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IDEAS LEADERSHIP HOPE

Breaking Barriers to Affordable and Abundant Housing

A German–US Comparison of Publicly Led
Development Projects

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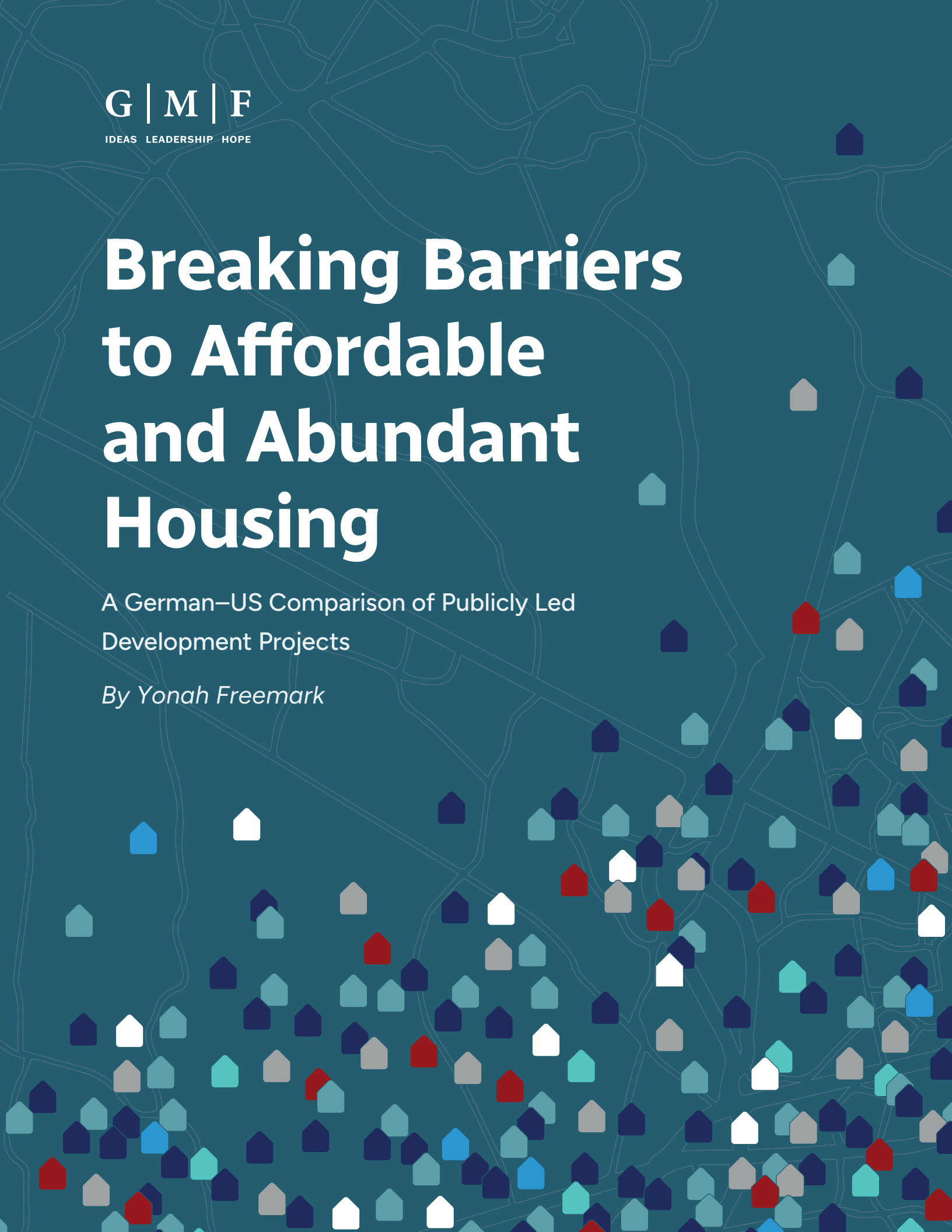


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As construction has slowed, urbanization rates have increased, income inequality has expanded, and government investment has declined, cities around the world have increasingly struggled with housing affordability (Ball and Wood 1999; Birch and Wachter 2011; Freemark and Steil 2022; Scanlon, Whitehead, and Fernández Arrigoitia 2014). In this challenging environment, local governments in the United States and abroad are promoting publicly led development projects that integrate housing and transportation investments, with the goal of creating mixed-use and mixed-income neighborhoods. Yet policymakers promoting such projects face systemic barriers. They must overcome restrictive zoning policies, attract investment to low-demand neighborhoods, align project timelines across multiple public objectives, encourage resident support, maintain political commitment in the face of continuous electoral pressure, and work across governmental levels. In this paper, I show that cities can use strategies including expanded use of public land, integrated transportation and housing investment planning, multistage public engagement processes, and reform of land use regulation to overcome obstacles to increasing housing availability. Approaches like these, implemented in the context of publicly led projects, can assist localities in responding to inevitable patterns of growth in a way that promotes social equity and increases environmental sustainability.

Policymakers at many governmental levels broadly agree about the need to increase housing availability and affordability; private-market investors cannot accommodate enough new housing for all those who need it. One fundamental problem is that local governments have enforced strict local regulations that make it difficult to build new homes, such as rules that prevent anything larger than single-family homes from being built or that ban a mix of uses in largely commercial neighborhoods. Building and fire codes, instituted at the municipal and state levels to promote safety, can also slow or discourage construction by raising costs (Listokin and Hattis 2005; McFarlane, Li, and Hollar 2021). These rules often constrain development in the most sought-after areas and impede construction (Monkkonen, Lens, and Manville 2020; Quigley and Raphael 2005). Competition for a limited number of units increases over time, raising rents and purchase prices (Kendall and Tulip 2018; Zabel and Dalton 2011). This problem—which occurs in both the United States and Europe—is particularly acute in some of the wealthiest cities and towns, which sometimes use exclusionary tactics to prevent new people from moving in (Freemark and Steil 2022; Freemark, Lo, and Bronin 2023). Although such rules rarely ban publicly subsidized or other affordable housing explicitly, they often have the de facto effect of preventing its construction.

Though many face resident or policymaker opposition to rezoning to encourage substantial new building, some local and state policymakers are working to review and revise their zoning laws with the goal of accommodating new construction (Pendall). Some US state governments, too, have begun instituting minimum requirements for density in local zoning codes, with the goal of maximizing construction for cities (Manji et al. 2023). And evidence suggests that over the long term, more accommodating zoning could result in an increase in construction (Freemark 2023a; Freemark et al. 2023) as well as a reduction in housing prices (Wassmer and Williams 2021). Higher-density zoning is particularly useful for encouraging private-sector investment and making room for publicly subsidized affordable housing.¹

But the regulatory policies put into play by local governments are only one part of the complicated equation of

city building. The pace of privately financed construction reflects whether there is private-sector demand for new investment in the first place. Many communities throughout the United States have failed to increase their housing stock at all over the past two decades (Freemark 2022). One explanation for that is the predominance of exclusionary zoning. But another explanation is that poor jurisdictions simply cannot attract investors for new projects. Even relatively well-off municipalities with accommodating zoning codes have been unable to attract enough housing construction to ensure affordability for all residents.² And federal support for housing affordable to households with low incomes has declined in recent decades (Vale and Freemark 2012).

Some cities, therefore, have promoted an alternative to relying on private investors alone. They have led the conception and implementation of integrated development projects, or comprehensively planned projects, which involve local governments selecting sites, creating development plans, and contributing to project financing. These projects hold particular promise to add to the local housing stock and reduce housing costs, while encouraging social integration, reducing carbon emissions, and improving quality of life by concentrating investments in focus neighborhoods. In this paper, I investigate how six cities in the United States and Germany are undertaking these publicly led projects with the goal of identifying best practices in their approaches. I find that publicly led housing projects have been enabled by:

- **The strategic use of publicly owned land to reduce the cost of providing affordable housing and to plan for a mix of uses from the start of project development.** Atlanta is redeveloping city-owned land through its new Urban Development Corporation to create high-density mixed-income housing. In Berlin, the city government has acquired land at the city edge to create master development plans that support city growth.
- **The integration of housing and transportation investments from the start of project planning.** Seattle planning staff are working with the regional transit provider to fund new affordable housing in areas

around a light rail line. Frankfurt is planning to extend a light rail line to provide service to its new housing development.

- **The creation of multi-stage resident engagement processes that enable plans to meet local expectations.** In St. Louis, community leaders and other residents have played an essential role in identifying priorities for the development project. Berlin undertook a three-stage design competition with urban designers in dialogue with a jury of experts and residents to finalize plans for its new development district.

- **Regulations that provide cities the tools to advance projects in the interest of housing development.** The German cities leveraged federally authorized policy that allowed them to freeze land prices once an area was identified for development. In Munich, the city took advantage of a policy that allowed it to cap rent increases in a target area to prevent gentrification and displacement even as it invested in neighborhood improvements.

Other cities considering how to expand housing construction through publicly led projects could consider implementing a mix of these approaches in the coming years.

● Methodological Approach

I evaluate two questions about publicly led projects. First, what are the major impediments for public entities to add housing supply, particularly units that are affordable for people with low and moderate incomes, in large new city developments? Second, what can cities learn from one another to break those barriers? To answer these questions, I compare US and German urban development policy, then leverage an analysis of case-study projects in cities in the United States and Germany. To understand these projects and the issues faced by local stakeholders, I conducted interviews, visited sites, collected project data, attended convenings, and amassed third-party documentation.

Data and evaluation

Staff at the German Marshall Fund (GMF) and its partners in Germany, including the Federal Ministry for Housing, Urban Development and Building and the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) identified the six case-study cities (Berlin, Frankfurt, and Munich in Germany, and Atlanta, St. Louis, and Seattle in the United States) and worked with those cities to select integrated development sites for evaluation (the GMF refers to those sites as “living lab” sites). These cities

are challenged to provide access to affordable housing, have a strong commitment by city leadership to address this, and have interest in participating in an international research project. Five US cities were considered, and GMF selected three after consulting with federal partners and with an eye to geographical balance around each country. GMF also assembled a team from each city to represent multiple stakeholder sectors, including the person leading affordable housing, another person working in the city government, and a cross-sector partner not working for the city government.

These cities reflect a cross-section of each country’s urban environments, and each is facing considerable housing cost and availability challenges similar to those present throughout the metropolitan areas in their respective nations. Each city has a number of development projects underway; for discussion here, I selected projects that prioritize housing investment, integrate housing development into broader community programming (such as access to transit and parks), and are being led by local governments, rather than private investors.

With the assistance of an intern at GMF, Sarah Phalen, I conducted a series of interviews with city staff members

from the team of each of the three US cities and with representatives of nonprofit organizations and the US federal government. The staff members represented mayor's offices, planning departments, housing departments, and transportation departments. I conducted interviews on several different themes, including general development goals, the relationship between federal and local governments on housing policy, and the potential for integrated housing development. These interviews were open-ended, designed to suss out the major barriers and potential opportunities for more housing development. I conducted interviews with 14 individuals, ultimately conducting a total of 23 interviews as I spoke to several people multiple times. In the findings that follow, I sometimes refer to comments made during interviews, but I keep the names of respondents anonymous to ensure the confidentiality of the points of view they expressed.

With the broader "Breaking Barriers" team (consisting of GMF staff and representatives of each of the cities), I conducted site visits of integrated development projects in Atlanta, Berlin, and Frankfurt. These visits aligned with all-day convenings in each city organized by GMF and GIZ, which provided formal and informal opportunities for me to learn about the approach that officials are taking to publicly led urban development. Again, I mention some of the comments made during these convenings in the findings below, though I keep comments anonymous.

Again with the assistance of Sarah Phalen, I reviewed scholarship and site plan information about each of the cities and sites. I also collected data from a variety of datasets, including those provided by the US Census Bureau, the real estate brokerage giant Zillow, and the National Housing Preservation Database, among others (all relevant data sources are noted below tables and figures). For the most part, I provide data at the metropolitan scale (meaning the US Census-defined "core-based statistical area" or the German federally defined metropolitan area³); at the municipal scale; and, for US cities, at the neighborhood scale (generally meaning census tracts, which are not associated with any political or elected body, but which nonetheless are often used by researchers to describe neighborhood-level demographic and economic conditions). Using these datasets, I assessed the general conditions in each of the case-study cities

and noted the special conditions of the integrated development sites.

My work was coordinated with research led by a separate but collaborative German research team led by planning consulting group TSPA and involving Stefan Heinig and Bauhaus-Universität Weimar. Throughout the project research period, this group led the development of a series of materials designed to provide insight into conditions in the German cities. They conducted interviews with German local stakeholders, collected data, and produced a series of reports reflecting their findings. I pull from those reports to describe conditions in the German cities and about the German case study projects.

I used an iterative approach to develop this report's findings. By bringing together the variety of data sources, reviewing scholarship, and coding interviews and learnings from the convenings, I was able to identify some primary barriers to successfully developing publicly led projects—while specifying potential approaches to surmount them.

Limitations

The projects and cities I profile in this report should not be construed as necessarily representative of their respective countries as a whole. First, project leadership had to be willing to engage in the transatlantic learning process; it is possible that cities facing different sorts of challenges chose not to participate (or were not selected for inclusion by German Marshall Fund staff). Second, city-level stakeholders selected the projects for consideration themselves; there may be other projects in each city that encounter different barriers to housing investment or that may provide other potentially useful approaches to break those barriers.

It is also worth emphasizing that the case-study cities vary significantly in terms of their demographics and economics (some suffer from decades of systematic disinvestment, while others are high wealth localities), and they are located in two different countries. Germany and the United States have vastly different histories and currently have different economies and politics, which inform how development projects in the two countries may be implemented. These different economic, historical, and

political contexts means that observations in one location may be only partly meaningful with respect to another, and comparing outcomes among them may be difficult.

By focusing on the approaches local governments are taking to promote new housing development, this research offers new insight into the challenges and potential of new publicly led projects. However, most new housing in the United States and Germany is developed by private developers. These private entities likely face many other difficulties, and opportunities, than the public sector does. For example, they are more likely to face challenges related to zoning regulations. Further research is necessary to explore the differences between the two countries in how private developers undertake projects.

Moreover, because of the constraints in the study timeline and the parties involved in the project group, I do not undertake much examination of the importance of state (or Länder) governments in making policy related to land use. This is a gap in the work, since the jurisdictional power of local governments in both countries is determined by states. Moreover, states can play an important role in supporting investments, such as in affordable housing.

Despite these limitations, this research offers new insight about how urban development works in the United States and Germany. Stakeholders from each of the cities—like many of their peers globally—share the goal of providing more housing and ensuring that housing is affordable. This comparison can help provide new examples for stakeholders in cities across both countries to consider as they are undertaking projects.

Comparing US and German Approaches to Urban Development Policy

In this section, I provide a broad overview of how urban development policy is conducted in the United States and Germany. The two countries have considerable differences in planning approaches that impact how they undertake publicly led projects.

● Land-Use Regulatory Policy

In the United States, local governments are “creatures” of their respective state governments; their existence is predicated on the choice of state legislatures to accord them various arrays of jurisdictional power over various aspects of urban life (Frug 2008). There is no constitutional provision for any state to guarantee independent decision-making by cities and towns—and state legislatures sometimes preempt housing-related choices made by localities, such as enabling inclusionary zoning or rent control (Fowler and Witt 2019). Nevertheless, most states (in part inspired by federal recommendations in the 1920s (Freemark et al. 2022)) have determined that most elements of land-use and housing policy—including zoning, building codes, building permitting, and affordable housing requirements—are choices to be made by local legislatures, like city councils and county boards.

Zoning is the set of rules that defines the scale of building and type of uses allowed in communities. It is typically implemented through a set of policies described in a zoning code, which describes allowed development jurisdiction-wide and by district; the code is then associated with parcels of land throughout a community on a zoning map. In some states, zoning policies must reflect comprehensive plans, which lay out more generalized principles about development goals by neighborhood, and which also must be approved by local legislatures. There are no federal requirements related to either zoning or comprehensive plans, and states vary in terms of the degree to which they enforce regularity among local jurisdictions’ land-use regulations (in many states, adjacent jurisdictions use completely different rules and standards, often even to describe the same requirements).

As in the United States, local governments in Germany make most choices related to land-use policy. They do so

through a required land-use plan (known as an FNP), similar to a comprehensive plan in the United States; the FNP establishes the zones intended for development. FNPs are designed to last between 10 and 15 years. These must follow rules established in the federal Spatial Planning Act, which is intended to coordinate planning and development policy across the country (Enssle, Martens-Neumann, and Heinig 2023). These local plans are nested within regional, state, and national plans, which set aside guiding principles (Enssle et al. 2023). Comprehensive plans are associated with more specific designations over districts (B-Plan)—similar to US form-based zoning but focusing more on urban design aspects—that must follow the rules established by the federal government in the Land Use Ordinance (BauNVO) (Hirt 2012). Local governments must also follow the national building code (BauGB) (Enssle et al. 2023).

Cities in the United States and Germany can leverage different regulatory tools to assist with the completion of publicly led development projects. Although US federal law does not articulate much in terms of specific policies local governments can use to undertake such projects (largely leaving policy development to states or home-rule localities), the German building code explicitly provides local governments a set of policies that they can use to advance projects. The BauNVO includes specific provisions for localities to designate mixed areas (MI) and urban areas (MU), for example, in local B-Plans for particular districts. The US federal government, on the other

hand, has no standard zoning principles, and the fact that Germany does may improve the ability of developers to invest in new housing projects, though that is outside the scope of this research.

Key policy areas and relevant policies include the following (this list is not meant to be comprehensive; I developed it based on discussion with policymakers as part of this project):

- **Urban development planning. Germany:** The Urban Development Measure (§ 165-171 BauGB) allows cities to define specific districts, whether currently constructed or not, for development. This measure, which German city staff describe as the “sharpest sword” in their toolkit, immediately freezes land prices at their assessed level once cities define the district, with the goal of enabling city governments to eventually purchase the land through eminent domain. This action prevents private investors from taking advantage of planned zoning changes or land purchasing plans by increasing how much they will charge to sell their land; the city can then expropriate the land at a reasonable cost and expand the footprint of publicly owned land. Cities or city-chartered agencies then generally act as master developer, with long-term ground leases. Profits can then be leveraged for infrastructure investments (which can be conducted by both public and private entities), as well as costs for social elements like daycares, schools, and green spaces. The Sectoral Development Plan (§ 9 para 2b BauGB) is a new land-use tool implemented by the federal government only in 2021 and thus not yet extensively used. This regulation is designed to speed the construction of additional housing, particularly social housing, and can be combined with rent control regulations. *United States:* Many cities have housing or urban development authorities with the power to expropriate land for public use using eminent domain, but they cannot freeze land prices in the context of zoning changes or public investment plans that may increase land value.
- **Preventing gentrification and displacement. Germany:** The Social Preservation/Milieu Protection Statute is designed to combat gentrification and displacement. The cities using this tool can specify a specific area for protection. In these communities, cities can deny the issuance of new building permits and take advantage of the right of first refusal for any building or land sales (meaning they can buy buildings or land put up for sale as long as they match the private market offer). Landlords in the area are prohibited from charging rents higher than in comparable parts of the city. **United States:** In some states, cities are authorized to leverage a right of first refusal, as well, as with Massachusetts’ allowance for cities to purchase housing to preserve affordable housing (Damrosch 2020). Moreover, some US cities are authorized by state law to implement rent control or rent stabilization policies, which limit rent increases, though those policies are relatively rare (Rajasekaran, Treskon, and Greene 2019).
- **Environmental review. Germany:** The Land Use Plan for Internal Development (§ 13a BauGB) tool allows cities to advance quick action on small-site developments. Cities can exempt environmental review assessments and public participation for infill sites less than 20,000 square meters. **United States:** In some states, environmental review policies are limited; in others, there have recently been efforts to reduce the burden of review. In California, for example, recent legislation has limited environmental review requirements for publicly subsidized housing projects.⁴
- **Protecting environmentally sensitive areas. Germany:** The 2010 Federal Nature Conservation Act (Bundesnaturschutzgesetz) requires that development projects that involve the destruction or impairment of natural areas must compensate for that destruction or restore ecosystems equivalent to the area demolished. This must be financed by the developer as a means of offsetting the negative impact (Baganz and Baganz 2023). **United States:** There is no state or federal standard for natural area compensation or restoration due to development projects, though federal and some state laws can prevent projects from being undertaken if they threaten endangered species.
- **Project-by-project contracts with private developers. Germany:** The Urban Development Contract (§ 11 BauGB) tool allows cities to enforce a binding contract

on private landowners through a site-by-site negotiation over project elements and funding. Landowners in some cases sign agreements that two-thirds of increased land values produced by changes to zoning requirements are redirected to infrastructure. **United States:** Many cities undertake planned development processes with private developers that involve negotiation over project elements, allowing cities to ask for specific public benefits to be included in projects, such as affordable housing units (Kim 2020). In some cases, these processes are negotiated through a community benefits agreement. This can also be facilitated through zoning bonuses, which enable developers to receive a boost in the allowed density of their planned

projects in exchange for providing a pre-defined public benefit (Spauster, Lo, and Freemark 2021).

- **Investing in underused land. Germany:** The Building Requirement (§ 176 BauGB) allows municipalities to define certain areas of the city for which they oblige property owners to invest in new construction if the city can demonstrate that doing so would be economically reasonable for the owner. Though this tool is rarely used, it could support housing investment on sites where landlords have been hesitant to invest because of their sense that they could make more money by waiting a longer period of time before construction. I found no similar regulation in effect in US cities.

● Integrated Development Planning

The dominant transportation mode for the past century has been the car, whose omnipresence and popular appeal has encouraged policymakers to realign transportation networks and land uses around its needs through the construction of highways and mandates or allowances for cul-de-sacs, strip malls, and office parks (Mattioli et al. 2020). In both Germany and the United States, more than 80 percent of trips are taken by passenger car, though travel varies significantly depending on the density of the local environment (Fountas et al. 2020). In line with the needs of the automobile, land uses such as residential, commercial, and industrial spaces are often separated from one another, unlike the mix of uses that characterized previous development patterns. Automobiles are associated with a wide array of harms. They perpetuate social inequality by requiring those who use them to spend more on transportation than those who do not—and they cut off access to opportunity for those who cannot afford a car’s high purchase and operations costs.⁵ Automobiles produce vastly more pollution than urban bus and rail networks, contributing to the climate crisis rather than assisting in the broad goal of abating it.⁶ And automobiles encourage urban sprawl, pulling people further from one another, reducing the economic potency of historic city centers, and requiring the massive replacement of

formerly agricultural and natural land with new development (Glaeser and Kahn 2004).

In the United States, the New Urbanism movement has since the late 1980s proposed an alternative approach generally founded on the goal of creating walkable communities with a mix of uses (Congress for the New Urbanism 2000). New Urbanist communities have popped up throughout the United States as a form of integrated development, combining investment in new homes with retail, parks, and other social amenities. New Urbanism’s frequent counterpart is transit-oriented development (TOD), which is premised on the idea that those walkable communities should be oriented around public transportation access (Dittmar and Ohland 2004). Major new public transportation projects are now almost always conducted in association with development plans around future stations, to maximize the benefit of the additional accessibility made possible by rail or bus service.

TOD has come to dominate as a mechanism to plan for future development in both German and US cities, and simultaneously, cities have expanded interest in transit investment. Atlanta and Seattle, for example, each have large transit expansion plans funded and currently under

construction, while St. Louis has preliminary plans for a new light rail corridor that would traverse the center of the city from north to south.⁷ Frankfurt has approved an expansion of its light rail network, and Berlin's government plans new subway lines in the coming decades.⁸ These investments offer an opportunity for integrated planning linking transportation access with new housing-rich neighborhoods (Pojani and Stead 2018).

TOD offers several co-benefits. In combination with new infrastructure investment, governments gain the opportunity to amass land near stations and lead projects on this land (Paulsson 2020). Publicly owned land can reduce housing construction costs and allow for integrating housing with other land uses—from retail to schools, parks, social service centers, and employment centers (Théry et al. 2016). Even so, assembling and using publicly owned land may be difficult because of limited public resources and competition with private market investors.

TOD goals are embedded in the New Leipzig Charter (Eurocities 2020), a document created by a consortium of European cities to reflect sustainable development goals. The Charter recommends that, in the pursuit of the common good, cities should lead in the creation of “compact, socially and economically mixed cities with well-developed infrastructure and a healthy environment” (2). This can be achieved by prioritizing justice, environmental protection, and productivity, with an integrated approach that combines investment in transportation with housing and other land uses, at multiple scales, meaning both at the neighborhood and city levels. The Charter's development concepts reflect a widely shared

view that cities built around these goals are more equitable and sustainable.

Integrated development concepts have been leveraged successfully to produce appealing, often mixed-income and mixed-use neighborhoods (Ibraeva et al. 2020). But there are systemic obstacles to attracting investment in lower-income areas where developers are less likely to make a profit (Hess and Lombardi 2004). Moreover, transit access—while essential for people with low incomes—increases housing costs nearby. This can result in people with low incomes either facing housing cost burdens, or such people being displaced to other parts of the metropolitan area with less accessible transportation services available (Kramer 2018; Padeiro, Louro, and Marques da Costa 2019). Either way, these outcomes are unappealing in the context of a locality searching for mechanisms to increase access to housing for all.

Cities evaluating mechanisms to expand housing construction through publicly led projects face a challenge, then, in pushing for integrated development that simultaneously improves access to public transportation services while also guaranteeing that the neighborhoods with access are affordable enough for a wide spectrum of the local population. But achieving such outcomes means that engaged localities must plan for a wide variety of potential interventions beyond just transportation projects and a land-use plan. One potential opportunity is investing in expanded affordable housing, to which we now turn.

● Public Sector Support for Housing Development is Generated at Multiple Governmental Levels

Both the United States and Germany face challenges with affordable housing, with a large share of residents facing cost burdens that make it difficult for them to pay for adequate housing. In both countries, public subsidies

help fill the gap, though approaches differ. But neither has made public subsidies a priority in the housing market. England, France, and the Netherlands, for example, each subsidize more than 15 percent of their housing stock

directly through public programs, a far higher level than either of the case-study countries (Scanlon, Whitehead, and Fernández Arrigoitia 2014).

In the United States, the federal government plays a role in subsidizing access to affordable housing for people with low incomes. Federal support is often combined with state and local housing assistance, and many housing units affordable to families with relatively low incomes are available on the private market, though the supply of such units has declined in recent years.⁹ Overall, about five percent of US households live in a unit covered by federal subsidy (Vale and Freemark 2012). The US federal government currently distributes housing assistance through two primary means. First, the US Department of Housing and Urban Development (HUD) provides funds to localities, states, and housing authorities. HUD's major programs include Section 8 housing vouchers, which support about 2.4 million households and 5.2 million individuals who receive rental assistance, mostly in private-market apartments; the public housing program, which supports about 800,000 units nationwide; and the Section 8 project-based program, which subsidizes about 1.2 million private-market units (US Department of Housing and Urban Development 2023a). Only about one in four eligible households actually receives federal public assistance for housing, suggesting persistent underfunding for HUD programs (Ellen 2020). The public housing and Section 8 project-based programs—which were key to many post-war US urban development projects—largely stopped funding new housing construction in the 1980s, so funds mostly go to maintaining units and subsidizing resident rents. Each of these programs restricts rental costs to 30 percent of household incomes, and units are typically reserved for families with low incomes (families whose incomes are at or below 30 percent of the median in their respective metropolitan areas). In addition, HUD subsidizes housing construction through the much smaller HOME and Housing Trust Fund programs (\$1.5 billion and \$382 million in 2023, respectively).

Second, the Internal Revenue Service distributes Low-Income Housing Tax Credits (LIHTC) to state housing finance authorities (as well as a few city authorities), which then allocate them to investors who can use them to limit their tax liabilities. These investors, in turn, provide

equity for apartments that generally guarantee rents affordable to households whose incomes are equivalent to 60 percent of their respective metropolitan area's median incomes. These projects include acquisitions of existing properties, renovations, and new construction; in 2021, state housing finance agencies financed about 150,000 units, of which about a third were new construction (Freemark and Scally 2023). LIHTC has supported the construction or renovation of about three million units since the program was introduced in 1986. Many LIHTC projects incorporate additional subsidies, such as HOME funding, to make projects more affordable to households with lower incomes (Kneebone and Reid 2021).

Much of the recent housing policy debate in the United States has revolved around whether subsidized housing funds should be leveraged to support giving households with low and moderate incomes “access to opportunity”—meaning the ability to live in neighborhoods with well-funded public services and employment options. Public housing and other sorts of publicly supported investments have been located in neighborhoods with limited amenities and poor access to transportation (Talen and Koschinsky 2014). The Section 8 voucher program has enabled many people to move from high-poverty neighborhoods to other locales (Ellen 2020). But those moves have sometimes been associated with higher transportation spending for households, which adds a cost burden for many (Hamidi, Ewing, and Renne 2016).

Others have emphasized bringing opportunity to subsidized housing neighborhoods. Beginning in the 1990s, HUD began investing in mixed-income, mixed-use renovations or replacements of public housing neighborhoods under the HOPE VI program (Goetz 2012). Public housing projects have suffered from underinvestment, high rates of crime, and concentrations of poverty that made them challenging communities in which to live (Vale and Freemark 2012). These HOPE VI projects—which may be seen in some ways as the conceptual predecessors of the publicly led investments on which I focus this paper—often integrated multiple subsidy streams and sometimes private investments. HOPE VI projects emphasized New Urbanist designs, meaning moderate-scale buildings, walkable streets, and, where possible, access to community needs like businesses and schools (Hanlon 2010). In

this fashion, these redevelopments departed significantly from the large towers that were characteristic of many postwar public housing projects. HUD's more recent Choice Neighborhoods program, which replaced HOPE VI, has continued in this approach (US Department of Housing and Urban Development 2023b).

Local and state governments play a supporting role in affordable housing investments in the United States. A large share of cities and states operate housing trust funds, which they can use to supplement federal sources or simply fund new projects directly (Spauster, Lo, and Freemark 2021). Others use inclusionary zoning—requirements that new market-rate projects integrate affordable units—to expand access to affordable housing. Nonetheless, these approaches have been limited in terms of their ability to address the housing need (Freeman and Schuetz 2017).

The German government currently subsidizes about five percent of its housing units through project-based social housing; about three-fifths of that is publicly owned (McCarthy 2019). In the postwar period, both the East and West German governments built millions of social housing units, but many have either been demolished in the years since or lost their social housing status, entering the private market. In recent decades, an average of 100,000 units were lost each year, with only about 25,000 units added (Scanlon, Whitehead, and Fernández Arrigoitia 2014). The federal government's recent support for the housing has been limited, with funding declining by a third to €1 billion annually between 2020 and 2024 for social housing construction (Schmidt 2021).

In most cases, social housing construction is financed through contracts with private, public, or non-profit housing cooperative developers, which received subsidies in exchange for maximum rent levels and maximum income levels, generally over 30 years (Scanlon, Whitehead, and Fernández Arrigoitia 2014). These contracts shifted from grants to loans over time. The social housing program has developed housing for different income bands, ranging from affordable to families with low to middle incomes, over the years. But on average, social housing rents are somewhat lower than those offered in the private market (Schmidt 2021).

Despite the overall decline in federal support for social housing, there has been a recent effort by local public housing developers to build new social housing projects or maintain affordability in older ones. One estimate suggests that about a million units originally built under federal contract are now owned by public or non-profit landlords that maintain low rents (Scanlon, Whitehead, and Fernández Arrigoitia 2014).

Germany also has a system for ensuring affordable housing for tenants. The federal government's housing benefits—Wohngeld—are guaranteed subsidies for households with low incomes, assuming they meet residence requirements (Enssle, Martens-Neumann, and Heinig 2023). These benefits support about 550,000 households across Germany, which is similar in scale to the US Section 8 housing voucher program; that said, many more households receive housing assistance as an unemployment benefit—this totaled €15 billion in 2009 alone (Schmidt 2021). Unlike in the United States, landlords are generally unaware that families are using housing benefit, but some households do not apply for them because of the bureaucratic difficulty doing so entails (Scanlon, Whitehead, and Fernández Arrigoitia 2014).

In addition to support for affordable housing, both the United States and German federal governments provide localities subsidies for urban projects. HUD's Community Development Block Grant program, or CDBG, funded about \$3.3 billion in allocations in 2023.¹⁰ These dollars can be used for a variety of local infrastructure improvements, though they cannot be used for housing construction. The German federal government supports city projects through Urban Development Support grants via the states; its funding (€790 million annually) is almost identical on a per-capita basis to CDBG funding in the United States.¹¹ Cities can receive funding by specifying specific redevelopment or preservation areas in which they plan to invest (Enssle et al. 2023).

● The Role of Community Engagement

The postwar period of urban development in the United States and Germany emphasized the use of large-scale renewal projects that leveraged public powers to lead major modernist developments (Klemek 2011). In Germany, these projects were often built where buildings had been demolished by bombing and fires during World War II. In the United States, urban renewal required localities to use eminent domain to take over and tear down large sections of existing neighborhoods. This approach to redevelopment was enabled by the 1949 US Housing Act, which funded localities and states to declare certain communities “blighted” (whether or not that was actually the case), demolish the old structures, and then reconstruct new buildings on the emptied sites (Zipp and Carriere 2012). Many of the new buildings were publicly subsidized public housing, but others were private investments; the differentiation between which investment occurred where was typically a reflection of the local real-estate market (Pritchett 2003). The passage of the 1956 US Federal Highway Act, which provided enormous funding for the completion of the Interstate highway system, reinforced this approach through the federally sanctioned erasure of city blocks, replaced by rights-of-way for fast automobile traffic (Rose and Mohl 1979). The result was massive destruction of urban quality of life meted out disproportionately on communities where people of color and families with low incomes predominated (Brinkman and Lin 2022; Karas 2015).

German cities demolished far fewer pre-existing neighborhoods for urban renewal or highway projects. But in both countries, this postwar approach to redevelopment was largely conducted with limited public engagement. In the United States, local bureaucrats and elected officials, in concert with state and federal officials, announced plans for neighborhood demolition without much opportunity for people in impacted areas to object. Residents nevertheless began to protest—and they did so in cities throughout the United States and much of western Europe (Klemek 2011). Much of the dissent revolved around the harms done by freeways specifically (Mohl 2004; Mohl 2008). This resistance to “top-down”

planning encouraged advocates to promote resident engagement—efforts to involve those directly affected by potential changes in the process of making decisions (Arnstein 1969).

In the decades since, urban planning professionals have adopted participation as a key element of almost every decisionmaking process related to the built environment, and engagement is mandated as part of many environmental reviews in the United States (Slotterback and Lauria 2019). In Germany, the B-Plans developed by local governments must incorporate public participation, with the processes determined by federal law. In some cases, development proposals incite significant resident protest, occasionally resulting in project cancellation (Enssle et al. 2023). In recent years, projects in German cities have begun to engage residents more concretely through co-creation of development plans, as I describe in the case study section that follows.

The use of public engagement has, in some cases, been formalized through semi-official bodies of neighborhood residents and community boards that often review proposed development projects before being considered by elected councils. And, in general, the prioritization of public engagement has meant that it has become increasingly difficult to build major projects without “discretionary review” by officials, often leaving housing investments open to political pressure to delay timelines, reduce the scale of new construction, and sometimes kill projects entirely (Manville et al. 2022).

Case-Study Cities and Their Publicly Led Developments

Each of the case-study cities included in this project is the core jurisdiction of a large metropolitan area, with a long history of urban development. Nevertheless, these cities diverge dramatically in terms of their economic and demographic conditions. St. Louis, for example, has struggled due to the pressures of deindustrialization and racial segregation; Munich, on the other hand, has flourished due to its centrality to the luxury automobile market and high-tech industry. Moreover, each city has a very different plan for its integrated development site. But they share enough characteristics to allow me to compare their varying approaches to urban development planning.

In this section, I first review major similarities and differences between these cities that inform the real-estate market and access to affordable housing, and then describe the publicly led development plans each municipality has put forward. In table 1, I summarize key characteristics of each of the case-study cities and their development sites. I detail both elements in the sections that follow.

TABLE 1
Overview of City and Publicly Led Development Sites for Each Case Study

	City Conditions	“Living Lab” Publicly Led Development Site
Atlanta	Growing city in a rapidly growing metropolitan area with a diverse population. Faces gentrification in the context of low housing affordability and high municipal income inequality.	Thomasville Heights neighborhood, including former public housing site (which has become reforested) and former site of subsidized Forest Cove apartments. At city edge and adjacent to federal penitentiary. Surrounded by neighborhoods of predominately single-family homes, near gentrifying areas. Transit options currently limited to an infrequent bus line, though city is considering implementing improved service.
St. Louis	City has been losing population for decades. Population is about 55 percent of color, compared to the rest of the metropolitan area, which is 74 percent non-Hispanic white. High poverty rates, about twice as high as metropolitan area. Limited market demand for new construction.	Near North neighborhood, encompassing Carr Square and Old North St. Louis, includes previous site of closed Pruitt-Igoe public housing complex (which has been reforested) and will host future National Geospatial-Intelligence Agency complex. Large HUD Choice Neighborhoods grant assisting funding for 695 units of new housing, public services, and corridor placemaking in community with high vacancy rates. The project may be connected with the urban core with a future, but currently unfunded, north-south light rail line.
Seattle	Rapidly growing, relatively high-density city with high housing costs fed by expanding tech sector. Currently constructing large regional transit expansion project.	Areas surrounding two light rail stations—International District-Chinatown and Delridge—along future West Seattle and Ballard Link extensions, with initial phase planned for opening in 2032 and project expected to be completed by 2040. Area around both is partly industrial, but near districts with significant development demand.

City Conditions	“Living Lab” Publicly Led Development Site
<p>Berlin Growing city with high rates of poverty and relatively high housing costs. History of underinvestment in some neighborhoods.</p>	<p>Buch am Sandhaus is the former site of a secret service hospital and the surrounding area; it is located at the northern edge of the city, in the Pankow district. Site is now mostly forested. Plan for up to 3,000 apartments, some on previously unbuilt land, linked to city with regional rail line.</p>
<p>Frankfurt Diverse city with low-for-Germany population densities and an active economy dominated by financial services.</p>	<p>Frankfurt Nordwest is a development scheme for a 550-hectare tract of land that is currently largely agricultural or unused by human residence northwest of the city. Plan for 6,800 housing units (30 percent subsidized) and 7,000 jobs connected to city via regional rail and extension of city’s light rail network.</p>
<p>Munich Rapidly growing, high-density city with some of Germany’s highest incomes and lowest poverty levels.</p>	<p>Werksviertel-Mitte is a 39-hectare district in central Munich that was previously industrial and which is to be transformed with 1,150 housing units, about 28 percent of which are to be social. Adjacent to major regional rail station. Part of citywide redevelopment plan to add housing.</p>

Source: The author, based on a review of research material and interviews.

● Demographic and Economic Context

In table 2, I compare demographic and economic characteristics in each of the case-study cities. Berlin is largest of the cities by surface area and by population (Berlin, in addition to being a city, is officially a German state). Munich has the highest population density, more than three times as high overall as Atlanta. Atlanta and Berlin have almost identical metropolitan populations of more than 6 million, with Munich, Frankfurt, Seattle, and St. Louis following, in that order.

Compared to the other cities, Berlin and St. Louis are the least well off, with the lowest incomes and highest share of people living below poverty (in the United States) or on

welfare rolls (in Germany). St. Louis’s adult residents are also far less likely to hold bachelor’s degrees than those living in the other US cities; Munich’s residents have higher college education rates than those of the other German cities. Comparing quality of life indicators through the human development index, the German regions score slightly higher than Seattle, and significantly more than Atlanta or St. Louis. Residents of the German cities are far less likely to travel to work by car (less than 40 percent of commutes by car in all three cities) than in Atlanta and St. Louis, and somewhat less likely than Seattle, which has a low rate of car commuting for a US city.

TABLE 2**Demographic Characteristics of the Case–Study Cities***Seattle is the most densely populated of the three US cities*

	Atlanta	St. Louis	Seattle	Berlin	Frankfurt	Munich
Land area (square miles)	135.3	61.7	84.0	344.1	95.9	120.0
Municipal population (2021)	496,480	293,310	733,904	3,677,472	759,224	1,487,708
Population density per square mile (2021)	3,669	4,754	8,737	10,690	7,920	12,400
Population change from 2000	+19.2% **	–15.8%	+30.3%	+8.7%	+18.2%	+22.9%
Population change from 1950	+49.9% **	–65.8%	+57.0%	+10.2%	+43.6%	+80.6%
Metropolitan population (2021)	6,144,970	2,806,615	4,011,553	6,144,600	5,604,523	5,991,144
Municipal population share of metropolitan area (2021)	8.1%	10.5%	18.3%	59.8%	13.5%	24.8%
Share of journeys to work by car (2016 for Germany; 2022 for United States) ***	58.7%	70.2%	41.8%	37.7%	39.3%	35.4%
Share population non-Hispanic white (2021)	39.2%	44.7%	60.1%	NA	NA	NA
Share population non-German (2011)	NA	NA	NA	14.1%	25.1%	22.9%
Per-capita income (US, 2021) or average gross salary (Germany, 2022)	\$55,051	\$33,810	\$74,733	€38,016	€45,276	€45,360
Persons below poverty line (2021)	18.0%	20.4%	11.0%	NA	NA	NA
Persons on welfare rolls, by state (2015)	NA	NA	NA	15.2%	6.5%	3.9%
Gini index of income inequality (city, 2021)	0.55	0.50	0.50	NA	NA	NA

	Atlanta	St. Louis	Seattle	Berlin	Frankfurt	Munich
Gini index of income inequality (metropolitan area, 2021)	0.47	0.47	0.47	NA	NA	NA
Subnational HDI* (2021)	0.90	0.91	0.94	0.96	0.97	0.95
Share adults with BA or more (US, 2021), or share of population 25–64 qualified at levels 5–8 ISCED (Germany, 2020)	59.8%	38.9%	68.3%	43%	42%	54%

Source: US Census 2021 1-year American Community Survey; HUD Building Permits Survey; Federal Statistical Office of Germany; German Central Registry of Foreigners; Global Data Lab; gehaltsvergleich.com; World Inequality Database; Eurostat.

Notes: * Human development index for state where city is located. ** The city of Atlanta has expanded by 99.5 square miles since 1950 and 3.7 square miles since 2000 through annexation. *** US figures are post-pandemic, which encouraged many people to work from home. NA = not applicable.

For the US cities, I conducted a series of mapping exercises to evaluate how the publicly led development sites selected by the cities fit within the overall demographic contexts of their respective cities. These maps, which note the location of the living lab sites, plus existing and planned public transit corridors, are presented in the appendix. None of the US cities follows a uniform distribution in terms of any of the demographic characteristics that I identified in table 2. In figure A.1, I illustrate the share of residents living under the federal poverty line, by neighborhood, which shows that both the Atlanta and St. Louis living lab sites are located in neighborhoods with higher levels of poverty. These are south and north of the downtowns of each city, respectively. These areas are also disproportionately populated by people who are non-Hispanic white (figure A.2). Seattle’s Chinatown International District—one of the living lab sites—has historically been one of the neighborhoods with the lowest-income

residents in the city; it has also attracted a diversity of residents representing many ethnicities.

The greater incomes of Seattle’s residents reflected in table 2 translate into higher local revenues and expenditures than the two other US cities, and likely more than the German cities, though incomplete information is available for those municipalities (table 3). Seattle local governments (including the city, county, and independent public agencies) expended a total of 12.5 percent more than those in Atlanta per capita in 2017, and 52 percent more than those in St. Louis. Though the cities received similar amounts of assistance from the federal government per capita, Seattle received considerably more assistance from its state government and was able to raise more funds locally. That said, Atlanta spent the most of the three US cities on housing and community development expenses.

TABLE 3**Fiscal Characteristics of the Case–Study Cities***Per–capita revenues and expenditures, 2017 (US cities), 2014 (German cities)*

	Atlanta	St. Louis	Seattle	Berlin	Frankfurt	Munich
Own source revenue	\$5,535	\$3,926	\$6,302	NA	NA	NA
Intergovernmental aid from federal government	\$590	\$417	\$483	NA	NA	NA
Intergovernmental aid from state government	\$656	\$782	\$1,184	NA	NA	NA
Total expenditures	\$8,471	\$6,281	\$9,533	NA	€4,243	€3,943
Housing and community development expenditure	\$483	\$317	\$422	NA	NA	NA

Source: Lincoln Institute of Land Policy, Fiscally Standardized Cities Database; Federal and State Statistical Offices, Germany, 2023.

Notes: Uses fiscally standardized city data, not municipal data.

The varying demographic and fiscal characteristics of the case-study cities intersect with those cities’ housing markets to influence housing availability and affordability (table 4). In some ways, the three US cities share conditions: They have a similar share of housing units owned by their residents (45–49 percent) and share of their units that are single-family homes (44–47 percent). These conditions are quite different from those in the German cities, where three-quarters or more of homes are rented by their residents, and less than 10 percent of homes are single-family.

In other ways, the US cities diverge dramatically: Seattle’s median home values are almost five times as high as those in St. Louis, and both Atlanta and Seattle have higher rent levels than St. Louis. St. Louis also has more housing availability, with more units per capita than its

peers—though a large share of those units is vacant. The German cities have more housing availability than Atlanta or Seattle, but very low vacancy rates.

St. Louis also has a larger share of housing units than Seattle subsidized with federal support for affordable housing, such as through the public housing program and LIHTC credits. That said, Atlanta has the largest share of its units with a federal affordable housing subsidy and the largest share of residents living in units subsidized through federal tenant-based housing choice vouchers. Though more limited data are available on housing costs in the three German cities, sale and rental prices per square meter for apartments in the three cities diverge dramatically; costs in Munich, for example, are almost twice as high as they are in Berlin and Frankfurt.

TABLE 4**Key Housing Characteristics of the Case-Study Cities***The six cities have contrasting housing markets*

	Atlanta	St. Louis	Seattle	Berlin	Frankfurt	Munich
Housing units*	253,355	173,493	384,799	1,869,436	365,437	753,150
Housing units per capita*	0.51	0.59	0.52	0.54	0.54	0.55
Share of metropolitan area's housing units*	10.3%	13.7%	22.9%	NA	NA	NA
Share units vacant*	8.1%	19.5%	8.6%	3.5%	2.7%	2.3%
Share units owned*	48.6%	45.6%	46.0%	14.8%	19.2%	23.8%
Share units single-family*	44.1%	47.3%	45.6%	8.4%	8.0%	8.8%
Median housing value*	\$375,500	\$170,800	\$848,100	NA	NA	NA
Price per square meter**	NA	NA	NA	€5,615	€4,375	€8,333
Median gross rent*	\$1,446	\$843	\$1,787	NA	NA	NA
Average net rent per square meter ***	\$15.3	\$11.2	\$19.2	€11.4	€13.1	€17.9
Share of renters paying >30% of income*	50.9%	45.5%	46.6%	NA	NA	NA
Share of renters paying >50% of income*	28.2%	25.1%	24.7%	NA	NA	NA
Share of housing units with federal affordable subsidies	13.2%	11.0%	7.5%	NA	NA	NA
Share of metropolitan area's affordable units	36.5%	40.3%	37.6%	NA	NA	NA
Share of residents in families using Housing Choice Vouchers	6.9%	3.4%	2.6%	NA	NA	NA

Housing permits 2012–21	45,866	6,425	89,624	168,804	41,219	87,237
Permits per 1,000 residents in 2010	109.2	20.1	146.3	48.8	60.6	64.5
Share housing permits single-family	15.4%	16.0%	6.7%	9.0%	4.8%	8.2%
Share of metropolitan area’s permits	14.8%	9.0%	36.3%	NA	NA	NA

Source: US Census 2021 1-year American Community Survey; HUD Building Permits Survey; National Housing Preservation Database; Federal and State Statistical Offices, Germany, 2023; Global Property Guide, May 16, 2023, <https://www.globalpropertyguide.com/Europe/germany/Price-History>; ImmoScout, accessed June 20, 2023, https://www.immobilienscout24.de/Suche/de/berlin/berlin/wohnung-mieten?enteredFrom=result_list&viewMode=PRICE_INSIGHTS; Apartment List, accessed June 20, 2023, <https://www.apartmentlist.com/rent-report/wa/seattle>

Notes: * in 2021 for US cities; 2011 for German cities. ** 2022. *** 2023. Assumes 100 square meter, 2-bedroom apartments for US cities.

These characteristics might imply that housing is more affordable in St. Louis than the other cities. But a similar share of renters in the Missouri city pay at least 30 percent of their incomes in rent (meaning they are cost burdened) as in the Washington State city, due to lower incomes and higher poverty rates. That said, residents of Atlanta are the most cost burdened, with a majority of its renters spending more than 30 percent of incomes on rent. More than 28 percent of Atlanta residents also spend more than 50 percent of incomes on rent, more than in St. Louis or Seattle (about 25 percent).

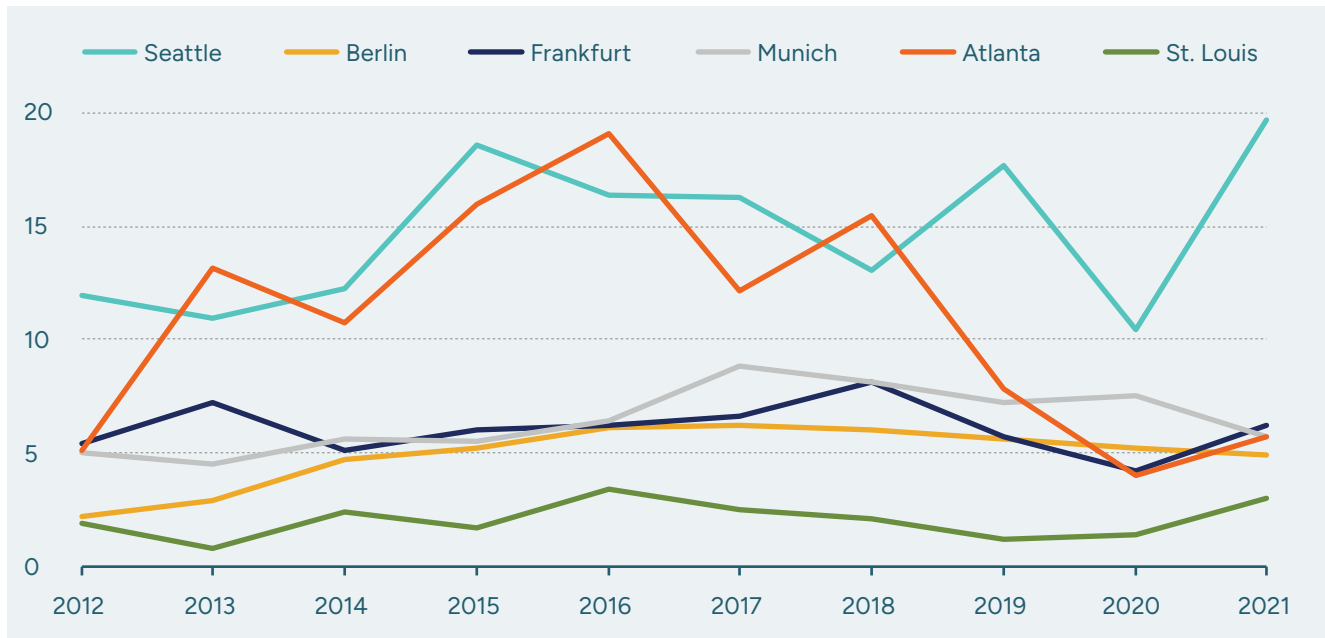
Trends in recent housing construction paint a nuanced picture about the future of each of the case-study cities’

housing stock. Seattle has permitted considerably more housing in recent years than its US peers, adding 89,624 units over the past decade, compared to 45,866 in Atlanta and 6,425 in St. Louis. Berlin permitted more units—but its population is much larger. When adjusted for population, Seattle’s performance over the past decade has been quite strong, with Atlanta only failing to keep up in the years since 2018 (figure 1). The three German cities have maintained relatively stable permitting rates over the study period, though Munich permitted more than the other two cities in the later portion of the decade and Berlin’s permitting rate was as low as St. Louis’s at the beginning of the decade.

FIGURE 1

Seattle Leads the Pack in Terms of Housing Permitting

Housing units permitted, 2012–21, per 1,000 residents in 2010



Source: HUD Building Permits Survey; National Housing Preservation Database; Federal and State Statistical Offices, Germany, 2023.

Seattle is also adding units at a faster rate than the metropolitan area overall; this is also true of Atlanta, though to a lesser degree. These differences in pace indicate that the housing stock in those two regions is, to some degree, centralizing through infill development. In St. Louis, on the other hand, only 9 percent of the metropolitan area’s housing permits in recent years were in the city, compared to 13.7 percent of existing units, meaning the region’s growth is sprawling out. That said, in none of the cities do single-family homes account for more than 16 percent of permitted new units, meaning that recent development has concentrated on multi-family apartment construction, particularly in Seattle and the German cities in general.

As with the distribution of population by demographics, housing conditions vary dramatically within each of the US case-study cities, for which I mapped outcomes in the appendix. In each municipality, housing densities are highest downtown and fall in outer neighborhoods, including in each of the living lab development areas (figure A.3). Densities in the publicly led development sites in Berlin and Frankfurt are also quite low, as much of each

site is forested; this is not the case in Munich, where the project is in the city center. The distribution of population densities closely matches the distribution of housing units that are single-family homes, which predominate at the city edges, including portions of Atlanta’s living lab site (figure A.4).

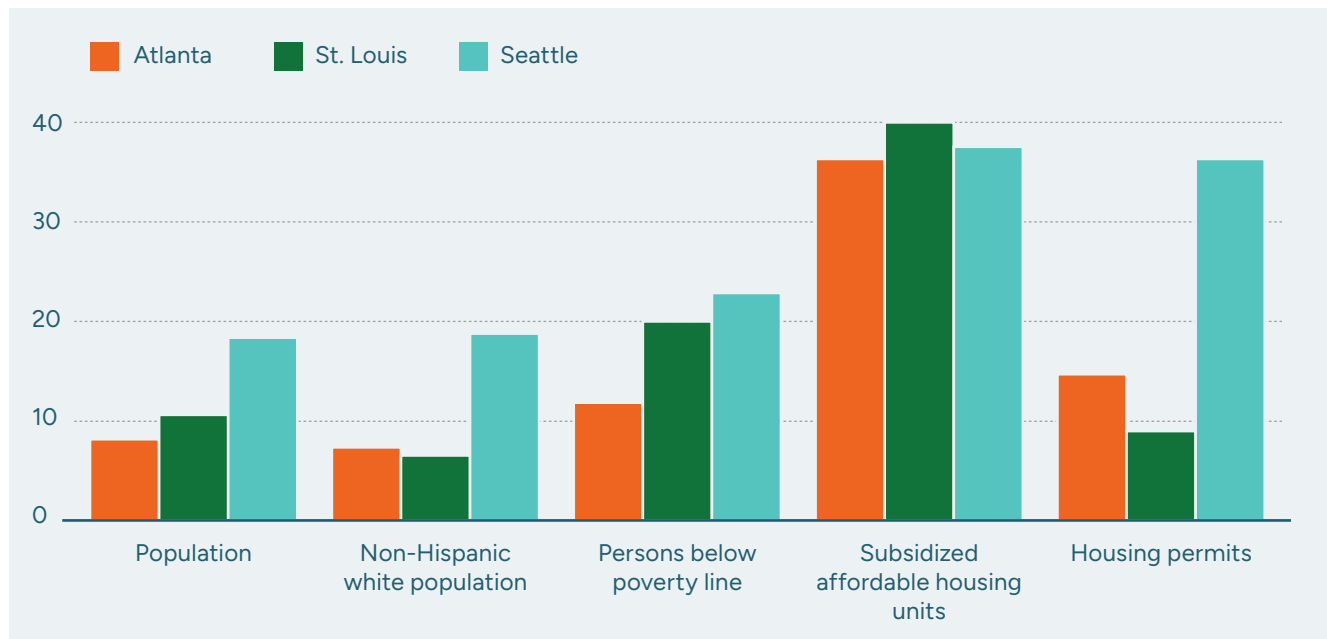
The distribution of federally subsidized affordable housing units follows similar but not identical trends in the US cities (figure A.5). In all three US cities, such units are most likely to be located in the downtown or near-downtown zones, with a concentration in the living lab development areas in both Atlanta and St. Louis. These areas—as well as those in Seattle—also have lower housing values compared to the rest of their respective cities (figure A.6). The areas with the lowest housing values generally have the highest share of residents who are severely cost burdened—spending more than 50 percent of incomes on rent (figure A.7). This map illustrates trends similar to those of the location of residents in poverty (figure A.1).

These trends collectively paint a picture of the differences between each of the US case-study cities and their

respective metropolitan areas (figure 2). Each of these cities stands out from their surrounding regions because they have a higher-than-region share of persons below the poverty line and a much higher-than-region share of subsidized affordable housing units, when compared to their respective populations. But in terms of growth through

new construction, Atlanta and Seattle stand out compared to St. Louis, which is not absorbing a proportionate share of the housing permitting of its region.

FIGURE 2
Atlanta, St. Louis, and Seattle Diverge from Their Respective Regions in Varying Ways
Share of metropolitan area totals



Source: US Census 2021 1-year American Community Survey; HUD Building Permits Survey; National Housing Preservation Database.

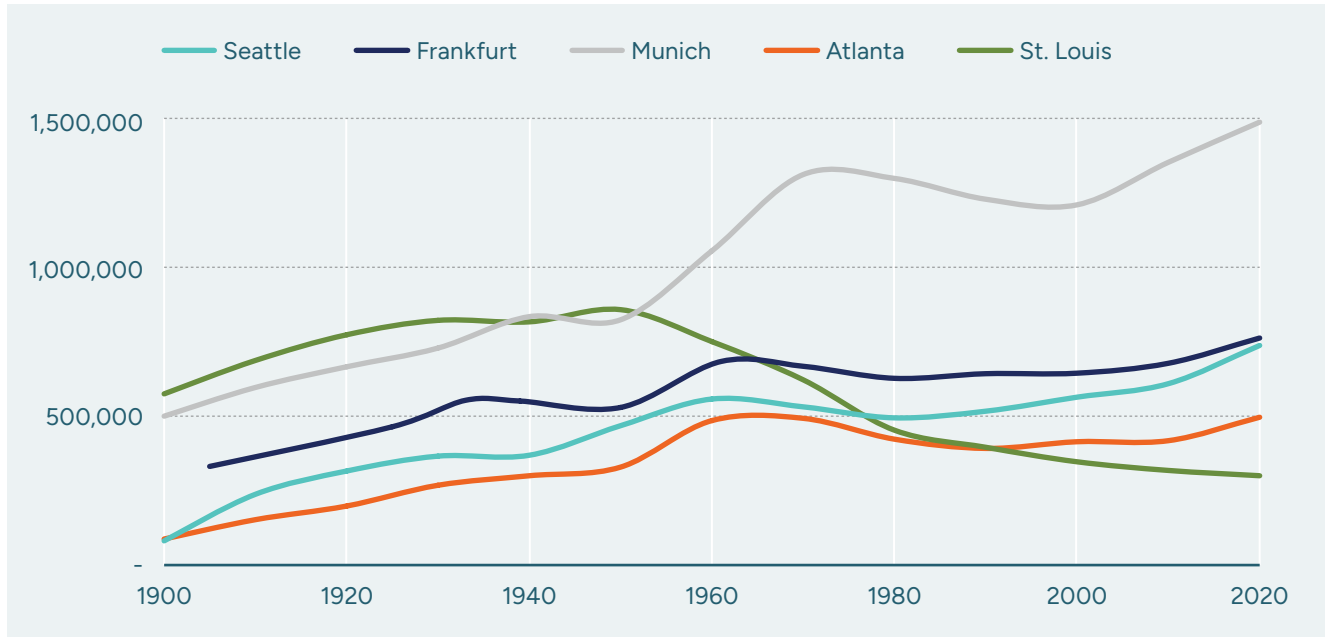
Notes: Data for population and resident demographics from 2021. Data for subsidized affordable housing units from 2022. Data for housing permits from 2012–21.

Changes Over Time

We can place these trends into historical perspective. Cities throughout the United States and Germany experienced tremendous growth in the first half of the 20th century; each of the case-study cities gained hundreds of thousands of residents between 1900 and the century's

midpoint, with St. Louis peaking at more than 800,000 inhabitants that year (figure 3; Berlin is not shown because it is an outlier). These cities grew as both countries' economies expanded and as they became centers of economic production. All of the case-study cities became manufacturing or industrial centers during World War II.

FIGURE 3
Population Change Over Time for the Case-Study Cities
Population in incorporated municipality, 1900–2020



Source: US Census, 1900–2020; German Statistics.

Notes: Note that incorporated municipalities changed in size over time due to annexation. The city of Atlanta, for example, has expanded by 99.5 square miles since 1950 and 3.7 square miles since 2000 through annexation. Berlin not shown because it is significantly larger in population than the other cities. Its population increased from about 1.9 million in 1900 to 4.3 million in 1939; 3 million in 1980; and 3.8 million in 2022.

But in the second half of the 20th century, trends diverged. Germany’s defeat in World War II and the country’s separation into East and West Germany was associated with population declines in each of the three case-study cities, with Berlin being particularly hard-hit. In the 1950s, Frankfurt and Munich grew quickly, with each then slowing down between 1970s and 2000, before returning to significant growth. Berlin struggled to regain population until the 1990s; its current population remains significantly below the city’s peak in the years running up to World War II.

As the American economy entered a post-industrial phase, manufacturing plants closed or relocated to suburban locales, often in the southeast and western regions of the country. White flight into suburban areas of each metropolitan region, combined with movement of businesses away from center-city cores, resulted in each of the US

case-study cities losing economic dynamism. Indeed, between 1950 and 1980, all three cities lost population, with St. Louis in particular losing 47 percent of its residents. In the years since, St. Louis has continued that trend (albeit at a less extreme pace), though Seattle and Atlanta have turned around. Seattle’s population has grown by 49 percent since 1980; Atlanta’s has grown by 17 percent.

One key explanation for the diverging trends experienced by the US three cities is the difference in economic activity over time, which is the product of both public and private sector interventions in the economy. These differences are particularly notable over the past two decades when comparing local economic output in each region (figure 4). Per-capita economic output barely budged in the Atlanta and St. Louis regions between 2001 and 2017, while it increased by 25 percent in the Seattle region over the same period (among metropolitan areas

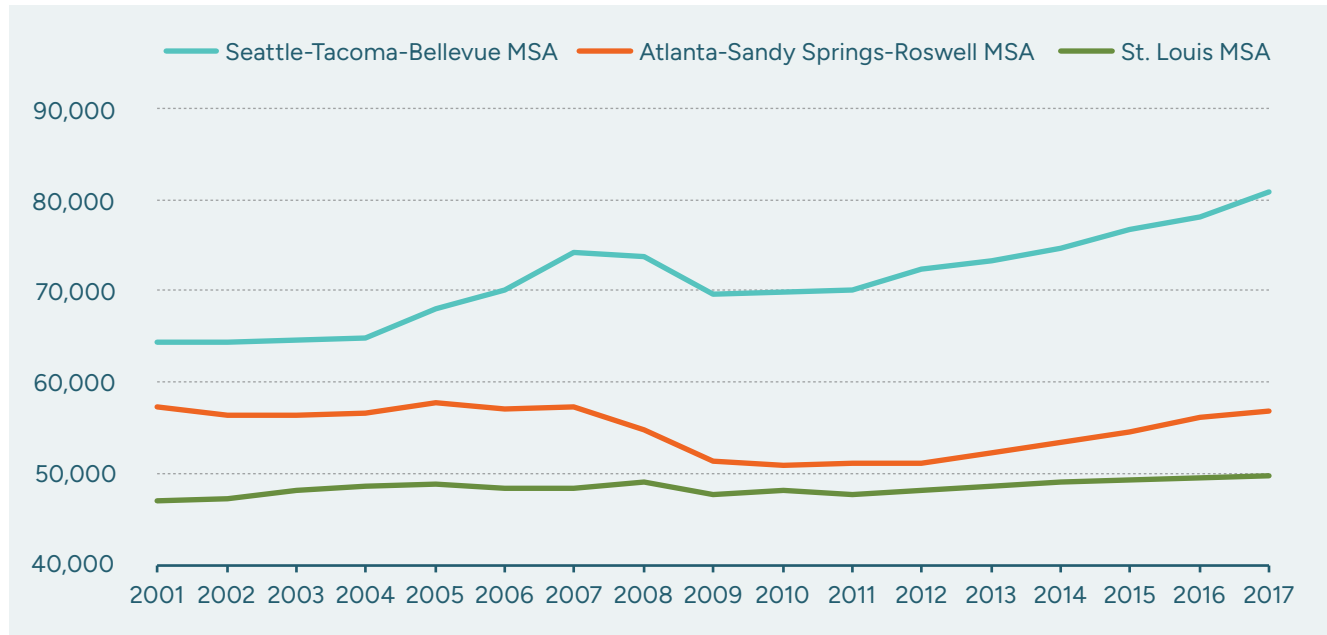
in the US, per-capita economic output increased by about 17 percent over this time). This reflects the comparative

strength of Seattle’s economy over the last few decades, built on the tech and aviation sectors.

FIGURE 4

Economic Activity in the US Case–Study Regions

Total Per Capita Real Gross Domestic Product, Chained 2009 US dollars, 2001–2017



Source: US Bureau of Economic Analysis, via St. Louis Fed, 2017.

These demographic and economic trends had differentiated impacts on the housing markets in each of the US case-study cities and their respective regions. Even as St. Louis lost about 65 percent of its population between 1950 and 2020, the counties now encompassing the St. Louis region more than tripled in population. While Atlanta’s population increased by about 50 percent over that period, its metropolitan area multiplied in population by more than five times. Seattle and its metropolitan area, on the other hand, grew at similar rates over the period.

Finally, again in the appendix, I map how housing values have changed over time in each of the US case-study cities (figure A.8). Seattle saw large increases in housing costs, adjusted for inflation, between 2001 and 2022, virtually everywhere in the city. Atlanta experienced increases in most of the city, though it had some declines in the center. And in St. Louis, much of the city experienced declining housing values. Figure A.9 maps the change in the

number of housing units by neighborhood in each of the US cities between 1950 and 1990, a period during which each of the cities experienced economic challenges. The trends in each are similar: A decline in housing stock available near the center of each city and an increase at the city edge. That said, both St. Louis and Seattle experienced an increase in housing availability in their respective downtowns during this period. And between 1990 and 2019, these trends evolved substantially (figure A.10). In St. Louis, almost all neighborhoods except downtown lost housing units, due in part to increasing levels of land and housing vacancy and a lack of new construction. In Atlanta, neighborhoods in various parts of the city had fewer housing units, though some areas, including much of the city core, had an increase. And Seattle experienced high levels of increased housing throughout most of the city.

● The “Living Lab” Publicly Led Development Sites

Each of the case-study cities identified a key area for evaluation and co-learning as part of the Breaking Barriers project. Certain of these projects involve redevelopment of disused, forested sites at the urban periphery (Atlanta and Berlin), others involve redevelopment of previously industrial sites in the urban core (Munich and Seattle), one involves development on agricultural land (Frankfurt), and the last involves redevelopment of a largely residential neighborhood into a mixed-use community (St. Louis). Again, any comparison between these cities must acknowledge the fundamental economic, policy, and governmental differences between the United States and Germany.

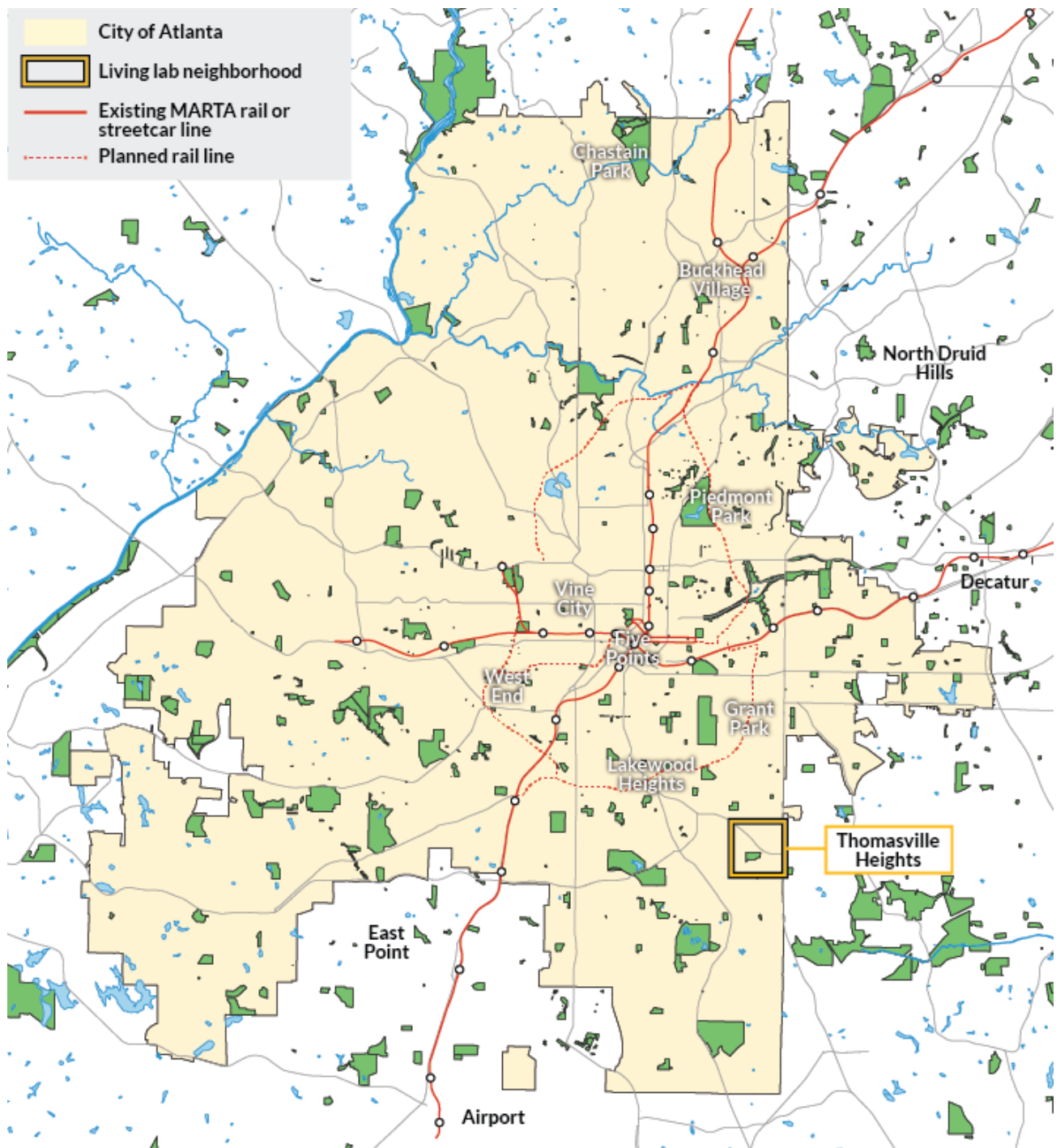
Despite these differences, all of the projects share some key characteristics: They prioritize housing development, particularly of affordable housing, as a key goal; their development is being led by city agencies and involves a considerable share of publicly owned land; and they are attempting to integrate the new housing into broader urban development plans. In this section, I review the major characteristics of each project.

Atlanta’s Thomasville Heights

The Thomasville Heights neighborhood is located southeast of the city center and is adjacent to the city limits (figure 5). The community has suffered from decades of disinvestment; its population is currently majority Black, with a large share of residents living in poverty. A large US penitentiary completed in 1902 is just northwest of the heart of the neighborhood. The “central park” of the neighborhood is a forest, known as Thomasville Park, attached to a recreation center. Southeast of that is a largely single-family neighborhood built in the 1950s. The neighborhood extends primarily along McDonough Boulevard Southeast, which is served by the MARTA 49 bus; this route runs downtown and takes approximately 30 minutes to get there from Thomasville. Buses run every 15 to 30 minutes during the day.¹² The development is close to the Beltline, a major circumferential park that is currently about half completed, and there has been significant private investment in housing redevelopment on properties between Thomasville Heights and downtown.

FIGURE 5

Thomasville Heights in the Atlanta Context



Source: The author, based on public data sourced from the city of Atlanta.

The neighborhood was the site of a 350-unit, 36-acre public housing development, called Thomasville Heights, that was completed in 1967 and demolished in 2010. The neighborhood was also home to the 404-unit Forest Cove Apartments, subsidized by federal project-based Section 8 support for low-income residents, which was completed in 1971. These apartments are in two groupings, separated by a currently forested area scheduled for redevelopment. Forest Cove faced years of poor maintenance, had high vacancy rates, and was condemned in December 2021 after several fires.

The poor state of Forest Cove encouraged Atlanta Mayor Andre Dickens to commit to rehousing the development's more than 200 households in other parts of the metropolitan area. This relocation was completed in late 2022.¹³ The city school system recently decided to close the school in the community due to falling enrollment. Though the owner of Forest Cove, Millennia Housing Management, has contested the property's demolition, HUD has revoked its housing assistance payments for the property, and the city has plans to demolish it.

Local officials are aware of the problems faced by previous developments on the site—but also see it as an opportunity to help provide additional housing for city residents into the future. One city staff member told me, “The housing we that we have currently does not reflect the current residents that we have. . . . We don't have enough housing to meet the needs of the people who live here.” The Atlanta Housing Authority spent years blocking the reconstruction of many of its older public housing

complexes in part because it was committed to a private sector-led, mixed-income redevelopment model that did not quickly replace demolished units (Vale 2013), leaving the Thomasville Heights site to reforest in the years since it was demolished. The Authority has since turned around, hoping to invest in 10,000 new homes over the next few years through a combination of public and private resources in connection with the city's broader housing strategic plan (Atlanta Housing 2023).

These conditions have encouraged interest in redevelopment in Thomasville Heights (figure 6). Mayor Dickens identified the community as a priority action area and has instructed staff to plan for up to 2,800 housing units in the neighborhood, including on both public and privately owned land, with a combination of multi-family buildings, small apartments, and single-family units, to be completed over the next few decades. The city's hope is to use public funds (a combination of federal support and local affordable housing funding) to ensure that at least 850 of these units will be affordable at 80 percent of the region's area median income (AMI), with a priority for investment in units at 60 percent of AMI. The project is also expected to include more than 100,000 square feet of commercial space. As of May 2023, the Atlanta Housing Authority released a request for qualifications for the redevelopment of the Thomasville Heights Projects site, which the agency plans to follow with an invitation-only request for proposals.¹⁴ In fall 2023, there was yet another fire in a condemned building on the site—and the city announced a class action lawsuit against Millennia Housing.¹⁵

FIGURE 6

Redevelopment Plans for Atlanta's Thomasville Heights



Source: City of Atlanta, Office of the Chief Policy Advisor, labeled by the author.

The completion of the full project will require action by multiple stakeholders simultaneously. A major private landlord, Dwell Communities, owns the land located between the groups of Forest Cove apartments. And Habitat for Humanity and Focused Community Strategies also control some land in the surrounding area. With the city, they are hoping to completely redevelop the community into a mixed-use neighborhood. Noted one interviewee from the city government, “We’re pushing to start over, [by building] a street grid from the ground up, with mixed-income, grocery stores, and the like.”

The city’s actions in Thomasville Heights will be further enabled because of the city council’s decision in June 2023 to fund a \$100 million affordable housing bond measure. Of these funds, \$38 million is to be dedicated for use as a revolving loan fund to finance affordable units (at 80 percent of AMI) on publicly owned land through a new entity called the Atlanta Urban Development Corporation, which is a subsidiary of the Atlanta Housing Authority;

\$29 million will be distributed for gap financing for private developers investing in affordable projects; \$15 million will be spent on infrastructure on public land; and \$15 million will go to address problems with existing affordable housing. The city’s fund will be complemented by \$200 million in philanthropic money for housing in Atlanta managed by the Community Foundation of Greater Atlanta, which has prioritized investments in Thomasville Heights.¹⁶

There remain a number of hurdles to development, even beyond the development itself. Atlanta is revising its zoning code as of this writing, but current regulations prohibit the construction of anything other than single-family homes on the site of the Forest Cove apartments (which is zoned R-4). That said, as I describe below, city staff are relatively unworried about the difficulty of rezoning to accommodate future housing. (The Dwell Communities and former public housing sites are zoned for higher densities.¹⁷) Moreover, the city’s broader planning principles have yet to prioritize the project. The city’s Housing

Affordability Action Plan does not mention the district, for example, though this may simply reflect a time lag between assuring the investment and planning.

St. Louis's Near North

The Near North neighborhood is located just north of downtown and includes both the Carr Square and Old North St. Louis communities (figure 7). The community has faced decades of disinvestment, some of which followed the use of federal urban renewal and highway funds in the postwar period to demolish preexisting structures.

It now suffers from very high levels of vacant buildings and undeveloped land; most blocks have one or more parcels of land previously occupied by housing but since demolished. At the center of the neighborhood is a major landmark of sorts. The Pruitt-Igoe apartment project was a federally supported public housing development that held 2,870 apartments in 33 high-rise buildings when it was completed in 1955. After considerable difficulty ensuring safety for residents, the apartment projects were demolished between 1972 and 1976, and the site has reforested in the years since.

FIGURE 7
St. Louis's Near North Neighborhood



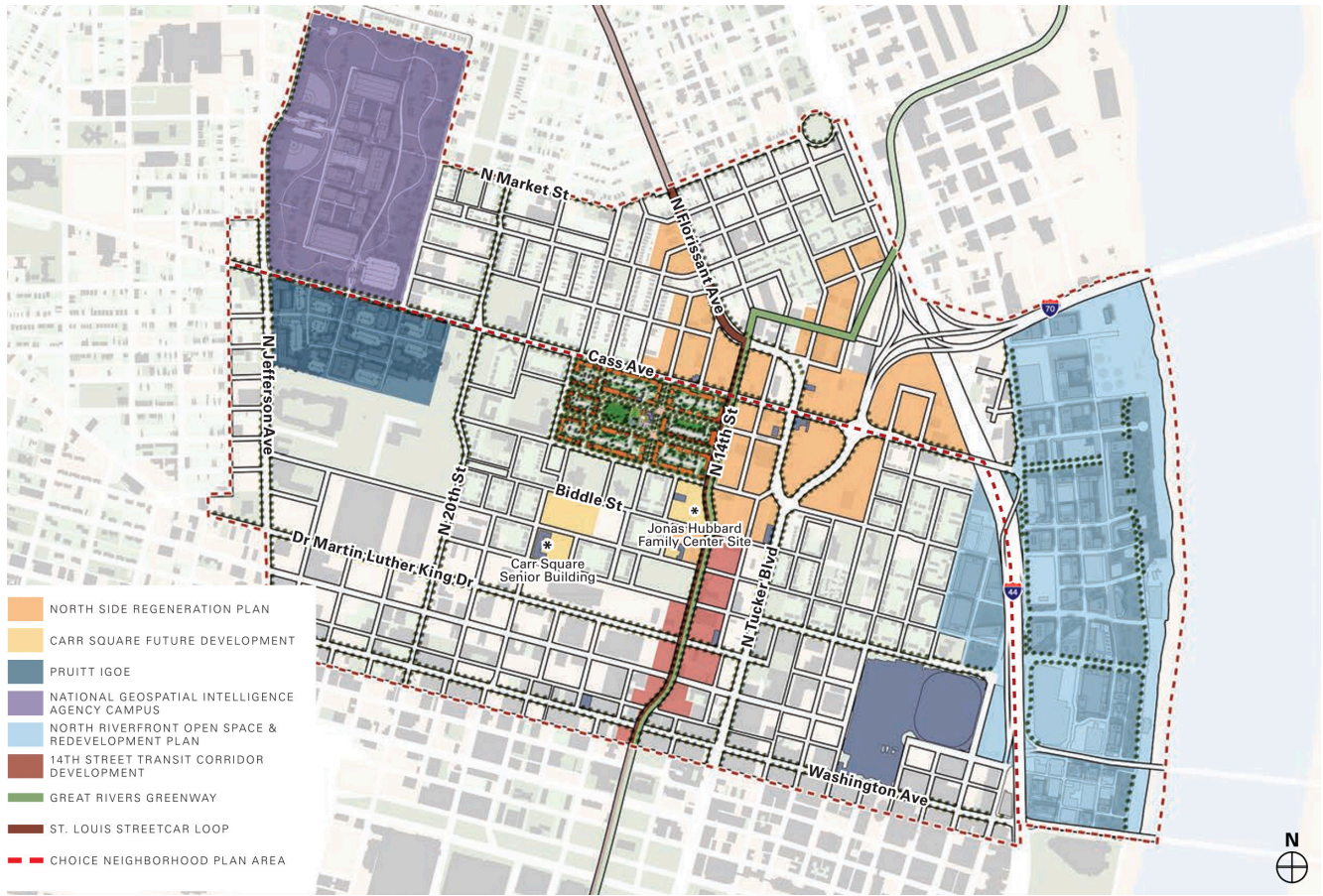
Source: The author, based on public data sourced from the city of St. Louis.

Over the following few decades, the Near North neighborhood faced considerable challenges attracting development. Part of the problem is the city's general economic circumstances, as laid out in the previous section. Noted a city staff member, "when compared to the lack of investment, we don't have the tax base to support our infrastructure, and we have extreme levels of inequality." The Near North community is now a low-demand area, with only limited private-market interest in redevelopment and high rates of poverty (City of St. Louis 2022).

But the neighborhood's future now looks more promising. One interviewee told me that the city's priority is to "interrupt these cycles, and heal the scars of segregation, redlining, and more."¹⁸ There are several key explanations for this momentum. The US Congress awarded the neighborhood the future campus of the National Geospatial-Intelligence Agency, a federal compound that will open by 2026. Though the project, which is being built on land the city acquired from individual property owners through eminent domain,¹⁹ will be cut off from the surrounding neighborhood by secure fencing, it may be useful in encouraging investment in the area, in part because of the 3,150 staff members expected to work there, and because of the learning spaces on campus designed for the use of area students.²⁰ The city hopes to leverage the project to promote new investment in the neighborhood.²¹

Perhaps more important from the perspective of access to housing are the grants the city won to support neighborhood redevelopment (figure 8). In 2016, HUD awarded a \$29.5 million Choice Neighborhoods grant, designed to be combined with other sources of investment to fund the redevelopment of the Preservation Square public housing project, the construction of almost 700 units of housing for households with diverse incomes, and increased loans and support for small businesses.²² Housing units will include both single-family and multi-family buildings, reflecting the current physical characteristics of the neighborhood. This neighborhood investment includes the construction of a newly connected street grid. Projects are already underway; 131 affordable units have been completed and 222 units are currently under construction. Completion has been slowed by the Covid-19 pandemic and other local contracting issues. Elements of the Choice Neighborhoods grant also include the creation of an economic empowerment center and placemaking along 14th Street, which runs through the area, completed in collaboration with the St. Louis Development Corporation. The city has also provided support for small businesses through the allocation of \$37 million in American Rescue Plan Act funds. In connection with the Choice Neighborhoods investment, the city has developed a neighborhood-wide transformation plan.²³

FIGURE 8
Redevelopment Plans for Near North St. Louis



Source: Urban Strategies, McCormack Baron Salazar, City of St. Louis, and St. Louis Housing Authority. 2016. Near North Side Master Plan. March. Available at <https://cdn.nextstl.com/wp-content/uploads/20220627114022/Near-North-Side-Choice-Master-Plan-Presentation-March-2016.pdf>

Note: Plans for the area have advanced since 2016, and the streetcar loop plan has been replaced by a proposed light rail line on a somewhat different alignment.

Finally, St. Louis is making plans for an expansion of its Metrolink light rail network with a new north-south line. The light rail line would run every 10 to 20 minutes along a 5.6-mile route, and it could be completed in the next several years. The line would run adjacent to the National Geospatial-Intelligence Agency, providing access to job holders there, and near the housing investments the city has planned.²⁴ The line could improve resident connectivity to the rest of the region.

The city has framed its investment in the Near North Side

as part of its 2022 Affordable Housing Study. That report acknowledges the difficulties of investing in the area; the neighborhood is what the report defines as a low-demand submarket, meaning having a significant number of households with low incomes, decades of population decline, and high vacancy rates. The neighborhood is predominately composed of single-family homes and has seen little new construction over the past few decades. It is thus to be determined whether the city's investments will catalyze broader economic development in the area in the coming years.

Plans for Seattle’s Chinatown and Delridge, along its Light Rail Expansions

In November 2016, Seattle region voters passed the Sound Transit 3 referendum, which funded \$5.4 billion in public transportation improvements throughout the Puget Sound metropolitan area. Among the funded projects are two interconnected light rail routes, referred to collectively as the West Seattle and Ballard Link extensions (these would be funded and built by Sound Transit, the regional operator). These lines, expected to be completed in 2032 and 2039, respectively, will cost \$12 billion and add 13 new stations to neighborhoods in the city of Seattle. Construction is expected to begin in 2026 after environmental review is completed.²⁵ The project responds to conditions in the rapidly growing region, which faces a housing crunch and high housing costs. New zoning policies to encourage additional housing near transit could reduce costs over the long term (Freemark et al. 2023).

The construction of new light rail stations offers the city of Seattle the opportunity to plan dense, mixed-use neighborhoods around new stations. The city is expected

to begin detailed station-area planning in 2024. The city’s focus is on two station areas that I explore as the integrated development case studies: Chinatown-International District (CID) and Delridge, each located south of downtown. The Delridge station is expected to open as part of the first phase of the project in 2032; the CID station as part of the second phase in 2039 (figure 9). These station areas are among the few neighborhoods in the city whose neighboring residents are majority people of color—and, as described in the previous section, many of the residents have low incomes. The CID station is near the confluence of a number of major transportation infrastructure projects that have previously undermined the community due to demolition and the negative impacts of construction, and a decade or more of additional transportation infrastructure construction has raised concern that the area may become difficult to live in. Moreover, some residents are concerned that the projects may encourage gentrification and displacement. There has been debate in the city about the exact location of the CID station, in part due to Sound Transit’s goal to cut expenses in the face of increased construction costs over the past few years.²⁶

FIGURE 9

Station Area Planning in Seattle



Source: The author, based on public data sourced from the city of Seattle.

Though the city has yet to develop specific plans for development in the station areas, we have some clues about how the areas will evolve over time. In the Delridge station area, the city is using its North Delridge Action plan to guide future planning, though it has not yet firmed up investment plans. The areas immediately adjacent to the planned station are currently about half occupied by housing and the rest by a steel plant and a strip commercial center; these areas, according to city staff, could theoretically be redeveloped to provide for community needs, such as groceries and affordable housing. One

interviewee noted to me that this area is “a pedestrian hellscape right now,” indicating that integrating the community with the future rail station may be difficult. The areas around the planned CID station form the cultural hub of Seattle’s Asian American community but are also occupied by large swaths of industrial uses. The area is also near the city’s main train station, large stadiums, and industrial uses whose future depends on city decisions about zoning and changes in the real estate market that may follow from investment in the new light rail line.

Planning in station areas in the Puget Sound follows decades of transit-oriented community planning that the city and regional planning agencies have led (see, e.g., Growing Transit Communities Partnership 2013; Nikolic et al. 2009). These, in turn, have been formalized in the urban village element of Seattle’s Comprehensive Plan, which encourages the creation of dense, mixed-use, and mixed-income neighborhoods in the areas near stations.²⁷ The city’s comprehensive plan is, as of this writing, in the process of being rewritten to encompass plans for the new light rail stations. Station area planning must also reflect the Washington state statute RCW 81.112.350, which requires Sound Transit—the agency building the light rail lines—to offer 80 percent of surplus property suitable for housing (meaning leftover land from project construction) to qualified entities that develop housing, of which at least 80 percent of units is to be affordable to families with incomes at 80 percent of the area median or less. Sound Transit adopted an equitable transit-oriented development policy in 2018 that promotes partnerships with other public agencies for development near stations. Sound Transit has also committed \$20 million to a revolving loan fund for affordable housing.²⁸

Berlin’s Buch am Sandhaus

Berlin is Germany’s unified capital city and state, the largest city in the country and third-smallest state by land area, after Bremen and Hamburg. After decades of a challenging economic environment, the city is now on the upswing, with a growing population and increasing job numbers, as described in the previous section. The city’s growth has raised concerns about housing affordability, and the city has committed to adding 200,000 new housing units by 2030. The local government’s goal

is to align new construction to areas around rail lines.

The city has 16 major new publicly led development zones, mostly scattered around the edge of the city in at least partly undeveloped areas. The living lab development zone is the Buch am Sandhaus, located in the Pankow borough on the north side of the city. The 57-hectare site encompasses an abandoned state security (secret service) hospital and forested areas, all proximate to a regional rail station. The city’s development plan proposes the construction of up to 3,000 new housing units (including the conversion of the hospital into homes), daycare centers, and schools, surrounded by maintained forested areas (figure 10). The city’s planners propose that buildings be arrayed along a major new street oriented toward public transport, bikers, and walkers.²⁹ The development site was identified for housing development by a private entity several decades ago, but that project was never realized.

The current project’s plan was developed through a multi-month public engagement process in which the city paid three teams of urban designers to offer ideas for the site. These designers presented their proposals to a city-hired jury of urban planning experts, as well as one representative of the community. The jury provided feedback to each team, which then refined plans two more times before the final plan was selected for implementation by the city. The city plans to develop the project through long-term leases on lots in the development after it has constructed basic infrastructure, such as the east-west street at the center of the project. Developers will have to follow city-determined development principles (such as affordable housing and design requirements); they are expected to include both private developers and the city public housing agency.

FIGURE 10
Berlin's Buch am Sandhaus Development, to the North of the City Center



Source: Berlin Senatsverwaltung für Stadtentwicklung, Bauen und Wohnen. Rahmenplan und städtebaulicher Masterplan. Accessed July 27, 2023. <https://www.berlin.de/sen/stadtentwicklung/neue-stadtquartiere/buch-am-sandhaus/rahmenplan-und-staedtebaulicher-masterplan/>

Notes: The former state security hospital is the inverted “T” shaped building on the north side of the site; the pink buildings are the sites of the planned major new housing developments. The S-Bahn regional rail station is located in the middle right of the plan, at the end of the new road planned to serve as the primary “spine” of the project.

Berlin’s project has met some resistance. A group of residents of the surrounding area has contested the plan, arguing that it would eliminate access to green space for the neighborhood and will require destroying large sections of forested areas in which endangered species now live. They argue that the federally required land

compensation plan for the project (which will require new land to be reserved for natural uses in exchange for this land being developed) is inadequate.

Frankfurt Nordwest—Stadtteil der Quartiere

Frankfurt is Germany's economic capital and a driver of much of the country's financial services industry. The pressures of global capital have encouraged the influx of higher-income residents and competition for land that has displaced older enterprises in the city. The municipality's goal is to identify new approaches to adding affordable housing while also renovating older units. Noted one attendee at a German Marshall Fund event, "In Frankfurt, we have a highly speculative market. . . . We want to have more housing possibilities and options." Though the city has generally low population densities in its neighborhoods, it has focused most of its development efforts on peripheral land currently occupied by agricultural or natural land but still within the city's limits.

As part of this initiative, the city's living lab site is Frankfurt Nordwest, a development proposed for mostly agricultural land northwest of the city center and located on the city's border with suburban jurisdictions.³⁰ The project will involve the creation of two sub-development zones (figure 11). The remainder of the surrounding site will remain primarily agricultural. The development zones are large enough to accommodate up to 6,800 housing units, of which at least 30 percent would be affordable under German social housing rules, and up to 7,000 jobs. The project would also include parks, schools, shops, and leisure uses.

The project is being planned for the area between the A5 motorway and existing portions of the city of Frankfurt, mostly developed in the postwar period, notably Nordweststadt. These neighborhoods have a high share of immigrant households and have generally lacked access to effective public services in the past, according to local planners. The new project is being associated with an extension of the city's U7 light rail line as well as the S-Bahn regional rail service. Project planners have had to work closely with the national government in project development, as it has involved plans to move a major electric power line and negotiations about the future of the motorway to ensure the development project and the road can coexist.

The project is being developed under the German Urban Development Measure described above. This enables the city to use eminent domain for land assembly at reasonable costs, and then allows the city to sell or lease land to private entities once plans have been finalized and infrastructure improvements have been made; these sales provide the funds to support investment in the social infrastructure that accompanies the project, including schools and daycare facilities. As in Berlin, the project has been developed using a three-stage resident engagement process and an eight-member appointed jury (a "Consilium") that provides technical feedback about the project's elements.³¹

FIGURE 11
Schematic Urban Design for Frankfurt Northwest



Source: Stadt Planungs Amt, Frankfurt Am Main. 2023, "Frankfurt Northwest." April. <https://www.stadtplanungsamt-frankfurt.de/show.php?ID=23150>.

Notes: The image shows the full boundary of the project, with the highway corridor cutting through on a diagonal from the northeast to the southwest. The new development areas are shown in red, purple, and brown colors, with the planned parks in green, and the extension of the U7 light rail line and the S-Bahn regional rail lines shown with dotted lines. Preserved agricultural areas are shown in yellow colors.

Frankfurt's development project has generated some disagreement. A plan for development on the west side of the site encountered opposition from residents and political officials from the suburban city of Steinbach, resulting in that portion of the project being scuttled. In addition, residents of the areas to the east have protested elements of the project, such as the fact that its development will involve the replacement of agricultural land with buildings. They worry this will diminish their quality of life. City planners have attempted to address this concern through the inclusion of major park spaces throughout the project, but opposition to the project remains present.

Munich's Werksviertel-Mitte

Munich has little land on its edges to convert from undeveloped to developed uses. (This results from historical differences in municipal annexation policy in the three regions.) The city has high housing costs, as shown in table 4. Though it is one of the wealthiest cities in Germany, housing price increases have outpaced increases in resident salaries, making living in the community more expensive for more of its residents. As such, it has significant development demand, and the city has plans for major new housing investments through infill reconstruction of formerly industrial zones.

Munich's 39-acre living lab site, Werksviertel-Mitte, is near Munich's city center and includes the former site of a Pfanni food production factory. It is within several blocks of the Ostbahnhof rail station, which is served by hundreds of regional rail trains a day, as well as frequent subway and light rail service. The district sat underused and its former industrial buildings partly abandoned for several years, leading to the area becoming known for its dance clubs and other nightlife uses. Though the site remains largely privately owned, the city has led planning for and investment in redevelopment in the community. The project is expected to incorporate 1,150 housing units (of which about 30 percent will be social housing) and up to 7,000 jobs, plus a mix of lofts, art studios, restaurants, and green spaces (figure 12).³²

The city government has conceptualized the neighborhood to become an active, vibrant area, not simply a residential community. This approach matches the project's location, which is near the center of the city and surrounded by fairly high-density areas. Munich's is at a more advanced stage of development than the other living lab projects profiled here. Much of the project planning was completed about a decade ago.

FIGURE 12

Plans for Munich's Werksviertel District, Showing New Buildings Near Ostbahnhof Station and Pedestrian-Only Streets



Source: Werksviertel München. Accessed July 27, 2023. <https://werksviertel.de/>

Barriers to Publicly Led Development

Together, the demographic conditions I described above paint a picture of communities in flux. On the one hand, cities like Atlanta, Munich, and especially Seattle are permitting relatively large numbers of new homes, making room for thousands of new residents as those cities grow quickly. But that new housing may be inadequate to address continued high housing costs (particularly in Munich and Seattle) or high housing cost burdens (particularly in Atlanta). On the other hand, cities like Berlin and especially St. Louis may have relatively lower housing costs—but their residents are more likely to have low incomes or live in poverty. In each of these groups of cities, housing remains a major cause for concern. More housing—particularly affordable housing—is necessary to account for local needs. The publicly led developments I profile here could help make room for those units.

My interviews with officials and other stakeholders in the case-study cities, combined with collection of information about local conditions, suggest ways in which it is challenging to generate new housing via publicly led investment. Several of these challenges are unique to either the United States or Germany, but others are shared across the Atlantic. In this section, I review several key findings from this research:

- In the United States, in particular, local zoning constraints—such as regulations allowing for the construction only of single-family homes—sometimes make it difficult for private-market actors to add new homes even in neighborhoods where there is real-estate demand to do so. Even so, these zoning constraints are not a primary impediment to the publicly led plans the cities are focused on.
- Though attracting investment to high-income neighborhoods is reasonably straightforward, assembling adequate financing for new housing development in communities that are currently largely inhabited by families with low incomes is challenging, delaying project completion. When successful, on the other hand, such investments could generate gentrification.
- Though cities hope to integrate multiple project objectives simultaneously—such as housing and public transportation investments—they find it difficult to do

so because of diverging financing and implementation calendars.

- Some highly vocal and sometimes politically influential residents oppose change in their communities—often because of worries about disrupting the status quo, but also because of concerns about hurting the local environment. This can delay project implementation because of long review periods and changes in project design that sometimes reduce density.
- Frequent elections in the United States encourage local elected officials to act fast with the goal of short- to medium-term results. This approach makes it difficult to commit to a major development project that will not be completed for years. The fact that local public administration is devolved into multiple departments worsens this problem.
- In both countries, federal government regulations and bureaucratic systems sometimes stand in the way of adding housing by creating obstacles that prevent the use of public funds in the most effective way possible.

Below, I detail each of these findings, using examples from the case-study cities to illustrate conclusions.

Conditions in the various cities differ, but the conclusions I describe apply to all of them, unless noted specifically.

● Zoning and Building Constraints in the Context of Inadequate Comprehensive Planning

As noted, German cities regulate construction using a nationally uniform building and land-use code, the BauGB.³³ Though the code enables each local government to make independent choices about future development within neighborhoods, the specific regulations that cities must follow are defined nationally. This includes not only the zoning districts that can be implemented (e.g., what sorts of buildings are allowed in a defined district), but also the tools a local government can leverage to undertake urban development, some of which I profiled above. Representatives of the German cities with whom I discussed development plans spoke positively about their ability to leverage zoning policies to implement their living lab projects. From their perspective, the nationally authorized regulations offer them broad latitude to complete their investments.

The US cities each have bespoke zoning rules typically defined at the local level but with input from state governments. The federal government has virtually no role in defining those zoning policies. These conditions make it somewhat difficult to compare policies in one city with another. As I discussed in the introduction to this report, there is considerable evidence that land-use regulations are one key explanation for inadequate *private* housing construction in US cities. Rules are often made too strict to enable the construction of a diverse type of housing to meet community needs.

Nevertheless, my interviews with officials in the case-study cities indicated that, broadly, they face few real land use regulation–related obstacles in implementing their publicly led living lab projects. Staff in Atlanta noted that their work in Thomasville Heights was not constrained by zoning policy—they could pursue the project they wanted and then move to easily alter the land-use rules from there. “City-owned land is typically formerly industrial or city service land,” one mayor’s office staffer said. “It’s usually fairly easy to rezone to multi-family or mixed use. . . . So, on 90 percent of our sites, [zoning]

entitlement is already there or relatively simple.” In St. Louis, one interviewee said, “We hate the mandatory parking minimums [imposed by the zoning code], and want those changed.” But they went on to emphasize that “for the most part, [projects] don’t need rezoning.” Even when they do, “rezoning is relatively straightforward. The Planning Commission will rarely deny a rezoning, and the only way to do that is if the project is in conflict with the comprehensive plan.”

There are several possible explanations for the lack of local concern about the constraints posed by existing zoning regulations on development strategies in the US cities. First, because the projects I investigated are led by city governments, they may have an easier time implementing changes in land-use rules than a private developer planning a similar project. Second, it is possible that the locations of the projects in the US cities—in largely low-income neighborhoods in all three cities—has resulted in less public resistance to zoning change than might have been experienced had the projects been developed in higher-income areas. Third, since localities are both planning the projects and regulating them, it is possible that the designs of the projects already reflect what officials know can be reasonably implemented under the land-use code or potential modifications of it. In any case, understanding the differences in the constraints (or non-constraints) imposed by land-use regulations between public and private developers is worthy of further study.

Indeed, when asked about recent *private* projects, interviewees emphasized that the zoning process could be more complicated. Seattle enforced a challenging development environment for private developers involved in building around other rail stations (not yet the living lab sites, which are years away from being subject to development). Describing conditions for private investment around the Northgate light rail station on the north side of Seattle, a staff member said, “It was so prescriptive, down

to the [size of] the balconies on those units . . . it was this crazy level of specificity.” They argued that these conditions inhibited the easy construction of projects led by private entities, even if the planning itself had been led by the public sector.

Moreover, there is evidence that the case-study cities do struggle to undertake comprehensive, integrated planning in advance of new project development, whether led by public or private entities. In Seattle, the city has for years pursued an urban village strategy that designated major

intersections where the locality wanted to focus investments and growth. In theory, this structure was supposed to produce neighborhoods with a reasonable mix of housing, employment, retail, and services. But officials complained this was rarely the case. “Holistic planning in a neighborhood is the edge, exception case,” one said. Another noted, “I notice that, with dismay . . . some of the development would happen anyway without a plan.” The case-study publicly planned projects I investigate here, then, may be somewhat of an exception to the rule.

● Difficulties in Attracting Investment to Neighborhoods with Little Demand—and Gentrification in Other Areas

Interviewees emphasized that the US cities have struggled for years to attract development in some of their least well-off neighborhoods. Low resident incomes make it difficult for private investors to make a profit on new construction, since they cannot rely on wealthier families being willing to move into the community. This makes building new housing other than publicly subsidized units challenging to finance. This is true even on the publicly led development sites, which incorporate a mix of public and private financing and rely on private investment (such as in the form of market-rate housing development) to help support the cost of providing affordable housing and social investments. At the same time, when they have been able to bring in new real-estate investment, US city planners have faced concerns that new projects generate gentrification and displacement. Even though additional housing is likely to play an important role in moderating increases in housing costs by adding new supply, it is often only financeable in neighborhoods where housing prices are already increasing.

The living lab project sites in all three of the US cities are in neighborhoods with a disproportionate population of residents with high levels of poverty and who are more

likely to be people of color. These communities have suffered years of limited private-sector investment in new housing. At the same time, at least in Atlanta’s case, the “neighborhood had largely been ignored by public partners for too long,” according to a housing staff member. While city agencies had developed plans for the redevelopment of the area, “too often, you’ll have a small-area plan, and then 10 years later, nothing will be done,” they continued, because of the inability to attract private-market development to the areas.

In some cases, the lack of public support for investments in such communities is the product of the intentional choice *not* to invest in such areas by public entities. “What we don’t want to do is only build affordable housing in the communities that have been historically disinvested,” a St. Louis interviewee said. Municipal staff considering how to spend limited affordable housing funding want to preserve some of those funds for “communities that are better off,” to use the language of a St. Louis official, to ensure that people with low and moderate incomes can have access to housing in different parts of the city as a whole.

When investments *do* go into communities with high rates of resident poverty, city staff worry about the potentially gentrificative effects. “We have to consider . . . anti-displacement, community ownership, cultural displacement, [and] affordable commercial space,” said a city staffer in Seattle. They worry that the investments in new housing projects in certain areas could be associated with dramatic changes to the neighborhood—and thus outcomes that fail to meet the needs of existing residents.

The German planners with whom I discussed these issues

raised fewer concerns about the difficulty of attracting investment in the lowest-income portions of their respective communities. There are several potential explanations for this difference with the United States. One may be that Germany has less economic inequality or social/racial segregation and thus suffers from less of the spatial differentiation in real-estate markets that is common in US cities. Another is that the German cities’ projects were not located in existing low-income neighborhoods, but rather on greenfield land outside the city (in Berlin and Frankfurt) or near the city center (in Munich); these areas may be easier to attract investment to than those in the US cities.

● Challenges Timing Projects to Meet Public Goals

The three German cities have established comprehensive planning efforts that link investments in new housing with other sorts of projects, such as public transportation lines, parks, and schools. They are capable of undertaking these sorts of joint investments thanks in part to a series of regulatory tools that enable comprehensive action, particularly the Urban Development Measure described above. But the US cities I studied experience difficulties linking a variety of investment types into a single, unified living lab project. Much of the challenge has to do with timing, among the correlated projects and with the availability of funding, and with the constraints of zoning policy.

Consider first the intersection between efforts to expand housing availability and new access to transportation—an essential link when the goal of all of the case-study cities is to encourage TOD. In Seattle, an interviewee noted that housing and transportation investments were “operating on different time horizons.” Sound Transit, which is building the light rail system that will serve the publicly led development sites, is planning lines that will not open for service for more than a decade. They are “hyperfocused on the schedule and budget of the [rail] system,” said a city department head, and “they are loath to take on additional responsibility outside of delivering the system.” The result is that, according to a federal transit employee,

the agency’s decisions about land acquisition are informed by making sure there is space for the future rail right of way, stations, and construction staging area—not ensuring that there is adequate space left over for connected housing development. (The fact that the agency has limited funds even to implement the transit project means it does not have leftover funding available for extra land acquisition.) And while the city could theoretically contribute to housing investment around stations, an interviewee pointed out that they did not “know if I have any [financing] sources that can hold out [on construction] for 15 years,” when the light rail line is completed. So transportation investments go in now and housing construction must wait for a hypothetical future.

These problems have shown up in the past. “The last time we had a light rail expansion project,” in the Rainier Valley, “there are still many parcels that are underdeveloped,” said one local planner. “The city is often very late in planning for station-area development,” another noted, suggesting that the energy for station planning for surrounding housing often fails to accelerate until just before a station is to open. And the transit agency’s choice not to purchase additional land for TOD surrounding stations meant that in “the first round of Sound Transit projects, we ended up with squirrely, triangular sites” that

were difficult to use for construction, according to a city employee. That said, as I describe below, there is hope that the agency is taking a different approach this time, and both Berlin and Frankfurt have demonstrated effective mechanisms to integrate transit directly into project planning.

In the other two US cities, the order of decision-making is reversed. While St. Louis is planning a major light-rail project that would serve the Near North neighborhood, city staff emphasized that “there’s uncertainty” about when that project will be constructed, because planners are far from completing the planning process or even taking the steps necessary to assemble its needed financing sources. “We have the NGA coming in” soon, they noted, but “we have light rail that won’t open until 2032,” at best. This means that the housing is likely to be completed far in advance of the transportation improvements.

Similarly, while Atlanta has developed a comprehensive local transit investment plan funded by a 2016 referendum, that plan included only increased frequency and longer spans of service on the bus route serving Thomasville Heights (with service increasing to every 20 minutes from every 25 at midday on weekdays).³⁴ While local staff noted that they would like to see a new bus rapid transit corridor with dedicated bus lanes and faster travel times serving the area (on the major street through the neighborhood, McDonough Boulevard Southeast), the city has no funding to build such a project at this time. If Thomasville Heights is a priority for the mayor in terms of neighborhood investment, that prioritization primarily seems to apply in terms of housing investment, not associated transportation projects.

Several of the US cities are trying to use zoning as a mechanism to plan for future housing in the context of new transit lines. But, perhaps surprisingly, some of those I interviewed expressed concern about rezoning in advance of the completion of their city’s development project. At issue for them is the difference in time between when a project is planned and when it can actually be built. If a rezoning occurs too far in advance of when a city or its staff wants to—or can—act, private developers may leverage new construction rights to build more, or at

least acquire land at elevated prices to do so in the future. While it is possible, or even likely, that much of what will eventually be built privately will be new housing, it is unlikely to be affordable or fulfill the city’s general desires for the area.

The living lab sites in Seattle again provide a useful example of this phenomenon. To handle the discrepancies in timelines between the housing and transportation projects, one option, according to a city staff member, would be to simply proceed now (or when the route is precisely selected, likely in 2024) with a city-led housing project. This would have the advantage of taking advantage of low existing land prices surrounding the future stations and little competition from private developers to acquire the land. “What hurts us,” said a city employee, “is the speculation and the land values; it’s really hard to compete.” But a project underway now would be complete many years before the light rail line, leaving initial residents without connectivity and with years’ worth of disruptive, noisy construction.

A second option would be for the city to simply acquire land and to hold on to it for several years. But this approach has its own problems. It would mean the city spending large sums of money on vacant land on which it would be able to build little for years. Not only would this reduce city property tax revenue, but it would raise political concerns about wasteful spending and no action, according to an interviewee.

A final option, perhaps the easiest one, would be to advance with the planning process before the city engages in direct public action. This would have the advantage of allowing the city to rezone to allow for the future development types that local stakeholders and political officials want to see. Upzoning around stations, for example, could enable more housing in highly accessible places. But upzoning, an interviewee argued, would raise land prices by enabling future development; “I don’t want the underlying zoning to change, because I don’t want the value to increase. . . . Anytime there’s an upzoning, that then increases the value that the government would have to pay.” Private investors would be able to build more and thus would purchase land for future projects. In the

meantime, the city would lose out on opportunities to buy land for its own use (such as for a more diverse array of housing choices), and affordable housing would be more expensive to construct.

All three options, then, are problematic in terms of a city's ability to accomplish its aims for a housing project. This poses a fundamental barrier in the way of the city's action. The city is stuck between a rock and a hard place in terms of whether to proceed with development, whether to buy land, or whether to rezone. This misalignment has hit Seattle in the past. One interviewee noted that there remain significant undeveloped or underdeveloped plots of land adjacent to the first phase of the city's light rail system, in part due to the strangely shaped parcels left over from light rail construction, as noted.

A last major barrier faced by the case-study cities is the difficulty of proceeding with a large development project when the market demand is not present for residents to occupy all of the proposed housing units at one time. In Atlanta, for example, city officials expect that Thomasville Heights will be constructed over a 15-year timeline, with fewer than half the units completed in the first seven years. As an interviewee from the office of the mayor noted, "there's an absorption risk. You're going to have too much housing at one time" without some delays. In some ways, this delay in construction could be beneficial—it will ensure that units do not sit empty and help relieve the financing load on city and private financing sources. At the same time, it will mean a neighborhood that is only partly developed for more than a decade to come, which could be detrimental to quality of life for residents.

● Resident Opposition to New Construction

In the United States, one often-cited obstacle to new housing construction—publicly led or private—is community engagement. While theoretically designed to ensure democratic engagement in the planning process, this involvement often means hearing more from people who are white, people who are older, and people who are homeowners (Einstein, Glick, and Palmer 2019). They may be more likely to oppose projects because of concerns that new projects, particularly those that contain affordable housing, will reduce property values or degrade quality of life in impacted neighborhoods (Been, Madar, and McDonnell 2014; Fischel 2005)—despite the fact that such projects do nothing of the sort (Stacy and Davis 2022). Such opinions are shared by homeowners across the political spectrum (Marble and Nall 2021). Projects in neighborhoods with a larger share of residents who are white homeowners are more likely to attract opposition at public hearings—and elected officials are more likely to pay attention when more people are opposed to projects (Lo and Freemark 2022). Meanwhile, people who are not directly affected by projects rarely engage—meaning those who might move into future buildings, for example, would almost never testify in favor of an investment.

The results of the current approach to engagement are three-fold: First, reduced overall housing construction; second, increased housing prices in appealing neighborhoods where housing is not being built but people still want to move in; finally, reinforced social and racial segregation produced by wealthier people moving to exclusive neighborhoods where locals protest new construction and others being forced to live elsewhere. Some argue that the way to deal with this problem is to expand engagement further, especially among historically underrepresented communities (Hyra 2015; Karner and Marcantonio 2018). Others, particularly members of the YIMBY ("yes in my backyard") movement, suggest that more housing should be allowed "by right," meaning without special review or public engagement. They argue that this sort of streamlining will result in more housing being built and achieve more equitable outcomes.³⁵ Pro-housing groups, often under the YIMBY banner, have been popping up in cities across the United States in recent years.³⁶

German cities, too, have seen some contestation about the importance of new development. Cities in both countries have struggled to identify the best ways to engage

the community while supporting that goal. Resident opposition is sometimes widespread. A Frankfurt city official said in a project convening, “We have a classic NIMBY [not in my backyard] phenomenon—people directly next to this neighborhood who own in this neighborhood don’t want it.” Despite their effort to develop a local community engagement process, St. Louis staff similarly argued that opposition was common, particularly in “areas of the city that are highly concentrated with single-family homes.” There, “when you talk about wanting to come in with new affordable housing, you will hear a lot of opposition.”

One issue is *who* states strong positions about projects. In St. Louis, a local housing official said, “the people with higher educations just are louder.” And in Frankfurt, most of the people who came out to public meetings, a staffer noted, were “elderly people, people who own housing, people who are white, people who grew up in Frankfurt; they are the people who get out and say what they want.” This disproportionate engagement of certain types of people in planning means others get left out. Noted the Frankfurt official, “people who are renting, who are often immigrants who can’t vote, [who] need the housing and want to support the project,” rarely have their opinions heard. In St. Louis, an interviewee said, people with low incomes “feel that whether they come to a meeting or not, they have no power.” This could mean that new housing projects are not reflecting the opinions or needs of the people who need new housing the most.

These opponents have focused their energy on attempting to shut down projects because of the perception that they will negatively alter the status quo in a certain neighborhood. Others point to environmental concerns. In Berlin, for example, residents have argued against the living lab project because of a concern that it would destroy part of a forest and the ecosystem there (I was unable to find evidence of similar concerns about the Atlanta example). A community group has argued forcefully to local elected officials that the project should be cancelled or replaced with one that would require fewer trees to be knocked down.

Despite these conditions, some interviewees noted that, because residents typically organize early against plans, if a project makes it through an initial stage of consideration by political stakeholders, it is more likely to make it to the construction phase. Noted an interviewee in St. Louis, “Theoretically, [you could] have residents mobilizing against a project, but when residents mobilize against a project, it is typically killed early on.” And there are some examples where development projects are simply supported by the locals. In Atlanta, a city staff member said “no one disagrees on this idea for” Thomasville Heights. As such, the city leaders promoting the development project have not had to contest resident points of view as they push for adding more housing supply.

● Short-Term Political Horizons and Devolved Public Administration

Among the current barriers to achieving more housing through publicly led development, perhaps the most challenging to address are the political and institutional barriers within each of the cities that are attempting to undertake their projects. These problems, according to the interviewees, are particularly acute in US cities, which face two major challenges. First, they are dependent on action by political officials whose primary perspective is

informed by short-term “wins.” Second, they struggle with disaggregated funding and planning processes managed by different local agencies or departments, which may not see eye to eye on the importance of getting new projects done.

Consider first the realities of short-term political leadership in each of the case-study cities. Since 2010, Seattle

has had six different mayors, none of whom was elected to a second term. Atlanta's previous mayor, Keisha Lance Bottoms, was elected in 2017 but did not even run for reelection in 2021; a similar circumstance occurred in St. Louis with its previous mayor, Lyda Krewson. A department head in Seattle said, "we've had a lot of shorter-term mayors," so it has been difficult to maintain a singular city vision for the future over time. The consequence of the short-term nature of these elected officials' time in office is that, according to an interviewee, when "I'm talking about something 15 to 17 years in advance . . . no one wants to think about something that far out." An Atlanta housing official said, "preparing for administrative change is going to be difficult. . . . As soon as we have a new mayor, they may change" the policies related to housing investment.

Furthering the challenge of engaging in the development of a major project that integrates housing into a broader neighborhood is the reality of many different public agencies working simultaneously—and sometimes at

odds with one another—on the same investment. An Atlanta official gave an example of a parcel of land owned by another local department. "The head of sanitation or public works doesn't really care about windfall returns to the city's general fund" in the context of a new housing project. As a result, it is difficult to make the case for converting the land they manage into other uses, like housing.

Similarly, different governmental units have different skills. "My experience is that part of the challenge is that transit agencies aren't really real-estate agencies," one federal official told me. "So they don't always take on" TOD projects. Each of the public agencies also manages its own contacts with relevant federal funders (e.g., HUD or the Federal Transit Administration, FTA), an Atlanta interviewee added. A Seattle official said, "there's at least three governments involved" in the living lab project planning. "Trying to get those three together to have a conversation with varying timelines of success and different measures, that's extremely challenging because no one entity holds that."

● Challenges at the Intersection of Local and Federal Policy

In both the United States and Germany, the federal government's role overseeing issues related to land-use planning policy is limited. In both cases, the federal government sets some guidelines and provide substantial funds, but state and local governments exert most control over what types of investments, such as housing, can be allowed where. Even so, federal policies can at times serve as a potential barrier to new housing construction. Localities identify mechanisms to operate within these constraints, but ultimately are subject to oversight from higher-level governments.

Staff from the German cities recounted a generally less direct relationship with federal stakeholders than the US cities (though they do have to follow the federal building code). While they receive federal grants for urban

redevelopment, their use is defined precisely by the national government in the context of integrated development plans developed by localities in association with state governments. Each of the city stakeholders described the Urban Development Support program, described above, as relatively easy to use and said it usually allowed them to undertake projects of their choice.

In some ways, US cities benefit from similar freedom in the use of the federal funds they receive through CDBG. Noted a federal official, "We give them a menu, but they really decide how they want to use the funds. As long as most of the funds go to low- and moderate-income people, they can do virtually anything they want," except invest directly in new housing construction. CDBG thus can cover expenses *related* to building, like acquiring land,

clearing buildings, laying streets, and installing utilities. Localities can extend CDBG funds through HUD's Section 108 program, which provides a loan guarantee equivalent to up to five years of CDBG allocations to localities, for bigger projects. HUD's HOME and Housing Trust Fund grants provide important assistance to localities looking to invest in new or renovated affordable housing. All HUD fund recipients must describe their planned expenditures in consolidated plan processes and annual action plan updates.

The relationships between national and local governments, however, are imperfect. Frankfurt's experience with its Nordwest project suggests that the German federal government's control of national infrastructure—including energy provision, highways, and railways—causes challenges. There, the federal government wanted to invest in changes to a highway near the development project, and this prevented the local government from moving forward with its housing development until a decision was made about how to move forward with the highway. Noted one German planner, "it becomes a power play: who is stronger, highway planning or local planning?" Until the national government makes its choices about infrastructure plans, the locality is stuck—and must adjust its plans in the meantime, delaying the completion of new homes.

The US officials I interviewed, too, raised major concerns about their ability to leverage federal funding support for their communities' benefit—and for the goal of quickly advancing housing construction. Federal grants are useful, but using federal money as part of a project adds a "whole pile of laws and requirements," such as the need to purchase materials from US-based sources (through the Buy America requirement), said a federal official. "It's one more thing that jurisdictions have to learn and absorb." A St. Louis interviewee backed up this contention, telling me that the different funds they had received had varying requirements when it came to issues like what types of organizations could receive funding as grant subrecipients.

Using multiple federal programs on the same project can double or triple requirements in terms of issues such as inspections and environmental review. An Atlanta housing official noted that "it's messy to line up funds from

multiple sources. . . . It can kind of grind the funds to a halt because of the bureaucracy of having so many different sources of funds involved." And HUD requirements, in general, are expensive. A Seattle representative said that "the unintended consequence of bringing in federal dollars is that it could cost us an additional \$10 million on a project. . . . If there's a penny of federal money, suddenly we have to abide by Davis-Bacon [labor cost rules]." As a result, cities try to concentrate federal dollars into just a few projects to avoid the expense, time, and confusion of trying to manage many projects with federal government funding.

HUD's ability to provide assistance to municipalities to navigate these circumstances is limited because of staffing shortfalls. The US Department of Transportation (DOT), for example, provides more assistance to governments to conduct environmental review than does HUD, according to one paper reviewer from HUD. One agency representative told me, "It's important to understand where we stand at HUD when it comes to manpower. From 1991 to 2018, we lost half our staff." As a result, said a local government interviewee in Atlanta, "I would describe us as the engine that moves things, and HUD is more reactive." Atlanta staff emphasized that the terrible conditions in the Forest Cove apartment complex were unknown to—or at least went unaddressed by—HUD for years. Making matters worse is that decisionmaking about HUD policy is sometimes divided between federal staff in the national headquarters and those in regional offices. A St. Louis staff member said, "I'm not sure how aligned local HUD offices are with DC HUD." A Seattle department director said the two parts of HUD were "pretty well distanced. There's actually a point of tension between the two of them... they are such a huge bureaucracy, and so we get lost in that conversation."³⁷

The US DOT, on the other hand, has received considerable increases in funding in recent years thanks to the passage of the 2021 Infrastructure Investment and Jobs Act. That law substantially expanded support for transit projects. Said a Seattle interviewee, "politically, there's a lot more support for big infrastructure. . . . From a values perspective, the federal government will put billions of dollars into helping lower income people move around—but not to get them housed." As a result, local *transportation*

officials go out of their way to “federalize” their projects (integrating federal funds); it is just worth it, given how much money is coming in. That value, however, has its limits: Though the FTA is officially supportive of joint development projects (meaning real-estate investments directly linked to transit) and TOD, transportation funds cannot be used for housing investments directly (there are promising new changes to federal requirements that may expand these opportunities; I describe these in the next section).

These conditions collectively paint a concerning picture of how local governments in both countries interact with national government officials and leverage federal funds. In Germany, large housing projects can be delayed or forced to change due to federal control over infrastructure projects that get in the way. In the United States, available funding for housing and related investments are constrained by complicated federal rules about how the money is spent, making using federal support challenging in the context of adding new housing units.

Breaking Barriers to Building Housing through Publicly Led Development Projects

Local governments in the United States and Germany face a number of challenges in implementing their publicly led development projects. These difficulties may stand in the way of the case-study cities—and others like them—being able to achieve the abundant access to housing their residents desire. Even so, my investigation also points to promising ways that the case-study cities in both countries have demonstrated to advance significant new housing construction in their living lab development areas. Several that stand out include:

- Publicly owned land offers a resource to reduce housing costs and provide government stakeholders the ability to act in the public's interest. Cities can maximize public land ownership while still encouraging new housing development, combined with permanent affordability guarantees.
- Cities can integrate financing and development planning for housing, transit, and other public investments simultaneously. Rather than approaching integrated projects from only one perspective, cities can co-plan to create more vibrant, connected communities.
- Rather than subject new development plans to years of attempts to garner public buy-in through endless

review processes, cities can call upon a well-defined, competitive planning process that, from the start, identifies public priorities related to not just housing but fully integrated projects and leverages those priorities throughout the development timeline.

- The zoning and building codes that localities use to regulate new construction do not have to serve as a major constraint on new housing availability, but rather can support it. Cities can adjust their local guidelines to facilitate more housing development.

Each city may need to apply these approaches in its own way. Integrating publicly led projects with new transit lines may be a more fruitful approach to generating space for new housing in some cities, while altering zoning to support more privately funded projects may be more effective elsewhere. Whatever the case, cities have to find new ways to add housing in the coming years. As an interviewee noted, "Seattle used to think of itself as a medium-sized town, but we are now a metropolis. . . . We are in a city that is land-locked and water-locked, and there is nowhere else to grow but up." Publicly led planning for vibrant and mixed-use new developments with plenty of new housing offers one path to achieve that goal.

● Strategic Use of Publicly Owned Land Combined with New Financing Sources and Affordability Guarantees

The publicly led development approaches each of the case-study cities is pursuing with its respective living lab project is, in some ways, a departure from the assumption that land is a private good which the government has only a limited right to manage through planning. At the core of the approach now being taken by the cities is the use of publicly owned land. Interviewees in each community emphasized that they see public land as an opportunity not to be sold off, but rather to generate leverage over

development plans, create equity to support future projects, and increase opportunities for housing affordability. They noted that, if structured appropriately, a project with publicly owned land could counter gentrification, extract housing from the uncertainty of the private market, and be integrated with other sources of funding and financing to promote better outcomes. Moreover, public land can be easier to redevelop than privately held land because of the less strenuous entitlement process, as noted.

One fundamental benefit of municipal land ownership is that it enables cities to plan for high levels of affordability without requiring as significant a subsidy as with LIHTC or other similar funding sources. “It’s imperative that we keep ownership of the land and mandate affordability,” an Atlanta official told me. The approach to do that is new. According to staff, city land previously was conceived as something that, in the context of housing developments, could be sold off—in some cases to nonprofit affordable housing developers; this was often used as a low- or no-cost contribution to LIHTC financing deals. But now, “we’re moving toward a value-generating approach,” said an interviewee. “We’ve come to the conclusion that the best way to generate a sizable return on our public land portfolio is to start thinking of our land contribution as an equity contribution on deals that are income-producing and that include affordable housing. So it’s to think like private investors that want to create more income for the city.”

This approach places the city in the forefront of the development process. In the past, if they did not sell it, cities like Atlanta would often sit on their land—even in the most hot-market neighborhoods—unconcerned about the degree to which it was contributing to the city’s housing supply. If developers advanced a proposal for new

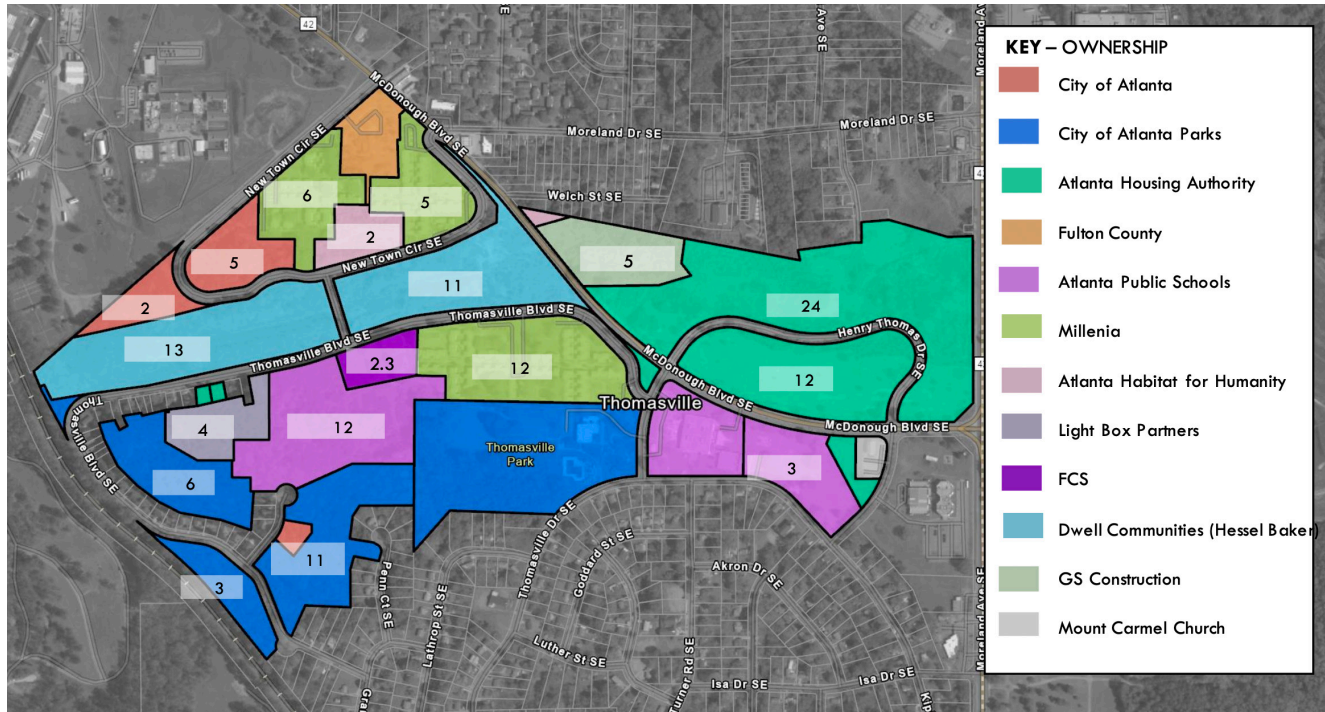
construction, the city might consider it. But now, the local government is taking a proactive lead on using the land to advance city priorities. This requires partnerships within agencies to assemble land parcels and use them. Noted a city employee, “We say, ‘hey, fire department, we’re not getting rid of your station, we’re either working with a developer to pick an alternative site [for the fire station],’ which allows the department to avoid the procurement process, ‘or we’ll rebuild it on the site’” as part of a larger development project.

Atlanta is undertaking this approach directly at Thomasville Heights, where the city and sister agencies already own a majority of the land to be redeveloped (figure 13). Municipal staff believe that the city can do a better job encouraging transformation in this relatively low-income community than the private sector can. “Our horizon is a bit longer than the typical investor,” said an interviewee. “Ultimately, you have to create some kind of market desire to move in the area.” And by using its own land, the city can think about the long term, integrate housing affordability from the beginning, introduce a large share of affordable housing into the portfolio, and ensure that the housing is being built in association with a mix of uses to create a vibrant community.

FIGURE 13

A Variety of Public Agencies Own a Large Share of Land in Atlanta's Thomasville Heights

Of 120 acres of undeveloped land in the neighborhood, 89 are publicly owned



Source: City of Atlanta, Office of the Chief Policy Officer.

Atlanta is not the only city focusing on the potential use of its publicly owned land. In Seattle, a planning staff member told me that “we’re looking at government agency owned property in general. We don’t want to just have this with Sound Transit, we also want to look at King County [which encompasses the city] and the school district: What are all the government parcels that might be good candidates for development?” Another emphasized, “It’s our intention that we want all the land that’s available. . . . I view the land that Sound Transit is taking [for the light rail project] as just the start.” In theory, many of these properties can be converted from some other use to focus on the goal of expanding housing supply.

Several of the cities are associating publicly owned land with new financing sources. In Seattle, a housing levy that was renewed and expanded in 2023 generates funding to be used for the production and preservation of affordable housing. In Atlanta, a \$100 million housing bond funded by city taxpayers will be complemented by philanthropic

dollars generated by the Atlanta Community Foundation and Woodruff Foundation. The Housing Production Fund will provide low-cost, mezzanine construction financing for mixed-income housing projects, with the goal of providing additional sources for affordable housing financing beyond what is already available through federal programs.

Some of the cities have created new public entities designed to ease the process of developing major projects like the living lab sites. Atlanta’s Mayor Andre Dickens moved the city’s Housing Innovation Lab into the mayor’s office with the goal of promoting his administration’s goal of adding 20,000 affordable housing units. And he led the Atlanta Housing Authority to create a new subsidiary housing developer, a governmental nonprofit called Atlanta Urban Development Corporation (AUDC) that is tasked with financing and developing mixed-income housing, sometimes referred to as social housing.³⁸ AUDC has the added advantage of enabling the city to develop

a long-lived institution tasked with housing construction. City staff want it to “exist insulated from the mayor” in the context of frequent political shifts.

AUDC is still building out its capacity, but it will be designed to co-develop and own projects through a joint venture model. Housing units developed by the agency could be made a key component of the Thomasville Heights development. This new authority has the advantage of enabling the city to “think beyond” LIHTC, as one interviewee put it. This new approach will expand the public capacity for development, bringing in real estate expertise as a core municipal function.

Seattle is on the way to implementing such a social housing agency, thanks to the 2023 voter approval of the Seattle Social Housing Developer. That independent, city entity will be designed to produce new housing units designed for residents with low, moderate, and middle incomes, and these could theoretically be integrated into the living lab project sites. That said, it remains to be seen how this body will be managed and funded.³⁹

St. Louis, too, has created an independent public agency tasked with engaging in land assembly and project advancement, the St. Louis Development Corporation. This agency has focused on what to do with the city’s mass of 25,000 vacant properties, many of which are in the Near North Area. The Corporation, like AUDC, is somewhat insulated from day-to-day political engagement, enabling it to act more quickly.

In Germany, the case-study cities leverage public land continuously as the preferred approach to undertake new housing development projects. Using regulatory tools that the national government has provided, especially the Urban Development Measure, the cities identify key land that they plan to develop and then expropriate it at prices that have not been inflated by speculation, before leasing it out to private entities. The profits from those leases go on to fund services such as schools and daycare. In Berlin, the city has focused on “not only housing and social housing, but a mixed social situation,” according to an attendee at a project convening. This is made possible by integrating the city’s social housing developer into plans and ensuring that they develop some of the project sites. City staff work to ensure that projects include a full mix of neighborhood amenities, such as groceries and green space, within an easily walkable distance.

In Munich, the city’s Sozial orientierter Bodennutzung (SoBoN) policy requires developers constructing on city-owned land to provide a minimum share of new units as affordable.⁴⁰ Developers respond to city invitations to present project ideas, and then are judged based on the quality of their proposals before they are chosen to engage in a long-term ground lease (projects that better meet public goals through the planned provision of public amenities are more likely to win). Private developers involved in projects on public land also contribute to the costs of infrastructure in the neighborhood, further enabling new construction.

● True Integration of Transportation and Housing Investments in the Face of Challenging Project Timelines

Staff in each of the case-study cities is committed to concentrating housing in areas accessible to transit services. Access to transit has several advantages: It encourages residents to use environmentally friendly modes of transportation, it can reduce project development costs (by eliminating the need to build as much parking), and it lowers overall living costs by allowing residents to avoid the costs of traveling by car. But building housing in a way that capitalizes on transit can be difficult, in part because of the differing timelines between the two types of investments, as described. Conducting this sort of joint planning requires intentional planning across municipal agencies that are building a common front. An interviewee from Atlanta emphasized, “we have to be really intentional because we’re retrofitting an auto-centric city. If you don’t do it right, you’ll end up with a lot of car dependency.”

The focus on linking housing construction with transportation investments is particularly a factor in Germany. Noted one convening attendee from Berlin, “We are considering that if we’re planning new areas, and housing areas, there is definitely no need to have a car—it’s always a possibility to use public transportation.” A Frankfurt representative agreed that “getting away from individual, car-centered new development—that will be a big chance for rethinking the issue of providing space for amenities.”

In Berlin and Munich, officials intentionally chose a site for redevelopment adjacent to existing, high-quality transit services. Residents of each living lab site will be able to travel throughout the region quickly thanks to these connections. In Berlin, in addition, the city is planning a frequent, dedicated bus rapid transit line linking the regional rail line to the full breadth of the new district. This project is being implemented along the major east-west corridor that will cross the neighborhood at the same time as the new housing is being built. Profits from the new development will help finance the bus line; as such, the

project will be fully accessible by public transportation from the start.

In Frankfurt, the city government is planning the creation of the Northwest neighborhood and funding the extension of transit to serve the site. The city government is ensuring that the thousands of residents at the development will get access to both regional rail and light rail service. These joint investments will guarantee that the neighborhood meets the city’s goal of adding housing density without adding street traffic.

As described above, in the United States, local governments often struggle to integrate planning processes across multiple city departments involved in multiple policy areas. This is despite the fact that, as in Germany, there is real demand for planning around transit. First, staff in US cities acknowledge the environmental and cost-savings benefits of concentrating development in ways that leverage integration with public transportation. Second, the reality is that many of the neighborhoods surrounding the living lab sites are already filled with residents who use transit. “There are really staggering rates of carelessness,” noted an official from St. Louis. “Over 50 percent of the households in those areas don’t have cars.”

This is a change from the past; noted an interviewee, “If you’re building housing, it’s easy to get myopic.” From this perspective, both Atlanta and Seattle have led the way by “quarterbacking” TOD. In the first city, the mayor’s office has concentrated decisionmaking by bringing in staff involved with a full breadth of issues related to the Thomasville Heights project, including transit, financing, parks, and schools. “We start with . . . the assets or resources that the different partners have,” said an Atlanta official. “Almost all of them are receptive to the idea that if we work together, we can accomplish something that’s really meaningful.” In Seattle, a planning agency staff member told me, “We are a team of city departments that

are contributing to this. For the most part, we try to work really collaboratively. We are one Seattle voice.”

As in Germany, US planners are focusing on ensuring that TOD means more than just housing located near transit. In Seattle, a planner asked, “What are the other modes that need to be plugged in, and understanding what amenities are needed? There’s a catalytic opportunity for the kinds of things we’re looking at, so economic development, commercial space, and more.” City staff pledged to take a major role in station-area planning as soon as Sound Transit finalizes station sites for the light rail project. And they will do so in concert with available public land.

One opportunity that Seattle is piloting is the use of excess transit agency-owned land around future stations for housing development. Once no longer needed for the transit project itself (such as for construction staging), that land will be targeted for affordable housing use. Because the land is publicly owned, it will become more feasible to construct housing at lower costs. This will become even more possible thanks to Sound Transit’s creation of a revolving loan fund designed to help support TOD.

Interviewees in Seattle mentioned an example of housing–transportation planning integration in their city. The Yesler Terrace neighborhood, while not a living lab site, was redeveloped in concert with the construction of a streetcar route, the First Hill line. In the late 2000s, the city began planning for this route, which would connect

its train station and the Capitol Hill district. At the same time, the low-slung, 561-unit public housing development at Yesler Terrace—on a 30-acre site—was identified by the Seattle Housing Authority (2023) for redevelopment due to aging infrastructure, and the agency began plans for its redevelopment.

Given the importance of the redevelopment project, planners at Sound Transit altered the proposed alignment of the First Hill line, with the goal of better serving Yesler Terrace (Sound Transit 2010).⁴¹ That line opened for service in 2016. And in 2013, the public housing project redevelopment was underway, made possible by a combination of LIHTC, HUD grants, state housing grants, and private investment. The area is planned for an almost nine-fold increase in housing density, and 3,900 units are already completed or underway, including a full set of replacement units designed for families with very low incomes, plus 1,000 more for families with low and moderate incomes (Seattle Housing Authority 2022). The project also includes new public parks, a community center, and medical facilities (figure 14). This deliberate concentration of units around a new transit line demonstrates the intentional increase in density made possible through better access to public transportation and a combination of public subsidies and private real-estate. Noted a Seattle interviewee, Yesler Terrace “proves it can be done—what’s emerging is a very desirable, mixed-income community that’s close to jobs, downtown, and public transportation.”

FIGURE 14

Seattle's Yesler Terrace Integrates Thousands of New Housing Units Adjacent to Streetcar Line



Source: Seattle Housing Authority (2022).

Note: Housing projects noted with red boxes; neighborhood amenities noted with blue boxes; medical and hotel uses noted with purple boxes; and future project noted with yellow box.

The US federal government could be a key partner in enabling the joint housing and transportation planning that the case-study cities want to pursue at their living lab sites. The FTA encourages new transit lines to be coordinated with zoning changes that allow more housing construction through its grantmaking processes. That agency also enables transit agencies to leverage station-area land for joint development, meaning projects that are directly linked to stations. Meanwhile, federal transportation grant dollars can be used for both TOD planning and joint development site infrastructure, such as roads and utilities (though they cannot be used for housing construction

directly); CDBG funds can also be used for those uses, as noted.

Recent changes to federal laws and regulations have provided new opportunities. The 2022 National Defense Authorization Act (NDAA) updated rules related to the disposition of land purchased with federal funds (Freemark 2023b). The FTA's guidance allows transit agencies to give land purchased using federal funds to public or nonprofit agencies for the purposes of affordable housing without having to pay the federal government back. This disposition can be undertaken without additional

public review, greatly simplifying the ability of agencies like Sound Transit to develop housing on land used for light rail construction.

The federal government has also adapted regulations related to use of loans provided by the Transportation Infrastructure Finance and Innovation Act (TIFIA) and Railroad Rehabilitation & Improvement Financing (RRIF)

programs. TIFIA and RRIF loans—which originally were focused on financing transportation projects with low-interest loans—can now be used for TOD. The programs offer both construction and permanent loans at much lower rates than commercially available. Though the programs have not yet financed any actual TOD projects, according to a federal interviewee, the goal is to begin providing loans to real estate projects in 2024.

● Multi-Stage Planning Process, Integrating Resident Engagement

As described, the current public planning process has the tendency to prioritize the points of view of only a certain subset of residents. People with higher incomes, people who are white, and people who are homeowners typically engage more directly in planning for new housing than others. And this has the ill effect of sometimes inhibiting housing construction. Interviewees from all cities agreed that the solution to this problem is not to eliminate resident engagement, but rather to create engagement processes that are more inclusive but also more definitively aimed toward ensuring that they result in more housing as an end product.

The US case-study cities developed comprehensive approaches to engage residents as part of their publicly led projects. In St. Louis, the local government hired a planning consultant to conduct resident training sessions to increase comfort with the process, as well as sharing information via town hall meetings, door-to-door flyers, and other sorts of engagement. In Seattle, officials affirmed that “we owe it to the residents of the city that the projects that Sound Transit builds integrate into communities and provide the most rich transit-oriented experience for those communities.” In Atlanta, officials undertook a similar series of public engagement programs designed to compile feedback from neighbors, with the goal of “build[ing] coalitions of the residents,” according to a local housing staffer. “We’re really sensitive to not drop in and

do a whole bunch of stuff without engaging the residents. it was essential that we develop alongside the residents.”

As described, staff argued that neither the project in Atlanta nor that in St. Louis has been seriously threatened by resident opposition. One explanation is surely the comprehensiveness of the resident engagement program. Another may be the fact that, in Atlanta, the renovation and replacement of the Forest Cove complex was association with a promise of a right to return for former residents. “We said, no matter what happens there, we’re going to create a high-quality neighborhood and give you all a chance to get there,” said a city employee.

The German cities offer some useful examples for how resident engagement can be leveraged to produce better projects. In Berlin and Frankfurt, as briefly mentioned above, the local governments conducted an urban design process meant to collect information from residents, pit ideas against one another, and end up with the best possible urban development. This process works as follows:

1. The city government identifies a development site for construction of new housing and other needs (in this case, the living lab sites).
2. The city hires and pays a number of urban design and planning teams to develop planning ideas for the site,

based on the city's general goal of increasing housing availability there (three teams in the case of Berlin, seven in the case of Frankfurt).

3. The public reviews these ideas in a series of open meetings and provides feedback to the design teams.
4. These teams (still paid) refine their plans, twice, in part to reflect the public's views about how to design to development.
5. A jury primarily comprised of experts in urban design and planning, but typically incorporating a resident member, then votes on the preferred alternative,

which becomes the city's final design to be implemented in the city's planning code.

This process is new to German cities, but it offers an intriguing example to follow for other cities considering how to advance major new development projects with the public's input. It has the benefit of structuring input over a series of sessions and doing so in a way that also prioritizes the points of view of experts. Hiring several urban design firms to create planning concepts from the beginning allows for a variety of options to be presented while maintaining the general purpose of the project, increasing housing supply.

● Developing Appropriate Land-Use Regulatory Codes

Interviewees from the case-study cities repeatedly argued that their ability to complete their respective publicly led development project was not limited by local zoning and building codes, as described. Because the city is leading project development in each case, city staff feel empowered to pursue the project that they believe is a best fit for the site, and, if necessary, to seek changes to local zoning afterwards. They do not think that making those changes is particularly burdensome, perhaps because they are public agencies. Even so, there are some key lessons to be learned from the development processes of the living lab sites, first, in terms of ensuring that zoning aligns with long-term plans and the timing issues inherent in development, and second, in terms of increasing the city's authority to regulate development in key areas.

Consider first the alignment between development planning and comprehensive plans. In St. Louis, local officials have emphasized the importance of updating the city's strategic land-use plan to reflect the priorities it has set out as part of the Near North planning process. This plan

update will ensure coherence between different sorts of investment across city agencies and the general goal of making the neighborhood one with a high quality of life.

But zoning policy is also meaningful for the implementation of major projects in the context of their extended implementation process. Here, Seattle is taking an interesting approach to dealing with the city's concerns, as noted, that upzoning too quickly could make the neighborhood unaffordable and inhibit public land purchase. The city is thus planning to implement what it refers to as "interim controls" that are designed, according to a city staffer, not "just to limit the bad development—it's also a tool to not rezone too early." These policies could, for example, limit the construction of new drive-through restaurants, prevent new storage facilities, and ensure that setbacks for new buildings respect adequate sidewalk rights-of-way, to ensure that the areas around stations appropriately reflect the goal of creating a walkable neighborhood; "It's really a way to set the development environment in advance so we don't hamstring ourselves," another interviewee said.

In the longer term, these interim regulations will be replaced. City staff expect the creation of TOD-oriented rules that support higher density uses, while incorporating inclusionary zoning requirements to ensure that new projects include an affordable housing element. This may include a series of anti-displacement measures that could, for example, protect from demolition apartment complexes with a high number of residents with low incomes. But the details of these policies have yet to be concretized.

Germany's Urban Development Measure was used by both Berlin and Frankfurt to ensure that they could assemble a large land parcel at property prices that did not inflate due to investor speculation. This tool was essential in enabling the city government to affordably buy land, thanks to its provisions that allow property values to be frozen. It will also be key to ensuring that the city can later fund social services by leveraging revenues from leasing parcels to private developers. This tool does not exist in a similar way in the US cities.

Conclusions

Through an investigation of the approaches six case-study cities in the United States and Germany are taking to conducting publicly led development, I have identified not only several of the key barriers to new housing investment, but also several potential mechanisms to break those barriers. There remain substantial obstacles to building enough housing to meet the need in both countries—and this study does not provide much information about how to encourage *privately* developed housing. But the case-study cities clearly demonstrate effective approaches on the path toward providing more housing. Some of these strategies could be beneficial for cities across both countries to emulate.

Most remarkable, perhaps, is the systematically courageous point of view that staff in each of the cities are taking in planning for their cities' respective future. In each city, political leaders have chosen to take pride in the future of their community and bring a cohort of people and institutions together to support the difficult endeavor of assembling and leading the planning and development of new housing projects. Each of the cities is demonstrating its resilience in the face of mounting affordability pressures by trying something new.

From that perspective, the choice by each city I study here to emphasize the role of the public sector in housing creation stands out. In both countries, city leaders acknowledge that they cannot just rely on the private real estate market to act independently to construct adequate housing for their respective populations. Rather, major publicly controlled development sites and development plans can be used as a mechanism to add thousands of new housing units. And those units can be added in a way that increases housing affordability, offers access to

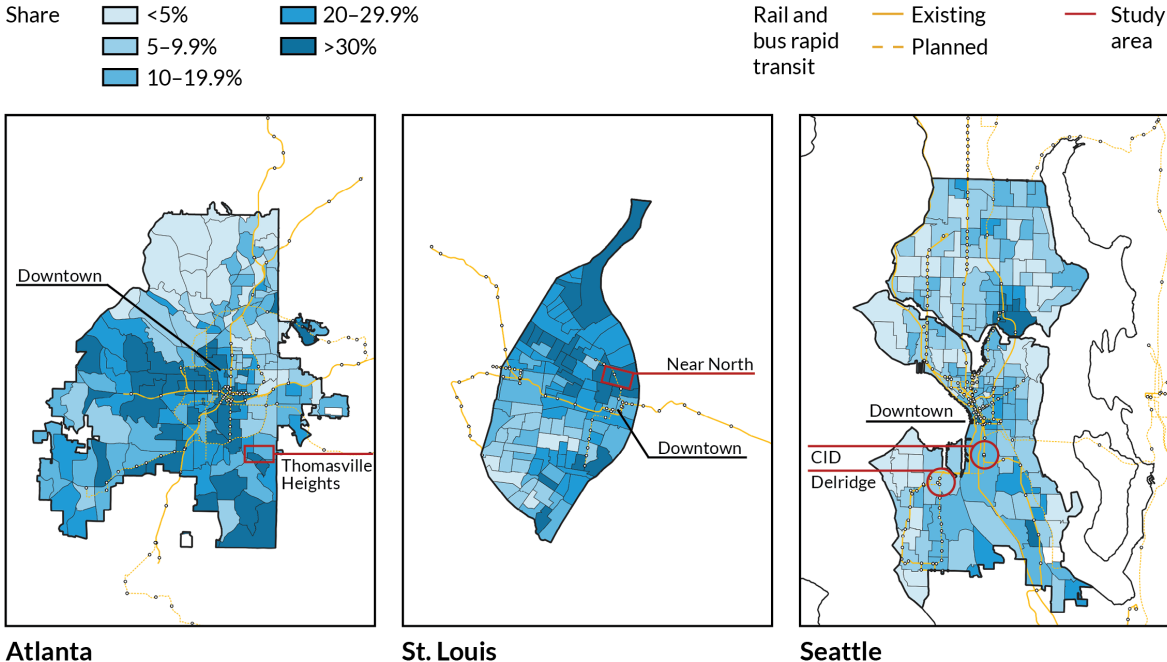
effective public transportation, and ensures a higher quality of life for residents. If successful, these development projects could represent a new model for developing integrated, high-density urban neighborhoods.

Both US and German cities can learn from each other's experience. The US cities have demonstrated key approaches to engage a wide swath of their residents, including some of the most historically disenfranchised, to the benefit of project advancement. The German cities have been able to leverage federal regulatory structures to speed project delivery. Both sets of cities have shown the value of using publicly owned land. As the living labs move toward completion, the transatlantic exchange of ideas about city planning can only improve results.

Appendix

In the maps that follow, I illustrate differences in the demographics of neighborhoods throughout each of the US case-study cities. Each map identifies where the living lab publicly led development site is located, as well as the location of existing and planned rail and bus rapid transit.

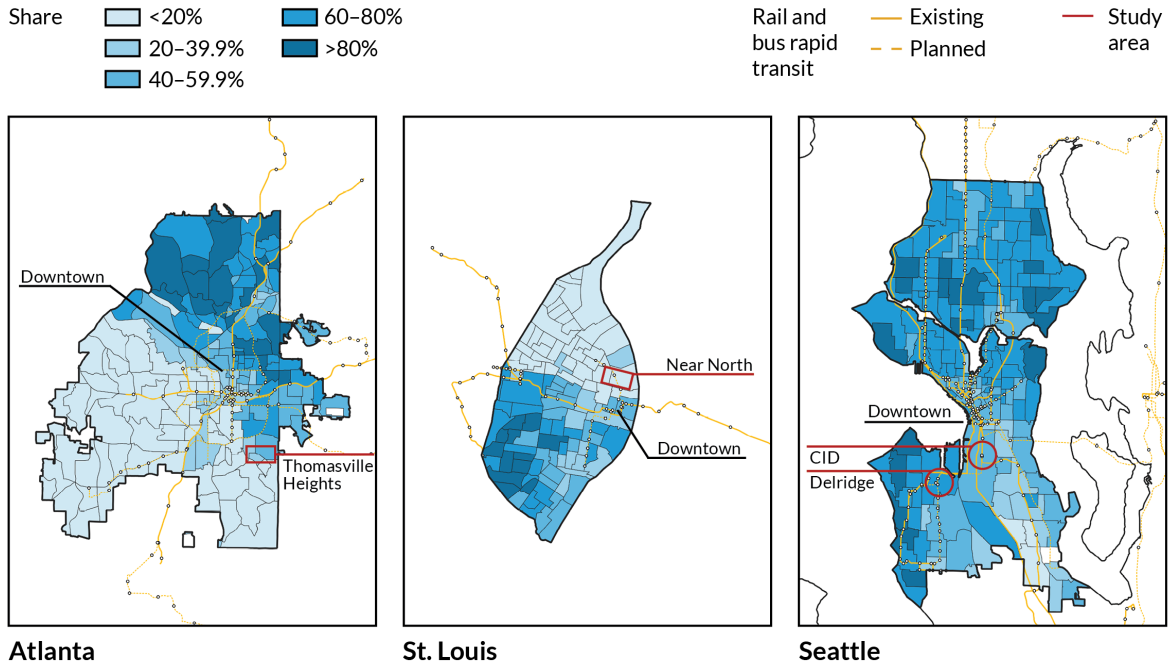
FIGURE A.1
Share of Population Living Under the Federal Poverty Line



Source: US Census 2017–21 5-year American Community Survey, showing Census tract level data.

FIGURE A.2

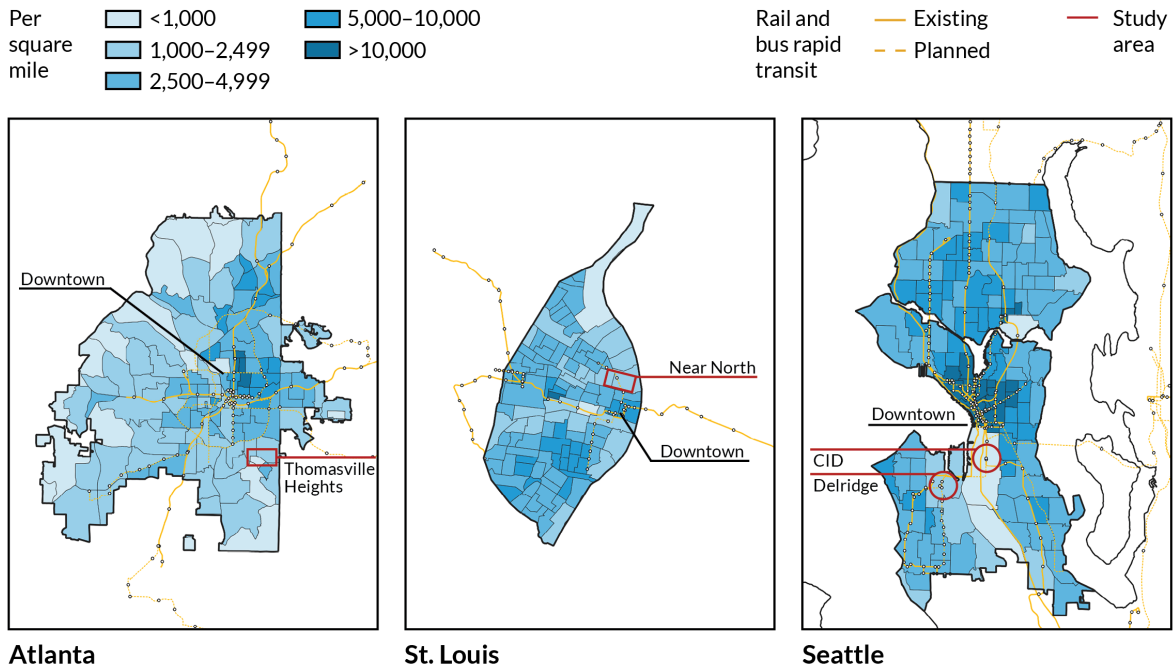
Share of Population that is Non-Hispanic White



Source: US Census 2017–21 5-year American Community Survey, showing Census tract level data.

FIGURE A.3

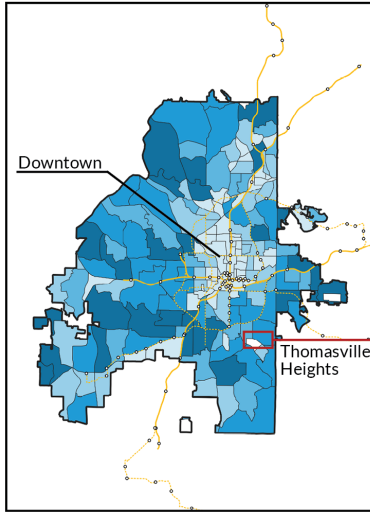
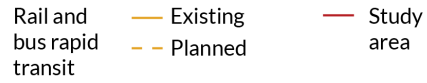
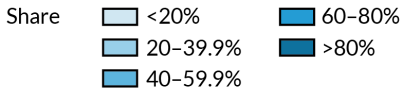
Housing Density per Square Mile



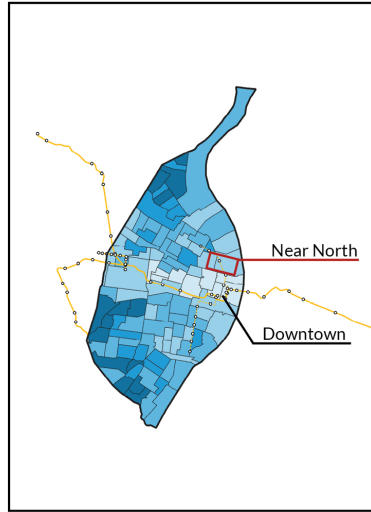
Source: Historical Housing Unit and Urbanization Database 2010 (2019 data).

FIGURE A.4

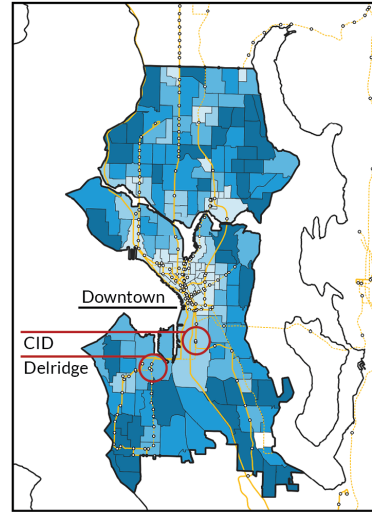
Share of Housing Units that are Single-Family Homes



Atlanta



St. Louis

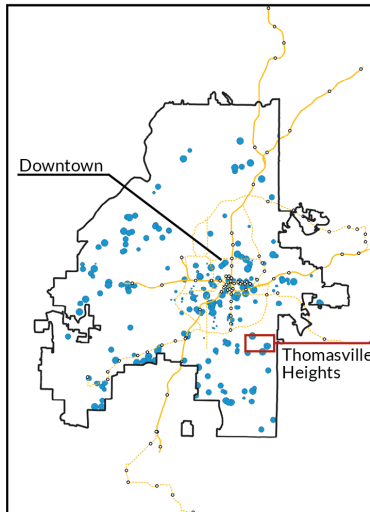
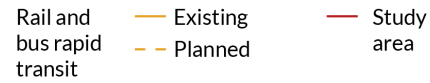
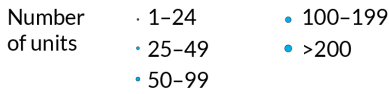


Seattle

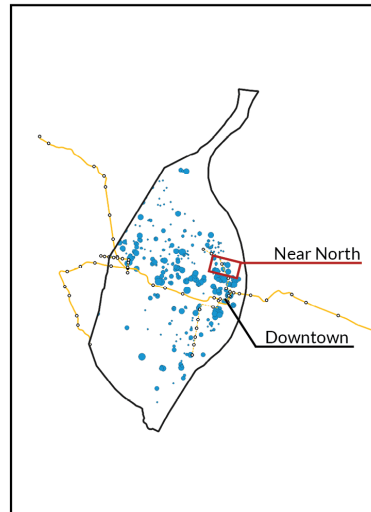
Source: US Census 2017–21 5-year American Community Survey.

FIGURE A.5

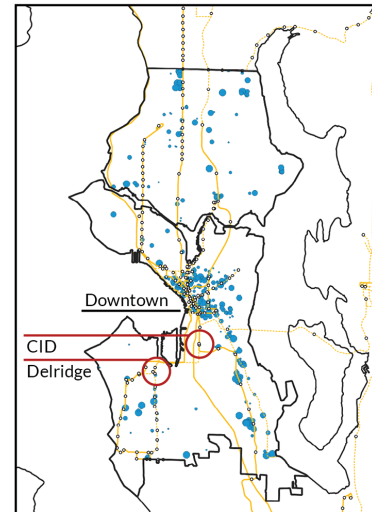
Distribution of Federally Subsidized Affordable Housing Units



Atlanta



St. Louis



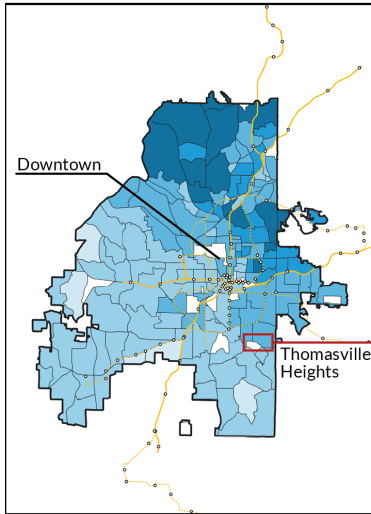
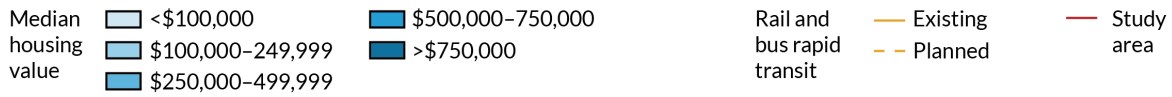
Seattle

Source: National Housing Preservation Database (2022).

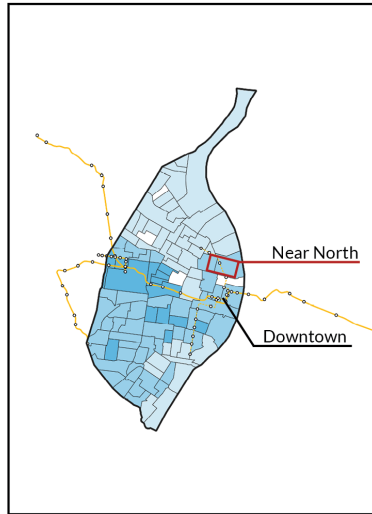
Notes: Affordable units included on these maps include all project-based, federally subsidized units, including public housing, project-based Section 8, and Low-Income Housing Tax Credit units.

FIGURE A.6

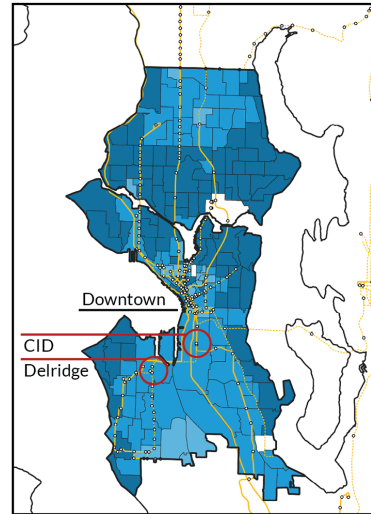
Median Housing Value



Atlanta



St. Louis

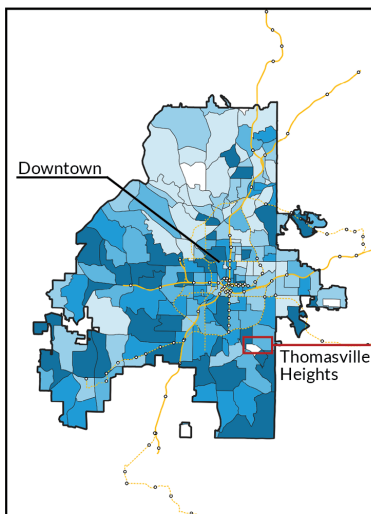


Seattle

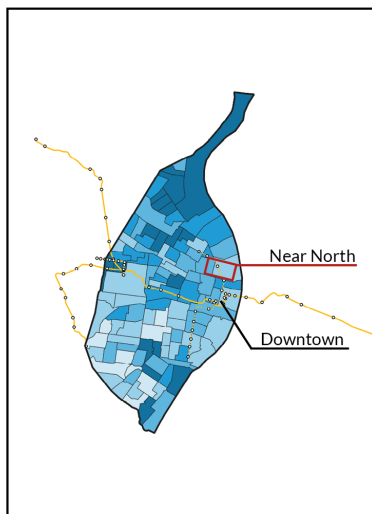
Source: US Census 2017–21 5-year American Community Survey.

FIGURE A.7

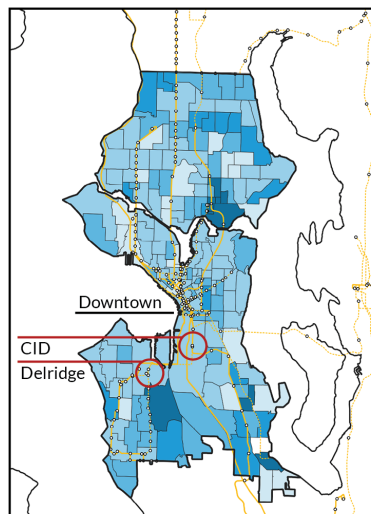
Share of Households Spending More than 50 Percent of Income on Rent



Atlanta



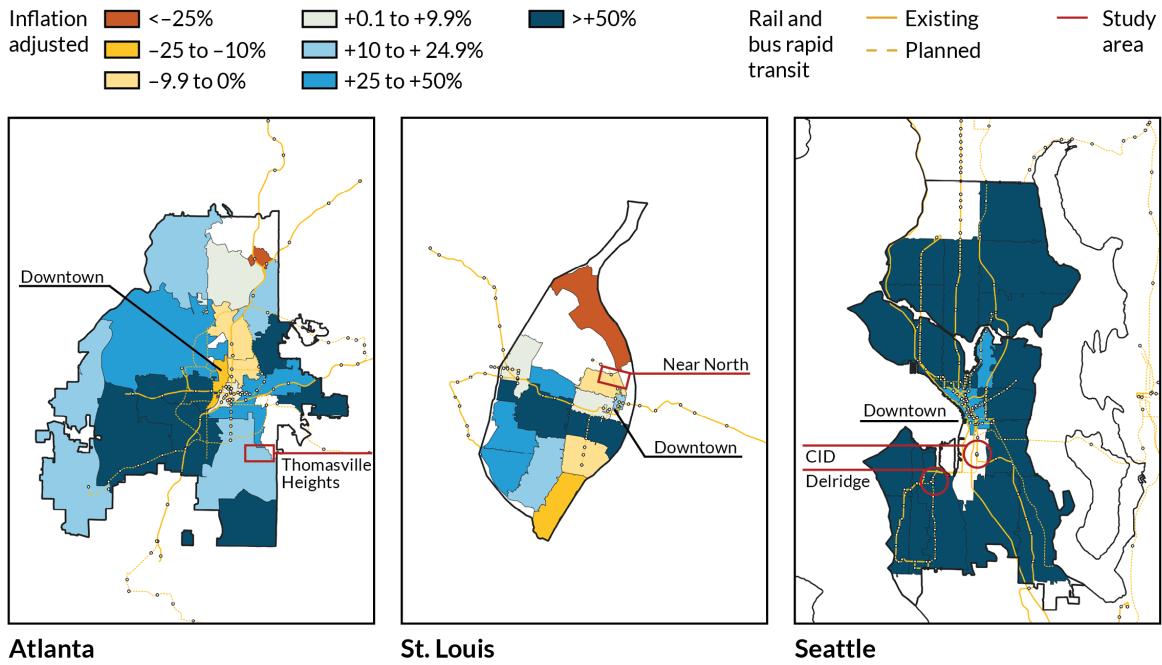
St. Louis



Seattle

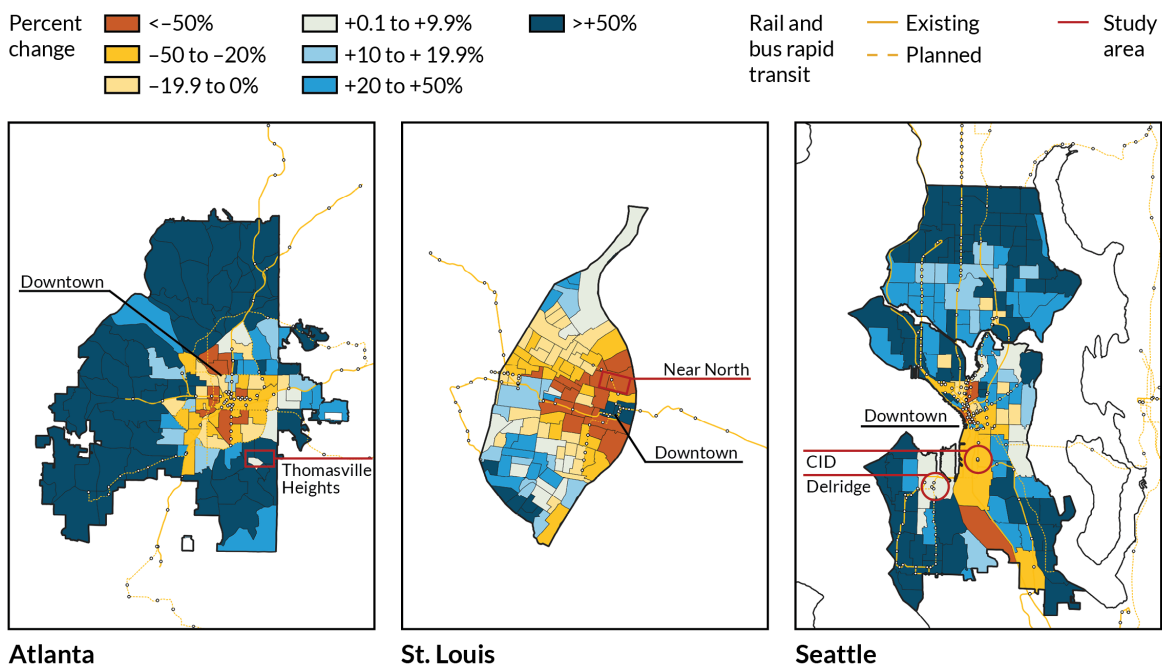
Source: US Census 2017–21 5-year American Community Survey.

FIGURE A.8
Change in Median Housing Values, 2001–22



Source: Zillow Home Value Index, all homes, by Zip code (2022).
Notes: Areas without data are shown in white.

FIGURE A.9
Change in Housing Units by Neighborhood, Case-Study Cities
Percent change from 1950 to 1990

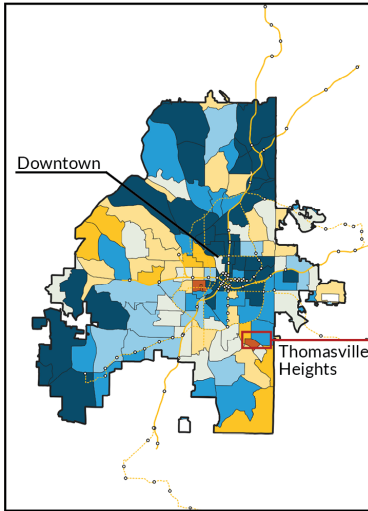
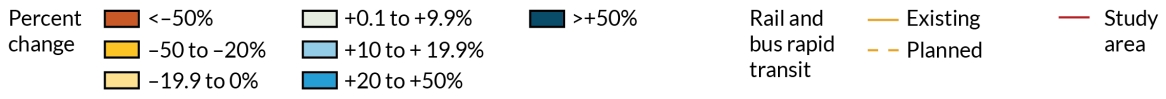


Source: Historical Housing Unit and Urbanization Database 2010 (1950 and 1990 data).

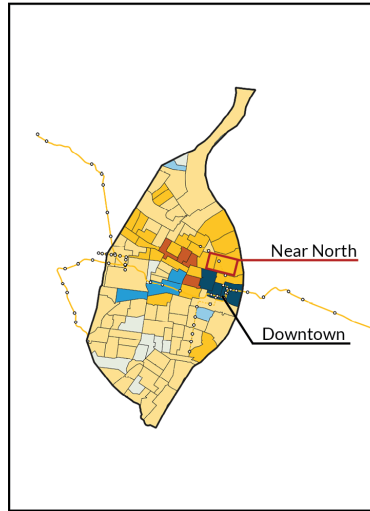
FIGURE A.10

Change in Housing Units by Neighborhood, Case-Study Cities

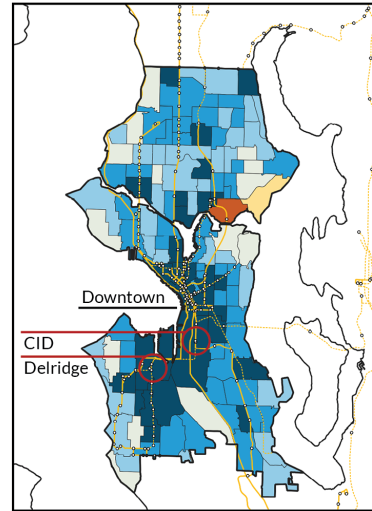
Percent change from 1990 to 2015–19



Atlanta



St. Louis



Seattle

Source: Historical Housing Unit and Urbanization Database 2010 (1950 and 1990 data).

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