AMENITIZING URBAN WATERWAYS
Planning public space improvements with vulnerable communities in mind

Timothy Douglas 2017
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University of California, Los Angeles
Luskin School of Public Affairs

Amenitizing Urban Waterways: Planning Public Space Improvements with Vulnerable Communities in Mind

A comprehensive project submitted in partial satisfaction of the requirements for the degree Master of Urban and Regional Planning

by

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June 2017
Disclaimer

This report was prepared in partial fulfillment of the requirements for the Master in Urban and Regional Planning degree in the Department of Urban Planning at the University of California, Los Angeles. It was prepared at the direction of the Department and of Dr. Kyle Shelton as a planning client. The views expressed herein are those of the authors and not necessarily those of the Department, the UCLA Luskin School of Public Affairs, UCLA as a whole, nor of the Kinder Institute for Urban Research or Rice University as a whole.
My sincerest thanks to my advisor Dr. Lens and my client Dr. Shelton for contributing to the success of this project. I appreciate all the time you spent discussing and editing and supporting me. Thank you to my classmates for all of the design advice provided. Thank you to my partner Jude for putting up with all of my cranky nights and long hours.
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Cities are, by definition, ever-changing and transforming. As new ideas take hold and our values and preferences shift, the physical image of the city changes too. From the “string of pearls” of linear streetcar suburb development, or the extensive sprawl we experience as a result of unimpeded freeway expansion, the decisions we make today regarding land use and infrastructure lay the foundation for future prosperity for years. In this project, I argue that many cities across the United States are embarking on a new trajectory of open space and central city-oriented planning - a growing movement styled as Trail-Oriented Development, or TrOD. Cities ranging in size and shape are reimagining their urban waterfronts and linear corridors as new sites of living, recreating, and working. Increasingly, Nashvilles to the Pittsburgs of America are realizing that waterfronts initially important for industry can serve new purposes and inject new life into urban cores.

All of this development is certainly exciting for urbanists and urban residents alike, and they have the potential to reap large financial and public health benefits for the public. However, as I discover in my case studies and analysis of Houston and Los Angeles that these benefits are often presented in the absence of any true costs other than initial financial costs. There is a body of literature that supports the notion that improved public spaces have a positive effect on rents and property values, but that this should be tempered by the potential for gentrification and displacement in redeveloping communities. Rarely are cities including an analysis of the communities that already live in the areas that are being redeveloped.

The vulnerability analysis that I conduct for Houston and Los Angeles reveals that there are areas of substantial vulnerability along their rivers precisely in the areas that will receive lots of investment and new development. These are low-income communities of color which have historically experienced disinvestment high rates of poverty. This project is important because of the American legacy of redevelopment and displacement, and it is critical that this new wave of urban development not exacerbate systemic inequality. The premise of this project is simple: we must do our due diligence to ensure that urban waterfront redevelopment benefits as many people as possible, and that we work proactively to identify communities that could be harmed and target policy solutions.
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By far the greatest and most admirable form of wisdom is that needed to plan and beautify cities and human communities.

– Socrates
Our urban waterfronts are making a comeback. As we begin to see a reversal in central city decline and the American economy continues on its relentless shift towards a service-based economy, cities across the United States are reimagining their relationship to their waterfronts. Indeed, waterfronts have historically been the nuclei of cities; providing economic prosperity and sustenance to early urban residents. Some cities, like New York, have reclaimed land and built showcase parks and communities like Battery Park City. Others, like Pittsburgh are creating an integrated system of parks and trails that provide quick access to those wishing to commute actively or find respite from the urban environment. Still more, like Nashville, have transformative plans to create new islands and urban waterways to provide people new recreation alternatives. The plans are bold visions for new open spaces that will spur new development, guide new infrastructure planning, and improve health for residents. But despite all of the optimism and pomp, there is a very real need for planners to concern ourselves with the communities that may already live where these new places will be created. Demographic characteristics often differ among communities along the rivers, bayous, and corridors explored in this report, meaning that the effects of redevelopment will be differentiated for different groups.

Houston and Los Angeles are compared to each other because of perceived similarities: the cities are each components of massive, sprawling regions that are as diverse as they are segregated. Both have downtowns complete with skyscrapers; those immense symbols of global capitalism and industrial leadership. They contain the largest ports in the USA - the combined Port of Los Angeles/Long Beach receives the lion’s share of USA’s container goods, while the Port of Houston is the major port of entry/exit for oil and gas. For much of the past 50 years, they have been defined by their auto-centricity but have both recently embarked on a new, more sustainable path of transit and active transportation projects. This project aims to contribute to the efforts of LA and Houston as they move into a new, people-oriented chapter in their transportation planning histories. Auto-centric infrastructure has had negative impacts on marginalized communities in each of these cities (and elsewhere). It is critical to ensure that as we move forward, the projects...
that we plan benefit those communities and do not contribute to further marginalization. A household’s mode of transportation, while still most often a private automobile, is differentiated along income lines. Low income folks disproportionately rely on active modes like walking and biking out of necessity, though often these same low income communities do not have access to safe bicycle facilities or adequate sidewalks - if sidewalks exist at all. The problem snowballs as low income communities have lower rates of civic engagement and knowledge of the planning process, and are less likely to demand upgraded facilities from municipalities. In cities from Chicago to Los Angeles, low income neighborhoods have less bike lanes and more fatalities. As gentrification takes root in cities across the country, some communities view new bike lanes as a threat - an amenity that didn’t exist until wealthier, whiter groups moved in. This results in a seemingly paradoxical situation where the communities that need improved facilities rally against them in the hopes of slowing down gentrification and ensuing neighborhood change. Proper solutions require active engagement with communities and a commitment on the part of municipalities to understand how their constituents travel and where there are safety concerns. It also requires an equitable approach to providing infrastructure - spending dollars in communities that need the investment, not simply communities that ask the loudest.

**PURPOSE OF THIS REPORT**

This report first begins by introducing the focus cities of this project, Houston and Los Angeles and their respective showcase projects. I provide a brief overview of demographics in each city and some background information about the major redevelopment plans of each. Following this section is a literature review that explores the themes relevant to waterfront and linear corridor redevelopment in a society characterized by inequality. I analyse four cities – Atlanta, Louisville, Nashville, and Pittsburgh to draw lessons from redevelopment projects that are transforming their cities in the ways that L.A. and Houston are planning with their own plans. Putting theory and the case study findings together, I create a sociodemographic vulnerability index for Houston and Los Angeles to identify communities along the Buffalo Bayou and Los Angeles River that have high concentration of factors which may render them vulnerable to gentrification and displacement. Finally, I conclude my analysis by looking specifically at particular communities within Houston and Los Angeles that were ranked as vulnerable, and propose policy recommendations for the entities that are in charge of redevelopment.

Analyzing vulnerability to gentrification allows planners and policymakers to better understand who may bear the negative consequences of these transformative projects, and where additional resources, housing, and amenities should be targeted. Too often the benefits are praised in terms of mileage of new bike facilities, acreage of new park space, and square footage of new mixed-used
developments with insufficient attention to effects on vulnerable communities. Community impact assessments are rarely, if ever, included in master plans for projects like the Buffalo Bayou or L.A. River. The purpose of this report is to highlight this aspect of redevelopment and position it as a central factor to consider, understand, and respond to when redeveloping our urban waterfronts.
Houston, with a population of over 2.2 million people, is the largest city in Texas and the fourth largest in the nation. Houston is known for its strengths in aerospace, healthcare, and its notorious traffic congestion in spite of the number of freeways that crisscross the region. It is less notable for vibrant public spaces, although with the opening of the Buffalo Bayou Park and the master plan led by the Buffalo Bayou Partnership (‘BBP’) the city is embarking on a new and greener path.

The Buffalo Bayou Master Plan returns Houstonians to the roots of their city. Houston was founded at a point along the Bayou adjacent to downtown, known as Allen’s Landing, which today has been integrated into the park system that is growing along the Bayou. The BBP has been charging forward with the planning of a central, 10-mile portion of the Bayou which spans diverse neighborhoods ranging in levels of income and racial/ethnic composition. In addition to creating the Buffalo Bayou Park, other BBP projects include daylighting Japhet Creek, constructing dozens of miles of biking, hiking, and walking trails, and the completion of the Buffalo Bend Nature Park - a wildlife-oriented park designed for passive recreation.

The Buffalo Bayou Partnership is the non profit organization leading the planning effort for a new, showcase green space along the Buffalo Bayou (‘the Bayou’). The Bayou runs generally west to east through Harris County, and right through the center of Houston, before eventually flowing into the Gulf of Mexico. As the city developed, it expanded to the west, and subsequently the areas west of downtown along the Bayou are mainly recreational and residential while the eastern portion is much more industrial and port-serving in character. The figures below show land uses of parcels within a half-mile of the Bayou. Houston is notable for not having a zoning code, and thus its land use inventory is incomplete and may not be particularly current, however Harris County (where Houston is located) has a shapefile that is periodically updated, most recently in January 2014. Figure 1 shows the land uses of parcels within a half-mile buffer of the Buffalo Bayou. The figure shows that land use becomes decidedly more industrial as we move east of downtown Houston, though there are large amounts of residential areas located nearby. There is also less open space.

Lost Lake Visitor Center at the Buffalo Bayou Park, open since 2015. Here visitors can find information, rent kayaks and paddle boards and visit landscaped gardens.

Source: buffalobayou.org
Figure 1. Land Use along the Buffalo Bayou (1/2 mile buffer)
The Los Angeles river travels over 48 miles from the Simi Hills south through Los Angeles County where it empties into the Pacific Ocean at Long Beach. There have been efforts for decades to clean up the L.A. River and improve its natural capacity and access for Angelenos. The US Army Corps of Engineers (USACE) has approved $1.3 billion for L.A. River revitalization, rewilding, and development of river-adjacent sites. “Starchitect” Frank Gehry has assembled a team that has been selected to design the 11-mile stretch that is being funded by the USACE. Much of the L.A. River was channelized over a 20 year period following the disastrous flooding of 1938. Channelizing allowed the river to function as a flood management system by moving storm runoff quickly out of the basin, but it also eliminated any signs of natural life and destroyed the ecosystem that was originally there. There are some portions of the river that have retained or have regained their earthen bottoms; the most extensive of which is the 11-mile stretch of river east of Griffith Park known as the Glendale Narrows.

Figure 2 shows the land uses of parcels with a half-mile of the L.A. River. The northern (San Fernando Valley) and southern (Gateway Cities) portions of the river are dominated by residential uses, while the central (Downtown L.A.) portion is very industrial.
Figure 2. Land Use along the L.A. River (1/2 mile buffer)
REFERENCES

This project touches on a number of themes related to the concepts of redevelopment and revitalization, open space and active transportation infrastructure, and neighborhood change. The following section briefly explores the literature in these fields and how they pertain to the L.A. River Revitalization and Buffalo Bayou Master Plan. The first section discusses work done in the field of transportation equity generally, and active transportation equity more specifically. Second is a discussion on the contribution of active transportation to community economic development. Thirdly, I will review the literature that exists on the role that active transportation plays in gentrification, and what impacts this has had on communities, particularly low-income and minority communities. Lastly, I review literature related to the role of waterways in contemporary urban development. They have played a critical mobility and economic role in much of urban history, but with technology advances and economic restructuring, we are seeing a growing trend towards brownfield redevelopment and park conversion.

**Transportation and Park Equity**

The issue of transportation equity is enmeshed within the American civil rights struggle, and continues to be a burden to low-income communities, communities of color, older adults, persons with limited English proficiency, and persons with disabilities.\(^1\)\(^2\)\(^3\) Transportation infrastructure has simultaneously been used to create access for some, while creating barriers for others. Sometimes these barriers are economic - highway infrastructure is for cars, and folks in poverty tend not to purchase cars at the same rates as others.\(^4\) Sometimes the barriers are physical, like so many of the freeways in the United States that separate and divide communities, and reduce access in and out of neighborhoods.\(^5\) Spending on transit is one dimension of transportation inequity. Low income communities and communities of color are disproportionately reliant upon public transportation in the form of buses when compared to the White population, however, low income communities and communities of color also receive far fewer subsidies when compared to spending on suburban, commuter and rail transit services.\(^6\)\(^7\)

Beyond transit, there are also inequities with regards to active transportation access and services. Women and minorities are more likely to report feeling unsafe when traveling by bicycle and agree that more a lack of supportive infrastructure is a key deterrent to traveling by bicycle.\(^8\) Further, spatial inequalities persist, as many residents of low-income and minority communities continue to be more likely to live in environments without active transportation infrastructure that is safe and high-quality.\(^9\)\(^10\)\(^11\)
Active Transportation and Economic Development

Several studies document the increase in the value of properties located adjacent or near to active transportation projects, like improved sidewalks, rail-to-trail conversions or improved bicycle lanes in urban settings.\textsuperscript{12,13,14,15,16,17} The Katy Trail in Dallas, TX\textsuperscript{18} and the Midtown Greenway in Minneapolis, MN\textsuperscript{19} are key examples of locations where developers are reporting that active transportation amenities are increasingly sought-after. In fact, the Greenway is estimated to have catalysed more than $750 million in new residential development.\textsuperscript{20}

Promoting active transportation through targeted investments generates both direct economic benefits as discussed earlier as well as indirect benefits by saving households significant sums of money when they drive less.\textsuperscript{21} These indirect economic benefits include health care cost savings as a result of a more active lifestyle, reduced externalities associated with congestion, reduction in parking subsidies, among many other benefits.\textsuperscript{22,23,24}

A growing body of evidence documents the net positive impacts of pedestrian and bicycle infrastructure on retail sales.\textsuperscript{25,26} Studies have found that cyclists tend to spend less per visit, but shop more frequently throughout a given month, which results in higher monthly spending than people who drive.\textsuperscript{27}

Waterway Revival in the Context of Re-urbanization and Gentrification

For much of the 20th century and indeed before, waterfronts were sites of industry, of commerce, and of manufacturing within cities. Vast amounts of land were necessary for port activities, due to the need for warehousing and storage space.\textsuperscript{28} Waterways like lakes and rivers formed the basis of the economy of many early industrial cities. Water is a necessary input in the production of steel and concrete, materials which helped us to build up our cities. However, as the American economy has transitioned over time away from industry, the economic potential of waterfronts transformed from being seen as an input in production, to a potential site of housing, entertainment, recreation and commercial activities. Cities are reopening their waterfronts which have long been closed off to the public or rendered near-impossible to access because of massive freeways that many cities so fondly built adjacent to their waterfronts and developers are selling them as amenities to attract investment. The inimitable Jane Jacobs has even commented on the lost opportunity of American urban waterfronts, writing that “[t]he waterfront isn’t just something unto itself. It’s connected to everything else”.\textsuperscript{29} Jacobs understood the asset potential of waterfronts, and remarked in her 1958 article how few cities recognized this. The contemporary situation has seemingly evolved, with countless cities around the country embarking on their own waterfront revitalization projects, having recognized that the urban residents of tomorrow in America will not be attracted to
cities because of industrial might, but perhaps instead because of the expanding opportunity to live, work, and play along beautifully designed waterfronts.30

Waterfront redevelopment can be understood as one of the tools that cities are using in order to reurbanize and create beautiful places for residents. Richard Florida has discussed the phenomenon of reurbanization extensively, and describes the current ‘back to the city’ trend exhibited by mainly elite individuals as a “recolonization of the city by the affluent and the advantaged”.31 It is through this lens that major redevelopment projects should be considered, as urban inequality is only increasing year over year, and has been for decades.32 That elite interests have historically co-opted the planning of cities is not up for debate - one need only look at the look at where amenities like schools and parks are in cities like Los Angeles or Houston to see that affluent neighborhoods typically receive more than their share. With major city-building projects comes both the responsibility and the opportunity to plan more inclusively and equitably. Gentrification is a loaded term in the world of urban planning. In this project, I use the definition of gentrification as “simultaneously a spatial and social practice that results in the transformation of a working-class or vacant area of the central city into middle-class residential or commercial use”.33

Active Transportation and Gentrification

It is well established that transportation projects can put upward pressure on nearby property prices, leading to gentrification and potential displacement issues.34 Scholars have discussed the “double-edged sword” of cultural amenities and revitalization, as these processes can contribute to enhanced growth and development,35 but that this growth itself may contribute to gentrification and potential displacement.36

Transit-induced gentrification is a growing subfield of the literature that deals with the impact of transportation investments on property values and subsequently on communities through demographic shifts.37,38,39,40 More recently, research has found that this holds true for some active transportation and greening projects.41 This poses a difficult question to planners aiming to provide enhanced amenities that improve safety, reduce the burden of high transportation costs and otherwise provide a quality public space where people can recreate: what are strategies for providing these community enhancements without harming those intended to receive the benefits of these enhancements?
REFERENCES

20. ibid.
25. ULI (2016).
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Chapter 3

CASE STUDIES

ATLANTA

Phillips Arena. arenadigest.com

NASHVILLE

Ryman Auditorium (front), AT&T Bulding (rear right). planetware.com

LOUISVILLE

Louisville Slugger. styleblueprint.com

PITTSBURGH

The Sister Bridges. brooklineconnection.com
The following section presents four case studies and their redevelopment projects: the BeltLine in Atlanta, Louisville Loop/Waterfront Park in Louisville, Cumberland River Redevelopment in Nashville, and the Three Rivers Park in Pittsburgh. The purpose of these case studies is to examine how the growing trend of riverfront (or in the case of Atlanta - linear corridor) revitalization is occurring, what kinds of neighborhood characteristics exist around these sites, and what the potential costs and benefits are. The cities chosen are at varying stages of development, though share similar characteristics to the projects planned for the focus cities, Los Angeles and Houston. With each case study, I have analysed the sociodemographic characteristics of the surrounding communities, defined by the census block groups falling within a ½-mile buffer around the project site. I examine sociodemographic factors that are associated with higher levels of vulnerability to redevelopment-induced gentrification and potential displacement, such as household income, rent burden, concentration of people of color and commute characteristics.

Pervasive racial and income inequality across U.S. metros leaves communities of color disproportionately more vulnerable to gentrification and displacement. Gentrification in and of itself is a symptom of more pervasive issues, like housing shortages, labor market restructuring, and often, government policy. The involvement of public dollars in gentrification is not a new phenomenon, as it can be traced back to the mid-century policies of urban renewal revitalization. This project largely examines the impacts - both positive and negative - of major waterfront revitalization projects - projects which often are funded with substantial public investment. I do not make claims regarding where gentrification has occurred or is occurring, nor do I claim that these projects necessarily will lead to gentrification or displacement. Rather, I build upon a body of literature that identifies communities with a confluence of characteristics that render them more vulnerable to the effects of gentrification and displacement should they occur.

Table 1 below summarizes some of the basic demographic information in the case studies I analysed. Houston is a clear outlier with regards to income, and this results from the fact that the western portion of the Buffalo Bayou is substantially higher income than the eastern portion.

<table>
<thead>
<tr>
<th>Demographics of census block groups within ½ mile of waterfronts</th>
<th>Atlanta</th>
<th>Houston</th>
<th>Los Angeles</th>
<th>Louisville</th>
<th>Nashville</th>
<th>Pittsburgh</th>
</tr>
</thead>
<tbody>
<tr>
<td>% people of color</td>
<td>58% (2%-100%)</td>
<td>51% (3%-100%)</td>
<td>67% (0%-100%)</td>
<td>52% (0%-100%)</td>
<td>58% (0%-100%)</td>
<td>27% (0%-100%)</td>
</tr>
<tr>
<td>% of renter households</td>
<td>58% (3%-100%)</td>
<td>47% (0%-100%)</td>
<td>60% (4%-100%)</td>
<td>39% (0%-100%)</td>
<td>61% (7%-10%)</td>
<td>57% (0%-100%)</td>
</tr>
<tr>
<td>Median rent</td>
<td>$1,064 ($624-$2,600)</td>
<td>$1,151 ($391-$3,016)</td>
<td>$1,320 ($425-$3,331)</td>
<td>$716 ($235-$1,160)</td>
<td>$871 ($241-$1,262)</td>
<td>$909 ($164-$2,361)</td>
</tr>
<tr>
<td>Median rent burden</td>
<td>35% (9%-170%)</td>
<td>23% (7%-47%)</td>
<td>30% (7%-68%)</td>
<td>23% (9%-62%)</td>
<td>29% (16%-47%)</td>
<td>28% (14%-69%)</td>
</tr>
</tbody>
</table>

*Note: All demographic data collected from the ACS 2011-2015 5-year estimates.*
Atlanta is the principal city of a metropolitan region of nearly 6 million people that sprawls over 8,300 square miles. The city is a strong cultural hub for the American South, has a thriving arts and music scene, and is home to the nation’s third highest LGBTQ+ populations per capita. African Americans have formed a majority in Atlanta since 1970, although the city’s White population has risen dramatically over the past decade. Changing preferences and rising incomes saw White Atlantans moving back into the city into original housing stock in the early 2000s, often Atlanta’s famous bungalows, and renovating and upscaling the residences. The city is already characterized by a high degree of segregation, with African Americans primarily living in south and west Atlanta, and White living in the north and east. The city has been aggressively pursuing densification and revitalizing its core, and in 2014 launched a streetcar in the hopes of catalysing new mixed use development along the corridor and adjacent neighborhoods.

The Project
The Atlanta BeltLine, unlike other case studies is not a waterfront project. Rather, it is a linear system of open spaces built on former rail rights-of-way. The BeltLine is so-called because it is a circumferential system of trails and parks, and eventually a streetcar system that wraps around intown (Atlanta term for central city) Atlanta. The linearity of the BeltLine renders it an appropriate case study for Houston/Los Angeles because of their hybrid waterfront/linear park characteristics. Development of
Amenitizing Urban Waterways

Community Impact

A common theme in the case studies presented here is the legacy of racial inequality and segregation, and in this Atlanta is no different. Atlanta consistently ranks among the lowest cities when measuring diversity at the neighborhood level, and among the most segregated U.S. cities.\textsuperscript{10} This raises tensions when it comes to any major infrastructure projects in the city, and compels city and county officials to be cognizant of the impacts that these projects have on historically disinvested and marginalized communities. The use of TIF funds for the BeltLine redevelopment differentiates Atlanta from the other cities discussed in this report. TIF is often described as a low-risk redevelopment tool, but this claim holds true only in a financial sense. In fact, housing scholars suggest that TIF can facilitate gentrification and lead to displacement for low-income residents.

Development and Economic Impact

Unlike Houston, Los Angeles, and the other case studies, Atlanta has created a tax increment financing (‘TIF’) district to fund part of the BeltLine improvements. TIFs are no longer policy options in California after redevelopment agencies were disbanded.\textsuperscript{6} The basic premise is as follows: an area is slated for redevelopment, and a geographic cordon is drawn around the area. Generally only commercial areas are included. Then, a threshold is set for tax revenue needed for general repair and maintenance. Any amount above this is funneled into a fund which pays for improvements in the redevelopment area. The idea is that those who benefit from the redevelopment contribute to the process, but in a way that is cost-neutral to the stakeholders.\textsuperscript{7} To date, roughly $350 million has been invested in the BeltLine, generating more than $1 billion in private redevelopment; an ROI of 3:1. Estimates for the remaining portions of the project, including transit, are in the vicinity of $4.4 billion over the next 17 years.\textsuperscript{8} A central component of the BeltLine plan is job creation, both temporary construction jobs, and long-term jobs that are created by the businesses that opt to locate along the BeltLine corridor. An economic impact study completed by HDR, Inc. estimated that 1 construction job would be created per $78,515 in expenditures. The BeltLine Partnership estimates that construction will generated 48,000 one-year jobs, and 30,000 new full-time jobs\textsuperscript{9}, and has developed a Workforce Partnership plan to help local residents secure these jobs. In this way, Atlanta is attempting to ensure that the benefits of the BeltLine will be felt by existing residents, who may also bear the costs of the BeltLine in increased rents, property tax bills, and general upscaling of businesses that will be located near the BeltLine.

The BeltLine is being phased out over a 25 year period, and is planned to include more than 1,200 acres of new or expanded parks, 33 miles of trails connecting dozens of those parks and others and 22 miles of new transit.\textsuperscript{4} As of 2017, approximately 11 miles of multi-use paths have been completed, along with installations of public art and park/open space improvements. There is currently no estimated planned date for the BeltLine streetcar system.\textsuperscript{5}

Community Impact

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Takeaway

In comparison to other cities, Atlanta has taken a proactive approach to addressing the concerns inherent in redevelopment projects. Provisions have been made for local hiring to help existing residents benefit from construction projects. The City has partnered with a non-profit to help guide development and provide financial assistance to homeowners facing unmanageable property tax bill rises. These are practical, helpful measures that help engage communities and built consensus. However, housing programs that assist only homeowners but leave out renters will always fall short. In Southwest Atlanta where construction has begun, renters form a majority of households. Rent burdens are high, and will likely only increase as the BeltLine advances and the streetcar system is eventually built out. The city’s next priority should address the concerns of renters, particularly given that the city has no rent control or stabilization policy, which leaves renters extremely vulnerable.
Demographics along the BeltLine vary greatly. The southwest is majority persons of color, whereas the northeast is significantly whiter. Southwest areas also correspond to those that are lower income and more rent-burdened than other areas. While renter households appear to be more evenly distributed throughout the BeltLine area, neighborhoods in the southwest are less likely to commute via automobile. Data sourced from the 2011-2015 ACS 5 year estimates, using census tracts.
LOUISVILLE
Loop/RiverWalk

Context
Louisville sits on the Ohio River, which forms the state boundary between Kentucky and Jeffersonville, Indiana. At over 700,000 people, it is the largest city in Kentucky. Louisville is a low-density, car-oriented city with limited transit and biking options - and unsurprisingly, more than 90% of Louisvillians commute to work in a private automobile. The I-71 and I-64 freeways built in the 1960s have created a barrier, effectively cutting off Louisvillians off from the river. The Ohio is a critical component of Louisville’s history. It was known as “River Jordan” by escaping slaves, who passed through Louisville on their way to free states up north. It was a major shipping port and center of the slave trade. This legacy of racial violence lived on into the mid 20th century as Louisville remained segregated despite the civil rights movement. By this point, residential segregation was a pervasive pattern in the region. It is in this context that Louisville’s waterfront redevelopment should be framed. Urban renewal practices hit downtown Louisville and neighborhoods west of downtown very hard, with large footprint housing blocks replacing old brick walkups and the vibrant communities that filled those neighborhoods. Louisville’s Black/White dissimilarity index is 68.6, indicating although that it is relatively more racially/ethnically integrated than Houston and Los Angeles, segregation is still prevalent.

The Project
Two concurrent and coordinated projects are currently transforming the way that city residents interact with

Population Density
1,924/sq mi

Access to parks within 5 minute walk
33% of residents

Bicycle mode share
0.4%

Waterfront Park aerial, hargreaves.com

Crowd at Waterfront Wednesdays, waterfrontpark.com
the Ohio River: the Waterfront Park and Louisville Loop. Waterfront Park is a showcase park located on the downtown portion of the Ohio riverfront, designed by the landscape architecture firm Hargreaves Associates. The current park has developed over three phases, with design of the fourth phase currently underway. Each consecutive phase adds distinctive elements to the waterfront development, including landscaped parks, food service, attractions for children and multi-use recreation paths. Phase III saw a former decommissioned railway bridge connecting Indiana and Kentucky opened to bicycle and pedestrian traffic. Phase IV extends the park westwards to connect to a historically disinvested and marginalized neighborhood, East Portland. The Waterfront Park is oriented towards recreation, and provides a variety of active and passive opportunities to engage with the spaces contained within. The park is actively programmed year-round, with a variety of events ranging from waterfront yoga, races, fireworks, and festivals. The Louisville Loop is a planned system of multi-use paths which contributes the city’s “City of Parks” initiative. Currently the portion which exists is the RiverWalk, which spans roughly 7 miles along the Ohio River beginning in the southwest and snaking up through downtown and connecting to the Waterfront Park.

Development and Economic Impact
Funding for the riverfront redevelopment has come from a number of sources. The RiverWalk was funded through Federal Surface Transportation Grants and ongoing maintenance has largely been funded through a combination of federal and state transportation dollars. The Waterfront Development Corporation (WDC) estimates that 1.5 million people visit the Waterfront Park annually, translating into millions of dollars of revenue for businesses, tax dollars for the city and county, and health benefits for the visitors.

Waterfront redevelopment is also spurring new residential development. RiverPark Place is a mixed-use development which in full buildout will contain 2,500 residential units (a mix of rental and condominium), a marina, several restaurants, more than 200,000 square feet of office space, as well as enhanced recreational facilities ensuring that residents are well-connected to the Waterfront Park and downtown Louisville. The language of the development stresses the importance of the Waterfront Park-adjacent site and the benefits of living near the amenities it provides. Furthermore, it is a component development of the larger Waterfront Park project. Units range from $900-1,600 for 1-bedroom units, and $1,100-$2,000 for 2-bedroom units. Cheap by Los Angeles standards, but above the median rents for the housing types in Louisville.

Community Impact
Slum clearance and urban renewal policies in the 1950s displaced downtown Louisville’s thriving African American population, many of whom relocated into West Side neighborhoods near the freeway and industrial waterfront, all while white flight emptied the central Louisville neighborhoods of much of its white
Black Louisvillians earn on average just 53% of the annual income of whites. This income disparity translates into reduced choices and options for people of color in terms of how they commute and where they live. The heart of Black Louisville is the Portland neighborhood in West Louisville - a historically white neighborhood that has been plagued by decades of disinvestment and physical separation as a result of white flight, freeway construction and road widening. Here, residents earn just 30% of white Louisvillians, and face significantly higher unemployment rates. Gentrification is increasingly a concern in westside neighborhoods as high-end bakeries like ‘Please and Thank You’ and art galleries like ‘Tim Faulkner Gallery’ begin to dot the East Portland landscape - selling foods and art at prices likely to exceed the budgets of many residents. Add in large-scale transformative projects like the westward expansion of Waterfront Park and Louisville Loop trails and it isn’t difficult to understand that residents feel as if this change is happening all around them, and not for them.

An equitable approach to Louisville’s waterfront development ensures that West Louisville residents benefit from the new trail system and park space, as well as from the new employment opportunities that have and will arise. Further, having housing policies in place to help residents remain in place in the wake of rising property values and rents will make the process of neighborhood change and upscaling - however inevitable - bearable for longstanding communities that often didn’t choose to relocate to the neighborhood in the first place. Incomes are lower, and rent burdens are highest downtown and immediately west, where Waterfront Park is planned to expand and where much of Louisville’s gentrification has been occurring. Using the Loop/Waterfront Park to anchor new mixed use development can help Louisville to lower its physical and carbon footprint by reducing the dominance of the private automobile for each trip, which in turn can alleviate rent and transportation burdens on households with limited resources. Currently about 90% of workers in 2015 commuted using an automobile, either as a driver or passenger. Only about 0.4% of Louisvillians commute by bicycle, and the average household takes 107 transit trips per year (Louisville H+T index). The combined Waterfront Park/RiverWalk and Louisville Loop in full buildout will provide more than 50 miles of multi-use paths, connecting 28 parks, 29 neighborhoods and 11 cities.

**Takeaway**

Louisville’s waterfront revitalization is part of a larger coordinated strategy to re-green the region and connect residents to nature. Historic inequalities persist in this city despite the fact that gentrification, and in particular displacement, are not yet hot-button issues. As the figures showed above, rent burden is relatively low, which is a great point for the city to be at. If the city ensures that there are progressive housing policies in place to help more vulnerable populations remain, then they will be better equipped to withstand the likely increase in property values that tends to follow major redevelopment projects.
Like many American cities, Louisville’s central districts are among the poorest in the city. Neighborhoods along the Ohio River in the central and southern portions have a high proportion of renters and people of color, as well as moderate rent burdens. The worst rent burdens are in Louisville’s downtown neighborhood, in dark green in Figure 11. Overall, Louisville is car-dependent, but some areas along the river have relatively high non-auto commutes. Data sourced from the 2011-2015 ACS 5 year estimates, using census tracts.
The history of Nashville’s relationship with the Cumberland River is typical for the American setting. The Nashville area has been inhabited for thousands of years prior to European colonization. The area was eventually settled due to the linkages provided by the Cumberland river for trade and navigation. The river provided the growth opportunities necessary to establish Nashville as an industrial center due to its connections to other navigable waterways like the Ohio River downstream. Railroading led to the establishment of railyards and other industrial uses in the areas immediately adjacent to the river, and coupled with highway-led suburbanization, the river became a largely forgotten component of Nashville’s urban fabric. The construction of the I-24 freeway in 1959 entrenched this fact - East Nashville was officially cut off from the waterfront. The freeway depressed adjacent land values, leading to further industrial uses being located in the unpleasant “no-man’s land” between the freeway at the East Nashville riverfront.

The Project
In contrast with the Three Rivers Park project in Pittsburgh, the Cumberland River redevelopment in Nashville aims to build a completely new neighborhood in Nashville, and reconnect the city to the river which first gave it life. While the final scenario has yet to be confirmed, the completed redevelopment is planned to include ample new trails, access points, amenities such as amphitheaters and docks for private boats and rentals, an urban forest, and improved access to the Nissan Stadium, home of the
Tennessee Titans. The city has broad visions for what the waterfront redevelopment will accomplish. A reimagined waterfront, they hope, will lure Nashvillians downtown, help make Nashville a 24-hour city, get people moving and engaging, and bridge divided communities. There’s even talk of eventually removing the interstates that have cut split Nashville.\(^{31}\)

Currently there are only four access points to the river from the downtown side, and fewer from the eastside - within the project study area. The I-64 cut off East Nashville from the waterfront, and led to decades of neighborhood decline while the area converted to more industrial uses. The first element of the redevelopment is Cumberland Park, which was completed in 2012 \(^{32}\) and designed by landscape architecture firm Hargreaves Associates.\(^{33}\) Previously brownfield, the park contains extensive amenities for children, and a stage area where performances from theatre to music take place. As Hargreaves describes it, “[Cumberland Park] is prioritized to draw residents and visitors back to the waterfront and downtown” reinforcing the role in revitalizing Nashville’s urban center that waterfront redevelopment plays. In addition to Cumberland Park, Hargreaves is the prime on the entire waterfront redevelopment project, which as of 2017 had an undefined scope, but two distinct proposals for the future of Nashville’s waterfront. The most transformative vision would create a new channel that would deviate from the river, northwest around the Nissan Stadium, creating an island between downtown Nashville and East Nashville. This option would create miles of new waterfront space which could serve as locations for new boardwalks, commercial and residential neighborhoods, marinas, and other amenities. The channel would also provide a calmer environment for casual boating activities than the still-active Cumberland River. Plans to build new transit and/or streetcars to serve the new waterfront community are also in the mix, along with 186 miles of new bicycling facilities - 50% of which will be in Nashville’s low-stress network. The channel would also help to alleviate the damage of flooding that periodically plagues the Cumberland River, by dissipating the flow of water over a larger area.

### Development and Economic Impact

Planning for the revitalization has so far been jointly funded by the Army Corps of Engineers and the Metro Nashville-Davidson County Government.\(^{34}\) Cumberland Park, the first signature public space created as part of the river’s revitalization, cost approximately $9.5 million to construct.\(^{35}\) Public funding for the park expansion and future revitalization phases will likely be sourced from federal appropriations, state and federal grants, tax increment financing (TIF), Metro bonds, General funds, Metro land sales, parking revenues, utility fees and philanthropy. The city estimates to generate $1.4 billion in private investment over a 20-year period, and anticipates the return-on-investment to be as high as 4:1 generated by the roughly $400 million in public investment. Diverse housing typologies are envisioned for the new riverfront neighborhoods, with mixed income
Community Impact
The Cumberland River is a dividing line in Nashville, separating high-income communities for the poor, and white communities from communities of color. Seen in figures 13-17, communities immediately east of the river are more than 50% people of color, take transit at higher rates and have median incomes less than half of communities immediately west of the river, and have extremely high renter-occupancy rates. These factors make communities east of the river more vulnerable to the negative impacts that are possible when redevelopment comes along - and this is a history that Nashville is already well-versed in. Neighborhoods in East Nashville historically were the locations for public housing for Blacks, while public housing for Whites typically were developed in western neighborhoods. While analysis shows that currently communities in the vicinity of the river are not overly rent-burdened, that could very well change as redevelopment speeds up. Of particular note is that if the Phase 2 plan of creating a new river channel east of the Nissan Stadium is approved, there will be very real displacement pressures on existing communities as land is taken through eminent domain and households and businesses are relocated. This could exacerbate problems that still remain from the slum clearance policies that Nashville, like countless other cities, aggressively pursued in the mid-20th century. To be sure, this is a very long term plan. Currently Nashville is a very car-oriented region; nearly 90% of commutes are made via automobile, while 2.5% take transit, 0.3% bike, and 2% walk. Nashville has a fragmented pedestrian and bicycle network, characterized by few dedicated bicycling facilities connected by sharrowed or bicycle-friendly routes. The waterfront currently has some multi use paths, though there are several barrier points and discontinuous parts. Nashville-Davidson (“Metro Planning”) recently released the draft Walk n Bike Plan for Nashville-Davidson Metro in February 2017. The plan proposes over 180 new miles of bicycle facilities, approximately 50% of which will be considered low-stress and appropriate for ages 8-80 (WnB plan). The Cumberland Riverfront trails are off-road facilities that will be connected to the larger city and regional bikeway networks, offering active and healthy alternatives to automobile travel.

Takeaway
Nashville’s Cumberland River is a veritable dividing line between resourced and under-resourced communities, much like the Los Angeles River and the Buffalo Bayou. This heightens tensions inherent in redevelopment and calls for particular policy solutions and methods of engagement with the communities where redevelopment will be taking place. Nashville’s revitalization plans are further complicated because of the major environmental
changes that are proposed, which will result in large-
scale displacement of existing businesses and residents. If existing residents are provided with the option of returning to the community upon redevelopment, or provided with substantial assistance in order to relocate in a cost-neutral manner, then equity concerns may be assuaged.
The area around the central Nashville waterfront is diverse in income and race/ethnicity - although these figures reveal some differences that emerge when crossing the Cumberland River. Overall incomes are lower on the east side, and the proportion of renters is higher. Not surprisingly, downtown Nashville has the highest rate of non-auto commute. Data sourced from the 2011-2015 ACS 5 year estimates, using census tracts.
PITTSBURGH
Three Rivers Park

The three rivers of Pittsburgh have been important to the city’s identity and prosperity long before its rise to prominence as an industrial powerhouse. The confluence of the Monongahela and the Allegheny into the Ohio (known historically as “The Forks”) has been continuously inhabited by Native Americans for over 19,000 years, and was a key geography in the Iroquois Confederacy prior to European colonization. The rivers transitioned from sites of transportation to sites of trade and industry. In one way or another, Pittsburgh has always drawn much of its prosperity from its waterways. Railyards and steel manufacturing plants dotted the Pittsburgh region waterfronts until the beginning of the American industrial decline. It was during this period of the mid-20th century that streetcar-fueled suburbanization, white flight, and American housing policy began to take its toll on the city. Abandoned industrial land turned into parking lots, historic neighborhoods were decimated in the name of “urban renewal”, and Central Pittsburgh entered into a negative spiral of disinvestment and blight like so many other Rust Belt towns. Pittsburgh now has a population that is half of what it was at its peak in 1950, and the decline isn’t stopping. The city is now embarking on a new path of dense, more compact development as neighborhoods begin to empty out as people continue to leave. This is a primary motivation for building the Three Rivers Park.

The Project
The Three Rivers Park in Pittsburgh is a linear system of parks, open spaces and landscaped public plazas along...
the three riverways of Pittsburgh: the Allegheny, the Monongahela, and the Ohio. Leading the charge on this transformative redevelopment is Riverlife, a nonprofit organization that coordinates between stakeholders and ensures that Pittsburgh residents benefit from the improvements being made. Riverlife’s 2001 Vision Plan describes the park as an “assemblage of many remarkable environments: existing ones […] and new ones”. The planned park stretches from the Hot Metal Bridge in the southeast, the West End Bridge on the west, and the 31st Street Bridge on the northwest. Existing parks like Point State Park and the Allegheny Riverfront Park are being transformed through enhanced connectivity as a result of the Three Rivers Heritage Trail - a 24 mile trail that connects park spaces within the Three Rivers Park area to the larger transportation network, future waterfront amenities like a ferry system, and mixed use developments that are popping up in neighborhoods like the Strip District. Three Rivers Park will be a space for both active and passive recreation. A place for people to live in or to visit, to come together for events, or escape the urban environment in lush green spaces.

**Development and Economic Impact**

Riverfront development has been booming in recent years in Pittsburgh. Riverlife sees the Three Rivers Park as an opportunity to guide the ongoing redevelopment of Pittsburgh’s waterfronts and a vital component of retaining public access and maximizing the public benefit of the waterfronts. While this boom has preceded the development of the park itself, an Economic Impact Report released by Riverlife shows that properties located nearby the park have experienced property value increases at a pace far above the city average. The report found that the investment in the park leveraged private development on the basis of a 20:1 ratio ($130 million investment spurred nearly $2.6 billion in direct riverfront development and over $4 billion when adjacent development is included). Riverlife has estimated that around 1.5 million people per year visit Three Rivers Park - roughly five times the population of Pittsburgh.

Neighborhoods like the South Shore have seen tremendous amounts of redevelopment, particularly around the SouthSide Works mixed-use development which was built in the 1990s. The South Shore park which forms the southernmost parcel of the Three Rivers Park system has breathed new life into the area, spurring additional development and improve active recreation infrastructure. Another waterfront area experience rapid neighborhood change is the Strip District. Riverlife has released a vision plan specifically for the District in order to ensure that public access to the waterfront is planned for and preserved in spite of the private residential and commercial developments like the Riverfront Landing mixed use project, which will add more than 750 residential units, office space, as well as riverfront amenities like canoe and kayak storage.
Community Impact
In comparison to many large metros, Pittsburgh is an affordable city when housing and transportation costs are taken into account. On average, Pittsburgh households spend 42% of their monthly income on housing and transportation; 23% is devoted to housing while 19% is devoted to transportation. Median rent in Pittsburgh is approximately $750, and just over half of the city rents. Renting is often more precarious than ownership, as there tends to be less price stability over time, particularly when units are not protected by a rent control or stabilization policy. Despite Pittsburgh’s general level of affordability, there are still many areas of this city where households face rents in excess of 30% of their monthly income - households defined as rent burdened. These areas are adjacent to Pittsburgh’s riverfront, and there is concern that redevelopment will lead to rising prices for owned and rented housing. Gentrification in a declining city like Pittsburgh may be especially damaging, as economic opportunities for low-skilled workers decline as the city turns to the knowledge sector to pave the way for future economic growth. Developments like a Whole Foods replacing an affordable housing structure don’t help the image that the city is turning its back on its poor. Essentially the trend that we are witnessing in Pittsburgh is the decline of a working class economy coupled with an influx of higher skilled and higher income workers, drawn to the region’s educational institutions, dense urban form and lower cost of living.

For a city of its size, Pittsburgh enjoys a robust transit network which consists of an LRT system, busways, bus service, and two funiculars. Ridership is nearly 17%, ranking it the 16th highest transit ridership metro in the nation. The city’s walking mode share is 12%, indicating a relatively dense and walkable road network (as well as a high presence of students living near the city’s major educational institutions. Biking is notably quite low in the city, though not surprising taking into the account the minimal biking infrastructure that is present. Three Rivers Park plans to provide continuous, unimpeded multi-use trails which would provide Pittsburghers with new ways to experience the city. Part and parcel with encouraging the use of the trails however is to improve access to the trails. Pittsburgh has recently passed a complete streets ordinance which will support the upgrading of streets to better serve non-automotive modes of travel.

Takeaway
In many ways, Pittsburgh will experience redevelopment very differently from a high-cost city like Los Angeles. Such large-scale redevelopment may seem out of place in a city whose population is declining while L.A. and Houston grow at lightning speed. Pittsburgh is in the midst of a turning point as its economy is restructuring and many inner-city neighborhoods are upscaling. In its Housing Needs Assessment, the Pittsburgh Housing Task Force recommends areas like the Strip District and the Bluff, which are located along the Three Rivers Park system for increased affordable housing. If the city follows through, the waterfront can be a place that a variety of types of people can enjoy. Three Rivers Park could be what Pittsburgh needs to focus reurbanization and enter a new phase of engagement with its waterfront.
In comparison to the other case studies, Pittsburgh has the most urban and dense central city. This coincides with the high proportion of renters and people with non-auto commutes, as well as a relatively high incomes. The immediate waterfront areas have low proportion of people of color, and moderate rent burden. Data sourced from the 2011-2015 ACS 5 year estimates, using census tracts.
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5. Atlanta Beltline (2014).
40. Craig, N. B. (1876). The Olden time: a monthly publication devoted to the preservation of documents and other authentic information in relation to the early explorations and the settlement and improvement of the country around the head of the Ohio.
45. ibid.


Redevelopment projects are often promoted as ways to reconnect divided communities and promote more social interactions, although this is difficult to measure. This type of redevelopment is part of a larger phenomenon of trail-oriented development, a typology that can be understood as a component of the back to the city movement that has been underway now for some time.\footnote{Douglas 2017} The vibrancy of activity of well-amenity-filled public spaces has positive effects on the people that use them, measured both in terms of physical and mental health.\footnote{Douglas 2017} But they can also harm the original residents of a district when equity is not actively included in the conversation. Los Angeles and Houston both have major, transformative plans for their signature rivers and it is important that this redevelopment happens in a way that includes diverse voices and opinions, engages with community groups, and with policies that ensure that longstanding communities are not displaced as a result of public space amenitization.\footnote{Douglas 2017} Too often this is the case.

Analysis of the project areas within the case study cities as well as Los Angeles and Houston reveal that the communities that live along the waterways and decommissioned rail corridors are, in fact, highly diverse with regards to income and ethnic composition. However, though they are diverse, a high degree of racial and income segregation emerged as well. In Nashville, for example, the Cumberland River acts as a barrier between resourced and under-resourced communities, whereas the Los Angeles River has changing demographics as you move from north to south along the river.

### Cost Burdens for Low Income Households

Los Angeles and Houston are two of the largest cities in the United States. Both cities are highly dependent upon the private automobile, and both are crisscrossed by a sophisticated yet very wide and congested network of highways and freeways (it should be noted that the Katy Freeway in Houston is the widest in the world, with 26 lanes at some points).\footnote{Douglas 2017} The similarities don’t end at transportation issues. Houston and Los Angeles rank similarly with regards to Black/White segregation when measured by the Dissimilarity Index\footnote{Douglas 2017}, and communities of color still face differential economic, social, and environmental outcomes in both. Residential areas that are nearer to industrial uses, such as Galena Park\footnote{Douglas 2017} in Houston and Maywood in L.A.\footnote{Douglas 2017} are disproportionately more polluted and economically disadvantaged than areas in other parts of the cities. One major differentiator between the two is housing: the Los Angeles housing market is among the most crunched in the country.\footnote{Douglas 2017} On average, housing costs comprise 35% of a household’s monthly income in Los Angeles, compared to 26% for Houston households, while transportation costs are effectively equal at 19% and 20%, respectively. Los
Angeles also has a larger share of renter households, paying a median rent of $2,863. Moderate burden is defined as H+T expenditures of less than 50% of monthly income. Severe burdens are H+T expenditures above 50% of monthly income. Housing and transportation (H+T) burdens for low-income households (defined as households below 80% of the area median income) are concentrated in Houston’s east side. In Los Angeles, H+T burdens are more severe, with more areas falling above 50% and less geographic concentration. Indeed, the most salient pattern is that the Valley region of Los Angeles is more affluent, with less renters and lower overall rent burden.

California is characterized by a patchwork of rental control policies, though only 19 cities in the state have rent control laws or other measures short of rent control. Four cities in the L.A. region have rent control measures in place: Beverly Hills, Los Angeles, Santa Monica, and West Hollywood. The City of Los Angeles has rent increase limits in place for units constructed prior to 1978 as well as some newer units which replaced older units protected under its rent stabilization ordinance (RSO). The inter-municipal policy differences complicate the process of addressing housing affordability. The L.A. River flows through 17 municipalities and unincorporated areas, none of which have any sort of rent control measures. The lack of coordinated housing policy above the municipal level makes it exceptionally more difficult to address affordability concerns raised by the L.A. River revitalization. Unlike California, the State of Texas prohibits municipalities from enacting rent control measures. Upon expiration of a lease, a landlord may increase the rent as much as he/she chooses, provided adequate notice has been given to the tenant. Some larger municipalities provide rental assistance to low-income and senior folks. Creating beautiful public spaces cannot solve Houston or L.A.’s affordability issues, but they can be the anchor points for the development of new mixed-use, mixed-income trail and park-oriented housing. Longer term plans like the development of new rapid transit can help to further reduce the H+T expenditure burden on households.

Figures 23-26 show household median income and rent burden in Harris County and Central Los Angeles County. For the purpose of conciseness, outer areas of Los Angeles County (Antelope Valley and Catalina Island) are not displayed. Houston demonstrates an interesting pattern - an arrow-like shape emerges pointing to the east. Income is high on the western portion of the Buffalo Bayou until downtown, where income sharply drops off. Rent burden appears to be relatively randomly distributed around the county, although it is moderate in the vicinity of the Bayou.

In Los Angeles, central city incomes are the lowest, closely tracking the higher rent burdens observed in the central portion of the L.A. River. Pockets of high rent burden are peppered throughout central L.A.
Figure 23. Median Household Income in Harris County, census tracts

Figure 24. Rent Burden in Harris County, census tracts

Figure 25. Median Household Income in Central Los Angeles County, census tracts

Figure 26. Rent Burden in Central Los Angeles County, census tracts
Figure 27. Housing and Transportation (H+T) Burden Along the Buffalo Bayou (1/2 mile buffer), Low-Income Households

Housing + Transportation Burden
(Low-income households, % of gross monthly income)

- 31% - 40%
- 41% - 50%
- 51% - 63%

Figure 27 shows the result of limiting my analysis of H+T burden to low-income households. Low-income households are defined as those with incomes below 80% of the area median income (AMI). In the case of Houston, H+T burdened areas are almost exclusively east of downtown Houston. In these areas, more than 30% of monthly gross income is devoted to H+T, an amount defined as unaffordable. The redevelopment of the eastern portion of the Buffalo Bayou has the potential to transform the neighborhoods of East Houston, but care needs to be taken to ensure that the redevelopment does not exacerbate this burden.

H+T burden in Los Angeles is peppered along the L.A. River, with areas of particularly high levels of burden concentrated in the Gateway Cities and Downtown L.A. regions. These areas have more substantial industrial uses relative to other parts of the county, and a larger proportion of low income communities. The Downtown L.A. portion is the section of the river currently under review by the U.S. Army Corps of Engineers (USACE), and is planned to be completely revitalized and redesigned by Frank Gehry and his team. The use of a “starchitect” is an exciting prospect for the image of Los Angeles, but may pose a threat to existing communities that live along the river, and who already face high H+T burdens.
Figure 28. Housing + Transportation Burden (H+T) Along the L.A. River (1/2 mile buffer), Low-Income Households

Housing + Transportation Burden
(Low-income households, % of gross monthly income)
- Yellow: 26% - 50%
- Orange: 51% - 65%
- Red: 66% - 88%
Mapping Vulnerable Populations

The potential benefits from redeveloping urban riverfronts and providing new amenities to urban residents are substantial, but as has been explored in this report, so are the potential negative consequences. I do not propose a method to evaluate costs. Rather, I propose that projects such as those described in this report, should perform an analysis of the populations that live near to where redevelopment will occur, and use the results to determine the appropriate strategies for mitigating the effects of the redevelopment. It is a type of social impact analysis, akin to an environmental impact analysis that major developments must undergo. Building upon the spatial analysis of case study cities and the literature on redevelopment and gentrification, I built a vulnerability index to indicate census block groups within a half-mile of the Los Angeles River and Buffalo Bayou that have high concentration of residents who are vulnerable to gentrification and potential displacement. I use a methodology developed by the City of Portland for a study on gentrification and displacement in that city. Table 2 shows the variables measured and the thresholds used for Houston and Los Angeles.

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Houston Threshold</th>
<th>Los Angeles Threshold</th>
</tr>
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<tbody>
<tr>
<td>% renters</td>
<td>56% [a]</td>
<td>54% [a]</td>
</tr>
<tr>
<td>% communities of color</td>
<td>56.3% [a]</td>
<td>71% [a]</td>
</tr>
<tr>
<td>% population age 25+ without bachelors</td>
<td>69.6% [a]</td>
<td>69.7% [a]</td>
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<tr>
<td>% households with income at or below 80% MFI</td>
<td>$51,040 [b]</td>
<td>49,680 [b]</td>
</tr>
</tbody>
</table>

[a] Data sourced from the 2009-2013 ACS 5-year estimates.
[b] Data sourced from the 2013 HUD.

Results

Figures 29-31 show the results of the gentrification vulnerability index. When considering redevelopment projects, a critical and often overlooked issue is the negative impacts that even well-intentioned projects may have upon communities. The figures above show that communities along the Buffalo Bayou and the L.A. River vary significantly in terms of vulnerability. Areas in blue indicate low vulnerability. This means that the census blocks contained little to know data that fell beyond the specified thresholds. Beige indicates areas of medium vulnerability - these areas may have some values which fall above and some which fall below the specified thresholds. The areas in red are areas where most to all data points were above specified thresholds, indicated high vulnerability.

Downtown Houston is a visible dividing line between majority high and low vulnerability areas within the city. The Buffalo Bayou Park, located near the center of the figure, could almost represent a bridge between these two areas: something emphasized in the Buffalo Bayou Partnership’s vision of making the Park a central, regional amenity and gateway to downtown. For those familiar with Houston, this index may not be surprising. The Greater Fifth Ward and Greater East End are historically disinvested African American and Hispanic communities with a large proportion of households earning under $46,000 per year, a high proportion of renters and individuals without a college or higher education. There is a high degree of overlap between the vulnerable areas.
of Houston and H+T burden, further indicating that there is a spatialized nature to poverty and advancement in Houston.

In Los Angeles, the large, saturated red area in the central portion of the river is at once visually striking and alarming. These are areas of high vulnerability, and are concentrated in and adjacent to the downtown core. Much of the area around the downtown core and particularly southeast of downtown are industrial in nature, and these are areas with a high concentration of vulnerable populations, determined by economic necessity. Upscaling the river around these areas in particular can have detrimental effects on these communities if they are displaced. Social networks can be disbanded if residents relocate to other neighborhoods. Gentrification can also lead longstanding residents that do remain to feel as if their neighborhood no longer serves them - a type of socio-emotional displacement that can have negative implications for physical and mental health.\textsuperscript{15,16} Indices like the ones prepared here are critical for planners to consider when creating master plans for historically disinvested (by the public or private developers) but they may be home to longstanding communities. They help to identify the magnitude of the problem and its geographic location, which allows interventions like affordable housing siting and the appropriate location of social services.

![Figure 29. Vulnerability Index: vulnerable census block groups within 1/2 mile of the Buffalo Bayou, Harris County](image-url)
Figure 30. Vulnerability Index: vulnerable census block groups within 1/2 mile of the L.A. River, Upper River

Figure 31. Vulnerability Index: vulnerable census block groups within 1/2 mile of the L.A. River, Lower River
REFERENCES

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Chapter 5

IMPLICATIONS AND RECOMMENDATIONS

The Los Angeles River Master Plan and Buffalo Bayou Master Plans outline exciting and adventurous projects which can be truly transformative for both local residents and visitors alike. However we must constantly work to ensure that existing communities - and in particular those who are already unduly burdened - are considered and also planned for. These projects should be thought of as a continuation of the process of re-urbanization, described by Richard Florida as one that leverages private dollars for public infrastructure, like transit, public space, and housing.¹

My analysis has revealed that the communities where these investments are being made are, on average, significantly poorer, less well-educated, burdened by high housing and transportation costs, more likely to rent, and have a significantly higher concentration of people of color than the regional distribution would suggest. It is a failure of public policy not to consider how redevelopment may disproportionately negatively impact these vulnerable populations. Redevelopment in East Houston should necessarily take a different approach than redevelopment in affluent areas. East Houston has been facing swift neighborhood change and the Buffalo Bayou Partnership should continue to be a convener of different stakeholders that will be affected by this project. The Partnership is already cognizant of the gentrification that is sweeping across historically Black and Hispanic communities like the Fifth Ward and East End², but I would urge policymakers to include vulnerability analysis as part of their master plans.

Continue Building Partnerships and Engaging Communities

One of the biggest hurdles to coordinated urban planning is the fragmentation inherent in American cities. Different agencies have different purviews, and often there is a lack of dialogue between these groups. In Los Angeles, this is being partially addressed by the convening of the L.A. River working group (LARWG). The LARWG is focused on addressing community impacts of the L.A. River revitalization, specifically in the lower LA portion, which contains the largest concentration of vulnerable communities, and is comprised of 39 affected stakeholders, ranging from cities in the area, the L.A. Neighborhood Land Trust, the Trust for Public Land, and the East Yard Communities for Environmental Justice.³ Such a large convening may be unruly, but it is democracy in action, and one way to ensure that community input is included at each step of the way.
There is no equivalent working group for the Buffalo Bayou, and this is a strategy that could be explored by partnering with the many community groups focused on improving equity for Houston’s east end neighborhoods. It is timely, given that there is an increasing wave of gentrification moving through the east end, and communities are already feeling the pressures of upgrading and displacement. Along with the City of Houston, the Partnership could be a key cog in ensuring that the East Sector redevelopment doesn’t “wipe the slate clean”. It’s an all-too familiar experience for communities of color to see neighborhoods transformed into unfamiliar territories, designed for new communities in mind. This means including community input at each step - from design, to implementation, construction, and ongoing maintenance. Citywide public benefits should be weighed against the costs borne by concentrated communities.

**Reinforce Progressive Housing Policies**

There is a palpable sense of mistrust regarding L.A.’s revitalization of its namesake river, and this should not be ignored. That the project has secured the likes of Frank Gehry to lead landscape architecture sits well with some (Curbed refers to as the “elite”), many others, including those who have been at the forefront of the L.A. River cleanup for decades, fear that it will lead to increasing privatization and exclusion of low-income households. In Los Angeles, the development of housing in general has become a major concern in recent years. Housing production is severely lagging population growth. During the 30 year period of 1970-2010, L.A. County housing increased by 20% (typical U.S. metro grew by 54%) while the county’s population ballooned by nearly 40%. The result is overcrowding, illegal rental units, and homelessness - not to mention very unaffordable housing.

On the November 2016 ballot were three measures to improve housing affordability and economic development, two of which passed. Measure HHH was passed, and provides $1.2 billion in funds for the homeless and people at risk of becoming homeless. Measure JJJ, known as “Build Better LA” was also passed, and it requires a minimum percentage of units to be affordable for developments that require a zoning change. There is also a local hiring element which helps to preserve local jobs and put income back into the hands of working-class Angelenos. Finally, Measure S is a ballot measure that did not pass. Measure S - the “Neighborhood Integrity Initiative” would have halted all construction that required a zoning amendment, density or height increases, or that which would result in a net loss of open space, agricultural, or industrial land. The passing of HHH and JJJ and rejection of S demonstrate a commitment on the part of Angelenos to take care of and provide for the most vulnerable in their communities. Houston too is experiencing an affordable housing crisis. Earlier this year, the city’s housing policies were accused by HUD of perpetuating racial disparities and segregation, finding that the city has allowed what HUD Region VI director Garry Sweeney described as “racially
motivated” local opposition to affect where affordable housing is built in the city (Page 1, HUD letter to Houston mayor). Affordable housing projects in the city are more likely to be blocked or watered down in predominantly white neighborhoods. Any policy or policies aimed at expanding access to affordable housing will be moot unless the city can find a way to prevent the coopting of municipal affairs by its monied white communities. Whether this occurs by-right or the passing of a new municipal ordinance outlining the procedure for the siting of affordable housing in affluent, resource-rich neighborhoods, it is an issue the city needs to address right away. A 2015 report from the Urban Land Institute regarding the East End redevelopment calls for increased levels of multifamily housing development accessible at all incomes levels, and the Buffalo Bayou East Sector plan can act as an incentive for developers by developing quality public spaces integrated into a larger trail network.10

The Houston region provides the least amount of affordable housing to households in need than any metro in the nation11, and this is a troubling statistic given the relatively low cost of living in Houston compared to other cities. In comparison to Los Angeles, Houston’s housing crisis is less fueled by excessive rent and more by its low incomes - particularly those of non-white residents. Median rents for 1 and 2 bedroom apartments are roughly $1,118 and $1,242 respectively.12 In fact, the Houston Business Journal reported in April 2017 that median rents had actually declined relative to 2016. Because of

Include Neighborhood Impact Analysis in Redevelopment Projects

Despite a body of literature and activists attesting to the negative impacts of redevelopment, cities and agencies planning large scale projects still do not appropriately incorporate neighborhood change and the potential for gentrification and displacement into cost benefit analysis. Building upon the methodology used in this report would be one option for understanding the profile of the communities where redevelopment is planned and the vulnerability of these communities. Incorporating these effects with other projects and local trends will paint a clearer picture of the overall benefit of these projects, and make tailoring of policy solutions more accurate. For example, Houston METRORail’s Green Line recently extended further into the city’s east end brings with it new, faster mobility for those without access to or the desire to own an automobile. The line offers easy access to downtown Houston and to the Houston Medical Center, both of which are major job centers. The line also brings the potential for more real estate speculation and ultimately higher costs as developers cash in on this public amenity, in a part of town that has more or less evaded the

prevalence of severe rent burdens in the East End, the city should demonstrate a clear commitment to ensuring that appropriate incentives and policies are in place to ensure sufficient affordable housing is provided.
real estate boom that has taken over the Bayou City.\textsuperscript{12,13} As my analysis shows, the east side of Houston near the Buffalo Bayou appears highly vulnerable to gentrification and displacement. This should be accompanied by extensive public outreach in the communities that will be receiving the improvements.
REFERENCES


I believe that we should be excited that cities are turning back to their waterfronts, and devising plans and strategies for reconnecting residents to these natural amenities. The way we move and interact with our cities is changing as more municipalities are investing in the creation of quality public spaces and transportation alternatives. The redevelopment of urban waterfronts and underutilized lands is a movement towards more intensive use of existing assets as opposed to the old model of auto-centric land uses. But as planners, we should be mindful of the unintended consequences of these developments. That isn’t to say that we should not build - but development does not occur in a policy vacuum. Cities that take strong positions on the location and type of projects get built should also take strong positions on policies that will improve the lives of existing and future residents by ensuring that development does not displace unnecessarily.