LRT) impact gentrification? Evidence from fourteen US urbanized areas. *Journal of Planning Education and Research, 39*(1), 35 – 49. doi: 10.1177/0739456X17713619.

Baldwin, D. (2017, July 30th). When universities swallow cities. *The Chronicle of Higher Education*. Retrieved from http://www.chronicle.com/article/When-Universities-Swallow/240739.

Banzhaf, H. S. & Walsh, R. P. (2013). Segregation and Tibout sorting: The link between place-based investments and neighborhood tipping. *Journal of Urban Economics, 74*, 83 – 98. doi: 10.1016/j.jue.2012.09.006.

Bardaka, E., Delgado, M. S., & Florax, R. J. G. M. (2018). Causal identification of transit-induced gentrification and spatial spillover effects: The case of the Denver light rail. *Journal of Transport Geography, 71*, 15 – 31. doi: 10.1016/j.jtrangeo.2018.06.025.

Bates, L. (2013). *Gentrification and displacement study: Implementing an equitable inclusive development strategy in the context of gentrification*. Portland, OR: City of Portland, Bureau of Planning and Sustainability.

Batty, M. (2014). City 1.0, City 2.0, City n.0, …, City t. *Environment and Planning B: Planning and Design, 41*(1), 1 – 2.

Baum-Snow, N., Freedman, M., & Pavan, R. (2018). Why has urban inequality increased? *American Economic Journal: Applied Economics, 10*(4), 1 – 42. doi: 10.1257/app.20160510.

Baum-Snow, N. & Hartley, D. (2016). *Causes and consequences of central neighborhood change, 1970 – 2010*. Toronto, Canada: University of Toronto.

Bender, T. (1988). Introduction. In Bender (Ed.), *The university and the city: From medieval origins to the present* (3 – 12). New York, NY: Oxford University Press.

Breznitz, S. M. & Feldman, M. P. (2012). The engaged university. *The Journal of Technology Transfer, 37*(2), 139 – 157. doi: 10.1007/s10961-010-9183-6.

Broad, R. & Cavanagh, J. (2009). *Development redefined: How the market met its match*. Boulder, CO: Paradigm.

Bromley, R. & Kent, R. B. (2006). Integrating beyond the campus: Ohio's urban public universities and neighborhood revitalisation. *Planning, Practice & Research, 21*(1), 45 – 78. doi: 12.1080/02697450600901517.

Brown-Saracino, J. (2004). Social preservationists and the quest for authentic community. *City & Community, 3*(2), 135 – 156.

Cantoni, D. & Yuchtman, N. (2014). Medieval universities, legal institutions, and the commercial revolution. *The Quarterly Journal of Economics, 129*(2), 823 – 887. doi: 10.1093/qje/qju007.

Cantwell, B., Marginson, S., & Smolentseva, A. (Eds.). (2018). *High participation systems of education*. Oxford, UK: Oxford University Press.

Carnevale, A. P., Smith, N., & Strohl, J. (2010). *Help wanted: Projections of jobs and economic requirements through 2018*. Washington, DC: Center on Education and the Workforce, Georgetown University.

Charles, C. Z. (2003). The dynamics of racial residential segregation. *Annual Review of Sociology, 29*, 167 – 207. doi: 10.1146/annurev.soc.29.010202.100002.

Clark, D. & Martorell, P. (2014). The signaling value of a high school diploma. *Journal of Political Economy, 122*(2), 282 – 318.

Clark, W. A. V. (1986). Residential segregation in American cities: A review and interpretation. *Population Research and Policy Review, 5*, 95 – 127.

CEOs for Cities with Living Cities. (2010). *How to behave like an anchor institution*. Cleveland, OH: CEOs for Cities.

Coates, D. & Depken, C. A. (2009). The impact of college football games on local sales tax revenue: Evidence from four cities in Texas. *Eastern Economic Journal, 35*(4), 531 – 547.

Cortright, J. (2006). *Making sense of clusters: Regional competitiveness and economic development*. Washington, DC: Brookings.

Couture, V. & Handbury, J. (2017). *Urban revival in America, 2000 – 2010*. No. 24084. National Bureau of Economic Research. Retrieved from https://www.nber.org/papers/w24084.

Crane, L., Harter, J., & Trehan, A. (2010). *Institutions as fulcrums of change*. Washington, DC: Partners for Livable Communities.

Dalton, L. C., Hajrasouliha, A. H. & Riggs, W. W. (2018). State of the art in planning for college and university campuses: Site planning and beyond. *Journal of the American Planning Association, 84*(2), 145 – 161. doi: 10.1080/01944363.2018.1435300.

Dehejia, R. H. & Wahba, S. (1999). Causal effects in nonexperimental studies: Reevaluating the evaluation of training programs. *Journal of the American Statistical Association, 94*, 1053 – 62.

Democracy Collaborative. (2018). Anchor dashboard learning cohort. Retrieved from https://anchors.democracycollaborative.org/higher-education-anchor-mission-initiative.html.

Dobelle, E. S. (2009). *Saviors of our cities: 2009 survey of college and university civic partnerships*. Retrieved from http://www.wsc.ma.edu/Announcements/PRtop25.pdf.

Doberneck, D. M., Glass, C. R., & Schweitzer, J. H. (2010). From rhetoric to reality: A typology of publicly engaged scholarship. *Journal of Higher Education Outreach and Engagement, 14*(5), 5 – 35.

Driscoll, A. (2008). Carnegie's community-engagement classification. Intentions and insights. *Change, 40*(1), 38 – 41.

Dubb, S. (2015). Community wealth: Creating a new community economic base in Detroit. *Journal of Law in Society, 17*(1), 113 – 119.

Dubb, S. & Howard, T. (2012). *Leveraging anchor institutions for local job creation and wealth building*. Berkeley, CA: Institute for Research on Labor and Employment at the University of California, Berkeley.

Dubb, S., McKinley, S., & Howard, T. (2013). *The anchor dashboard: Aligning institutional practice to meet low-income community needs*. College Park, MD: The Democracy Collaborative at the University of Maryland.

Duke-Williams, O. (2009). The geographies of student migration in the UK. *Environment and Planning A, 41*, 1826 – 1848. doi: 10.1068/a4198.

Edlund, L., Machado, C., & Sviatschi, M. M. (2015). *Bright minds, big rent: Gentrification and the rising returns to skill*. Bonn, Germany: Institute for the Study of Labor.

Ehlenz, M. M. (2019). Gown, town, and neighborhood change: An examination of urban neighborhoods with university revitalization efforts. *Journal of Planning Education and Research, 39*(3), 285 -299. doi: 10.1177/0739456X17739111.

Etienne, H. F. (2012). *Pushing back the gates: Neighborhood perspectives on university-driven revitalization in West Philadelphia*. Philadelphia, PA: Temple University Press.

Etzkowitz, H. (2014). The second academic revolution: The rise of the entrepreneurial university and impetuses to firm foundation. In T. J. Allen & R. P. O'Shea (Eds.), *Building technology transfer within research universities: An entrepreneurial approach*, (12 – 32). Cambridge, UK: Cambridge University Press.

Fitzgerald, H.E., Bruns, K., Sonka, S.T., Furco, A., & Swanson, L. (2012). The centrality of engagement in higher education. *Journal of Higher Education Outreach and Engagement*, *16*(3). pp. 7-27.

Florida, R., Gulden, T., & Mellander, C. (2008). The rise of the mega-region. *Cambridge Journal of Regions, Economy and Society, 1*(3), 459 – 476. doi: 10.1093/cjres/rsn018.

Florida, R., Mellander, C., & Gulden, T. (2012). Global metropolis: Assessing economic activity in urban centers based on nighttime satellite images. *Professional Geographer, 64*(2), 178 – 187.

Frank, K. A., Maroulis, S., Duong, M., & Kelcey, B. (2013). What would it take to change an inference? Using Rubin's causal model to interpret the robustness of causal inferences. *Education Evaluation and Policy Analysis, 35,* 437 – 460.

Friedman, D., Perry, D., & Menendez, C. (2014). *The foundational role of universities as anchor institutions in urban development: A report of national data and survey findings*. Washington, D.C.: The Coalition of Urban Serving Universities.

Geiger, R. L. (2016). The ten generations of American higher education. In M. N. Bastedo, P. G. Altbach, & P. J. Gumport (Eds.), *American higher education in the twenty-first century: Social, political, and economic challenges* (4th ed.) (3 – 34). Baltimore, MD: Johns Hopkins University Press.

Geiger, R. L. & Sá, C. (2005). Beyond technology transfer: US state policies to harness university research for economic development. *Minerva, 43,* 1 – 21.

Glaeser, E. & Gyourko, J. (2018). The economic implications of housing supply. *Journal of Economic Perspectives, 32*(1), 3 – 30. doi: 10.1257/jep.32.1.3.

Goode, J. G. & Schneider, J. A. (1994). *Reshaping ethnic and racial relations in Philadelphia: Immigrants in a divided city*. Philadelphia, PA: Temple University Press.

Goodman-Bacon, A. (2018). Difference-in-differences with variation in treatment timing. *National Bureau of Economic Research Working Paper Series*, No. 25018. doi: 10.3386/w25018.

Gregory, S. (1993). Race, rubbish, and resistance: Empowering difference in community politics. *Cultural Anthropology, 8*(1), 24 – 48.

Gregory, S. (2013). The radiant university: Space, urban development, and the public good. *City & Society, 25*(1), 47 – 69. doi: 10.1111/ciso.12011.

Grimmett, M. A., Lupton-Smith, H., Beckwith, A., Englert, M. K., & Messinger, E. (2018). The Community Counseling, Education, and Research Center (CCERC) model: Addressing community mental health needs through engagement scholarship. *Journal of Higher Education Outreach and Engagement, 22*(3), 201 – 230.

Gulbranson, C. A. & Audretsch, D. B. (2008). Proof of concept centers: Accelerating the commercialization of university innovation. *The Journal of Technology Transfer, 33*(3), 249 – 258. doi: 10.1007/s10961-008-9086-y.

Hackworth, J. & Smith, N. (2001). The changing state of gentrification. *Tijdschrift Voor Economische En Sociale Geografie, 92*(4), 464 – 477. doi: 10.1111/1467-9663.00172.

Harkavy, I., Birch, E., Alperovitz, G., Cantor, N., Clancy, G., Coletta, C.,…, Weeks, J. (2009). Anchor institutions as partners in building successful communities and local economies. In Brophy, P. & Godsil, R. (Eds.). *Retooling HUD for a Catalytic Government: A Report to Secretary Shaun Donovan* (pp. 147 – 168). Washington, D.C.: Penn Institute for Urban Research.

Hodges, R. A. & Dubb, S. (2012). *The road half traveled: University engagement at a crossroads*. East Lansing, MI: Michigan State University Press.

Hoyt, L. (2013). Introduction. In L. Hoyt (Ed.), *Transforming cities and minds through the scholarship of engagement* (1 – 26). Nashville, TN: Vanderbilt University Press.

Hubbard, P. (2009). Geographies of studentification and purpose-built student accommodation: Leading separate lives? *Environment and Planning A, 41*, 1903 – 1923. doi: 10.1068/a4149.

Hwang, J. & Lin, J. (2016). What have we learned about the causes of recent gentrification? *Cityscape, 18*(3), 9 – 26.

Hyatt, S. B. (2010). Universities and neoliberal models of urban development: Using ethnographic fieldwork to understand the 'Death and Rebirth of North Central Philadelphia'. *Learning and Teaching: The International Journal of Higher Education in the Social Sciences, 3*(3), 6 – 31. doi: 10.3167/latiss.2010.030302.

Initiative for a Competitive Inner City. (2011). Anchor institutions and urban economic development: From community benefit to shared value. *Inner City Insights, 1*(2), 1 – 9.

Iuviene, N., Stitely, A., & Hoyt, L. (2010). *Sustainable economic democracy: Worker cooperatives for the 21st century*. Cambridge, MA: MIT Community Innovators Lab.

Kantor, S. & Whalley, A. (2014). Knowledge spillovers from research universities: Evidence from endowment value shocks. *Review of Economics and Statistics, 96*(1), 171 – 188.

Kenyon, D. A. & Langley, A. H. (2010). *Payments in lieu of taxes: Balancing municipal and nonprofit interests*. Cambridge, MA: Lincoln Institute of Land Policy.

King, G. & Nielsen, R. (2019). Why propensity scores should not be used for matching. *Political Analysis, 27*, 435 – 454. doi: 10.1017/pan.2019.11.

Kinton, C., Smith, D. P., & Harrison, J. (2016). De-studentification: Emptying housing and neighbourhoods of student populations. *Environment and Planning A, 48*(8), 1617 – 1635. doi: 10.1177/0308518X16642446.

Kochenkova, A., Grimaldi, R., & Munari, F. (2016). Public policy measures in support of knowledge transfer activities: A review of academic literature. *Journal of Technology Transfer, 41*, 407 – 429. doi: 10.1007/s1091-015-9416-9.

Lertwachara, K. & Cochran, J. (2007). An event study of the economic impact of professional sport franchises on local U.S. economies. *Journal of Sports Economics, 8*(3), 244 – 254.

Ley, D. (1986). Alternative explanations for inner-city gentrification: A Canadian assessment. *Annals of the Association of American Geographers, 76*(4), 521 – 535.

Li, X. (2019). Do new housing units in your backyard raise your rents? *Working paper*. Retrieved from https://docs.wixstatic.com/ugd/7fc2bf_ee1737c3c9d4468881bf1434814a6f8f.pdf#Glaeser%20and%20Gyourko%2C%202018.

Liu, S. (2015). Spillovers from universities: Evidence from the land-grant program. *Journal of Urban Economics, 87,* 25 – 41. doi: 10.1016/j.jue.2015.03.001.

Lloyd, R. D. (2006). *Neo-bohemia: Art and commerce in the postindustrial city*. New York, NY: Routledge.

Logan, J. R., Stults, B. J., & Xu, Z. (2016). Validating population estimates for harmonized census tract data, 2000 – 2010. *Annals of the American Association of Geographers, 106*(5), 1013 – 1029. doi: 10.1080/24694452.2016.1187060.

Logan, J. R., Xu, Z., & Stults, B. J. (2012). *Longitudinal tract database* [data file]. Retrieved from https://s4.ad.brown.edu/Projects/Diversity/Researcher/Bridging.htm.

Logan, J. R., Xu, Z., & Stults, B. J. (2014). Interpolating U.S. Decennial Census tract data from as early as 1970 to 2010: A longitudinal tract database. *The Professional Geographer, 66*(3), 412 – 420. doi: 10.1080/00330124.2014.905156.

Lyall, K. C. (2013). Reorganizing higher education systems: By drift or design? In J.E. Lane and D.B. Johnstone, *Higher Education 3.0: Harnessing Systemness, Delivering Performances* (pp. 127-147). Albany, NY: State University of New York Press.

Mandich, A. M. & Dorfman, J. H. (2017). The wage and job impacts of hospitals on local labor markets. *Economic Development Quarterly, 31*(2), 139 – 148. doi: 10.1177/0891242417691609.

Manjarrez, C. A., Cigna, J., & Bajaj, B. (2007). *Making cities stronger: Public library contributions to local economic development*. Washington, DC: The Urban Libraries Council.

Marcuse, P. (2015). Gentrification, social justice and personal ethics. *International Journal of Urban and Regional Research, 39*(6), 1263 – 1269. doi: 10.1111/1468-2427.12319.

Maurrasse, D. (2007). *City anchors: Leveraging anchor institutions for urban success*. Cleveland, OH: CEOs for Cities.

Miller, P. A. (2002). The economic impact of sports stadium construction: The case of the construction industry in St. Louis, MO. *Journal of Urban Affairs, 24*(2), 159 – 173.

Mokyr, J. (2005). *The gifts of Athena: Historical origins of the knowledge economy*. Princeton, NJ: Princeton University Press.

Moretti, E. (2004). Human capital externalities in cities. In J. V. Henderson & J. F. Thisse (Eds.), *Handbook of regional and urban economics: Cities and geography* (2243 – 2289). Amsterdam, The Netherlands: Elsevier B. V.

Morris, K., Jones, A., & Wright, J. (2010). *Anchoring growth: The role of 'anchor institutions' in the regeneration of UK cities*. London, UK: The Work Foundation.

Murnane, R. J. & Willett, J. B. (2011). *Methods matter: Improving causal inference in educational and social science research*. New York, NY: Oxford University Press.

O'Shea, R. P., Fitzgerald, C., Chugh, H., & Allen, T. J. (2014). University-based entrepreneurship: A synthesis of the literature. In T. J. Allen & R. P. O'Shea (Eds.), *Building technology transfer within research universities: An entrepreneurial approach*, (33 – 59). Cambridge, UK: Cambridge University Press.

Page, B. & Ross, E. (2016). Legacies of a contested campus: Urban renewal, community resistance, and the origins of gentrification in Denver. *Urban Geography, 38*(9), 1293 – 1328. doi: 10.1080/02723638.

Pearman, F. A. & Swain, W. A. (2017). School choice, gentrification, and the variable significance of racial stratification in urban neighborhoods. *Sociology of Education, 90*(3), 213 – 235. doi: 10.1177/0038040717710494.

Peltzman, S. (1973). The effect of government subsidies-in-kind on private expenditures: The case of higher education. *Journal of Political Economy, 81*(1), 1 – 27.

Perry, D. C. & Wiewel, W. (2008). The university, the city, and land: Context and introduction. In W. Wiewel & D. C. Perry (Eds.), *Global universities and urban development: Case studies and analysis* (3 – 24). New York, NY: Routledge.

Persons, G. A. (2004). National politics and charitable choice as urban policy for community development. *The Annals of the American Academy of Political and Social Science,* 594, 65 – 78.

PolicyMap. (2020). *Online GIS Maps | PolicyMap.* Retrieved from www.policymaps.com.

Pomeroy, R. S., Pollnac, R. B., Katon, B. M., & Predo, C. D. (1997). Evaluating factors contributing to the success of community-based coastal resource management: The

Central Visayas Regional Project-1, Philippines. *Ocean & Coastal Management, 36*(1 – 3), 97 – 120.

Porter, M. E. (1990). *The competitive advantage of nations*. New York, NY: Free Press.

Porter, M. E. (1997). New strategies for inner-city economic development. *Economic Development Quarterly, 11*, 11 – 27.

Porter, M. E. (2016). Inner-city economic development: Learnings from 20 years of research and practice. *Economic Development Quarterly, 30*(2), 105 – 116. doi: 10.1177/0891242416642320.

Reardon, K. M. (2006). Promoting reciprocity within community/university development partnerships: Lessons from the field. *Planning, Practice & Research, 21*(1), 95 – 107. doi: 10.1080/02697450600901566.

Rich, M. A. & Tsitsos, W. (2016). Avoiding the 'SoHo effect' in Baltimore: Neighborhood revitalization and arts and entertainment districts. *International Journal of Urban and Regional Research, 40*(4), 736 – 756. doi: 10.1111/1468-2427.12376.

Rooney, J. D. & Gittleman, J. (2003). *A new era of higher education-community partnerships: The role and impact of colleges and universities in Greater Boston today*. Boston, MA: The Carol R. Goldberg Seminar.

Rosenbaum, P. R. & Rubin, D. B. (1985). Constructing a control group using multivariate matched sampling methods that incorporate the propensity score. *The American Statistician, 39*(1), 33 – 38.

Rosenberg, J. M., Xu, R., & Frank, K. A. (2018). Konfound-It!: Quantify the Robustness of Causal Inferences. http://konfound-it.com.

Rutheiser, C. (2012). The promise and prospects of anchor institutions: Some thoughts on an emerging field. *Policy Development & Research Edge*. Retrieved from https://www.huduser.gov/portal/pdredge/pdr_edge_hudpartrpt_062211.html.

Sage, J., Smith, D., & Hubbard, P. (2013). New-build studentification: A panacea for balanced communities? *Urban Studies, 50*(13), 2623 – 2641. doi: 10.1177/0042098013477694.

Saltmarsh, J., O'Meara, K., Sandmann, L., Giles, D., Cowdery, K., Liang, J., & Buglione, S. (2014). *Becoming a steward of place: Lessons from AASCU Carnegie Community Engagement applications*. Washington, D.C.: American Association of State Colleges and Universities.

Sladek, E. (2017). *Higher education's anchor mission: Measuring place-based engagement*. Washington, D.C.: The Democracy Collaborative.

Sladek, E. (2019). The transformative power of anchor institutions. *Metropolitan Universities, 30*(1), 3 – 4. doi: 10.19060/22919.

Smith, D. (2008). The politics of studentification and '(un)balanced' urban populations: Lessons for gentrification and sustainable communities? *Urban Studies, 45*(12), 2541 – 2564. doi: 10.1177/0042098008097108.

Smith, D. P. & Holt, L. (2007). Studentification and 'apprentice' gentrifiers within British provincial towns and cities: Extending the meaning of gentrification. *Environment and Planning A, 39*, 142 – 161. doi: 10.1068/a38476.

Smith, J. A. & Todd, P. E. (2005). Does matching overcome LaLonde's critique of nonexperimental estimators? *Journal of Econometrics, 125*(1 – 2), 305 – 353. doi: 10.1016/j.jeconom.2004.04.011.

Smith, N. (1982). Gentrification and uneven development. *Economic Geography, 58*(2), 139 – 155.

Smith, N. (1998). Gentrification. In W. Van Vliet (Ed.), *The encyclopedia of housing* (198 – 199). Thousand Oaks, CA: SAGE Publications, Inc.

Stoecker, R., Beckman, M., & Min, B. H. (2010). Evaluating the community impact of higher education civic engagement. In C. Burack, S. D. Seifer, & H. E. Fitzgerald (Eds.), *Handbook of engaged scholarship: Contemporary landscapes future directions – Community-campus partnerships* (177 – 196). East Lansing, MI: Michigan State University Press.

Taylor, H. L., Luter, D. G., & Miller, C. (2018). The university, neighborhood revitalization, and civic engagement: Toward civic engagement 3.0. *Societies, 8*, 106 – 126. doi: 10.3390/soc8040106.

United Nations, Department of Economic and Social Affairs, Population Division. (2015). *World urbanization prospects: The 2014 revision*. New York, NY: United Nations.

United States Census Bureau. (2016). *Core-based statistical area*. Retrieved from https://www.census.gov/topics/housing/housing-patterns/about/core-based-statistical-areas.html.

United States Census Bureau. (2018). *Glossary*. Retrieved from https://www.census.gov/programs-surveys/geography/about/glossary.html#par_textimage_13.

United States Census Bureau. (n.d.). *American FactFinder*. Retrieved from https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t.

University of San Diego. (2020). *The Mulvaney Center for Community, Awareness, and Social Action.* Retrieved from https://www.sandiego.edu/mccasa/.

University of San Francisco. (2020). *Engage San Francisco*. Retrieved from https://www.usfca.edu/mccarthy/engage-san-francisco.

Walker, L. A. & East, J. F. (2018). The roles of foundations and universities in redevelopment planning. *Metropolitan Universities, 29*(2), 33 – 56. doi: 10.18060/22342.

Webber, H. S. & Karlström, M. (2009). *Why community investment is good for nonprofit anchor institutions: Understanding costs, benefits, and the range of strategic options.* Chicago, IL: Chapin Hall at the University of Chicago.

Wiewel, W. & Perry, D. C. (Eds.). (2008). *Global universities and urban development: Case studies and analysis*. New York, NY: Routledge.

Williams, B. (1988). *Upscaling downtown: Stalled gentrification in Washington, D. C.* Ithaca, NY: Cornell University Press.

Wittman, A. & Crews, T. (2012). *Engaged learning economies: Aligning civic engagement and economic development in community-campus partnerships*. Boston, MA: Campus Compact.

Wolf-Powers, L. (2010). Community benefits agreements and local government. *Journal of the American Planning Association, 76*(2), 141 – 159. doi: 10.1080/01944360903490923.

Wooldridge, J. M. (2016). *Introductory econometrics: A modern approach* (6th ed.). Boston, MA: Cengage Learning.

World Bank. (2009). *World development report 2009: Reshaping economic geography*. Washington, DC: World Bank.

Wright, M., Lockett, A., Clarysse, B., & Binks, M. (2006). University spin-out companies and venture capital. *Research Policy, 35*, 481 – 501. doi: 10.1016/j.respol.2006.01.005.

Youtie, J. & Shapira, P. (2008). Mapping the nanotechnology enterprise: A multi-indicator analysis of emerging nanodistricts in the US South. *The Journal of Technology Transfer, 33*(2) 209 – 223. DOI: 10.1007/s10961-007-9076-5.

Zou, B. (2018). The local economic impacts of military personnel. *Journal of Labor Economics, 36*(3), 589 – 621.

Zukin, S. (2016). Gentrification in three paradoxes. *City & Community, 15*(3), 202 – 207. doi: 10.1111/cico.12184.