PLANNING GENTRIFICATION

Municipal Policy & Price Effects of the Orange Line in Portland, OR

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Abstract

The mission of creating more environmentally-friendly and socially-equitable cities is critical; recognition of this need has increasingly informed urban policy. Urban planning strategies for realizing these laudable goals of inclusivity and sustainability are expressed in terms of a market-oriented and entrepreneurial smart growth framework, which seeks the revitalization of cities with transit-oriented development. This thesis critiques the discourse and practice of transit-oriented development with reference to a case study of a recently-constructed light rail line in Portland, Oregon. I deploy a hedonic analysis of property values in conjunction with an analysis of planning documents to illustrate the connection between plans and property values. Light rail was envisioned as a catalyst for development, development cast as its own end; the hedonic analysis illustrates that this strategy has already boosted land values, setting the stage for the profitable redevelopment and gentrification of neighborhoods along the line. This analysis raises equity concerns surrounding transit-oriented development as a strategy for promoting inclusive cities; increased property values will tend to displace the lower income, transit-dependent residents who most benefit from increased transit access.

1 Introduction

Urban development arises as the spatial representation of relations between people—whether those relations are defined as economic, political, intellectual, cultural, or social. The physical environment of the city exhibits these present and past relations; as the successive alterations of the landscape accrete, patterns of development reveal changes in ideological and material conditions. Simultaneously, the urban landscape forms the environment for which most of the revolutions in the relations between people are first hatched and realized. Urban planning thus mirrors relations through space, able to powerfully shape lives yet shaped itself by power.

Transportation occupies a key role in developing uneven geographies, its infrastructure being the mode by which people, capital, information, and resources are brought together in space. Transit, in particular, is fundamental to the formation and functioning of the core-centric city, connecting the dense concentration of people required. Beyond this immediate economic nature of transit, however, lies a set of diverging visions of transit as improving social equity and environmental outcomes with expanded non-automotive mobility and as a tool for attracting growth and development. The contradictions between these aims are elided by the employment of smart growth rhetoric that portrays transit-oriented development as the means for achieving the illusive "Triple-Bottom Line" in the built environment—the simultaneous realization of social equity, environmental protection, and economic profit. The development unleashed by smart growth policies may be linked closely to gentrification—the social and class "upgrading" of space—by improving conditions for capital reinvestment that displaces the poor.

In this paper, I examine the intersection of gentrification, planning, and transit investment in the "sustainable city" through the case of the Orange Line, a recent light rail expansion in Portland, Oregon, and the adjacent suburb of Milwaukie. I chose to situate this research in Portland due to both my own familiarity with its planning processes and Portland's commitment to smart growth sustainability, its extensively gentrified landscape, and its famed progressive politics that claim to create an equitable and livable city for all. Through regression analysis, I found that the Orange Line has rapidly created a price premium on the order of $50,000 for single-family homes, valorizing land for profitable redevelopment and raising the specter of

price-induced displacement. This valorization is not merely an unintended byproduct of transportation investment; rather, it is the result of an active strategy of revitalization, informed by present trends in real estate, with predictable (and predicted) effects on property values. The politics revealed by this examination of transit-oriented development planning in Portland illustrate how entrepreneurial neoliberalism is chained to the mission of creating livelier, more sustainable cities.

I begin this investigation by situating the rise of gentrification in relation to transatlantic trends in urban planning and the rise of neoliberalism in sections 2.1 and 2.2. I highlight how this combination of postmodern planning and neoliberal restructuring has entailed the devolution of power at multiple scales, transforming urban governance by shifting municipalities into entrepreneurial mindsets prioritizing private value creation. This development of the entrepreneurial city is parallel to the postmodern trend in planning, wherein the backlash against top-down modernist planning is expressed in an admittedly circumscribed structure of neighborhood planning and community engagement. In section 2.3, I link the historical emergence of gentrification to this entrepreneurial and postmodern regime, briefly exploring the role of the rent gap, postindustrial restructuring, cultural politics, and state intervention to explain the international emergence of gentrification. I then locate gentrification and neoliberal urbanism within the politics of smart growth in section 2.4, noting how smart growth has emerged as a tool for greenwashing accumulation and gentrification. Here, I explore the contradictory relationship of transit to urban planning. I highlight how transit is envisioned as both the enabler of equitable and sustainable mobility, at the same time that it is employed in municipal growth strategies through smart growth and transit-oriented development.

In section 3, I move into my case study of Portland, contextualizing its history in relation to the frameworks explored in the background in 3.1, drawing attention to its notably long history of commitment to smart growth and its present housing affordability pressures and ongoing gentrification. In section 3.2, I analyze the municipal policies and mobilizing rhetoric employed in relation to the new Orange Line. I examined maps of zoning changes and planning documents—including station area visions and plans, the line's Environmental Impact Statement,

sections of Portland's new 2035 Comprehensive Plan, and TriMet's promotional report on the Orange Line—to demonstrate that light rail was seen as a tool for sparking real estate investment and explore how policy was crafted with the intent to enable or mitigate that transformation. I then shift to my own hedonic model study of the relationship between home prices and proximity to Orange Line stations in section 3.3, in order to examine the extent to which transit access is capitalized as a premium in real estate values. I conduct an analysis of home sales both by time periods and by the station area, finding a materialization of a premium over the course of planning, construction, and early operation. I also found that station premiums were greatest near the SE Clinton St. and South Waterfront stations, both of which were are planned to permit and attract significant redevelopment in the coming years. In section 4, I conclude by exploring the differential interpretations of this transit station premium and, more generally, the implications of how transit, gentrification, and municipal growth strategies are linked.

This study is unique in its integration of hedonic analysis of property values with an interrogation of planning policies and politics, informed by critical perspectives from geography. While there have been a plethora of hedonic analyses on the relationship between property values and transit proximity (to be briefly summarized within section 2.4), this economic literature tends to be wholly neoclassical in orientation. It largely sees any land value uplift from transit as simply an indication of the value that individual market actors attach to the accessibility provided by transit investment (Revington 2015). This literature rarely questions the equitability of outcomes from land value uplift, nor does it contextualize planning frameworks or real estate investment in the theoretical or historical literature (with some exceptions, see Immergluck (2009) or Lin (2002) who critique property value change from transit as a driver of and indicator for gentrification or Duncan's (2007) quantitative exploration of the conditional nature of transit capitalization in relation to market segments and TOD features). This study thus aims to fill a gap in the current literature by connecting the dominant processes within contemporary urban development to a particular case study, informed by a mixture of methods for analyzing the intent, planning characteristics, and market response of transit and transit-oriented development.

2 Background

2.1 Planning in Context

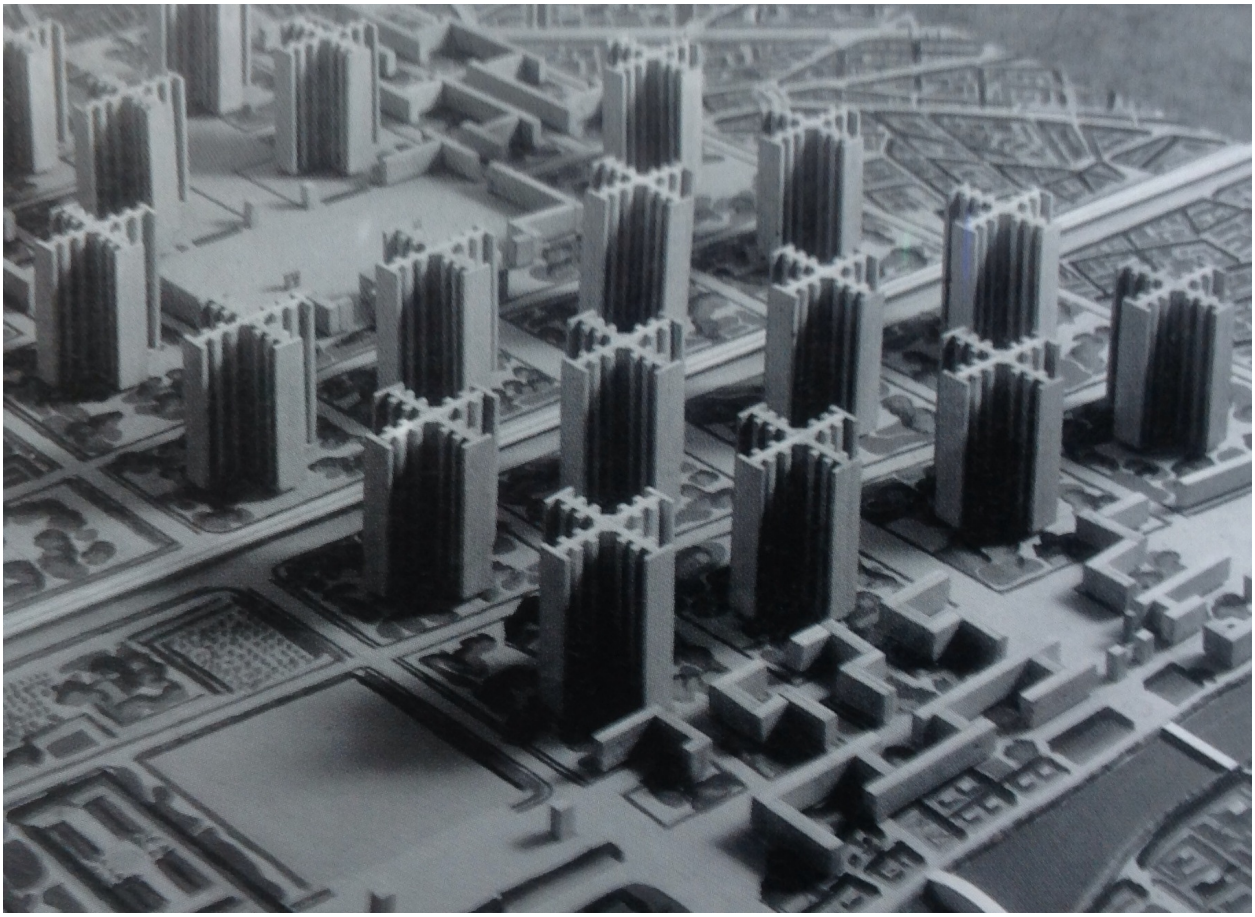
Urban planning arises from the dialectic between two impulses—social reform and facilitation of growth. New forms of unifying these threads emerge from the crises wrought by the unforeseen consequences of the older order of planning, shaped in reaction to the failures and contradictions of the previous institution. We may trace this dynamic back to the origins of planning as a modern discipline in the 19th century. Physical planning of street layouts has long emerged from the exigencies of colonialism and rapid expansion and settlement; the grand scale of 19th century imperialism and urbanization expanded these networks to unprecedented extents (Mumford 1961). The grid expressed both a mode for efficiently commodifying and selling land as real estate and a desire for ordered simplicity and spatial equality (Grant 2001). The dramatic and laissez-faire expansion of industrializing cities heightened class contradictions latent in the economic structure, inscribing the built form of the city with the political militancy, poverty, overcrowding, and disease created by industrial capitalism.

Alarmed by this social unrest and squalor fermenting in the gridiron repetition of the industrial city, the Garden City and City Beautiful movements arose in the late 19th century, urging the reformation of society through the reshaping of the city (Boyer 1983). These movements sought to bring the naturalistic or monumental back into the city as a mode of instilling civic virtue and a more harmonious socio-economic order, thereby (supposedly) staving off embedded class conflicts and keeping the capitalist growth machine churning (Boyer 1983). The Garden City, as conceived by Ebenezer Howard (1902), envisioned urban populations dispersed into new linked, rigidly-planned satellite towns, ample green space provided in each town and protected agricultural land lying in between them, thus capturing the benefits of both town and country for residents. Though Howard's vision was never exactly realized, the Garden City movement indicated and shaped discourse on urbanity, while providing a template for imagining suburbanization as the cure-all for urban ills. The language of unifying "town and country" was particularly significant, employed by Soviet planners and American suburban developers alike (Zile 1963). The City Beautiful movement similarly identified urban problems as

stemming from the built environment, though its preferred solutions involved grandiose, monumental, and classically-styled monuments, civic buildings, boulevards, and parks, designed to change the way citizens thought about a city (Wilson 1994).

The antipathy of the Garden City movement to the urban morphed into postwar suburbanization and the hollowing-out of cities. Its corollary in the remaking of the extant city laid in modernization and growth through high-rises and highways, envisione], via Wikimedia Commonsd as the rationalization of the landscape. Rallying to the cry of open space and automobile efficiency, and generously funded by central governments, municipalities and planners led the charge of urban renewal against the city, flattening entire districts judged as "outmoded" or "blighted" and drilling through city blocks with new expressways (Jacobs 1961).

Figure 1: Le Courbusier's Plan Voisin for Paris



This image depicts Le Courbusier's infamous plan for the demolition and reconstruction of central Paris, displayed at the Nouveau Espirit Pavillion in 1925. Though never implemented in Paris, landscapes inspired by this modernist vision would crop up throughout the world. *Image source: SiefkinDR (Own work) [CC BY-SA 4.0 (http://creativecommons.org/licenses/by-sa/4.0)], via Wikimedia Commons.*

Freeway construction, "slum clearance," and the creation of Corbusierian-Keynesian public housing heralded progress (Ley 1996). Though the exact timeline of modernization praxis varies by country and city, the extent to which modernism and urban renewal was inscribed on the international landscape is striking. Modernist planning was and is an international ideology, with Le Courbusier spreading its dogma of architecture and urban planning worldwide, through the Congrès Internationaux d'Architecture Moderne (CIAM). German planners were the first to adopt the modernism as a widespread urban design and architectural style, in the 1920s, favoring the starkly functionalist concrete buildings as honest (Klemek 2011). They advocated for the clearance of central city blocks and the city's replacement with repetitive grouping of apartment blocks on green space, connected by widened roads, with uses rationally separated. By the 1940s, modernism had fully taken root in Britain, France, the U.S.S.R., the U.S., and Canada, and was shortly adopted as dogma from Singapore to Brasilia (ibid). This planning consensus began to crumble in Western nations in the late 1960s, crashing down before the empirical failure of these interventions to revitalize cities (Jacobs 1961), mobilization of citizens opposed to the destruction of their neighborhoods (Abbott 1983), and the recession of the Keynesian welfare state with a global crisis of accumulation (Harvey 1989).

From the crisis of the 70s came a new planning regime across the advanced capitalist world. Drawing on the rebuke of modernist planning and growing cultural, environmental, and economic critiques of suburban sprawl, a new model of growth and urban renewal emerged in opposition to the old, prioritizing privately-focused but human-scale reinvestment in the core (Ley 1996). This model entailed a unification of impulses towards preservationism and citizen participation with entrepreneurially-minded efforts to revitalize the city, along with a modest realignment away from purely automotive infrastructure. It was forged in the neoliberal context of dwindling state support and the flow of capital back into disinvested areas (and the heightened need to encourage this inflow of capital). While suburbanization continued to outpace core reinvestment, gentrification has become an important counter-thread in the urban development of a range of cities, particularly those with a substantial dense, prewar urban form and a vital core. Though planning departed from modernist strategies, it retained the aims of urban renewal-era valorization of land; planning's "success" consists of the gentrification of

broader swathes of the urban landscape, reclaimed for the highest and best use. Over the past forty years, this planning regime has evolved to incorporate global city strategies and sustainability discourse into its canon. Even as contemporary planning holds enhancing equity as a prominent goal, the exigencies of municipal politics under neoliberalism demand that equity be subsumed within a program of accumulation.

2.2 The Rise of Neoliberal Urbanism

Contemporary urbanization and planning dynamics are shaped strongly by the logics and policies of neoliberalism (Farmer 2011). Neoliberalism advocates the extension of market principles as the preponderant mode of societal organization, calling for both the privatization of many state functions and the internal reordering of politics as governance (Harvey 1989). As a theory of political economic practices, neoliberalism proposes that "human well-being can best be advanced by liberating individual entrepreneurial freedoms and skills within an institutional framework characterized by strong private property rights, free markets, and free trade" (Harvey 2005, 2). It conceives of individuals as, ideally, rationally self-interested, drawing on neoclassical economics to argue that individuals engaging in consensual market transactions to maximize their own utility maximizes total social utility. The role of the state is to merely create and maintain the necessary institutional framework in which these transactions may occur; state interventions in market behavior are regarded as harmful distortions of the social optimum, creating inherently inefficient outcomes (Harvey 2005). As a practice, neoliberalism has entailed both the "roll-back" of public services and the "roll-out" of devolved, entrepreneurial forms of state power (Peck and Tickrell 2002). Driven by crisis and ideology, the state systematically withdrew its support for the social reproduction, cutting funding for public housing and urban services and dismantling welfare systems, as well as rebalancing economies in the interests of capital, deregulating business, systematically diminishing the power of unions and labor, and opening national borders to capital flows and investment.

A parallel ascendancy of neoliberal forms of state governance pushed beyond diminishing the Keynesian state, advancing a competitive municipal growth politics that emphasizes anticipating, complementing, and mimicking market processes. As Peck and Tickell

(2002) note, the situation of cities in a context of diminished federal and state funding is precarious: "cities must actively—and responsively—scan the horizon for investment and promotion opportunities, monitoring 'competitors' and emulating 'best practice,' lest they be left behind in this intensifying competitive struggle for the kinds of resources (public and private) that neoliberalism has helped make (more) mobile" (394). In the context of mobilized and liberalized international capital, municipal competition extends globally; cities attempt to position themselves on the world stage as worthy of investment, relevant in the hierarchy of global cities. In response, entrepreneurial urban policy, in the form of strategic amenity investment, public-private partnerships, property tax abatements, and rezoning, becomes central (Hackworth 2007). Attracting real estate development, business investment, and property value appreciation thus forms the base of municipal politics. Despite the ideological commitment of neoliberalism to minimize the state, its practical reality has entailed the transformation, not elimination, of state urban development practices—the municipality adopts a developer's perspective while endeavoring to partner with private capital. This competitive positioning towards the real estate market feeds the impulse of gentrification, transforming the process from a sporadic occurrence to a globalized phenomenon (Smith 2002). Attracting growth to cities constitutes the main aim of neoliberal urbanism, gentrification appearing as a form of regenerating space in the image of capital.

2.3 Theories & Histories of Gentrification

Gentrification has increasingly come to define the contemporary city, reworking its socio-spatial nature by reclaiming the city as the province of the educated elite. As a process of class upgrading expressed in space, gentrification reflects the inequalities produced within the broader political economic system, the spatial nature of the production of value, and the attitudes and tendencies of the classes constructed by capitalism. While gentrification and attendant displacement can be identified with cities as diverse as Shanghai (He 2010), São Paulo (Siqueira 2014), Lagos (Nwanna 2012), or Cape Town (Fleming 2011), and, in many respects, the process has been globalized (Smith 2002; Lees et al. 2016), its original geography lies in cities with a large and centralized advanced service/professional sector (Slater 2011). Both the historic

precedents of gentrification as a sporadic occurrence and the factors underlying gentrification as a generalized impulse should be accounted for in theorizing this process of class-upgrading of space. While it is no accident that Ruth Glass presciently coined the term "gentrification" in 1964, at the leading edge of the post-industrial economic restructuring, urban space always reflects social dynamics. As Smith (1996) notes, isolated accounts of class upgrading in the central city and the displacement of working class homes can be found in Frederick Engel's description of Manchester in the mid-19th century, in the Georgetown in Washington, D.C. and Beacon Hill in Boston in the 1930s and 40s, Nantes in the 17th century, or, of course, Haussmann's clearance of lower-class medieval Parisian landscapes for boulevards and elite habitations. These cases of spot rehabilitation, however, were relatively unique occurrences, brought on through specific histories, never becoming entrenched as a prominent and replicating urban phenomenon.

In the 1970s, gentrification rapidly materialized in cities throughout the advanced capitalist world, detected first in the major global cities of the time—London, New York, Paris—but becoming apparent in a host of cities lower in the urban hierarchy by the decade's close (Smith 1996). It's important to note that, while gentrification is geographically expansive and central to the contemporary urbanization process (Wyly and Hammel 1999), it has always existed as an uneven process. Gentrification has varied by context in terms of its expression and extent, present alongside the continued dynamics of suburbanization and concentrations of (frequently racialized) poverty (Zukin 2016). Nevertheless, the process of gentrification in contemporary cities is readily evident and seemingly constantly advancing, taking on an air of inevitability and appearing as simply a natural progression in urban space (Zukin 2016). Even Detroit, poster child of urban decay, has seen the unmistakable combination of rising rents; an increase in the college-educated white population; upscale apartment developments; the opening of new trendy restaurants and luxury boutiques; and creation of a new streetcar route on Woodward Avenue (Moehlman and Robins-Somerville 2016).

Given this context, it is hard to envision how surprising gentrification was at its advent, yet it was, in fact, "a dramatic yet unpredicted reversal of what most twentieth-century urban

theories had been predicting as the fate of the central and inner city" (Smith 1996, 30). These upended theories were based heavily on the concentric zone model of cities and assumed a linear process of internal city development with metropolitan expansion. The basic concentric zone model saw land uses as naturally radiating outwards in rings from the center of the city, with a downtown zone surrounded by industry, then a "transition zone" (slums that are gradually converted to industrial use), followed by working-class residential, with middle and upper class residences at the suburban fringe (Burgess 1925). As the city expanded, these inner rings would supposedly simply expand outward, resulting in the inexorable decay of inner city residential zones and their natural conversion into business use. Though this model was tweaked to incorporate the notion of favored/elite sectors in the city, houses were still seen as inescapably filtering down, steadily losing value and attracting lower-class and immigrant residents until their eventual total decay and obsolescence (Hoyt 1939).[1] While these models of urban growth sufficed to describe the social patterns of city expansion at a particular historic moment, their universalization of urban socio-spatial dynamics occluded the concrete and contingent factors that underlaid these dynamics. We must be careful not to make the same mistakes of naturalization and linear extrapolation in discussing the present reality of revitalization.

Scholars have attempted to explain the driving factors of gentrification in terms of a variety of political, economic, demographic, and cultural factors. At its most fundamental level, gentrification is the "return to the city" by capital and the middle class (Ley 1996; Smith 1996).[2] Theoretical explanations of gentrification can be broadly categorized as emphasizing the production-side or consumption-side of the process (Slater 2011). Production-side theories, as articulated by Neil Smith and David Harvey, situate gentrification within the framework of uneven development under capitalism and use a Marxist analysis to emphasize the contradictions of capital as invested in the built environment. Capital will, and indeed must, flow into the areas in

[1] Note that this assumption of inevitable decay was a major justifier of slum clearance and urban renewal; demolition was seen as merely accelerating the natural succession of land uses while clearing away the supposed environmental drivers of poverty and immorality.

[2] The phrase "return to the city" is a bit of a simplification in terms of the geographic origins of gentrifiers—survey data shows that a large majority of the educated professionals settling in gentrifying neighborhoods, rather than moving from the suburbs, instead are extending the period of the life-cycle traditionally associated with inner-city living (Ley 1996; Berry 1985)

which it can seek the highest return, demanding ever increasing profit and profitable realms for investing that profit. Though the built environment comprises an important arena for capital accumulation, it also poses barriers to further accumulation, by dint of the nature of property investment (Harvey 1978). Capital invested in the built environment is both fixed and slowly degrades, the value of the investment devalorized piecemeal as the investor receives their returns. The movement of capital into the suburbs equated to capital disinvestment in the inner city that devalorized property, reducing the capitalized ground rent even while the potential ground rent of this central land increased with metropolitan growth. A rent gap emerges when the capitalized ground rent falls far enough below the potential ground rent; capital reinvestment can be expected only when the returns from redevelopment to capture this potential ground rent are sufficiently enticing to developers (Smith 1996). The sectoral switching of capital is motivated by crises of accumulation, in which the profitability of previous modes of investment declines precipitously with oversaturation (Harvey 1978; Christophers 2011) This cyclical pursuit of maximal returns to investment produces a seesaw movement of capital through space and time, with disinvestment heightening the profitability of eventual reinvestment. Within the U.S., the processes of directing capital outward and disinvesting in the core were exacerbated by federal suburbanization policies of simultaneously subsidizing freeway construction and mortgage loans and formally redlining many inner city neighborhoods, particularly those containing racial minorities, concentrations of poverty and/or immigrant populations.

The rent gap is a very useful schematic, though it tells an incomplete story of gentrification on its own. While a rent gap is a precondition for gentrification, empirically, the areas facing the largest rent gap are typically *not* the first to gentrify (Beauregard 1990). Moreover, as Smith himself points out, a rent gap can also be produced primarily just through the rapid inflation of potential ground rents (1996). Such valorization of land could occur by any number of means, including municipal investment in amenities or changes in policy, spillover effects from nearby densification and/or valorization, or an increase in the cultural capital assigned to a place. Hackworth (2007) argues that this form of intense valorization of potential ground rents has become the dominant progenitor of the rent gap since the 90s, at least within the global centers of capitalism—no longer is gentrification dependent on an extended period

of devalorization; rather it is realized within neighborhoods as a result of city-wide real estate pressures, spilling out from the core with far less regard for hyperlocal characteristics.

Consumption-side theories of gentrification, as promoted by David Ley and Chris Hamnett, emphasize demand side drivers, drawing attention to the origin of the gentrifier class. Ley (1996) analyzes how post-industrial restructuring, beginning in the 1960s, greatly enlarged the cohort of quaternary sector employees—professionals working in the knowledge-based service jobs, including both public and private sector positions, which tended to be concentrated in the center of cities. This quaternary sector workforce forms a new, expanded middle class which, emerging during a time of social and cultural upheaval, became an expanding pool of gentrifiers with a disposition to central-city living and an associated rejection of suburban living as conformist, bland, and monotonous (Ley 1996). Location within the gentrifying inner-city conferred and confers not only a convenient commute to downtown jobs, but also a social status and cultural capital. Finance, Insurance, and Real Estate (FIRE) have emerged as the prime drivers of global capitalism, creating value through speculative modes of expanding and repackaging debt, particularly embodied in real estate debt and its exotic derivatives. The corollary of the growth in quaternary service jobs is the decline in primary industries and manufacturing. Industrial restructuring itself opens up substantial rent gaps—the offshoring of manufacturing creates vacuums of under-utilized brownfield space near the city core and on waterfronts. Not only are the potentials for gentrification are boosted by open tracts of deindustrialized land, the process of land appreciation in a context of generalized gentrification will itself tend to displace existing industrial uses.

Explanations of the nature of gentrification are woefully incomplete without recognizing the role of the state. With reference to New York's urban history, Hackworth and Smith (2001) periodize the relationship between gentrification and the state, seeing the process as beginning with sporadic, largely state-led urban renewal efforts prior to 1973; followed by capital switching and the purchase of property that presaged a large and privately-led expansion of gentrification in the 80s; a slowing of reinvestment with the recession at the end of the decade; and further expansion of gentrification in the 90s with increased activity by a nexus of the state and large

developers. This stage model should be supplemented with consideration to the continuance and influence of urban revitalization policy in shaping the landscape of investment, as well as the different contexts in which state-led gentrification occurs. Harvey (1989) locates four development foci of entrepreneurial coalitions in cities: competition over the spatial division of production (sparking exports by offering tax breaks, developing through public-private partnerships, expanding the universities and research centers that train and attract a skilled labor supply), of consumption (by gearing the landscape towards tourism and upscale retail), of global command functions (by improving transportation and communication links), and of federal redistributive funds (largely political lobbying for defense contracts). Ley (1996) notes the importance of downzoning and livability policy in encouraging rehabilitation and redevelopment of inner city homes in Vancouver, while Altshuler and Luberoff (2003) point to the utilization of mega-projects by American cities to promote urban investment.

The connections between state activity and gentrification are solidified further when we expand our view beyond the Anglo world; gentrification in Latin America has been launched as a program by governments and international agencies seeking to boost urban competitiveness and tourism, while East Asian developmental states feature an intimate connection between government policy and land development, gentrification planned and realized through the construction of new-build housing estates and mega-projects (Lees et al. 2016). The expansion of gentrification pressures has itself bonded the municipality and revitalization policy ever more closely together; metropolitan and even planetary gentrification spark growing demands for state interventions to protect the affordable housing threatened by state-promoted revitalization drives. These demands are captured within the nexus of neoliberal urbanism. Inclusionary zoning—a policy which mandates that a percentage of all newly constructed units be affordable, or provides development incentives for doing so—is proposed as a major response to these affordability problems, directly linking the cause of creating more affordable housing to the encouragement of maximal real estate development (Stabrowski 2015).

2.4 Transit, Smart Growth & the New Politics of Accumulation

Transit appears as one in a set of strategies for state-led revitalization, attracting planners both for its use value in enabling metropolitan mobility and as a tool for reshaping the landscape. Altshuler and Luberoff explain the proliferation of new transit systems within the U.S. from the 1970s onward by noting its general political support—transit "appeals to interests across the political spectrum: downtown and construction-related businesses, construction and transit labor unions, environmentalists, good-government organizations, advocates for the poor, and a wide variety of others who perceive transit as a way of reconciling development, equity and amenity goals" (2003, 217). Transit is important to the economic functioning of cities, particularly the dense, core-centric cities which have seen the most extensive gentrification, as it physically enables the clustering of economic activities. Even as transit accounts for only about 5% of national commute trips, it is essential for dense, walkable downtowns, facilitating large scale movement in and out of the core while using a fraction of the space required by automobile conveyance and storage (Walker 2011). There is additionally a strong equity appeal to transit; poor residents are more likely to lack a car and thus be dependent on transit for mobility, opportunity, and access to the city.

These equity and use value appeals of transit coexist with how transit is intentionally constituted within the municipal growth regime, as a tool for reshaping the landscape through intensification of uses at nodes. By enabling denser land uses and enhancing transportation accessibility, transit may raise the potential ground rent of an area, enhancing the profitability of capital investment (Revington 2015). While this raises a potential contradiction with the aforementioned equity aims of transit, such valorization is, mostly, the point. The primary attraction of costly rail investment (rather than bus investment) is to foster growth (Altshuler and Luberoff 2003)—a priority of those who primary interest in land is in its exchange value. Targeted transit investment can facilitate this valorization both through the direct agglomeration economies, and further by allowing development and the active facilitation of development to be couched in socially-beneficial terms, via transit-oriented development. Transit-oriented development, smart growth, New Urbanism, and sustainable urban development have become

central to contemporary growth planning. These paradigms are, on one level, reactions against the aesthetic, economic, and environmental effects of suburban sprawl; simultaneously, the discourse of sustainability and smart growth has emerged as a form of soft neoliberalism (Lees et al. 2016). Smart growth aims purportedly to return a triple-bottom line, bringing economic prosperity, ecological integrity, and social justice through improved physical planning and a more inclusive planning process (Gibbs et al. 2013). As defined by Smart Growth Network, it consists of ten principles:

1) Mix land uses
2) Take advantage of compact building design
3) Create a range of housing opportunities and choices
4) Create walkable neighborhoods
5) Foster distinctive, attractive communities with a strong sense of place
6) Preserve open space, farmland, natural beauty, and critical environmental areas
7) Strengthen and direct development towards existing communities
8) Provide a variety of transportation choices
9) Make development decisions predictable, fair, and cost effective
10) Encourage community and stakeholder collaboration in development decisions

By creating denser, walkable mixed-use developments, largely directed within existing communities and with transit ("transportation choices") available, smart growth intends to reduce car dependency and its associated carbon emissions, air pollution, and other environmental effects. This goal is accompanied by a notion of improving the social context of place and development through better urban design and by encouraging public collaboration in the planning process. New Urbanism can be represented as a variant of smart growth that places particular emphasis on neotraditional architectural styles on master-planned sites. The smart growth ideal of public collaboration is tempered by the details of principle 9, which calls for the establishment of development-by-right. Though this principle is not objectionable on its own, as economically privileged homeowners will tend to intervene politically to block proposed

Smart growth functions as a framework of encouraging "sustainable" capital accumulation, connected to a drive for revitalization. It pushes "policies to revitalize cities; reform local zoning to encourage compact development and infill; coordinate state agencies and their growth policies; and overhaul capital investments to align with a sustainable agenda" (Ingram et

al. 2009, 7). As Dale and Newman (2009) point out, smart growth infill often involves projects with no direct commitment to affordability; such projects of enhancing livability while ignoring the distribution of benefits will tend to fuel displacement and the creation of class-exclusive areas. Lees (2000) notes how gentrification has been inscribed in smart growth politics, with governments in the U.K. and U.S. integrating urban regeneration policy, class displacement, and environmental sustainability within a single thread.

Transit-oriented development (TOD) is a central strategy within the smart growth framework, with a specific focus on concentrating dense development within walking distance to transit stations. TOD is intended to increase transit ridership, promote lower-energy, urban lifestyles, and channel growth into less environmentally and economically costly arrangements. Such plans involve a tight interconnection of municipal officials and the real estate industry; entrepreneurial neoliberal policies are instituted alongside mixed-use, denser zoning to allow for and encourage growth through intensified land uses. The notion of transit as a driver of development dates, more or less, to the creation of rapid transit itself; in the 19th century, private streetcar and rapid transit lines were frequently constructed into the countryside by real estate developers, access to downtown valorizing land for residential use (Jackson 1985). A similar process of rapid urbanization connected to extensions of transit can be seen contemporarily in many East Asian cities, particularly in China (Lees et al. 2016). The concept of transit-oriented development was reintroduced to the American planning landscape by Arlington County officials in the 1970s, working to enable denser development in the Northern Virginia suburbs of Washington, D.C. alongside a new Metrorail corridor. TOD initiatives have greatly expanded in North American cities since then, propagated through emergent networked institutions like Smart Growth America and the Congress for New Urbanism.

Just as entrepreneurially-minded smart growth has pervaded planning discourse, smart growth planning has pervaded the real estate industry. Notions of real estate attractiveness are now governed by its logic, placing a premium on transit-served and amenitized urbanity (or rather a sanitized and gentrified version thereof) while shunning auto-oriented suburbia. Though the trend of urban reinvestment has been observable in a wide range of cities since the 1970s,

in the aftermath of the Great Recession, the relationship between urban and suburban growth patterns has numerically inverted. Walkable urban places (including downtown cores, adjacent dense neighborhoods, university districts, and transit-oriented suburban downtowns and centers) have seen an increase in their share of metropolitan growth in the largest 30 U.S. metro areas, developing significant rent premiums over sprawling landscapes (Leinberger and Rodriguez 2016). Eight of these metro areas—New York City, Boston, D.C., Chicago, Seattle, Cleveland, Pittsburgh, and Portland—saw a majority of office and multifamily rental development in urban locations (ibid). The recession, arising from a housing bubble fueled by mortgage-backed securities, acted as a switching point for capital; the devalorization of overbuilt suburban land was concomitant with an accelerating shift towards core-centric professional, knowledge-economy employment (Trujillo and Parilla 2016). The process of identifying and exploiting rent gaps seems to have accelerated since Smith formulated the concept; by 2015, five years into the cycle of real estate reinvestment, the Urban Land Institute (ULI)—a global land use think tank with members in academia, government, the real estate development industry, and financial investment and private equity firms—highlighted the growing suburban rent gap, exploitable where transit provision and urban features provided a basis for exploiting potential ground rents:

> As capital has disproportionately flowed to highly concentrated locations, a number of suburban markets now appear comparatively inexpensive and yet have "good bones" that will serve them well going forward. The good: many of the "edge city" locations that combine office, retail, and residential areas effectively—especially those that have two characteristics. Those attributes are sufficient density to support live/work/play interactions, and a combination of transit and walkability. The traditional "railroad suburbs" come to mind, as do small suburban downtowns close to major markets…
>
> The bad: anything "garden variety." Over the short haul, anyway, there is not much demand from either users or investors for plain-vanilla highway-dependent office parks, or other real estate that falls into the "commodity" bucket. They are cheap, but you get what you pay for.
>
> The ugly: anything that smacks of "sprawl" or of "yesterday's hot concept." If a property is dependent upon an inflated parking ratio, take a pass. If a property is operationally tied to demand that presumes the growth of tract housing at the perimeter of a metro area, run the other way. If you find a property without a cogent appeal to either millennials or baby boomers, time is not on your side. (PwC and ULI 2014, 18-19)

Despite the widespread adoption of smart growth urbanism and transit-oriented development by the planning profession, at least in terms of its theories and aims, some criticism of smart growth has arisen in the literature, challenging its claims of achieving triple-bottom line sustainability. These critiques have drawn attention to the conflict between the economic feasibility and social equity of TOD projects, as well as the ways in which smart growth is harnessed in neoliberal regimes to promote revitalization and displacement (Jones and Ley 2016; Larsen 2005; Dale and Newman 2009; Pollack et al. 2010; Pendall et al. 2012). According to locational indifference theory, to the extent that the mobility provided by transit is valued by market actors, transit accessibility will be capitalized into housing prices. This accessibility premium may be offset to some degree by disamenities from transit operations (noise, vibration, additional traffic, or perceived crime).

A number of studies on the relationship between transit and land values and property prices via hedonic models have been conducted—more than 130 analyses across 60 studies just on North American systems. These have found, in general, a positive relationship between transit and land value, with price premiums typically on the order of 5-10% of property values for single family homes and somewhat larger for office, retail, or multifamily uses (Higgins and Kanarglou 2016; Debrezion et al. 2007; Duncan 2011), though this varies substantially by study design, location of the transit system, and by individual station (Higgins and Kanarglou 2016). Additionally, TOD initiatives themselves have been found to exert a further price premium. Atkinson-Palombo (2010) found that the adoption of TOD zoning with light rail in Phoenix was associated with a decline in single-family residential property prices but a 37% price premium for condos in mixed-use zones. Duncan (2011) found synergistic effects between TOD features (pedestrian connectivity and people-serving service jobs) and light rail proximity in San Diego for condos, with a premium around $20,000 for properties with 75th percentile values of intersection connectivity and nearby retail jobs (relative to all properties in the study area), compared to a negative premium of $10,000 for properties with 25th percentile values for these TOD features.

These locational price premiums raise the potential for price-induced displacement from transit. While displacement itself is difficult to measure in many cities, owing to a lack of systematic data collection on the occurrence and reasons for residential moves (Rayle 2015), the outlines of displacement can be revealed through census data on the social composition of neighborhoods over time. Kahn (2007) found that, in 14 cities with transit expansions between 1970 and 1990, census tracts within one mile of stations were significantly more likely to attract college graduates. Echoing these findings, Pollack et al. (2011) report that a majority of rail transit-rich neighborhoods in 12 U.S. metro areas saw larger rises in median home values, rents, and household incomes that their respective metro areas from 1990 to 2000. Finally, Grube-Cavers and Paterson (2014), conceiving of gentrification as an event—the simultaneous rise in rents, professional employment, household incomes, owner-occupation, and college education above metro-wide average rates within a neighborhood that previously had household incomes and numbers of degrees per capita at a rate below the metro-area average—found that urban rapid transit was positively associated with gentrification in Montreal and Toronto, though not in Vancouver.

3 Case Study: Portland

3.1 Planning History

Portland is commonly identified as an exemplary planning model, with a pleasurably European-feeling downtown, a serious commitment to sustainability, a uniquely high level of public engagement, and, of course, a robust transit system of light rail and streetcars[3] (c.f. Ozawa 2004; Walton 2004). The Congress for New Urbanism praised the Portland Streetcar as "one of the most successful and cost-effective economic development drivers anywhere in America in the new millennium" (Steuteville 2016). Discourses of the city as a well-planned ecotopia are so omnipresent that articles critiquing Portland city planning inevitably begin by outlining this perception (Cox 2009; Goodling 2015). This reflects both a reality and a very successful branding effort. While all of major elements of Portland livability and planning (light rail and transit-oriented development, bike lanes, an urban growth boundary, community engagement in and public feedback on the planning process, and strong discursive, if not material, support for equity) are by now commonplace in cities, its commitment to these elements of smart growth has a notably long history. As such, it provides an ideal case for examining the intersection of smart growth planning, transit, and affordability pressures induced by gentrification.

Portland's urban history up until the 1970s mirrored national suburbanization trends—the city's population stagnated while its suburbs exploded; it catered to automobile access by bulldozing the central city for highways and surface parking lots; and it engaged in prototypical urban renewal programs that involved the wholesale demolition of the "blighted" South Auditorium and Central Albina neighborhoods (Goodling 2015). Transit ridership hit a low of 16 million annual rides in 1971, down from 160 million in 1944 (TriMet 2015). A sea change in planning was brewing, however, with community activists in inner neighborhoods like Corbett-Terwilliger and the Northwest District organizing to resist clearance (Abbott 1983) while the newly organized TriMet centralized transit operations and began planning for growth. Neil Goldschmidt, an insurgent progressive with a base of power in the neighborhood activist

[3] Buses currently carry about 200,000 riders per weekday in the metro area, compared to 120,000 light rail riders and 15,000 streetcar riders, though it is the rail system which earns outside accolades.

movement and a strong orientation towards transit investment and downtown revitalization, was elected to the City Council in 1970 and winning the mayoral election in 1972. Goldschmidt, and his base of support in neighborhood activists, forcefully shifted Portland into a new model of growth with transit and revitalization, built on the bones of the urban form generated by earlier streetcar-oriented development (Abbott 1983).

Over the span of the proceeding decade, the basic structure of the Portland Way would be constructed, mirroring cultural and planning trends observed in progressive cities throughout the Global North (Ley 1996). Freeway riots overturned plans for the Mt. Hood Freeway, set to carve through Southeast Portland; the federal money apportioned for the highway was set aside for Banfield light rail—the eastern portion of the Blue Line today. TriMet and the City coordinated to create the bus mall downtown, while the City's Downtown Plan envisioned revitalization through improved transit access, with spillover effects from a more attractive downtown revalorizing the inner neighborhoods. Harbor Drive, the waterfront highway, was ripped out and turned into a park, symbolically named for the Governor who mandated urban growth boundaries in Oregon. And the "Nodes and Noodles" alternative of the 1978 Comprehensive Plan marked a commitment both to transit-oriented development and to large-scale preservation of the single-family zones of Portland. This was codified in the plan for Centers and Corridors in the 1983 Comprehensive Plan, directing growth to transit-served streets and nodes.

Portland can be said to have, in part, generated the contemporary smart growth concept, being at the forefront of the reintroduction of transit and planning as a mode for enhancing reinvestment and creating real estate value. This vision of investment in non-automobile transportation, densification, and revitalization is married to a discourse of sustainability. Neil McFarlane, General Manager of TriMet, lays out both how transit is a fundamental component of the region's growth machine and how the system targets the middle-class (the "choice riders" who have the option to drive):

> Transit plays a critical role in providing options for traveling throughout the region. It connects people to work, school, recreational destinations and essential services. It's not just a commuter service. It's a community asset. And the benefits extend far beyond those who ride.

> TriMet's transit system is recognized as a national leader for its connection to land use. By linking land-use planning and transit, we have helped create livable communities, vibrant neighborhoods and provide alternatives to driving. Transit is also a catalyst for economic development. More than $10 billion in transit-oriented development has occurred within walking distance of MAX light rail stations since the decision to build in 1980. Developers like the permanence of rail when investing in projects.
>
> Transit is also valued by the community. Most of our riders—81 percent—are choice riders. They have a car available or choose not to own one so they can ride TriMet. With more than 325,000 trips taken each weekday on our buses, MAX Light Rail and WES Commuter Rail, we eliminate 66 million annual car trips. That eases traffic congestion and helps keep our air clean. TriMet carries more people than any other U.S. transit system our size. Our many innovations have drawn the attention of government leaders, planners, transit providers and transit users from around the world.
>
> We didn't start out that way. When TriMet was created in 1969, the former transit agency was facing bankruptcy, with dwindling ridership and little community support. Over the years, we've built partnerships with government agencies, key stakeholders, businesses and the public. This region has come together and created a shared vision that ensures transit continues to play a leading role in this region's livability and growth. (TriMet 2013, 3)

Light rail in Portland acts as a spine on which densification and growth are planned, with the Comprehensive Plan formally regulating the order of the city and the region with regard to rail transit. Portland planning nevertheless forms a holistic ecosystem of reinvestment in the core to attract and retain the middle class and to maintain the position of Portland, and particularly downtown Portland, within the region. These plans for transit-oriented revitalization are not always realized, or at least not on the time scales imagined, as in the case of the Gateway Regional Center at the edge of East Portland. Gateway has seen relatively little of its planned urban redevelopment materialize decades after the arrival of light rail and seventeen years after the institution of an Urban Renewal Zone (PDC 2016), with the combination of an extensively auto-oriented built environment, a concentration of poverty and racial minorities excluded from the core, and comparatively low rents precluding wide-scale private redevelopment—for now.

Portland's livability is closely connected to substantial lifestyle-based migration by young college-educated people—since 1980, the city has consistently attracted this gentrifying group at some of the highest domestic net migration rates in the country, through both expansionary and recessionary economic times (Jurjevich and Schrok 2012). The lifestyle capital of Portland

Figure 2: Percentage of residents 25 years or older with a Bachelor's degree

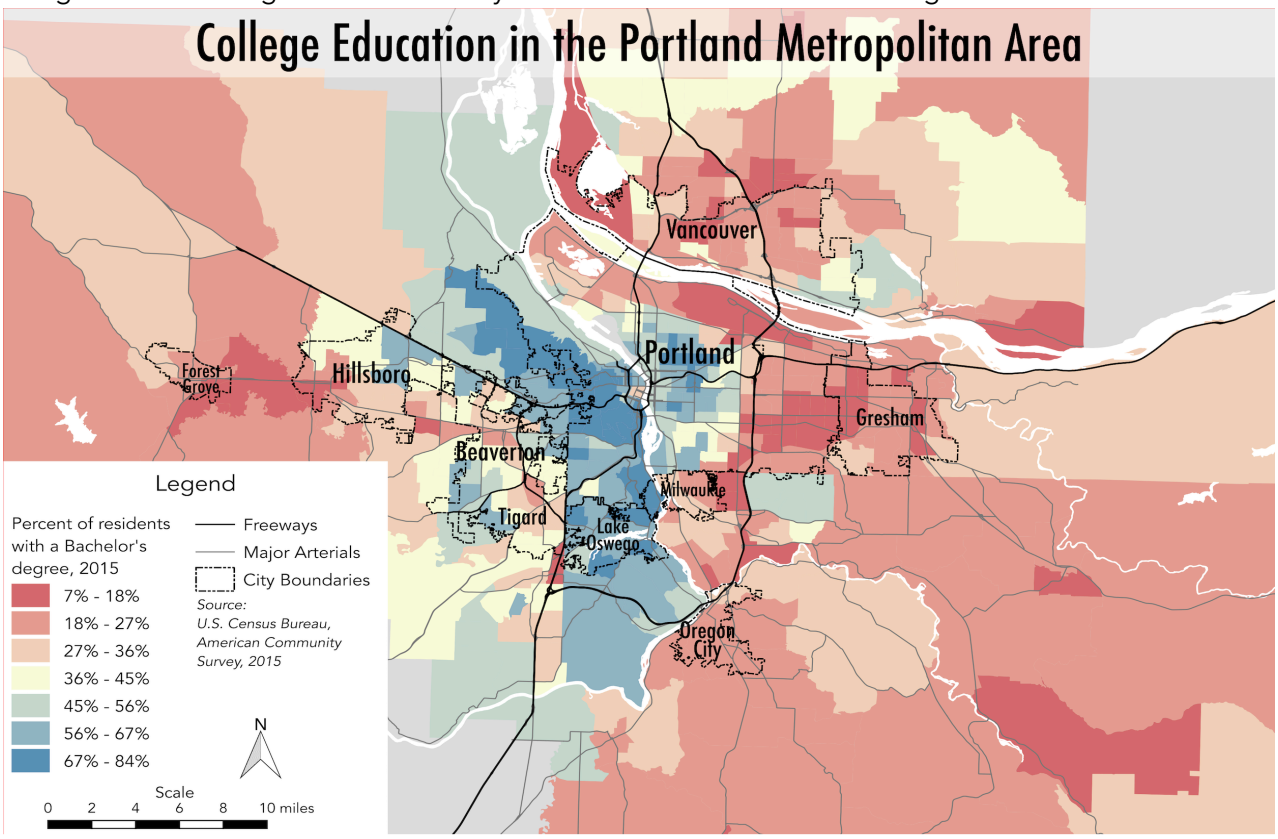
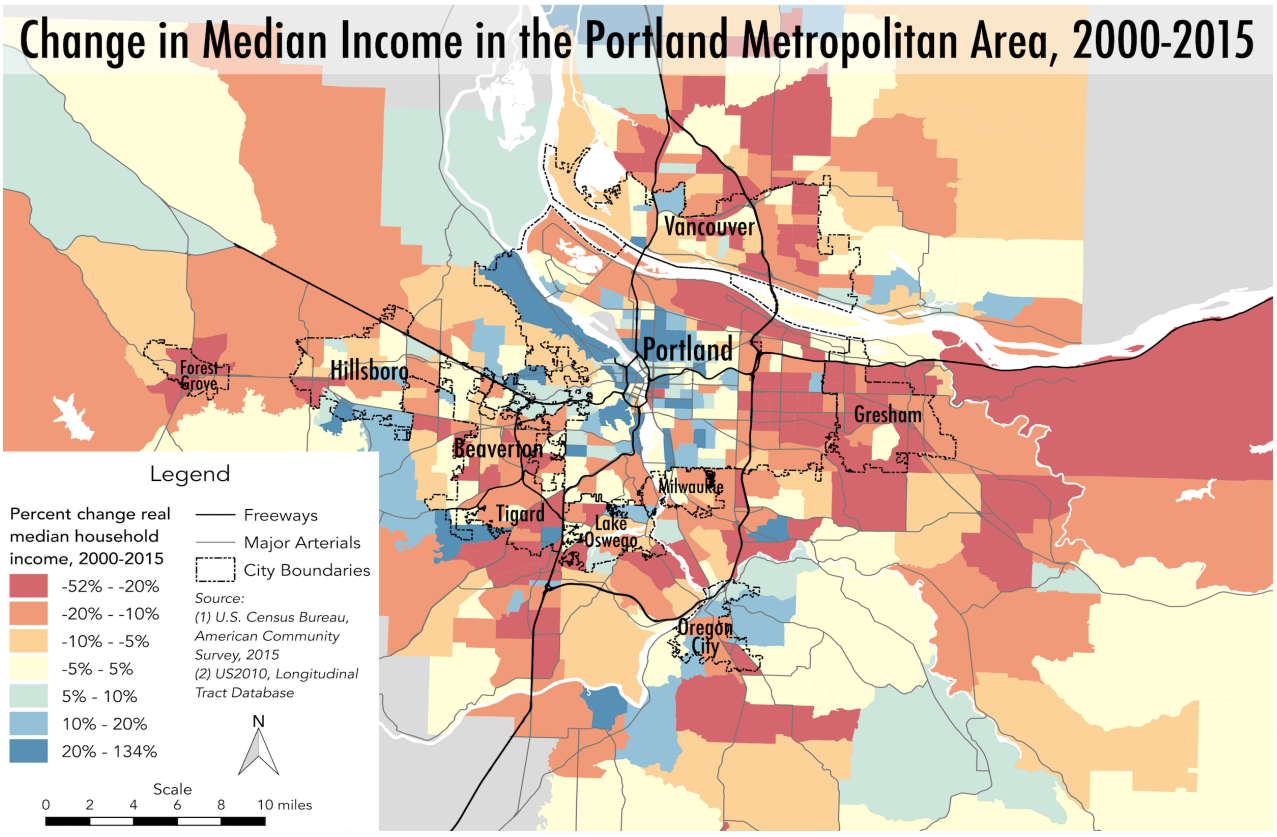


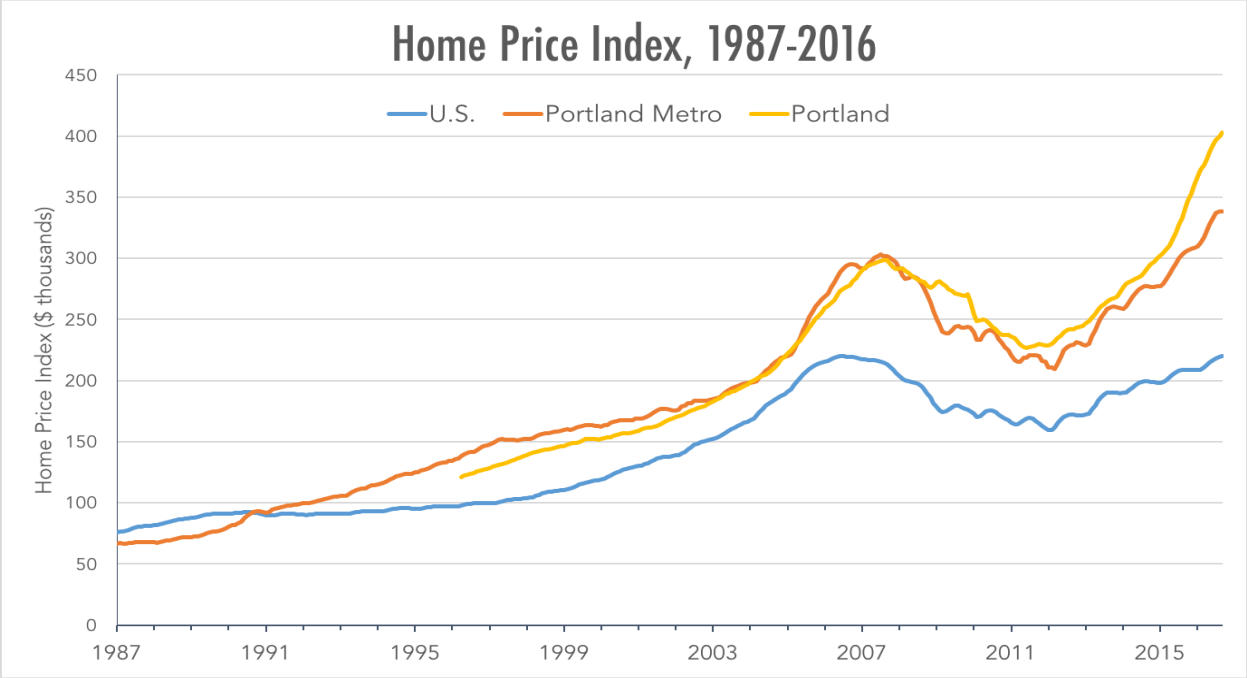
Figure 3: Change in real median household incomes



has brought with it real estate capital; the city has ranked near the top of ULI's list of the best real estate markets (for investors and developers) since the recession. They attribute its attraction to being comparatively affordable (relative to the Bay Area) and to "its attraction to the millennial generation, steps it has taken to create a vibrant urban core, and a diverse economy… Portland is a classic example of a market where population growth may lead employment growth. The market is appealing enough to the millennial generation that they are likely to move there without the guarantee of permanent employment" (ULI 2014).

The socio-economic geography of Portland has been systematically reordered, with the gentrification of inner neighborhoods (to the west of 82nd Avenue) strikingly visible in both the shifts in and state of household incomes and college education (figures 2 and 3). Virtually the entirety of the inner city has been reclaimed for an educated middle-class that forms the consumption base for Portland's progressive sustainability politics; this has carried with it the concomitant warehousing of lower income and racial minority households in East Portland and suburbs to the city's east (Goodling et al. 2015). Shifts in demographic composition have been particularly dramatic in North Portland, the historic center of Portland's black population (and

Figure 4: Portland Home Price Index



Source: Zillow Home Price Index

thus the subject of redlining and systematic disinvestment), aggressively gentrified and whitened after 1990 (Gibson 2015).

Metro-wide real median household incomes have been stagnant since 2000, though this obscures the nature of the metropolitan restructuring. While household incomes have risen throughout most of the inner city (and, in some cases, at the metropolitan fringe), incomes throughout established suburbs and suburban East Portland have generally fallen in real terms. Housing prices have rapidly appreciated, both during the 2000s housing bubble and since 2012 (figure 4), increasing affordability pressures throughout the housing market. These pressures are manifested well beyond the bounds of neighborhood real estate hotspots; 59% of Portlanders rated housing as unaffordable in the 2016 Livability Survey, compared to 43% in 2015 and only 21% in 2012 (Portland City Auditor 2016). Portland's geography thus replicates both Ehrenhalt's (2013) Great Inversion and a generalized squeezing of the working and middle-class from the city as a whole.

3.2 Planning Change: MAX and the Orange Line

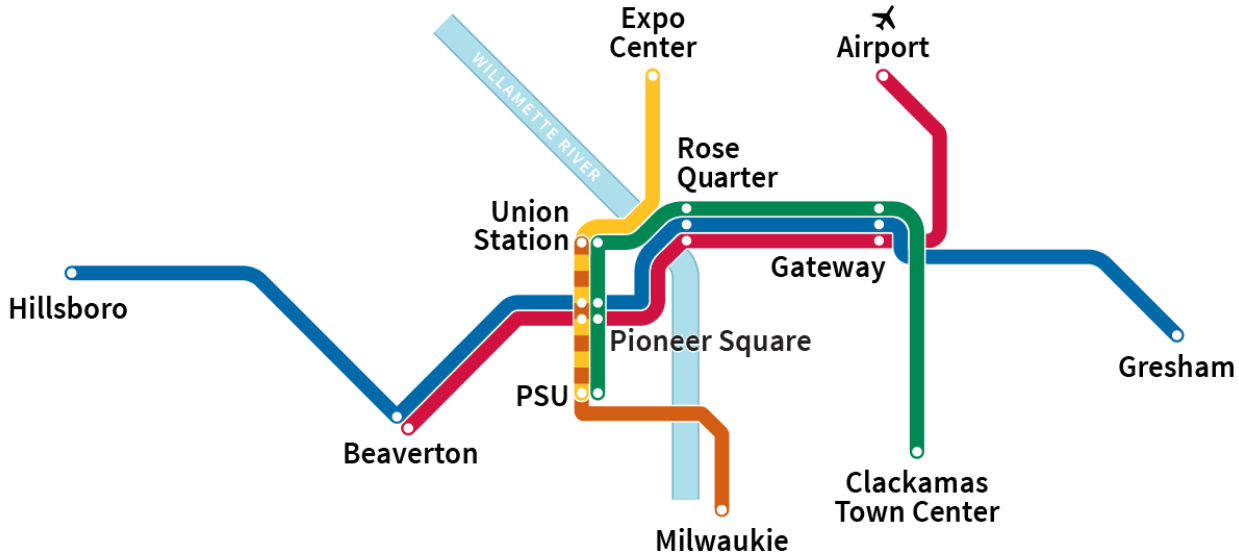
The Orange Line extends from downtown Portland into Milwaukie, Oregon, an inner suburb directly south of the city's borders (see figure 4 for a map of the TriMet light rail system). The Orange Line is primarily at-grade light rail, with several elevated sections around industrial uses in the northern end of Milwaukie and between the two Milwaukie stations. It runs largely in its own right of way, with separation from the street except for the 1.5 miles it travels along 17th Avenue SE. From the South Waterfront to the Clinton Street Station, connected via a new multimodal bridge, this newly created right of way is well-connected to a fairly dense street grid. The two Milwaukie stations similarly integrate into the street fabric, though the Park Ave Park & Ride abuts a major street with long pedestrian signal cycles. The SE Bybee and SE Clinton St Park & Ride stations have far inferior access—here, the train traverses land carved out from an easement between Highway 99 and a freight rail line, with street connections reliably poor.

The corridor has long been eyed for rail investment, with a Portland City Club Report from 1977 identifying the restoration of urban rail on the Oregon City interurban alignment

through Milwaukie as a regional transportation priority. The construction of the Blue Line was prioritized over this corridor, setting aside the issue of Portland-Milwaukie light rail until the 90s, after the Banfield MAX and its Westside extension were completed. Planning of Portland-Milwaukie light rail was initially being bundled as part of a North-South line from Clackamas Town Center, through Milwaukie and Downtown Portland, to Vancouver, Washington. Clark County voters rejected the $238 million bond to cover Washington's portion of the line costs, however, stalling plans for this rail expansion (Maras 2015). In 2004, TriMet opened the northern portion of this line as the Yellow Line, terminating inside Portland city limits. In 2008, TriMet finished construction on the Green Line to Clackamas Town Center, running south along I-205 from existing rail lines at Gateway. After nearly two decades of false starts, the planning of light rail to Milwaukie officially began in 2008, opening as the Orange Line in September 2015. Half of the $1.5 billion line's costs were covered by the Federal Transit Administration through the Capital Investment Grant Program (Gates 2016).

Encouraging development was a major and explicit rationale for light rail as envisioned by TriMet, who entitled the main report on the line "Growing Places." This development orientation recurred throughout the planning process. The alignment itself was altered in the 2008 Locally Preferred Alternative (LPA) Report from the 2003 LPA, adding a station south of

Figure 5: Portland's MAX light rail system, 2017



Source: TriMet

downtown Milwaukie and adjusting the new bridge approach to add a station in the South Waterfront area. These changes were expressly to maximize development prospects and serve projected development (Metro 2008). Station area planning consisted primarily of assessing existing and potential development opportunities in an area, as well as the public investments which would maximize development potential. Illustrative of this development orientation was the widespread reporting of the estimate of household and job growth within half a mile of the station, rather than an estimate of the number of people using the station. Though the potential for this transit-oriented development to spark displacement was left undiscussed during this station area planning process, it was distinctly noted as a possibility in the Environmental Impact Statement (EIS), required because of the use of federal funds:

> Investment in station areas could enhance the surrounding areas by adding services and value to the neighborhood. Where lots are vacant or underdeveloped, property owners may find that property values increase. While this could be a net benefit to property values, *low income residents in adjacent neighborhoods may find it difficult to keep up with rising housing values*. Property owners may benefit from this, but *existing renters may need to move from the area to find accommodations with similar affordability*. (Metro 2010, 3-67, emphasis added)

The Orange Line was also used as the basis for complementary municipal policy changes, within both Milwaukie and Portland. Milwaukie has long angled for a revitalization of its downtown and viewed light rail as a foundational tool for pushing forward this revalorization. Anticipating and seeking to maximize potentially transformational effects, Milwaukie created an urban renewal zone around its downtown. This urban renewal zone apportions additional property taxes from increased land values over the next 29 years, in order to service the debt from investing in the amenities that would increase those land values. Such speculative municipal debt-financing of gentrification is coupled with a vague promise to invest in affordable housing, to advance equity.

In Portland, planning for transit-oriented development was influenced by several, often contradictory, aims to protect existing industrial uses in the corridor, minimize the controversy of densification of single-family residential land, boost ridership through densification, and promote the newly-established "Innovation Quadrant." The planning process for Orange Line TOD

occurred over several years and coincided with Portland's drafting of a new 2035 Comprehensive Plan. Plans were drawn up for each station east of the Willamette River in the Inner SE Station Areas and Brooklyn Station Areas planning processes. The OMSI and SE Clinton/12th St station plans were then incorporated within the SE Quadrant component of the Center City 2035 process that was itself a component of the 2035 Comp Plan. The Brooklyn station plans and the plans for SE Bybee and SE Clinton stations were directly integrated in the Comp Plan process. The South Waterfront and Lincoln St stations were left out of this formal planning process, owing to the pre-existing high density zoning built around the existing streetcar line—the area is already zoned for Central Commercial, this mixed use zone allowing building heights up to 325 feet with development bonuses and a Floor Area Ratio of 5:1 or 6:1.

OMSI and SE Clinton lie within the Central Eastside, a predominately industrial district across the Willamette River from downtown. Whereas previous TOD had focused on creating a mix of retail and apartments, with the Orange Line Portland was constrained by regulations from Metro (the regional government and planning organization) concerning the protection of the supply of industrial lands. It thus focused its planning efforts on densifying and gentrifying employment zoning by raising height limits and redefining "industrial offices" (software, graphic design, etc.) as industrial uses. Areas adjacent to the OMSI and Clinton stations were rezoned from "Industrial Sanctuaries" to "Central Employment," with residential development allowed. The Portland Development Commission had an extant Urban Renewal Area in place within the Central Eastside; this URA was reoriented to "facilitating catalytic redevelopment projects along the Portland Milwaukie Light Rail line" with investments in infrastructure (BPS 2015, III-19). This was in keeping with a vision of intensive change directly adjacent to OMSI and Clinton, intended to create a "live/work village full of activity during working hours and at night… Reborn as a residential and creative office resource for Portlanders, the area can become a safe, attractive place to live and work, with eyes on the street day and night in a new/old location with its own unique, appealing character" (TriMet and Metro 2011, 69).

Further from the city center, in predominately residential neighborhoods, zoning changes were relatively limited. Neighborhood feedback in the process was opposed to development on

single-family side streets, though there was a widespread desire for mixed-use and retail development on SE Milwaukie Ave in the Brooklyn neighborhood. The industrial land by the Holgate rail yard was protected by a new Prime Industrial designation. Roughly ten blocks of commercial tracts near the SE Holgate station were rezoned to Mixed Use—Neighborhood and modest rezones were made near the SE Tacoma St Park and Ride. Residential upzones have often been limited in scope in Portland planning, with planner navigating the tensions between the commitment to densification and neighborhood citizen participation.

3.3 Regression Analysis

To analyze the potential price effects of the introduction of light rail, I conducted a hedonic analysis of home sales within 1.25 miles walking distance of each of the stations, between 2008 and 2016. Hedonic analysis is a revealed preference method of estimating the value of an aspect or component of a market good. It breaks down this good (housing for this analysis) into its constituent characteristics, and obtains estimates of the value contributed by each characteristic. The general hedonic model of housing is that prices are a function of their structural, neighborhood, and transportation attributes, with a normally-distributed error term. Variables are used as measures or proxies of these attributes, with each variable controlled in a linear regression to find the effect of the study variable on home prices, independent of all others.

I examined home sales with respect to both the timing of the sales and by the proximity to individual stations. I used three time periods for the stations—planning, construction, and operation. The beginning of construction on Tilikum Crossing, the new multimodal/car-free bridge, was chosen as the demarcation between planning and construction. The primary data source used for this analysis was the County Assessor's records of property sales, building area, and lot square footage. I calculated the key independent variable for my study—network distance to stations—using the Network Analyst tool in ArcGIS. I chose to measure walking/network distance since the hypothesized price premium of transit is generally considered to be a function of people valuing the accessibility benefits of transit (Higgins and Kanaroglou 2016), which are realized through the extant street network. Given that the Orange Line runs

largely in an old freight rail right-of-way, alongside a large golf course, and near the Willamette River, accounting for how geographic barriers increase the actual distance to the station was obviously important. I based the exact corridor boundary on a survey of existing literature—a ~1 mile Euclidean buffer for studies using a continuous-distance variable is typical (c.f Duncan 2007; Yan et al. 2012; Atkinson-Palombo 2010); a 1.25-mile network buffer approximates this distance while accounting for significant geographic barriers.

Given a dataset of 5,433 home sales, I then began an iterative process of model specification. For measurement of station distance, I ultimately settled on two functional model forms: a continuous level-log model and a distance bands model. Leaving the price variable untransformed was appealing on the theoretic basis of the nature of land premiums resulting from rail and the practical basis of simplifying interpretation of the results (Duncan 2007). To account for the significant fluctuation in home prices over this period, I inflated prices to October 2016 values, using the S&P CoreLogic Case-Shiller Index for the Portland Metropolitan Area for each month. To account for the likely nonlinear diminishment of station premiums, I log-transformed the distance variable, producing a model in which a percentage change in distance will equate to a given dollar change in price. I also measured station distance using a series of quarter mile network distance bands encoded as dummy variables. I log-transformed all locational distance variables, assuming a nonlinear return to proximity. I log-transformed building square footage and lot area, due to the positive skew of their distribution. I also squared age, to account for a general U-shaped function of age and price (new homes are more expensive than 30-40 year-old ones, but 100 year-old homes gain value).

Due to spatial autocorrelation of the residuals, I used a series of neighborhood dummy variables based on the neighborhood association the sales occurred in, as part of a spatial fixed effects model. I refined the model used for the time series analysis by adding variables with hypothesized effects on price, including those shown in the variable list (table 1), along with some other neighborhood socioeconomic census variables (race and median household income); land use percentage within a quarter mile buffer; distance to water, community centers, grocery stores, and commercial areas; and measures of elevation and slope. These variables

Table 1: Variables list

Variable	Description	Source
ADJ_PRICE	Most recent sale price (US$), inflated to Sept 2016 values using Portland Metro Area S&P/Case-Shiller Index for date of purchase	County Assessor Data accesssed through PortlandMaps
lnAREA	Natural logarithm of the square footage of the lot	County Assessor/PortlandMaps
lnBLDG	Natural logarithm of the building square footage	County Assessor/PortlandMaps
AGE	Age of structure at purchase in years	County Assessor/PortlandMaps
AGE2	Age of structure at purchase squared	County Assessor/PortlandMaps
ATTACHED	Dummy variable indicating if property is attached, calculated using property code descriptions	County Assessor/PortlandMaps
SFRzone	Dummy variable indicating if within a single-family residential zone (R5, R7, R10, and R20 and analogous zones outside Portland)	Metro RLIS
PREWAR	Percentage of structures within a quarter mile buffer that were constructed before 1940	Metro RLIS
PER_BACH	Percentage of residents with a Bachelor's degree or higher	US Census 2010, by census tract
lnOLSta	Natural logarithm of network distance (ft) to nearest Orange Line station	Metro RLIS
lnBUS	Natural log of Euclidean distance (ft) to nearest bus route	Metro RLIS
lnHWY	Natural log of Euclidean distance (ft) to nearest highway or interstate	Metro RLIS
lnDOWNTOWN	Natural log of network distance (ft) to centroid of CBD census tract	Metro RLIS
lnPARK	Natural log of Euclidean distance (ft) to nearest park	Metro RLIS
HWY500	Dummy variable indicating if within 500 ft Euclidean distance of a highway	Metro RLIS
HWY1k	Dummy variable indicating if between 500 ft and 1000 ft Euclidean distance of a highway	Metro RLIS
OL500	Dummy variable indicating if within 500 ft Euclidean distance of Orange Line track	Metro RLIS
OL1k	Dummy variable indicating if between 500 ft and 1000 ft Euclidean distance of Orange Line track	Metro RLIS
BUS500	Dummy variable indicating if within 500 ft Euclidean distance to a bus route	Metro RLIS
BUS1k	Dummy variable indicating if between 500 ft and 1000 ft Euclidean distance to a bus route	Metro RLIS
0-.25mi	Dummy variable indicating if within 0.25 mi of an Orange Line Station	Metro RLIS
.25-.5mi	Dummy variable indicating if between 0.25 and 0.5 mi of an Orange Line Station	Metro RLIS
.5-.75mi	Dummy variable indicating if between 0.5 and 0.75 mi of an Orange Line Station	Metro RLIS
.75-1mi	Dummy variable indicating if between 0.75 and 1 mi of an Orange Line Station	Metro RLIS

were discarded for lack of significance and issues with multicollinearity. The distance band dummy variables for bus and highway proximity were also comparatively insignificant and discarded for time series analysis. All time series models still showed a small, but statistically significant spatial correlation after imputing neighborhood fixed effects, which I accounted for by using the spatial lag and error model in GeoDaSpace, denoted 2SLS (Two-Stage Least Squares) in the regression table (Table 2), in addition to the Ordinary Least Squares (OLS) model. This model incorporates two variables, W_ADJ_PRICE and lamda, that allow for the spatial interdependence of the dependent variable and error terms. All OLS results shown use robust standard errors as computed by the White test, as heteroscedasticity was significant.

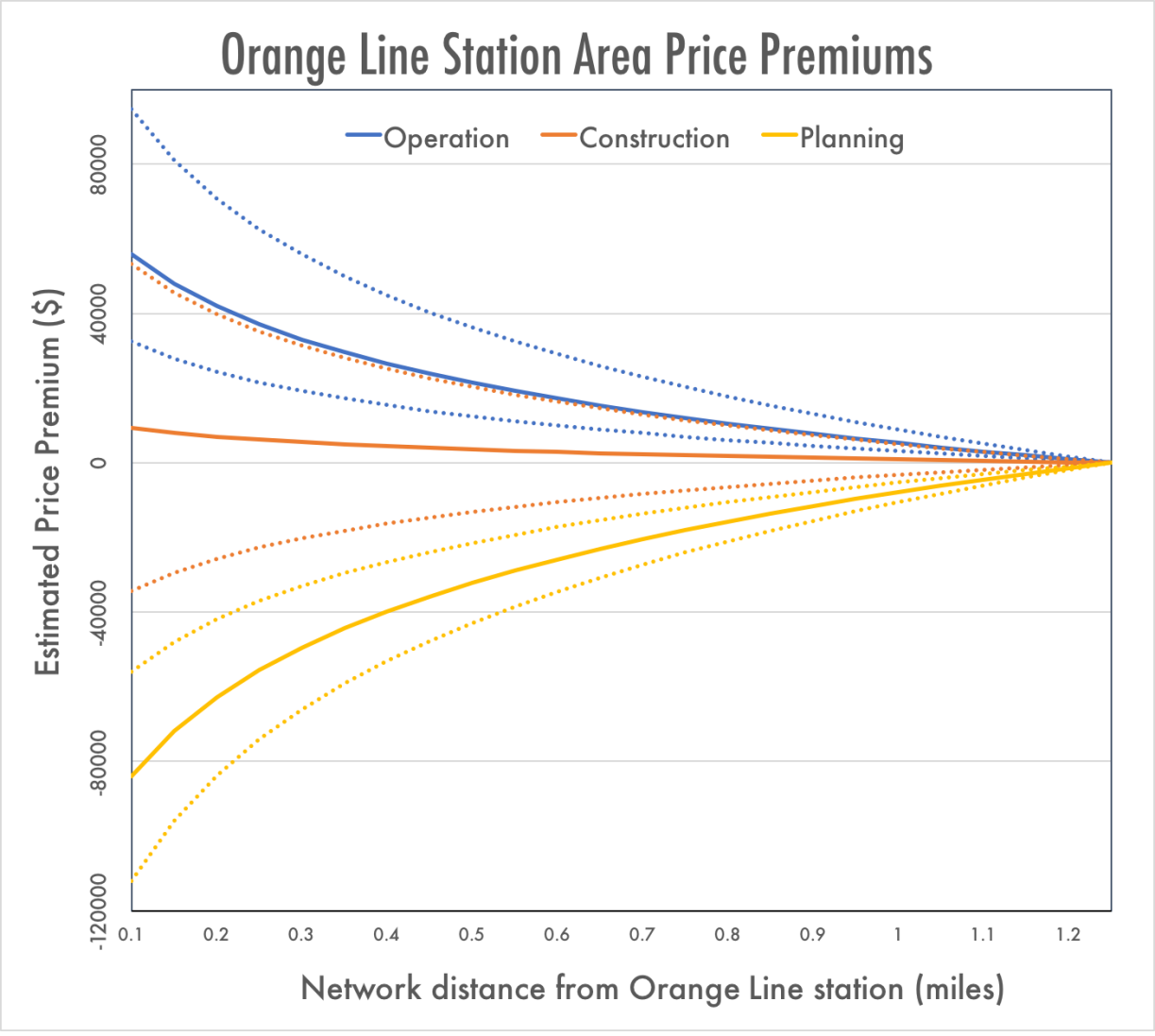
The variables of focus for my analysis in this regression table are lnOLSta and the categorical distance variables. The coefficient for lnOLSta, divided by 100, is the expected change in price from a 1% change in station distance. The categorical distance variable coefficients measure the average station premium/discount of each distance band relative to properties between 1 and 1.25 miles from the station. This time series regression (table 2) clearly

Table 2: Time series regression

	All Time Periods				Operation				Construction				Planning			
	ln(Network Distance)		Distance Bands		ln(Network Distance)		Distance Bands		ln(Network Distance)		Distance Bands		ln(Network Distance)		Distance Bands	
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)
(constant)	-1801774.02*** (176738.75)	-2451879.49*** (223970.92)	-1827631.05*** (189743.06)	-2465102.98** (236019.88)	-1395704.69*** (393061.58)	-1644613.43*** (279498.55)	-1681791.88*** (422582.6)	-1981682.8*** (291022.55)	-1760084.52*** (230304.47)	-2133996.91*** (307334.39)	-1715520.54*** (247885.8)	-2040382.03*** (317029.34)	-1940036.69*** (362234.56)	-2418861.9*** (623968.46)	-1834298.63*** (394080.87)	-2381211.12*** (317373.56)
Property characteristics																
lnBLDG	246711.47*** (6269.74)	230523.05*** (5047.22)	246610.18*** (6278.77)	230450.14*** (5047)	203916.78*** (13745.06)	188380.22*** (11005.72)	204971.26*** (13732.59)	188040.81*** (11023.23)	261171.17*** (8085.65)	249895.75*** (6673.79)	260905.98*** (8106.37)	249589.79*** (6672.49)	254611.88*** (12972.25)	247034.49*** (10263.51)	254397.35*** (12946.07)	245869.58*** (8017.49)
lnAREA	91131.62*** (7144.85)	79532.26*** (5216.66)	91177.81*** (7165.29)	79395.33*** (5217.71)	60245.14*** (10528.19)	51133.44*** (10215.32)	58962.58*** (10554.19)	47707.58*** (10104.73)	93388.72*** (8573.3)	84825.18*** (6698.97)	93601.6*** (8593.44)	84766.28*** (6692.03)	98099.27*** (18563.91)	86144.06*** (6319.81)	98376.53*** (18631.56)	77189.08*** (8561.97)
AGE	-3317.15*** (242.12)	-3411.49*** (221.07)	-3308.74*** (242.82)	-3401.81*** (221.17)	-1070.31* (490.29)	-1190.37** (453.38)	-1112.48* (488.82)	-1267.21** (448.59)	-3451.2*** (292.71)	-3422.95*** (285.52)	-3426.05*** (293.53)	-3401.66*** (285.34)	-3293.22*** (631.78)	-2802.21*** (519.72)	-3261.82*** (636.29)	-2975.09*** (471.48)
AGE2	21.1*** (1.93)	23.05*** (1.79)	21.01*** (1.93)	22.97*** (1.79)	5.17 (3.86)	6.43 (3.48)	5.54 (3.85)	7.16* (3.44)	21.25*** (2.44)	21.78*** (2.35)	21.04*** (2.45)	21.61*** (2.35)	20.87*** (4.79)	18.73*** (4.33)	20.54*** (4.82)	19.22*** (3.87)
ATTACHED	-45129.53*** (6315.54)	-32970.96*** (6615.06)	-45369.2*** (6316.51)	-33038.9*** (6616.41)	-47837.96** (15296.85)	-44042.47*** (13443.19)	-47241.28** (15312.66)	-43073.76** (13294.75)	-45922.7*** (7932.87)	-38453.82*** (35361.11)	-46470.82*** (7961.77)	-38814.82*** (8589.89)	-45085.64*** (13665.73)	-32914.45* (15038.1)	-44932.36*** (13583.41)	-38521.58** (13545.01)
SFRzone	18760.68*** (4911.44)	12822.95* (5410.79)	18175.01*** (4927.33)	12310.34* (5429.19)	10190.59 (11459.77)	7200.34 (9693.03)	11012.67 (11699.6)	8255.6 (9590.99)	25848.72*** (5973.07)	21501.76** (7205.44)	25166.1*** (5977.68)	20996.03** (7211.21)	14275.77 (10304.21)	11832.97 (11506.31)	13923.61 (10306.13)	4633.51 (8445.57)
Neighborhood characteristics (Dummy variables not shown)																
PREWAR	225729.72*** (19707.92)	133602.05*** (27422.51)	227076.13*** (19678.85)	135985.2*** (27660.82)	138393.29*** (42236.07)	94329.92** (31935.98)	137492.47** (42328.19)	87731.52** (30549.09)	228621.45*** (25607.47)	138264.95*** (36235.54)	231530.93*** (25742.11)	144411.13*** (36236.69)	280630.96*** (40600.78)	220116** (85332.78)	280191.06*** (40464.39)	185752.31*** (29165.18)
PER_BACH	170189.88*** (34227.01)	-16662.72 (41722.21)	165604.69*** (34921.7)	-24024.74 (42054.16)	283642.29*** (60722.29)	179909.76** (57910.87)	294980.77*** (60334.52)	183085.64** (56259.48)	156318.67** (48652.62)	-11226.08 (55819.27)	144907.87** (49644.28)	-27890.78 (55920.85)	97699.1 (68310.28)	-118390.95 (97986.09)	92012.21 (70162.99)	5680.98 (55431.47)
lnPARK	-5986.27* (2467.78)	-1943.59 (2588.09)	-6149.21* (2478.12)	-1843.04 (2600.64)	-4468.31 (4856.02)	-3914.92 (4211.01)	-4666.7 (4858.7)	-3846.47 (4138.05)	-4766.79 (3282.22)	-2613.16 (3326.9)	-5146.23 (3291.4)	-2891.63 (3330.66)	-7743.25 (5323.87)	-4009.11 (5975.22)	-6749.71 (5373.01)	-4887.87 (4136.55)
Transportation characteristics																
lnOLSta	-9161.43 (5706.02)	-7918.61 (8495.41)			-23094.19* (10921.62)	-24192.08* (10135.77)			-7621.77 (7711.67)	-4059.92 (11497.26)			5552.71 (12041.74)	36282.08** (12092.89)		
0-.25mi			27474.12* (11597.33)	24775.15 (16087.25)			60938.75* (25731.38)	56472.46* (23044.25)			24322.84 (14983.22)	9820.27 (21112.06)			-1365.3 (22889.8)	15417.67 (23103.04)
.25-.5mi			4321.55 (7640.04)	5257.31 (9902.48)			27008.84 (14934.8)	31078.65* (12467.12)			-2405.95 (10141.25)	-11266.97 (13100.23)			-4272.18 (16364.35)	6185.83 (12670.43)
.5-.75mi			1605.18 (6007.94)	-4808.99 (7974.7)			30436.57* (12490.91)	32608.9** (10151.42)			-4199.85 (8172.17)	-15175.45 (10392.71)			-14018.27 (11770.95)	-2550.59 (10068.54)
.75-1mi			-1716.44 (5498.23)	-4309.52 (6266.97)			9645.58 (12085.72)	12865.96 (9908.76)			-2345.15 (7009.67)	-6788.8 (8013.24)			-12377.44 (11984.44)	-4631.88 (9399.94)
OL500	-46625.14*** (8928.8)	-26353.98* (12694.4)	-50437.64*** (9264.73)	-30791.11* (12725.95)	-40787.88* (16704.52)	-31791.85 (17630.92)	-41601.11* (17242.3)	-27647.24 (18478.68)	-42159.74*** (12340.8)	(-23429.08) (16636.14)	-45810.9*** (13041.28)	-25777.57 (16525.02)	-67564.54*** (16617.01)	-34405.63 (32278.57)	-74665.15*** (16588.45)	-49010.37 (19607.55)
OL1k	-27143.99*** (6339.51)	-10463.78 (8397.78)	-28663.8*** (6384.07)	-12875.66 (8353.6)	-29954.53* (14503.62)	-23648.25 (13308.07)	-30735.42* (14238.25)	-21987.18 (13033.4)	-25983.29** (8468.09)	-14394.36 (10938.31)	-26375.13** (8541.38)	-14230.1 (10799.18)	-23298.88* (11157.89)	7665.6 (20833.99)	-29338.92* (11571.42)	-14157.88 (13821.51)
lnBUS	8878.14*** (2321.85)	10441.57*** (2755.65)	8710.87*** (2337.48)	10200.43*** (2752.18)	11126.03* (4921.95)	11486.81* (4546.36)	12009.22* (4946.42)	12334.04** (4402.74)	8480.68** (3128.74)	10518.4** (3601.96)	7864.88* (3137.66)	9515.79** (3584.17)	6360.55 (4606.77)	7954.1 (5612.6)	5772.08 (4704.17)	7206.28 (3888.42)
lnDOWNTOWN	-40937.13* (17032.75)	29761.79 (22633.51)	-45975.71** (17810.8)	24442.39 23145.88	-16398.36 (40488.62)	15114.77 (27660.21)	-9043.35 (42255.29)	27970.16 (27460.91)	-57666.72** (22442.87)	-18852.22 (30691.56)	-67681.58** (23463.36)	-30403.51 (30942.04)	-52694.29 (32105.38)	-39393.89 (77044.42)	-58041.15 (33826.17)	8763.99 (31454.99)
W_ADJ_PRICE		0.52*** (0.05)		0.52*** (0.05)		0.3939*** (0.0619)		0.4269*** (0.0599)		0.3729*** (0.0623)		0.4*** (0.062)		0.39*** (0.12)		0.43*** 0.06
lamda		0.47*** (0.06)		0.48*** (0.06)		-0.2831* (0.1204)		-0.3755** (0.1226)		0.5483*** (0.0871)		0.5477*** (0.0857)		0.79*** (0.04)		-0.28*** 0.08
Model Statistics																
N	5433	5433	5433	5433	998	998	988	988	3006	3006	3006	3006	1429	1429	1429	1429
Adjusted R squared	0.6888	0.6866	0.6888	0.6851	0.6665	0.6818	0.667	0.6837	0.7232	0.724	0.7232	0.7232	0.6642	0.6434	0.6639	0.6763
Moran's I	0.0642***		0.0643***		0.0318***		0.0286***		0.0593***		0.0596***		0.0366***		0.0368***	
Log likelihood	-71500.422	-71422.5	-71498.94	-71429.6	-13039.242	-13035.2	-13036.899	-13033.1	-39466.049	-39437.2	-39464.733	-39437.4	-18842.371	-18835.9	-18841.368	-18834.7
Akaike info criterion	143062.845	142907	143065.88	142927	26140.484	26132.3	26141.797	26134.3	78994.098	78936.4	78997.466	78942.8	37746.741	37733.7	37750.737	37737.5

illustrates the emergence of a light rail price premium, with the continuous and distance band variables becoming significant after the opening of the line. Below is a plot of the bid premium resulting from the 2SLS model of continuous distance, with 95% confidence intervals marked with dotted lines (figure 6). It illustrates the rapid materialization of a ~$56,000 price premium between properties 1.25 miles away and those within 0.1 miles during the operation period, with either no statistically significant effects or a significant disamenity effect in the preceding periods. The categorical dummies corroborate this finding, pointing to a $56,000 premium up to a quarter mile and a roughly $30,000 premium between a quarter mile and three quarters of a mile.

Figure 6: Bid-rent premiums for Orange Line stations



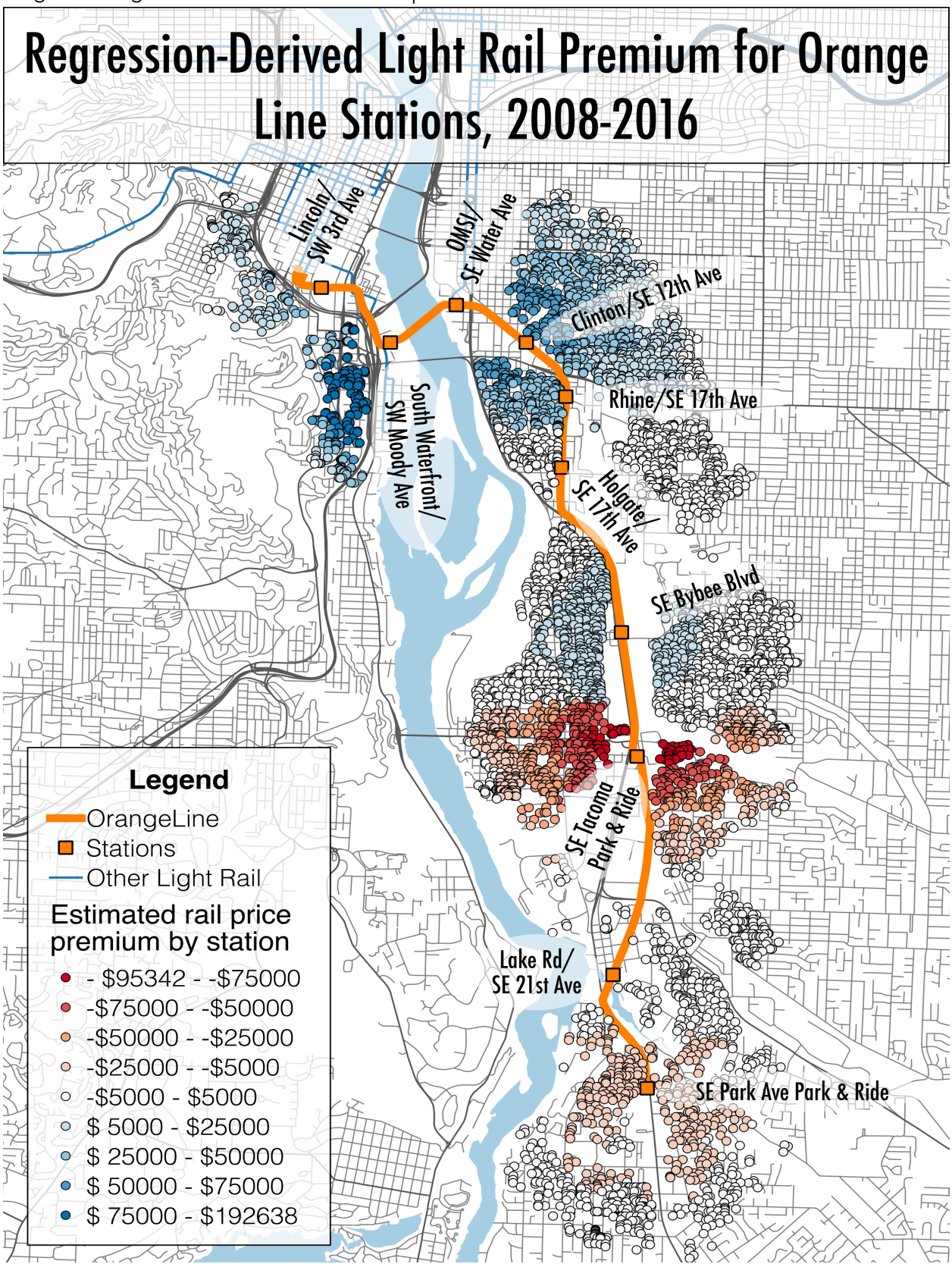
Of course, these smoothed bid-rent curves for the network as a whole elide significant distinctions. Rail networks are not spatially homogenous—both the utility of stations and the attractiveness of their environments vary widely. To investigate potential spatial heterogeneity and help ground the econometrics in the localities of planning and equity, I conducted an individual station regression analysis. I split the sales data by the nearest station, excluding OMSI/SE Water Ave due to a lack of observations (N=9). I then ran a regression of each of these datasets, using a singular model specification developed on the dataset as a whole. For station areas revealing significant spatial autocorrelation, I ran the spatial lag and error model (table 3). Accurate estimation of the station-specific price premiums was hampered in large part by the limited sample size available. Given that the time series analysis indicated that Orange Line station locations have only recently been capitalized into land markets, it is perhaps unsurprising that a majority of the results were statistically insignificant. Restricting the analysis to sales within the operation period was not a viable option, given the sample size. Nevertheless, statistically significant effects were found for five stations: a transit-premium for the South Waterfront ($2,900 increase with a 1% decrease in distance), Clinton/SE 12th Ave ($810-$840 increase), and Rhine/SE 17th Ave stations ($440 increase) and a disamenity effect for the SE Tacoma Park & Ride ($1,200-$,1600 decrease per 1% decrease in distance) and the Park Ave Park & Ride and home prices ($450 decrease).

Table 3: Station area regression

Station	Lincoln/SW 3rd Ave		South Waterfront	Clinton/SE 12th Ave		SE Rhine	Holgate/SE 17th Ave		SE Bybee Blvd		Tacoma P&R		Lake Road	Park Ave P&R	
Model	OLS	2SLS	OLS	OLS	2SLS	OLS	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	OLS	2SLS
Variable	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)
(constant)	-1829566.08	-1631329.6	-6362041.17*	-2452534.79***	-2478809.04***	-4355348.45***	-3279324.29***	-3070533.43***	-4589375.9*	-3632441.62***	4264974.05	2829365.85**	1788162.45	3143209.37*	-245677.34
	(1588591.39)	(1632411.1)	(2746832.11)	(626216.81)	(574588.83)	(1199219.5)	(541094.95)	(500765.49)	(692194.13)	(617344.6)	(1073478.74)	(1016041.63)	(1159532.96)	(1543255.15)	(1500689.5)
Property characteristics															
lnBLDG	299808.76***	295221.19***	269421.9***	331164.8623***	323150.33***	230478.09***	196085.32***	188450.35***	299618.99***	270587.19***	235095.14***	212062.86***	104717.32***	160496.17***	155154.09***
	(56551.16)	(49328.79)	(39183.44)	(15304.31642)	(15213.94)	(21398.91)	(10271.14)	(10360.32)	(14800.15)	(12194.96)	(13229.72)	(10842.81)	(16143.05)	(16242.82)	(11271.61)
lnAREA	163517.93**	157559.14***	31970.24	80225.887***	71848.05***	55131.42***	78037.09***	75526.75***	198025.22***	168658.23***	72344.21***	57817.74***	86663.97***	71714.7***	55377.94***
	(54821.38)	(41942.57)	(21389.26)	(18396.58)	(18454.02)	(16928.83)	(13476.11)	(13032.87)	(20645.39)	(15166.29)	(14511.19)	(10232.5)	(20685.29)	(16190.08)	(8438.1)
AGE	-414.32	-667.52	-635.45	-4564.45***	-4433.65***	-3150.47***	-3299.81***	-3171.84***	-6170.1***	-6188.13***	-3486.28***	-3550.25***	-2908.68***	-2014.88**	-1720.15***
	(2873.46)	(2659.27)	(1654.85)	(746.346)	(738.61)	(624)	(445.38)	(433)	(680.77)	(555.32)	(453.15)	(442.43)	(848.07)	(655.16)	(480.52)
AGE2	-1.93	-0.13	4.87	30.66***	30.37***	22.45***	22.18***	21.47***	44.66***	47.72***	24.3***	24.85***	18.72**	10.1	8.85*
	(19.96)	(18.8)	(11.49)	(6.03)	(5.72)	(4.8)	(3.53)	(3.42)	(5.7)	(4.76)	(4.09)	(3.68)	(6.24)	(5.58)	(4.43)
ATTACHED	10046.09	11177.57	-16251.04	-52546.03***	-46486.59**	-45220.38***	-25043.58*	-19918.75	NA	NA	-51218.74**	-42240.29**	NA	NA	NA
	(45809.23)	(51856.29)	(26916.09)	(17109.24)	(15311.99)	(13058.58)	(11092.37)	(10915.59)			(16020.51)	(13898.73)			
SFRzone	-15871	-15216.06	99397.92	36615.86*	32033.44	-10888.51	-1610.19	-999.27	-8163.88	-6680.01	29658.93**	25464.58*	-93815.03***	-31478.73	-21168.24
	(73020.03)	(74985.81)	(61719.75)	(16127.69)	(16786.3)	(11707.96)	(7664.26)	(7249.77)	(15318.82)	(14057.55)	(10374.67)	(10927.56)	(35886.85)	(21717.27)	(12394)
Neighborhood characteristics															
PREWAR	-356693.69	-176901.2	-252807.82	327110.75*	193488.69	659833.83***	125626.75***	126883.28***	299982.47***	148582.33***	53546.31	13031.79	76515.14	4308	82034.76
	(205638.33)	(261942.78)	(374175.03)	(165863.83)	(166137.44)	(139406.17)	(33764.92)	(31762.66)	(37868.98)	(41164.55)	(56407.49)	(48261.18)	(58767.19)	(137145.54)	(62416.68)
PER_BACH	-83077.09	-90208.53	-476902.74*	-49381.94	-46288.81	62300.03	139040.62	122466.8	720193.6***	321744.05**	314683.73***	193978.91***	-59436.77	-1208394.12*	-556154.67
	(207201.29)	(218800.22)	(240329.74)	(107796.48)	(99847.35)	(93223.01)	(81450.94)	(77006.66)	(122457.85)	(125465.34)	(44215.28)	(44344.15)	(201430.66)	(549866.09)	(356867.11)
lnPARK	95853.65**	82253.58**	-290.2	-299.127	-1418.93	-12293.61	2094.32	1347.13	-12463.38*	-5472.71	-10537.08	-7087.71	-9676.68	-13580.52*	-7386.37
	(29224.49)	(30488.59)	(12123.91)	(7890.90)	(7197.93)	(7752.45)	(4840.04)	(4560.98)	(6216.95)	(5067.08)	(6261.17)	(5225.34)	(5586.28)	(6842.22)	(4996.09)
Transportation characteristics															
lnOLSta	-3835.66	-52575.51	-293901.67*	-81846.53**	-84897.06***	-43945.08*	1319.8	2430.99	4063.06	-10356.1	159609.72***	119374.8***	2619.24	45162.98**	15841.15
	(97105.66)	(123889.66)	(130601.3)	(26442.47)	(24640.93)	(19610.03)	(19723.6)	(18619.72)	(22945.9)	(18755.06)	(43040.03)	(31249.65)	(21733.43)	(16907.97)	(14699.46)
OL500	NA	NA	NA	33221.23	-27921.21	-32175.59	-15470.67	-7840.62	-158713.04***	-109258.04**	-163803.4***	-116367.38**	19321.12	5563.14	-17685.27
				(57511.05)	(49442.36)	(26915.32)	(19048.59)	(18129.21)	(37066.81)	(43148.95)	(35052.82)	(35808.3)	(29262.44)	(29414)	(24260.59)
OL1k	-98291.88	-79919.42	86893.27	-2142.83	-26258.41	6690.62	-30893.73*	-18037.79	-43484.22*	-35147.94	-65045.32***	-27965.09	-8806.59	-485.05	-17102.29
	(61912.34)	(80682.74)	(90331.84)	(29206.10)	(28439.21)	(19955.88)	(14935.81)	(14782.74)	(20332.93)	(21410.3)	(18778.73)	(19872.51)	(19435.74)	(14996.14)	(17373.96)
lnBUS	-59833.63	-57599.27	9571.46	24658.08*	19494.29	15789.84	7695.23	3662.22	1805.49	7350.14	3368.38	-3310.1	11657.45	17163.58*	6872.29
	(42985.59)	(51378.08)	(22003.36)	(11484.41)	(11377.79)	(12605.1)	(7202.74)	(7001.73)	(7650.16)	(7158.38)	(8065.61)	(7765.21)	(10984.88)	(8392.29)	(7904.83)
BUS500	-108342.91	-84784.79	207.06	29700.36	33199.9	-4938.54	-5473.5	-2451.06	-18300.05	-7318.83	-51341.09**	-39696.21*	-4073.6	-4070.29	-15399.79
	(70671.85)	(89981.57)	(75835.48)	(24779.53)	(23907.67)	(22352.39)	(14397.87)	(13844.89)	(18123.69)	(16415.04)	(19616.13)	(16855.92)	(26206.39)	(15684.12)	(17034.59)
BUS1k	-76574.73	-64529.83	-18336.16	(31396.89)	28207.96	-21617.15	13242.21	14588.31	-3297.56	2581.85	-43732.86**	-26412.35*	-11153.71	-9781.15	-11911.46
	(63528.98)	(75014.2)	(73492.9)	(17324.35)	(16698.51)	(14808.84)	(9618.47)	(9170.08)	(11196.12)	(11064.1)	(13807.76)	(11662.67)	(18843.73)	(10201.81)	(10344.78)
lnHWY	83138.12	75764.53	109583.22**	92740.03**	85350.69**	45937.15*	-21492.88	-11712.29	-69271.63***	-37638.29**	-100025.34***	-70281.98***	-25639.22	4039.93	-4048.09
	(59254.04)	(63694.07)	(34323.21)	(33173.97)	(33280.84)	(23539.83)	(15809.4)	(15453.93)	(17305.09)	(14703.09)	(25399.16)	(19127.41)	(16992.95)	(12172.75)	(11416.82)
HWY500	64670.15	75192.12	10268.12	160406.01*	151865.17	94219.89	-87570.31**	-63990.44*	-46830.37	12102.61	-72189.75	-49142.01	-43363.08	27347.71	16471.3
	(86914.47)	(110070.96)	(57619.22)	(81318.03)	(81741.06)	(54520.48)	(30656)	(30381.7)	(30525.91)	(36995.43)	(52428.04)	(59179.86)	(28272.05)	(28274.28)	(25513.81)
HWY1k	11325.37	14702.27	-28682.12	34289.62	25897.12	48302.23	402.16	3990.74	-29981.69	2883.2	-75459.75**	-57283.56	-8500.26	20492.03	15225.9
	(53388.91)	(59937.14)	(40003.93)	(52409.66)	(50805.6)	(35838.27)	(18651.71)	(17701.42)	(16959.81)	(20601.96)	(28240.51)	(34482.35)	(19494.44)	(13499.52)	(14943.1)
lnDOWNTOWN	-112406.53	-97365.04	733286.26*	-78966.14	-40610.6	226826.03	169132.17**	142928.12*	136410.52*	73531.5	-662574.92***	-485580.95***	-264217.86*	-452221.15**	-111154.5
	(154083.41)	(150623.76)	(338035.1)	(68283.47)	(63892.93)	(124381.28)	(62897.01)	(59833.94)	(65345.14)	(58122.73)	(113236.58)	(103742.15)	(116624.97)	(158558.8)	(143861.28)
W_ADJ_PRICE		0.2257			0.2233**			0.2170***		0.3339***		0.3767***			0.4449
		(0.2083)			(0.0808)			(0.0737)		(0.0455)		(.0552)			(0.2453)
lamda		0.1877			-0.0642			-0.0408		-0.0403		0.0847			-0.2596*
		(0.2664)			(0.1265)			(0.1095)		(0.0793)		(0.0819)			(0.1343)
Model Statistics															
N	171	171	170	716	716	438	639	639	1329	1329	978	978	311	672	672
Adjusted R^2	0.6263	0.6628	0.5076	0.5952	0.5949	0.5113	0.565	0.5801	0.6811	0.6929	0.5934	0.616	0.5119	0.4951	0.5152
Moran's I	0.0436*		0.0015	0.0294**		-0.0080	0.0614***		0.0947***		0.2393***		0.0279	0.0512***	
Log likelihood	-2325.767	-2325.77	-2222.436	-9461.339	-9460.5	-5665.516	-8133.425	-8130.55	-17546.929	-17509.7	-12820.511	-12735.8	-3976.782	-8676.071	-8675.64
Akaike info criterion	4689.534	4689.53	4482.871	18962.678	18963	11371.032	16306.85	16303.1	35133.858	35061.3	25681.022	25513.6	7991.563	17390.142	17391.3

To visualize these spatial patterns, I mapped the derived light rail premium for each sale (figure 7). I multiplied estimates of station-specific coefficients by the percentage change in the distance to the nearest station from the corridor boundary to that of the observed sale. The results indicate a strong light rail premium near the city center and a discount for properties near a park and ride (though this analysis provides no indication as to whether such a discount applied to the area before pre-light rail). The premium attached to proximity to the Clinton station accords to perceptions by developers that this station offered by far the best redevelopment opportunities (David Evans and Associates, Inc and Sera Architects, Inc 2009). Considering that none of the envisioned mixed-use development has yet occurred, such a price premium may only intensify with the maturation of the station area. These station-specific results accord generally with some previous findings in the literature; Kahn (2007) reports that gentrification and home price appreciation tended to be observed near newly-constructed walk-and-ride stations, with depreciation and a decline in class status near park-and-ride stations. Based on the site geography, however, one can doubt whether the disamenity value found for the Tacoma St Park & Ride is really for the transit station—as one approaches the station from the west, one hears the dull roar of the highway well before there is even a glimpse of rail, the tree-lined sidewalks of Sellwood diminish and then disappear, and early 20th century and new mock-early 20th century craftsmen houses give way to ranch homes and mid-century garden apartments. As this analysis uses residential sales, it is admittedly poorly suited to analyzing the effects of two key stations: OMSI and downtown Milwaukie (Lake Road), both of which were spotlighted in the revitalization planning process and had few proximal residential sales in the study period.

Figure 7: Regression-derived station area premium



4 Implications

> *If urban entrepreneurialism (in the broadest sense) is embedded in a framework of zero-sum inter-urban competition for resources, jobs, and capital, then even the most resolute and avant-garde municipal socialists will find themselves, in the end, playing the capitalist game and performing as agents of discipline for the very processes they are trying to resist. (Harvey 1989, 5)*

The Orange Line was explicitly about creating better places; in many ways real estate was the vehicle justifying light rail investment. Thus, the results of this regression analysis illustrate success on one level—an indication that market actors collectively value this capital expenditure. Moreover, from a developer's perspective, rising prices and rents make more developments pencil out, expanding opportunities for profit. Development and real estate interests are thoroughly engrained in the planning process, sitting on the Stakeholder Advisory Commissions that shape land use policies and exerting influence through think tanks and conferences that disseminate the fundamental ideas of planning, dissolving the borders between state and market (Simpson 2016); outcomes structurally reflect this alignment of land-based interests. Functionally, this mirrors the smoke-filled rooms and backdoor decision-making by business and municipal elites of an earlier age, albeit while adding a degree of transparency and a modicum of citizen participation to the process. Though we may support the vision of denser, human-scaled and less auto-dependent cities, smart growth's deployment in contemporary regimes renders property value appreciation and profit-geared development an end in itself. The equity implications of this situation are questionable; increased property values (and particularly rents) will tend to displace the lower income, transit-dependent residents who most benefit from increased transit access.

At one level, light rail is simply a subset of a broader category of amenities adding value to place. Amenity valuation is a subjective and inherently speculative activity, depending on a combination of how market actors value an amenity and how they perceive other actors to value that amenity. Real estate prices thus reflect a certain aggregation of speculation. This perceived value can be sketched out with reference to the features highlighted by real estate listings. A brief analysis of listings within the study area reveals frequent advertising of a property's

proximity to light rail or transit in general, as well as some spatial unevenness in terms of the relative emphasis placed on light rail, other transportation characteristics, structural characteristics, and the neighborhood. Despite the lack of price premiums found in this study for the downtown Milwaukie station, many property listings near the line prominently feature proximity to the Orange Line—advertising this fact even before any information on the building's characteristics—raising the possibility that transit premiums have materialized but were undetected by the bundling of time ranges together for spatial analysis. This data source provides opportunities for further research into the geographic extent of the promotion of transit as an amenity and the potential for constructing a regression analysis of property values with reference to their marketing.

At the same time, light rail, as mass transportation, serves a fundamental need for mobility; public policy surrounding rail infrastructure is central to realizing the equity potential of rail. Investment in transit has long been assumed to be an unalloyed boon for the comparatively poor segment of the population that is dependent on transit. Though there is a growing recognition of the connection between transit and gentrification—both in Portland and at larger scales—the language and policy of transit-oriented revitalization still presumes the achievability of growth-oriented "Triple-Bottom-Line" sustainability, albeit with some modifications to selectively "mitigate" the impacts of gentrification. Light rail and TOD were and are envisioned as a catalyst for meeting the needs not only of private and public profit, but as the model by which the new, amenity-filled, environmentally sustainable, and socially equitable city is created. Transit is evaluated first and foremost on the basis of the transit-oriented development it drives.

The language of planners promoting investment hinges on a rhetorically seamless linkage between growth, sustainability, and equity; these three concepts are recanted together, as if through repetition they will become reality. Sustainability is discursively chained to growth, with neoliberalism succeeding in transforming a word that once meant a zero growth steady-state into cover and a strategy for endless accumulation. The soaring language of the Plan's goals is diminished only by the insufficiency of its policies. Underneath the surface goals of achieving equity lie policies either of a hopelessly modest scale or merely presenting an equitable direction

while retaining and fulfilling substantial municipal and private interests in land value maximization. The long-term vision is housing in livable, diverse, multi-modal neighborhoods as a social right; the present reality is amenity provision as a variously intentional and inadvertent strategy of urban renewal, raising land values, spatially isolating an underclass, and attracting the footloose capital and middle class for which the spectacles of gentrification are constructed.

In interpreting the role of planning within these structures, it would be improper to assign either insufficient or excessive blame for gentrification to the planning profession; planning is complicit in, but not the ultimate driver of, the gentrification of the city. We should neither lose sight of the structural limits on municipal-level planning in terms of constructing cities nor the ways in which the success of revitalization deepens the unevenness of the urban landscape. This uneven development proceeds apace, its logic derived from the fixed spatial nature of capital, the tendency towards crises of overaccumulation under capitalism, and the use of the spatial fix to temporarily resolve these crises of declining profitability (Smith 1982). The state intervenes in and shapes this process, but is itself constrained in its actions. Keeping the growth machine oiled comprises the base concern of urban politics (Molotch 1976). Smart growth revitalization and densification has emerged as a predominate strategy for attracting and directing capital accumulation in the contemporary city.

Scalar contestations of equity emerge as we consider who the City is constructed for. The global city concept is particularly relevant to understanding the nature of unequal service of segmented scales of the "public." Farmer (2011) illustrates how globally-oriented transit expansions in Chicago, in the form of an express line from downtown to the airport and the Circle Line around greater downtown, have been prioritized above both the maintenance of the system and the needs of the local transit-dependent population. Similarly, Enright (2013) analyzes how the Grand Paris Express, a plan to dramatically expand transit access in the Parisian suburbs, was directed towards the creation of a globally competitive polycentric city. By dictate, its first priority was that of "serving urban travelers and linking technological, scientific, and economic poles on the outskirts of the city with the center of Paris… One of the key features of this transit-led development, however, is that many of these poles must also be brought about through the

creation of a transit system" (798). This issue of global branding and infrastructure extends far beyond transit, however, with international airports, other transport infrastructures, convention centers, stadiums, mega-events, skyscrapers, starchitecture, and more, appearing as the physical manifestation of a politics of global positioning. The physical side of global striving is accompanied by discursive branding, the creation of a recognizable and unique identity. The rush to brand and reshape cities for capital contravenes with local needs; for whatever competitive benefits success on the global scale carries for the land-based elite, those living in a city must contend with the creative destruction of their lived environment and increased competition for the basic needs of housing.

As cities worldwide race into the urban century, the basic patterns of globally-oriented neoliberal gentrification are replicated, naturalized, and suffused with salutatory greening language (Lees et al. 2016). These strategies of transit and TOD planning as a tool for state-led regeneration of land are observable globally. This process is expressed differently by context, yet megacities of the Global South, sprawling Sunbelt cities, and rapidly urbanizing East Asian cities have each utilized transit as an instrument of (re)investment. Those cities which have progressed further in the process of gentrification are now reaping the class conflict and political pressures arising from widespread unaffordability. This has forced neoliberal entrepreneurialism to incorporate affordable housing as a strategy, buttressing prospects for growth by maintaining social reproduction. Gentrification-displacement knows no final bounds; London, the city that inspired the term gentrification, now faces the displacement of the *upper class* from its toniest districts, local wealthy professionals outbid by a hypermobile global elite primarily using real estate as a store of value. While this fate hardly awaits all neighborhoods or all cities, it makes starkly apparent the inequitable ends to which unrestrained commodification of land can extend. Strategies of intervention to maintain the affordability of the fundamental use value of housing for all residents of a city must be integrated into planning if it is to advance the ideal of the inclusive city.

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