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## **Summary**

The Los Angeles River flows through a 52 mile stretch of Los Angeles County bringing a vital source of water to the region and affecting the personal lives of millions of people. In the beginning part of the 21<sup>st</sup> century, community members and local governments developed plans to revitalize the watershed and bring new opportunities to the river corridor. Since that time, projects have been developed and implemented to bring new ecological functions, recreational opportunities, river accessibility, and transportation modes to the river. The new functionality of river sites brings exciting and vital changes to enhance the health of the river and the communities alongside it. However, with these new changes come possible negative externalities.

The river's new land functionality has the potential to lead to a decline in housing affordability in neighbourhoods along the river site. In cases around the world large scale revitalization efforts to green spaces have been attributed to green gentrification. A revitalized green space may result in exceptional rises in property values and rental prices. With the potential to stir displacement in the existing communities.

In my case study on the Los Angeles River Revitalization I look at several indicators of housing affordability to understand how the changing river functionality may be affecting the adjacent neighbourhoods. The research utilizes data related to housing costs, rental burdens, affordable housing assistance, and the actions of stakeholders to explore any trends to emerge since the adoption of the Los Angeles River Revitalization Plan.

The results of my research provide a mixed view of housing affordability around the Los Angeles River. When the entire stretch of the river is analysed for indicators of housing affordability there is no area that stands out with every available indicator. The Glendale Narrows Region of the Los Angeles Revitalization is at the greatest risk of worsening housing costs based on literature and views of stakeholders. However only a sharp increase in property values provides evidence for this using the quantitative data available.

## **Keywords**

Housing Affordability

Urban Green Space

Los Angeles River Revitalization

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# Chapter 1: Introduction

## Background Statement

The watershed surrounding the Los Angeles River has been a vital life source for the region for thousands of years. From the Tongva people to Spanish settlers to the annexation of the state of California, the Los Angeles River has been an important foundation for civilization on the land. The Los Angeles River has experienced significant changes since the region began to urbanize in the 19th century. Following devastating flooding throughout the late 19th and early 20th century the river was severely altered using large formations of concrete to control water flow.

It was the creation of the California aqueduct in the early 20th century that provided a steady river flow that enabled the city to grow to one of the country's major metropolises. As the river has transformed from a natural flowing and unpredictable watershed to a controlled concrete drainage there have been numerous conflicts and contentious planning decisions along the way (Di Palma and Robinson, 2018). It was after the floods of the 1930s, the River got a large reconstruction by the Army Corps of Engineers to prevent further disasters. Though the solution took away many of the natural features of the river and detached the city's residents from interacting with the river. Over the past 35 years, activists have taken an increased effort to restore the river to its former natural state (Di Palma and Robinson, 2018). The actions of various non-government organizations and community groups have been able to motivate change from necessary government agencies.

In 2007 the city of Los Angeles drafted a River Revitalization Master Plan to guide the development of the river corridor for years to come. The main goals of the river revitalization plan are to control channel capacity and velocity, improve water quality, promote ecological functions, provide recreation and public access, and also consider the transportation potential possibilities around the river. (READER'S GUIDE LA River Ecosystem Restoration Project)

The idea to restore the river's condition serves multiple purposes for city residents and the river's ecosystem. For city officials and community activists, the project is reflective of an achievement to provide environmental justice to long deprived communities, in addition to the crucial flood/drought mitigation advantages of the restored river. The 2007 Los Angeles River Master Plan (LAARMP) provided a guideline for the city to improve the livelihood of residents surrounding the river by offering plans for new ecosystem services, recreational park spaces, bike pathways, walking trails, and increased accessibility to the river.

Since the drafting of the Master Plan in 2007, the process has begun to revitalize the river as some projects are in the planning and building phase while others have already been completed. The extent of these projects differs in range, from small adjustments to improve sections of the riparian corridor to the large multifaceted projects like the G2 projects at Taylor Yard, and a project in development by famed architect Frank Gehry.

## Problem Statement

The additions from the revitalization efforts will bring not only changes to the river but to the communities that live along the river corridor. The new features and functions of the river will bring positive externalities to people's lives but also pose a possible threat to communities. One of the main concerns associated with the river revitalization plan is the impact the project

is having on housing affordability in adjacent communities. With the introduction of green spaces, there is the potential for green gentrification to occur depending on the size or location of the space (Rigolon and Németh, 2020). Activist groups and NGOs have voiced concern that the river's restoration is causing displacement in neighborhoods along the river (Garcia and Mok, 2017). In other cities of the United States, similar greenbelt projects such as the Highline Park in New York or the BeltLine in Atlanta induced the postulation of reduced housing affordability due to gentrification (Immergluck and Balan, 2018; Loughran, 2014).

Racial segregation and inequality have marked the city's geography for much of its existence. The recent history of Los Angeles has included noticeable issues of environmental degradation and social injustice, including issues such as the "Battle of Chavez Ravine" which transpired around the river corridor (Ortega, 2017). Legal institutions and zoning have been complicit in this process and have brought the city to its current state of racial and class segregation (Franco, 2019). Recent conversations on gentrification brought the topic to the forefront of people's thoughts and the issue is debated in many of the land-use decisions made by city administrators and developers (Shaw, 2018). To achieve the objectives of the Los Angeles River Revitalization plan it is crucial to maintain intact communities within the river corridor as the functionality of the river changes.

## **Research Objectives**

- Trace links between urban green space revitalization and housing affordability.

While there has been academic research to show how green spaces affect housing affordability, it is not necessarily going to happen with every new green space. In the current situation in Los Angeles, there is concern and speculation over a growing affordability issue due to the river revitalization project. My research will aim to locate trends in housing costs and rental burdens that can be linked to the projects of the revitalization plan.

- Explain how urban green revitalization affects housing affordability.

Urban green space is often perceived as a valuable amenity to a neighborhood and as such is likely to contribute towards higher housing affordability. My research will aim to understand the effect that park functionality can have on housing affordability and dissect the processes by which this occurs. With my research, I plan to explain how different aspects of river revitalization affect affordability and also understand the processes by which this has occurred through my case study.

## **Research Question**

My research question for the thesis is: How are urban green space functions associated with the Los Angeles River Revitalization affecting housing affordability along the river corridor in Los Angeles County?

The intent of this question is to understand what effects the introduction of green spaces has on the surrounding area's affordability. To answer this question thoroughly I will use four sub-questions to understand the different components underlying the main research question. Each sub-question will contribute towards answering the main research question



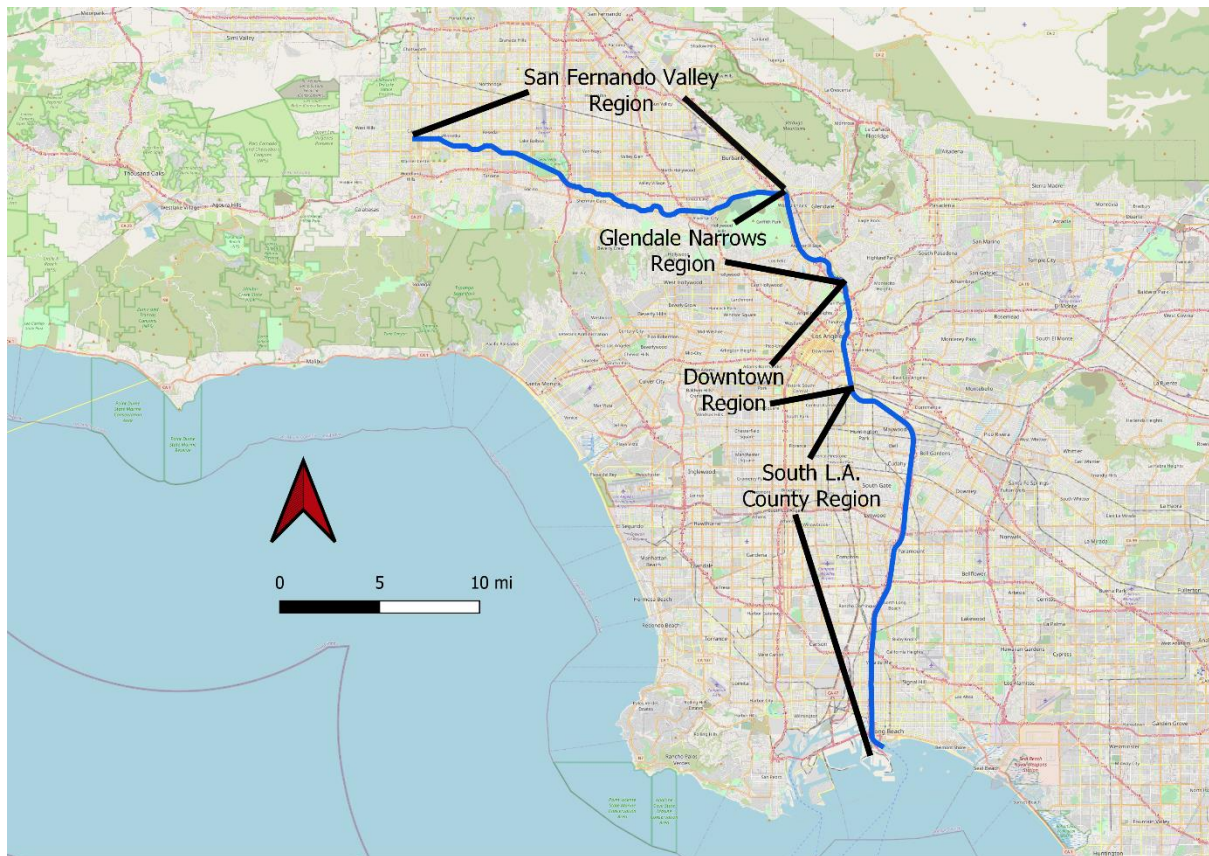
1. How have stakeholders addressed housing affordability as an externality of river revitalization?
2. How have housing costs changed along the river corridor in comparison to other regions of Los Angeles County?
3. How has the number of renters with a housing burden changed along the river corridor?
4. What areas along the river corridor have been selected for affordable housing assistance?

### **Scope of Study**

The focus of the research will be on communities and neighborhoods which lie within the corridor of the main stretch of the Los Angeles River (LAR). The river begins in the San Fernando Valley region in the north section of Los Angeles. This stretch through the San Fernando Valley begins near the neighborhood of Canoga Park, and flows east through the neighborhoods of Reseda, Encino, Lake Balboa, Sherman Oaks, Studio City, Hollywood Hills, and the city of Burbank.

The river then begins to flow south towards the Glendale Narrows area and will flow through the neighborhoods of Atwater Village, Los Feliz, and the Elysian Valley. Eventually, the LAR reaches the city's downtown region transecting through the neighborhoods of Lincoln Heights, Boyle Heights, Chinatown, and Downtown. The River then shifts directions back westward towards the Pacific Ocean and passes through the neighborhoods and municipalities of South Los Angeles County.

Map 1: Regions of the Los Angeles River



Prepared by Austin VanDerWouden, 25/01/2021

My research will focus on the three main revitalization areas designated by the 2007 Master Plan: The San Fernando Valley, Glendale Narrows, and Downtown. I will also look at South Los Angeles County. Although this area is not featured in the LAARMP because it is outside of the city of Los Angeles it still faces similar exposure to rising housing costs and green gentrification. The South Los Angeles County Region may benefit from the improvements to the river's water quality and capacity control. Also, there have been similar revitalization plans in southern parts of the County.

### **Relevance of the Study**

Housing affordability and resulting displacement are major concerns for Los Angeles citizens and my research can provide information on this issue in the context of the LAR. The focus of my research will be limited to assessing the effects of revitalization on housing affordability. To look at the greater scenario of green gentrification occurring or to look at the success of environmental justice policies would not be possible in the framework of the thesis or at this stage of the revitalization project. By looking at impacts on property values, rental prices, and affordable housing assistance I can understand the early and middle stages of what is occurring in specific neighborhoods.

The major urban regions of Southern California are currently are facing an affordable housing crisis and government agencies are trying to catch up with the shortage using the strategies they have available. My research will focus on understanding how this crisis is unfolding in a major infrastructure project taking place in one of the country's largest metropolises.

## **Chapter 2: Literature review/theory**

### **Introduction**

Chapter 2 presents the key concepts related to the research questions. The current state of knowledge on housing affordability and urban green space revitalization are considered from key researchers on the topics. The chapter focuses on the context of Los Angeles when possible to add more related content. Links between the two main concepts are explored to provide a thorough idea of the interactions between urban green space revitalization and housing affordability. Examples from the United States and around the world are highlighted to draw any parallels to the revitalization of the Los Angeles River.

### **Housing Affordability**

The costs of housing are a crucial factor in a region's livability and growth. For city managers to maintain affordable housing involves a delicate balance of supply and demand fostered by responsible governance. A decline in housing affordability has become a global occurrence attributed to housing prices increasing at a faster rate than wages. (Wetzstein, 2017).

The greater Los Angeles region is impacted by the threat of declining availability of affordable housing. Though the concept of affordable housing exists in the general consciousness as a looming issue plaguing the state of California, there are still uncertainties to the cause and appropriate response to the issue of housing. The issue is going to continue being relevant, as the state continues to grow in population resulting in an even bigger shortage in housing supply and affordable housing units (Gabbe, 2019)

Housing affordability is defined by the amount of a person's income they need to spend on housing. The United States Department of Housing and Urban Development (HUD) deems affordable housing as housing that a household can obtain for 30% or less of its income. (Elmedni, 2018) For my research, a rental burden is defined as housing costs that are more than 30% of the household's income.

Researchers and professionals who work to address rising housing costs consider the two key factors threatening housing affordability; growing income inequality and limited housing availability. These two factors of affordable housing consider the supply and the demand of housing. Different governance approaches may emphasize an approach to affect either side of the supply and demand when working to mitigate declining housing affordability.

Rodríguez-Pose and Storper write that the affordability crisis is 'due less to over-regulation of housing markets than to the underlying wage and income inequalities, and a sharp increase in the value of central locations within metro areas, as employment and amenities, concentrate in these places' (Rodríguez-Pose and Storper, 2020: 225) In this school of thought policymakers would emphasize income inequality as the main contributor towards a decline in affordable housing. Which is increased due to high-income earners moving closer to the central business districts to seek better employment opportunities.

## **Land Use Functionality and Housing Affordability**

Other academics attribute the shortage of affordable housing more so to regulations stunting housing development. This concept is described in the “Housing as Opportunity” school of thought (Manville et al., 2020). Housing regulations become a driver of higher housing costs when demand is growing in a region faster than supply, and supply is limited by regulations (Manville et al., 2020). One tool available to managers in this scenario is to deregulate housing policies to allow growth, which has been embraced by institutions of housing in the U.S. The need for increased housing stock has led to a three-decade period in which “a series of presidential administrations—and the American Planning Association—have recommended that cities update their zoning codes to enable more affordable and market-rate housing development. (Gabbe, 2019)

This recommendation emphasizes that as cities and regions increase in populations and density, zoning needs to be adjusted to provide for the needs of the public. The “Housing as Opportunity” school of thought advocates the use of upzoning to respond to increase the housing stock (Manville et al., 2020). City managers can utilize upzoning “to provide for higher density building, increasing the housing stock and also potentially providing inclusionary zoning principles.” (Gabbe, 2019)

Zoning can be used as a strategy as well to set aside land for affordable housing units. The “inclusionary zoning” approach allows urban managers to establish inclusionary housing policies to maintain a certain supply of affordable housing units or socialized housing. Though it has had difficulty providing affordable housing needs in places such as the UK, Ireland, Hong Kong, and Australia (Wetzstein, 2017). Additionally, the state of California has set limitations on cities’ ability to adopt inclusionary housing policies, leaving cities to incentivizing developers to provide affordable housing units. (Garde, 2016) The research in “Affordable by Design? Inclusionary Housing Insights from Southern California” suggests that the most effective approach to providing affordable housing units in Southern California is for cities to incentivize developers with density bonuses (Garde, 2016)

In addition to zoning and land use regulations affecting housing affordability, property values can be affected by the changes to the surrounding land use function. Changes in land use regulations can increase property value by creating an ‘Amenity effect - when land-use regulations protect, enhance, or create amenities or services that benefit property owners.’(Jaeger, 2006 ) The additional value added by the amenity effect can be one driver of gentrification.

## **Gentrification**

Cities and their neighborhoods are in constant fluctuation. Gentrification is one of the most notable concepts to emerge concerning socio-economic changes to urban neighborhoods. Since the term’s introduction in the 1950s to describe gentry movement to London’s lower-class neighborhoods (Glass, 1964), gentrification has been described in various ways by academics and urban management professionals.

While certain distinct characteristics of gentrification have been debated and various institutions have their own distinct definitions, a broad overview can generally characterize the phenomenon. “Depending on the time and place, gentrification has been seen as a tool, goal, outcome, or unintended consequence of revitalization processes in declining urban

neighborhoods, which are defined by their physical deterioration, concentrations of poverty, and racial segregation of people of color.” (Zuk et al., 2018). Within the Los Angeles River Revitalization Master Plan gentrification is identified as a process that “occurs when low-cost, aging neighborhoods are renovated and subsequently experience gains in property values that can result in the displacement of the neighborhood’s original residents.”

Although gentrification is noted for some benefits to a city there is usually a number of negative consequences that detriment the city (Gibbons et al., 2018). A topic of contention with gentrification is the effect that that neighborhood revitalization has on community members (Freeman, 2005). The introduction of new or enhanced amenities will add to a more desirable neighborhood contributing to possible increased housing costs which existing residents can benefit from or in some cases can make it difficult for residents to keep up with rising costs associated with new property values.

Displacement is the forced removal of people from their housing and may be a result of a plethora of inductors (Zuk et al., 2018). In the context of gentrification, displacement may occur when inhabitants are unable to pay rent, property taxes, or home payments due to the altering socio-economic condition of their neighborhood. While there is debate over the necessity and extent of gentrification to cause displacement the two concepts are often associated with one another. Though displacement is not always a component of gentrification. Displacement is not dependent on gentrification nor a necessary occurrence to delineate gentrification but displacement can be an effect of gentrification. (Zuk et al., 2018)

## **Green Space Revitalization**

In the 21st century, the idea to revitalize urban green spaces such as older parks and polluted sites has become a trend as “post-industrial cities seeking to redefine their economy and image have turned to environmental sustainability as a framework to guide redevelopment” (Rigolon and Németh, 2020). With the revitalization of green space, the contributing stakeholders can expect and plan for a number of externalities. Green spaces can offer ecological services, recreational opportunities, or valuable natural resources. The revitalization of green spaces offers greater health and livability to a city’s constituency.

## **Environmental Justice**

The concept of environmental justice emerged in the United States as a response to the positioning of polluting agents in communities mostly populated by people of color (Edwards et al., 2016) (Pedersen, 2010). The management of natural resources and green spaces plays a crucial role in the physical well-being of a city’s residents. The Environmental Justice Office within the Environmental Protection Agency outlines environmental justice as “The fair treatment of all races, cultures, incomes, and educational levels with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no population of people should be forced to shoulder a disproportionate share of the negative environmental impacts of pollution or environmental hazards due to lack of political or economic strength.” (Rhodes, 2003). In 2020 the EPA held a similar definition which detailed Environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to

the development, implementation, and enforcement of environmental laws, regulations, and policies. “(Environmental Protection Agency, 2020)

While the United States federal government may look at Environmental Justice to limit vulnerable groups’ exposure to environmental dangers. There is also an academic perspective on environmental justice that emphasizes both the ability to protect but also provide to the public, resulting in an equitable share of environmental burdens and benefits. (Rhodes, 2003). The introduction of urban green spaces can offer both these functions to the public.

In the United States, a declining state of environmental justice has been measured over the last 20 years. Various studies in the 21st century have shown green spaces in lower-income neighborhoods to be less maintained, lower in quality, and less in quantity. (Anguelovski et al., 2019).

## **Green Gentrification**

The contributing factors of gentrification may be any form of revitalization process altering the neighborhood. Academics have developed the term “green gentrification” to describe when parks and greenways bring socioeconomic and demographic change. (Anguelovski et al., 2017; Gould and Lewis, 2017) As a crucial amenity to urban residents, green spaces offers recreational opportunities, reduced pollution, and aesthetically pleasing urban environments. Due to the common appreciation of urban green spaces, there is an added property value to adjacent housing.

A public urban green space can be a plethora of different characteristics such as “parks and reserves, sporting fields, riparian areas like stream and river banks, greenways and trails, community gardens, street trees, and nature conservation areas, as well as less conventional spaces such as green walls, green alleyways, and cemeteries (Wolch et al., 2014).

The existence of green space in an urban environment will not always result in green gentrification. The function and location of green space affect the extent of gentrification (Rigolon and Németh, 2020). Since green spaces do not always result in gentrification it is necessary for academics and governments to understand when it may occur.

Restoration or revitalization of urban green spaces to provide environmental justice has the risk of negating its effort by causing green gentrification. The provision of environmental justice and the instigation of green gentrification is a delicate balance of planning for urban managers and developers.

## **Revitalization Examples**

The restoration of Cheonggyecheon in Seoul, Republic of Korea is an example of a river revitalization effort similar in scale to the Los Angeles River. The improvements to the Cheonggyecheon are in hand with improvements to multiple environmental, social, and economic benefits. The restoration is credited with improved air quality, more public green spaces, increased tourism, and building the city’s reputation on a global scale (Lee and Anderson, 2013).

Along with these improvements the project is cited as being in some part responsible for gentrifying nearby communities. ( Kriznik, 2011) The project is identified as contributing to gentrification by increasing land prices 30-50 percent for land within 50 meters of the project (Lee and Anderson, 2013).

The comparison most made of the Los Angeles River revitalization is to the Highline Park in New York City and the Beltline in Atlanta. These two cases show examples in the United States context of green gentrification at a scale similar to the Los Angeles River Revitalization (Rigolon and Németh, 2020). All three projects consist of long greenbelt sites that cut through significant portions of each city's central region.

In the cases of the Beltline and the Highline, both have been perceived as stirring displacement through green gentrification. The sites are depicted as bringing higher housing costs (Immergluck and Balan, 2018), and also disrupting the land tenure of residents experiencing homelessness by bringing in security personal to the newly established green space (Suiter, 2016).

### **Los Angeles River Revitalization**

The implementation of the Los Angeles River Revitalization is an ambitious effort by activists and city officials to revert a past errors. Along with the ecological purposes, the project has the ability to provide environmental justice too long deprived communities along the river corridor. The success of providing environmental justice will be jeopardized if significant displacement occurs within river adjacent communities.

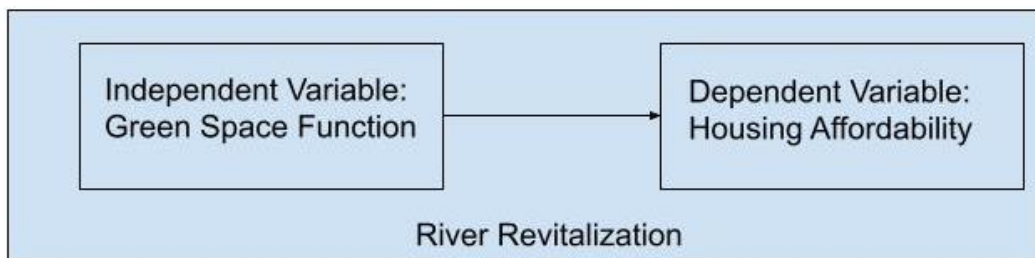
The academic article “Green gentrification or ‘just green enough’: Do park location, size and function affect whether a place gentrifies or not?” found that between 2008 and 2016 “new greenway parks with an active transportation function fostered gentrification more than other parks.” (Rigolon and Németh, 2020). This finding applies to some aspects of the Los Angeles River revitalization. While the river revitalization is a greenway it will likely take time to change public perception of the river to view it that way. The river has long been depicted as a concrete and derelict site. Also, the new transportation functions being added are the bike paths and metro stops. Which have been less popular transportation methods in the car-centric environment of Los Angeles. The concurrent effects of the changing green space functionality has on housing affordability will guide whether or not this green gentrification will lead to community displacement.

Revitalizing the Los Angeles River provides a benefit to the residents of Los Angeles County. The overall increase in amenities around the Los Angeles River may raise demand to live near the river. Housing affordability is already a concern of many residents of Los Angeles County and the river revitalization potentially heightens this concern for communities in the river corridor. Stakeholder intervention would be crucial to maintain a steady rate of housing cost. Multiple approaches are available to provide affordable housing and the cities of Los Angeles County will have to utilize the policies available to them. The project transects multiple municipalities and will require coordination between these different governments along with overall compliance with state and federal guidelines.

## Conceptual Framework

To determine the extent to which gentrification is adding to increased housing costs the research will be focused on the relationship between the green space function and housing affordability along the river. The green spaces functionality will be the independent variable as it is a set plan with several projects completed. Housing affordability will be the dependent variable as it is hypothesized to be influenced by the changing functionality of the river. The river revitalization will be the frame that keeps these two variables connected.

Figure 1: Conceptual Framework



The concepts of gentrification, green gentrification, and environmental justice are included in the Chapter 2 Literature Review to add to the context of the conceptual framework. The concepts of gentrification and environmental justice are useful to understand the academic literature surrounding green gentrification. The literature review included green gentrification as an important concept in the link between green space revitalization and housing affordability. Though with the scope of this research it is not possible to include it in the conceptual framework.



# Chapter 3: Research design, methods and limitations

## Introduction

The research methodology in this chapter was designed to successfully answer the main research question and the sub-questions. Indicators were selected that could be analyzed using available data. For successful data collection, the research methodology needed to consider what data was obtainable through government and non-government organizations. The amount of primary data available was limited given the outbreak of the Covid-19 pandemic and the police brutality protests in the United States

## Research Design and Methods

To answer the research question, I used a case study to determine the extent that green space functionality affects housing affordability. The case study utilized qualitative and quantitative data from both primary and secondary sources. A case study was the most valid research strategy because the research is intended to explain a unique occurrence in a specific location (van Thiel, 2014). Using the case study approach will allow for an in-depth understanding of the situation that goes beyond desk research. Due to the extensive and overlapping projects associated with the river revitalization, I will use one case study to focus on the entire extent of the LAR, rather than focusing on any specific neighborhood.

## Research Question

How are urban green space functions associated with the Los Angeles River Revitalization affecting housing affordability along the river corridor in Los Angeles County?

1. How have stakeholders addressed housing affordability as an externality of river revitalization?

*The influence of various stakeholders has been key in the realization of the river revival project. As with any project in Los Angeles, there is input from various agencies and community members along the way. With my interviews with government officials and through the use of secondary sources I gathered qualitative data to understand how these groups have identified and interfered with housing affordability. I sought information relevant to where communities most face rising housing costs and what actions stakeholders are taking to mitigate the risk of rising housing costs. With this question, I gained an understanding of how the master plan for the river revitalization affected city planning decisions. With these questions, I will know the process behind the city's zoning changes and housing ordinances and their potential effect on the neighborhood's housing affordability. The data helped triangulate which areas are experiencing this greatest rise in housing costs.*

2. How have housing costs/rent changed along the river corridor in comparison to other regions of Los Angeles County?

*This sub-question aimed to examine if indicators of housing costs experienced noticeable change depending on proximity to differing greenspace functions or lack thereof. What trends can be sufficed from this data and do they reflect any impact from changing green space functionality along the river? It will be important in my research to isolate the river's changing functionality and effect on affordability as opposed to the larger city-wide trend.*

3. How has the number of renters with a housing burden changed along the river corridor?

*For the regions along the river corridor, data will be collected for the number and percentage of units with a housing burden. The data for housing burden considers the amount paid for rent as it compares to the income of renters. The purpose of this research question is to account for the possibility of a changing economy and income inequality.*

4. What areas along the river corridor have been selected for affordable housing assistance?

*Of the multiple ways to measure housing affordability, I will look specifically at data used by the Housing and Urban Development Department. This data will indicate which area's along the river have been selected by the United States national government as high risk for the inability of residents to pay rent. The sub-question will explore which areas along the river have been distinguished by the federal government as potential sites in need of affordable housing.*

## **Secondary Data**

The secondary data was collected from multiple online sources including government and private sources. Data from government agencies will include data collected by federal and state agencies gathered with the intent to understand housing information; including data on rent as a percentage of income, property values, and the Low-Income Housing Tax Credits. These data sets were evaluated over time scales to account for changes in housing affordability during the duration of the project. Data from private companies was used related to property values.

Public policies was assessed to understand land-use changes and ordinances related to housing. Reports published by government and non-government organizations provided information on the actions and findings of relevant stakeholders.

The secondary data will cover the entirety of Los Angeles County with specific sections isolated and measured as separate entities. Stretches along the river corridor were isolated and calculated to understand housing affordability issues at different spatial levels. The secondary data was organized into four distinct river regions.

## **Primary Data**

Primary data was collected through the use of semi-structured interviews with relevant stakeholders. The purpose of the semi-structured interviews was to gather data relevant to research sub-question 1. Data from the interviews was useful to triangulate the information from reports and public policies, as well as to follow up with any updates from stakeholders. A variety of relevant stakeholders were contacted for interviews and leads into further relevant data. Academics, non-government organizations, and government agencies were contacted for

availability. Of the individuals who were sent inquiries for interviews, a shortage of respondents agreed to partake.

The stakeholders to provide responses to research inquiries included;  
4 members of the Department of Planning for the city of Los Angeles

### Challenges and Limitations

Given the intricacies of the various projects completed and underway it was difficult to fully grasp the situation with research. The extent of the project’s construction and the timeline for its completion will limited the research’s potential. My research aimed to answer the research question at this point of the river revitalization process.

In addition to the challenges and limitations of the research is the outbreak of the Covid-19 pandemic which affedted the research in multiple ways. The pandemic has influenced immediate housing affordability severely since it began to spread in the state of California in March 2020. Due to this, no secondary data was used from 2020 as this data on affordability would be too strongly influenced by the virus and its relevant economic turmoil, rather than the river revitalization project.

Also, the virus as well as the civil unrest throughout the country are a likely contributor to the lack of responses for the interviews. Due to the limited availability from key stakeholders, my research incorporated data from reports and policies drafted by the stakeholders. The secondary data halped triangulate the data since not as many primary sources were available.

### Operationalization, variables, and indicators

Table 1: Operationalization Table

Operationalization Table					
	Variable	Sub-variable	Indicators	Data Type	Data Source
Independent Variable	Green Space Function		Additional recreational green space	Quantitative, Qualitative	LARRMP, lariver.org
			Additional ecosystem service		
			Additional river accessibility		
			Additional transportation service		
Dependent Variable	Housing Affordability	Stakeholder Involvement	Stakeholder Recommendations	Quantitative, Qualitative	Published Reports, Los Angeles Community Planning Department, Public Policies
			Adopted Polices		
		Housing Costs	Changes in property value	Quantitative	Zillow Property Value Estimations, ACS 5-year estimates
			Changes in rent	Quantitative	ACS 5-year estimates
				Quantitative	ACS 5-year estimates
		Housing Burden	Change in percentage of units paying 30% or more of income on housing	Quantitative	ACS 5-year estimates
			Change in number of units paying 30% or more of income on housing	Quantitative	ACS 5-year estimates
		Affordable Housing Assistance	DDA status per year	Quantitative	Department of Housing and Urban Development (www.huduser.gov),
QCT status per year	Quantitative		Department of Housing and Urban Development (www.huduser.gov),		

The independent variable will use a variable of green space function. The variable will use the indicators of additional recreational green space, additional ecosystem service, additional river accessibility, and additional transportation services .

The dependent variable has four different sub-variables. The sub-variables are “housing costs”, “housing burden”, “affordable housing assistance”, and “stakeholder involvement”. The “housing costs” sub-variable will use indicators related to changes in property value and changes in rental prices. The “housing burden” sub-variable will be used to gain insight into how much the public has paid for their housing compared to their income. The “housing

assistance” sub-variable will show which areas of the river corridor are qualified for assistance with affordable housing projects by the federal government.

The “stakeholder involvement” variable will use indicators of “stakeholder recommendations” and “adopted policies”. The purpose of the stakeholder involvement variable is to identify any policies or recommendations drafted with the purpose of responding to a decline in affordable housing.

### **Reliability and Validity**

The external validity of the research will be low because it is a specific case study that will not be applicable to other urban regions (van Thiel, 2014). The situation in Los Angeles is unique in many ways. It is one of the most populous and diverse cities in the country. Affordability issues are more prevalent and historically controversial in the region. Internal validity will be higher than external validity because of the scope of the research being done. Data will be analyzed over a large portion of land that intersects a diverse number of neighborhoods.

To build a comprehensive view of housing affordability I will examine multiple different indicators of quantitative data. The dependent variable will be examined through these different indicators to discover any distinct trends in the communities surrounding project sites.

# Chapter 4: Presentation of data and analysis

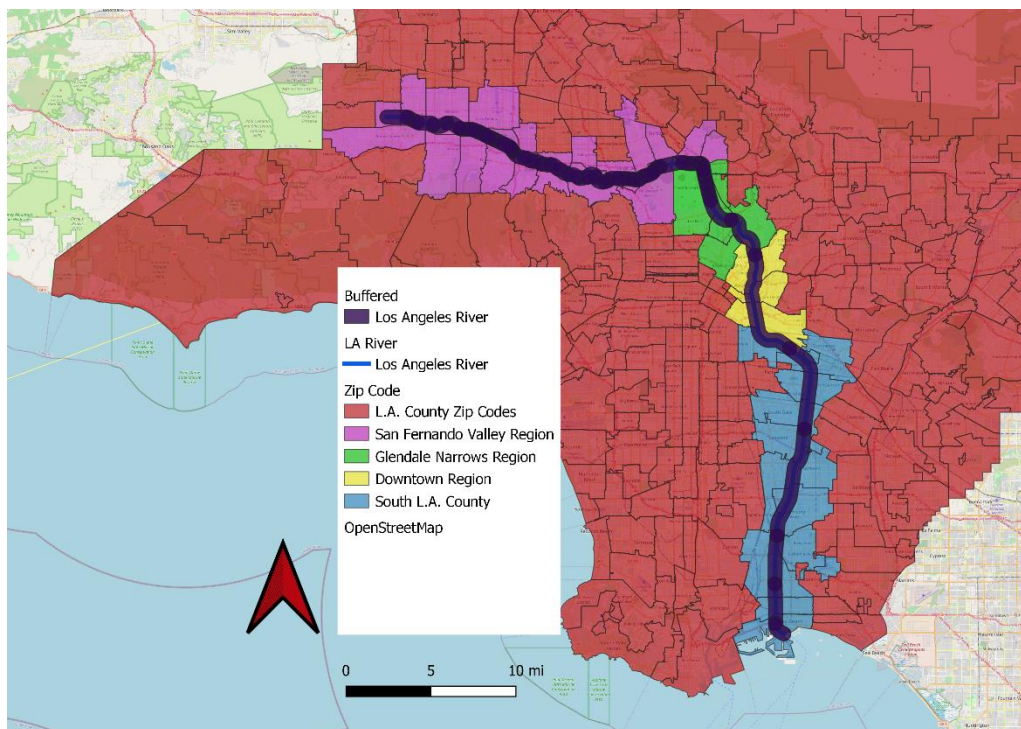
## Introduction

The collected data is organized and analyzed in this chapter. The data for the independent variable is relevant to the location and function of the river revitalization projects. The dependent variable is analyzed by various indicators of housing affordability based on their location. The independent variable data was collected using the LAARMP as well as city of Los Angeles websites. Data for the dependent variable indicators were collected for non-government reports, public policies, and semi-structured interviews related to stakeholder involvement. As well as quantitative data from state and federal data websites. The analysis of the data will be used to answer my research questions in Chapter 5.

Data for the independent and dependent variables will be analyzed based on their geographic location. The geographic location will be delineated by neighborhood, zip code, and census tract. The neighborhood level has a less tangible spatial area due to the lack of uniform boundary lines. Zip code and census tracts will provide more precise spatial locations to measure. Zip codes are used by the United States postal service for mail delivery but are also used as a spatial area for certain data collection. Census tracts are used by the U.S. Census Bureau to aid with the U.S. census.

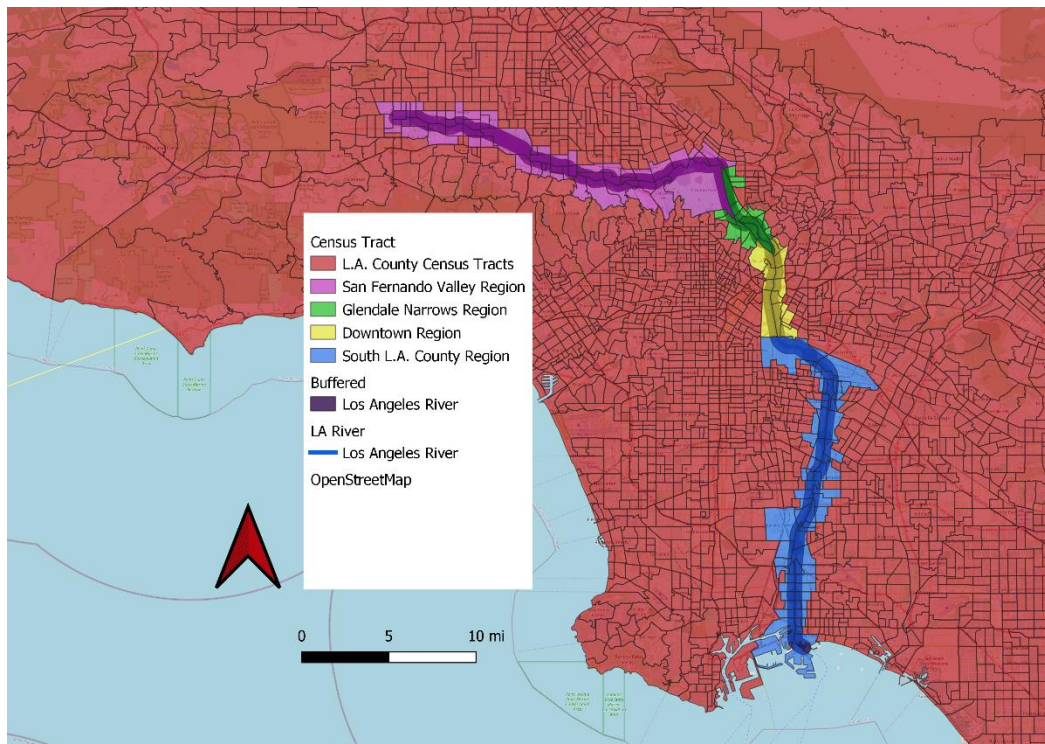
Four river regions are used to organize the major areas relevant to the river revitalization; The San Fernando Valley Region, The Glendale Narrows Region, the Downtown Region, and the South Los Angeles County Region. Spatial areas will be considered river adjacent if they occupy land within a half-mile from the river. The half-mile determination was made because this is the established distance of land that lies within the Los Angeles River Overlay District. To measure this QGIS software was used to establish a buffer zone.

Map 2: Los Angeles River Regions at Zip Code Level



Prepared by Austin VanDerWouden, 26/01/2021

Map 3: Los Angeles River Regions at Census Tract Level



Prepared by Austin VanDerWouden, 01/26/2021

## Independent Variable

The changes to the land use function of the Los Angeles River since the adoption of the LARRMP consist of overlapping and multi-purpose alterations to various locations along the river corridor. In each of the three sections identified in the LARRMP and the fourth section of the river which runs through South Los Angeles County, there have been projects developed to bring new services to the land.

The completed and approved projects associated with the river revitalization will be marked for their location and their changing land functionality. For the purpose of my research, the independent variable considered six project sites; five of the major projects associated with LAARMP and one project developed similar in purpose but not associated with LAARMP. The research did not consider the major architecture project being developed for the LAR by the architect Frank Gehry as it was not far enough along in development to know the specific intentions.

## Indicator: Additional Green Space Functionality

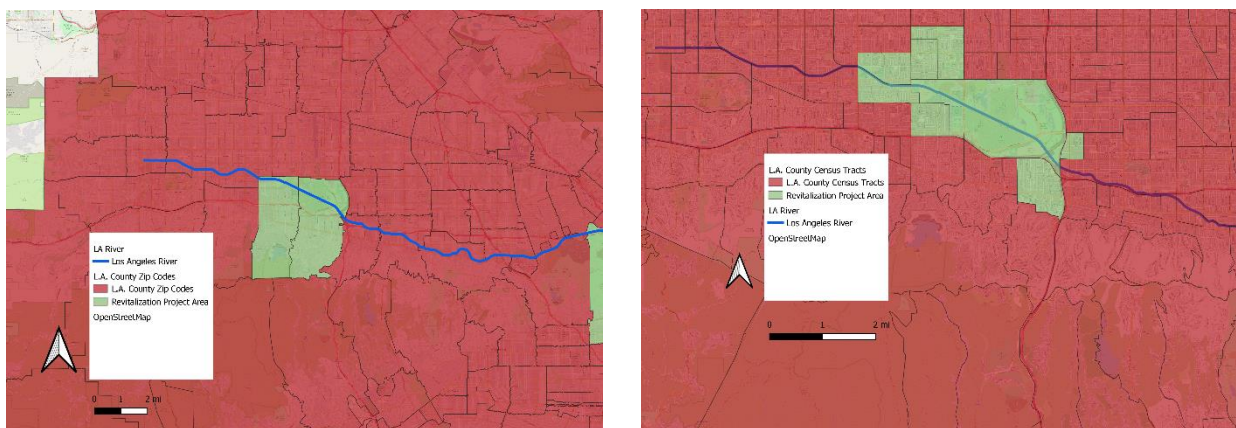
**Source:** Los Angeles River Revitalization Master Plan (City of Los Angeles 2007), [lariver.org](http://lariver.org), [lariverrecreation.org](http://lariverrecreation.org), [lacity.org](http://lacity.org)



## San Fernando Valley Region

In the San Fernando Valley Region, new green space functions were created within the **Sepulveda Basin L.A. River Recreation Zone**. The 2-mile long recreational zone allows the public to access the river for activities such as kayaking, fishing, and birdwatching. As well as opening accessibility around the river by increasing walking pathways for visitors. The area which embodies the Recreational Zone is the zip code of 91436 and the census tract of 9800.24. The surrounding census tracts of 1320.02, 1320.01, 1327.00, 1329.00, 1390.01, 1414.00, 1288.01, and the zip code of 91316 will also be associated with the project due to their proximity within a half-mile of the recreational zone.

Map 4: San Fernando Valley Region Project Site



Prepared by Austin VanDerWouden, 01/27/2021

## Glendale Narrows

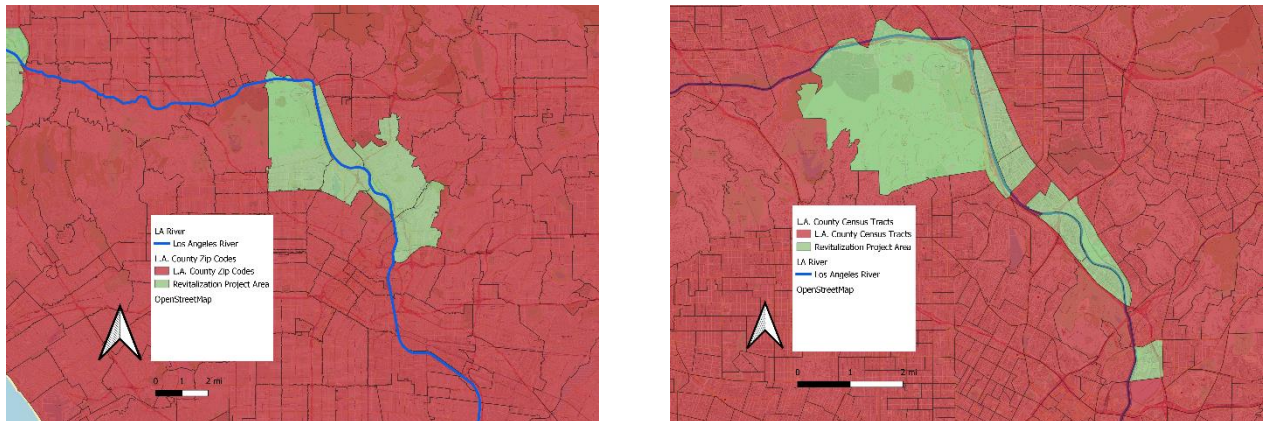
As the river starts to bend and take a southern trajectory the river goes through the Glendale Narrows stretch. Within the Glendale Narrows, the river has had the most significant revitalization efforts at this point of the process.

**The North Atwater East Bank Riverway** will be a 2.2-mile section of the river and feature alterations made to establish ecological functions. Located within the zip code of 90039 and the census tract of 1881.00. The project will focus on transforming the section of the river into a more accessible and ecological functional site. The existing asphalt along the riverway will be replaced with new beneficial ecological features for the public.

The 1.7 mile **Elysian Valley Recreational Zone** is another recreational zone to provide an accessible place for recreational activities similar to the Sepulveda Basin L.A. River Recreational Zone. The recreational zone provides accessibility to the river which will improve further when the Taylor Yard G2 projects are finished around the site.

The **Taylor Yard G2 Projects** are one of the main projects in the river revitalization. The projects at the Taylor Yard site are being developed on land near the Elysian Valley Recreational Zone and are located in the same zip code and census tract. The project will eventually cover a 100 acres parcel of land and add an increased transportation through a metro station.

Map 5: Glendale Narrows and Downtown Regions Project Sites



Prepared by Austin VanDerWouden, 01/27/2021

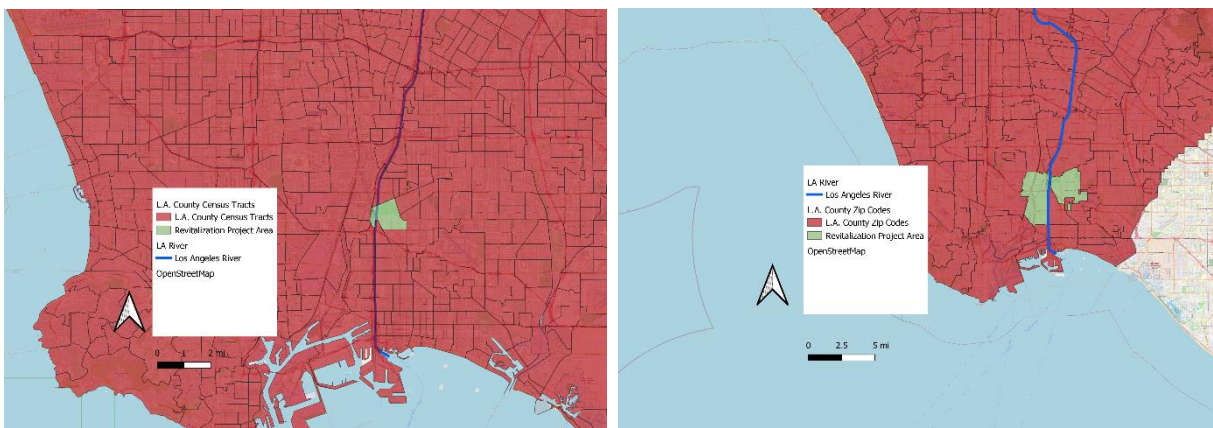
## Downtown

The River passes by the eastward side of downtown Los Angeles and leaves the Glendale Narrows and goes through the Downtown Region. In the Downtown Region, the **Albion Riverside Park** was completed and opened to the public in 2018. The park is located in the Lincoln Heights neighborhoods within the zip code of 90031 and the census tract of 1997.00. The park is on a six-acre site directly adjacent to the LAR. The revitalization site offers new recreational sports facilities along with the ecosystem services added to the river’s riparian zone.

## South Los Angeles County

While no projects in South Los Angeles County are mentioned in the LAARMP, the area has undergone some changes to land use functionality along the LAR and has a large area of land touching the LAR. The changes brought about by the river revitalization have the potential to impact these communities as well. The **Dominguez Gap Wetlands** will be included as a site in my research because it fulfills a similar objective as the projects of the LAARMP and was completed in the time between the publication of the master plan and 2019.

Map 6: South Los Angeles County Project Site



Prepared by Austin VanDerWouden, 01/27/2021



Table 2: River Revitalization Project Sites

River Revitalization Project Sites					
Region	River Revitalization Project	Neighborhood	Zip Code	Census Tracts	New Changes to Green Space Function
San Fernando Valley	Sepulveda Basin L.A. River Recreation Zone	Balboa Park, Encino	91436, 91316	980024, 132002, 132001, 132700, 132900, 139001, 141400, 128801	Recreational , River Accessibility
Glendale Narrows	North Atwater East Bank Riverway	Atwater Village, Los Feliz	90039, 90027	188100, 980009, 188300	Ecological Services
Glendale Narrows	Elysian Valley L.A. River Recreational Zone	Elysian Valley	90065	187102, 187200, 197200	Recreational , River Accessibility
Glendale Narrows	Taylor Yard G2 Projects	Elysian Valley	90065	187102	Recreational, Transportation
Downtown	Albion Riverside Park	Lincoln Heights, Chinatown	90031	199700	Recreational
South Los Angeles County	Dominguez Gap Wetlands		90807, 90810	571800	Ecological Services , River Accessibility

### Dependent Variable

Quantitative and qualitative data for each sub-variable will be used to form a comprehensive view of the changes to housing affordability in communities along the Los Angeles River in comparison to one another as well as Los Angeles County as a whole. These sub-variables include; stakeholder involvement, housing costs, housing burden, affordable housing assistance.

The data collected on the website Zillow features estimations on average property value for a neighborhood. The estimated prices are made by the real estate company. Data was collected for neighborhoods at the dates of January 2011 and December 2019.

The U.S. Census Bureau compiles data from around the United States related to aspects of demographics and livelihood. This includes data on housing including estimates of property values, rent, rent as a percent of income, as well as other information. At the zip code level, the spatial area is larger than at the census tract level. The census tract’s smaller spatial area will result in more units to analyze and data more particular to the river corridor. Data collected through the U.S. Census Bureau uses two timeframes. The data for zip codes uses data from 2012 and 2019. The data collected for census tracts are from the dates of 2010 and 2018.

The data related to the “affordable housing assistance” sub-variable uses government determinations on areas in need of more affordable housing as determined by the HUD. The data for housing assistance from the HUD also uses two different timeframes. QCT information was available for the years between 2008 and 2019 except for 2011 and 2014. The data for DDA was available for the years 2016, 2017, 2018, and 2019.

The qualitative data for stakeholder involvement was gathered through secondary sources of reports and policies, as well as from semi-structured interviews with the Los Angeles Department Of City Planning.

### Sub-variable: Stakeholder Involvement

The recommendations and policy suggestions of government agencies and non-government organizations can help determine the expected impact on housing costs and what actions have been taken by government agencies, non-government organizations (NGOs), or private

businesses to influence housing affordability in river adjacent communities. The sub-variable will also provide insight into any trends in housing affordability recorded by NGOs or government agencies.

### **Indicator: Stakeholder Recommendations**

**Source:** “Pathway to Parks & Affordable Housing Joint Development” (LA-ROSAH, 2018), Whitewashing the Los Angeles River? Gentrification not gentrification: green displacement threatens communities of color and low-income communities (Garcia and Mok, 2017),

A small number of environmental activist groups were behind the catalyst for the River Revitalization. Eventually, the city assembled an ad-hoc committee to head the revitalization efforts and establish the project’s plan. The committee was tasked with working with relevant stakeholders to “make major revitalization efforts, identify linkages between projects and communities, recommend policy changes, and create a City role for River revitalization.” (LARRMP)

Throughout this process community members engaged with the committee to foster a participatory approach to the revitalization process. The 2007 Master Plan considered housing affordability as a negative externality of the river revitalization plan.

After the implementation of the 2007 LARRMP, several stakeholders took the initiative to address the possibility of green gentrification along with river adjacent communities. Most notably, the Los Angeles Regional Open Space and Affordable Housing (LA ROSAH) collaborative assembled to address the complexities of green space development and propose potential solutions to mitigate any decline in housing affordability. Fifteen agencies came together to form the collaborative group.

In 2008 LA ROSAH published the report, “Pathway to Parks & Affordable Housing Joint Development”, to address the effects that parks and green spaces can have on affordable housing. The report finds potential for gentrification as the revitalization comes at a time post the 2008 recession where “urban neighborhoods in Los Angeles, particularly those connected to high-quality transit, rapid bus, and subway, have become hot spots for real estate development in the past decade” partly driven by the “strong post-recession economy, driven by high income jobs in white collar industries, and a revitalization interest in Downtown and central city neighborhoods” that have attracted higher income residents to the inner city.

Within the report by LA ROSAH the neighborhoods of Chinatown, Lincoln Heights, and Frogtown are all highlighted as river adjacent communities struggling to maintain affordable housing.

The Los Angeles River Revitalization also faced concern for a lack of affordable housing from CityProject, another non-profit organization centered on policy and legal advocacy. The report “Whitewashing the Los Angeles River? Gentrification not gentrification: green displacement threatens communities of color and low-income communities” by CityProject found “no clear trends” to indicate gentrification however it did find a “pattern of displacement along the river” near project sites in downtown Los Angeles.

### **Indicator: Adapted Policies**

**Source:** Semi-structured interviews with Department of Community Planning, Los Angeles River Revitalization Master Plan (City of Los Angeles 2007), ZONING INFORMATION (Z.I) NO. 2358 RIVER IMPROVEMENT OVERLAY DISTRICT (Department of City Planning 2015), Housing Progress Reports (City of Los Angeles 2020)

Urban development within the United States follows a decentralized system that features governing bodies at multiple levels with unique regulations, policies, and ordinances. The Los Angeles River Revitalization sites transect through different municipalities of Los Angeles County resulting in a unique overlay of zoning regulations for specific communities. Within the City of Los Angeles the community planning districts make decisions on the future conditions of the 35 delineated communities. These community plans are responsible for upholding the implementation of the proposed projects of the LARRMP as well as adjusting land-use zoning and planning for the community.

Construction of the River Revitalization project is at this point in time an ongoing process. Los Angeles County and the city municipalities with land near the River will continue to develop these projects and mitigate any issues.

The community plans for two communities centered around the Los Angeles River in the Downtown Region and the Glendale Narrows Region are currently due for revision of their community plans with housing affordability as a key focus area of the plans. Not only to provide affordable housing units but to promote job growth as well. Part of this is to maintain industrial zoning that has traditionally supplied jobs for the regions (Los Angeles Department of City Planning)

At the city level, the Los Angeles River Overlay District (LA-RIO) was adapted to guide future development along the river corridor. The LA-RIO establishes new stricter development guidelines for the river adjacent neighborhoods, mostly related to the exterior of properties within a half mile of the LAR. The overlay district established development regulations to “support the goals of the Los Angeles River Revitalization Master Plan” by having development complement the plan for increased accessibility and ecological functions within the river corridor. The LA-RIO does not establish any mandates to promote affordable housing.

Urban managers have traditionally been limited in their approach to housing to the use of zoning (Los Angeles Department of City Planning). The city has utilized strategies to increase the number of affordable housing units near major infrastructure projects through inclusionary zoning practices. Measure JJJ was adopted in 2017 to incentivize developers to include affordable housing units near Transit Oriented Communities (Los Angeles City Planning, 2020). The policy to develop more affordable housing units near the Transit Oriented Communities is a potential approach to providing affordable housing units in communities centered around areas set to improve transportation as part of the river revitalization, such as the Taylor Yard G2 Projects.

### **Sub-variable: Housing Costs**

#### **Changes in Property Value**

The price of residential property value within a geographical region is indicative of the level of demand to live in the area by reflecting the increased value homeowners and landlords see

in an area. The changes in property value for the city of Los Angeles and Los Angeles County were also documented for the same years as the neighborhoods, zip codes, and census tracts. The percent change of the city of Los Angeles and Los Angeles County offer a comparison for the different regions surrounding the L.A.R. By comparing the river adjacent areas to the greater County and the City of Los Angeles will provide a context to the development of the LAR regions. Of the four distinct regions, the Glendale Narrows region and the Downtown region both show the most significant increase in property value by both zip code and census tract.

**Indicator: Change in Property Value by Neighborhood**

**Source: Zillow**

**Table 3: Percentage Change in Property Value by Neighborhood, 2011 - 2019**

Percent Change in Property Value by Neighborhood, 2011 - 2019				
Source: Zillow				
Region	Neighborhood	2011	2019	Percent Change 2011 - 2019
<b>San Fernando Valley</b>				
	Canoga Park	294,000	540,000	45.56
	Reseda	305,000	555,000	45.05
	Encino	708,000	1,120,000	36.79
	Lake Balboa	345,000	609,000	43.35
	Sherman Oaks	647,000	1,050,000	38.38
	Studio City	575,000	1,280,000	55.08
	Hollywood Hills	617,000	1,830,000	66.28
	Burbank	511,000	849,000	39.81
Region Median				44.20
<b>Glendale Narrows</b>				
	Atwater Village	513,000	958,000	46.45
	Los Feliz	406,000	1,520,000	73.29
	Elysian Valley	415,000	808,000	48.64
Region Median				48.64
<b>Downtown</b>				
	Lincoln Heights	277,000	596,000	53.52
	Chinaotwn	318,000	599,000	46.91
	Downtown	378,000	640,000	40.94
	Boyle Heights	221,000	485,000	54.43
Region Median				50.22
<b>South Los Angeles County</b>				
	Maywood	228,000	441,000	48.30
	Commerce	255,000	468,000	45.51
	Bell/Bell Gardens	256,000	470,000	45.53
	South Gate	253,000	462,000	45.24
	Lynwood	236,000	454,000	48.02
	Paramount	230,000	444,000	48.20
	East Compton	214,000	429,000	50.12
	North Long Beach	262,000	483,000	45.76
	Los Cerritos	438,000	767,000	42.89
	Westside/Carson	319,000	565,000	43.54
	California Heighs?	417,000	661,000	36.91
Region Median				45.53
River Corridor Median				45.66
City of Los Angeles		423,000	727,000	41.82
Los Angeles County		389,000	642,000	39.41

The data on property value from Zillow indicates that between 2011 and 2019 the City of Los Angeles experienced a price increase of 42% and Los Angeles County saw nearly a 40% increase in property values.

The San Fernando Valley region was about the same as the city and County average with a median increase of 44.91%. Within the San Fernando Valley Region the Hollywood Hills region had the largest increase in property values at 66%.

In the Glendale Narrows Region, all three neighborhoods were above the rate of change for Los Angeles County and the city of Los Angeles. Atwater Village had a percent change of 46.46% and the Elysian Valley experienced a 48.63% change in property value. While the Los Feliz neighborhood experienced a 73.29% change in home values, which was the highest change amongst the river adjacent neighborhoods.

In the Downtown Region, the Lincoln Heights and Boyle Heights neighborhoods experienced an increase higher than 50%. The main downtown neighborhood was closer to the averages for the City of Los Angeles and Los Angeles County with an increase of 40.94%.

In South Los Angeles County many of the neighborhoods were also around a 40% change in property values over the timeframe. East Compton was the highest percent change at around 50%.

**Indicator: Change in Property Value by Zip Code**

**Source:** 2012 ACS 5-year estimates, 2019 ACS 5-year estimates

Table 4: Change in Property Value by Zip Code 2012 -2019

Change in Property Value by Zip Code 2012 - 2019				
Source: 2012 ACS 5-year estimates, 2019 ACS 5-year estimates				
Region	Zip Code	2012	2019	
<b>San Fernando Valley</b>				
	91303	343,400	465,100	26.17
	91367	563,100	697,600	19.28
	91306	366,600	520,200	29.53
	91356	675,100	957,400	29.49
	91335	344,700	496,700	30.60
	91316	507,200	685,300	25.99
	91406	375,800	545,300	31.08
	91436	1,000,000+	1,351,500	N/A
	91411	454,300	652,900	30.42
	91403	748,500	1,027,200	27.13
	91423	781,700	938,500	16.71
	91604	848,200	1,140,800	25.65
	91607	598,400	822,300	27.23
	91602	653,300	734,400	11.04
	91608	N/A	N/A	N/A
	91505	541,300	699,300	22.59
	91523	-	-	N/A
	90068	964,200	1,228,400	21.51
	91522	-	-	N/A
	91521	-	-	N/A
	91506	546,900	721,400	24.19
	91201	631,000	795,200	20.65
	91202	609,400	767,500	20.60
<b>Region Median</b>				<b>25.82</b>
<b>Glendale Narrows</b>				
	90027	803,900	1,146,900	29.91
	91203	376,000	514,900	26.98
	91204	412,600	500,500	17.56
	90039	619,100	854,200	27.52
	90026	563,100	838,400	32.84
	90065	469,900	706,900	33.53
<b>Region Median</b>				<b>28.71</b>
<b>Downtown</b>				
	90031	357,900	550,000	34.93
	90012	402,400	533,200	24.53
	90033	326,500	434,200	24.80
	90013	315,300	657,400	52.04
	90021	458,000	888,900	48.48
	90023	307,300	427,300	28.08
<b>Region Median</b>				<b>31.51</b>
<b>South Los Angeles County</b>				
	90058	182,900	328,400	44.31
	90270	274,200	387,000	29.15
	90040	345,400	406,900	15.11
	90201	279,700	406,800	31.24
	90280	304,400	408,200	25.43
	90262	294,500	399,100	26.21
	90723	269,700	343,800	21.55
	90221	248,100	364,100	31.86
	90805	295,100	405,300	27.19
	90807	493,800	608,400	18.84
	90810	322,500	414,300	22.16
	90806	371,500	466,000	20.28
	90813	305,100	393,000	22.37
	90802	282,300	404,100	30.14
<b>Region Median</b>				<b>25.82</b>
<b>River Corridor Median</b>				<b>26.59</b>
<b>California</b>		<b>383,900</b>	<b>505,000</b>	<b>0.24</b>
<b>Los Angeles County</b>		<b>443,300</b>	<b>583,200</b>	<b>0.24</b>
<b>City of Los Angeles</b>		<b>470,000</b>	<b>636,900</b>	<b>0.26</b>

The median change in property value for the zip codes of the San Fernando Valley region was 25.82%. 91406 and 9436 experienced the greatest rise in property values and had levels of increase slightly above 30%. The zip code of 91607 was the greatest outlier with an increase of only of 11.05%.

As the river continues southward towards the Glendale Narrows Region the property values also saw steady growth. The region as a whole saw a median change in values of 28.71%. The zip codes with the highest level of increase were the two zip codes near the Elysian Valley. 90026 had an increase of 32.83% and 90065 increased at a rate of 33.52%.

The trend in increased property value continued as the river moves into the Downtown Region. The zip codes in this region had a median increase in values of 31.50%. Two major contributors to this increase were the 90013 zip code in Lincoln Heights and the 90021 zip code in Boyle Heights. Both saw substantial increases with 90013 rising at 52% and 90021 at 47.48%.

In South Los Angeles County the median percent of change was back around the same level as the San Fernando Valley region with a change of 25.81%. The rate of increase for the property value is very similar in South Los Angeles County as the median percentage in the San Fernando Valley. Both regions had a percent increase of 25.81%. The greatest rate of increase in property value for the South Los Angeles County region is in the zip code of 90058 which lies in the city of Vernon. The property value in zip code 90058 is 44.30%.

#### **Indicator: Change in Property Value by Census Tract**

Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimates

**Table 5: Change in Property Value by Census Tract 2010 - 2018**

Change in Property Value by Census Tract 2010 - 2018				Change in Property Value by Census Tract 2010 - 2018				
Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimates				Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimates				
Region	Census Tract	2010	2018 Percent Change	Region	Census Tract	2010	2018 Percent Change	
<b>San Fernando Valley</b>				<b>Downtown Region</b>				
	113232	672200	630200	-6.25	185310	356100	482800	35.58
	133100	492300	568100	15.40	185320	427200	455400	6.60
	132001	524700	573900	9.38	980010	-	-	N/A
	132002	517000	591900	14.49	199000	354200	399200	12.70
	141202	958700	875000	-8.73	206010	534300	494200	-7.51
	134303	385500	463300	20.18	199700	385500	381600	-1.01
	134520	254700	340000	33.49	206020	-	-	N/A
	134001	451800	439700	-2.68	203500	472000	357600	-24.24
	134520	254700	340000	33.49	204200	420000	360400	-14.19
	134521	412500	361600	-12.34	204600	385400	365200	-5.24
	134522	378400	415100	9.70	204700	279700	388300	38.83
	124600	780100	794600	1.86	205110	-	-	N/A
	134903	-	-	N/A	205120	452500	361100	-20.20
	139301	637600	771800	21.05	206032	359100	465400	29.60
	135111	495300	539900	9.00	206050	-	-	N/A
	135114	394000	456900	15.96	206031	475600	668800	40.62
	134002	493200	448900	-8.98	Region Median			2.79
	134710	396300	440800	11.23	<b>South Los Angeles County</b>			
	134800	437800	450500	2.90	532400	325000	387500	19.23
	134904	431300	466900	8.25	533401	389400	359900	-7.58
	131020	411700	457400	11.10	533403	405900	414600	2.14
	132300	434900	426200	-2.00	533701	335600	356700	6.29
	132501	370700	436300	17.70	533702	390600	417700	6.94
	132502	341700	336300	-1.58	533703	270800	412300	52.25
	980024	644200	690800	7.23	532303	416000	380400	-8.56
	132700	459300	549800	19.70	532304	387900	437400	12.76
	133000	404800	434300	7.29	533804	326600	385800	18.13
	132900	609400	621000	1.90	533805	309100	374700	21.22
	139001	536500	651000	21.34	533806	95900	315700	229.20
	134901	488000	581000	19.06	533901	369100	414400	12.27
	139200	516200	560600	8.60	534101	414900	368400	-11.21
	134905	637500	501200	-21.38	534102	450500	400000	-11.21
	141400	944000	989700	4.84	534201	451600	288000	-36.23
	128702	636400	764900	20.19	534202	333300	359600	7.89
	128801	458000	583300	27.36	536102	368600	325400	-11.72
	128802	635300	729000	14.75	536103	358600	410000	14.33
	128910	692400	771300	11.40	536104	468800	380000	-18.94
	141101	617700	699500	13.24	536200	361200	378400	4.76
	141102	910300	963000	5.79	540000	421100	368900	-12.40
	141201	615200	814200	32.35	540101	390700	379100	-2.97
	141202	958700	875000	-8.73	541802	401700	388600	-3.26
	141302	762600	908800	19.17	553601	322700	408900	26.71
	141303	359900	478400	32.93	553701	240700	246100	2.24
	141304	711700	714800	0.44	553702	333200	270900	-18.70
	141201	615200	814200	32.35	553802	120000	148600	23.83
	143902	914200	1236200	35.22	542103	335100	313100	-6.57
	143200	587700	693300	17.97	542200	290100	323400	11.48
	143300	731200	810100	10.79	570202	314900	370100	17.53
	143400	801500	841700	5.02	570404	366900	373200	1.72
	143500	791000	1032100	30.48	570301	316000	381000	20.57
	143602	685500	729500	6.42	570402	350000	370100	5.74
	143603	644800	750000	16.32	570303	272400	345300	26.76
	143604	416700	776800	86.42	570304	192600	348100	80.74
	320000	-	-	N/A	571701	401800	375400	-6.57
	143800	1,000,000+	1210500	N/A	571800	866600	801200	-7.55
	143901	1,000,000+	1578100	N/A	572100	413000	411900	-0.27
	143100	954500	744600	-21.99	572400	462200	464600	0.52
	143700	1,000,000+	1192700	N/A	572302	425300	410400	-3.50
	189701	914100	1051000	14.98	572201	495500	447000	-9.79
	311600	518100	666900	28.72	572600	387400	409300	5.65
	311700	618900	787100	27.18	572202	512300	469100	-8.43
	311801	575400	596800	3.72	572700	382100	358600	-6.15
	980009	-	-	N/A	573100	520600	461900	-11.28
	301602	577100	582300	0.90	572900	373400	348300	-6.72
	301601	454700	671100	47.59	573003	415900	465500	11.93
	301701	600400	599800	-0.10	575500	-	-	N/A
Region Median				11.16	575401	377300	426700	13.09
					575801	355900	432000	21.38
<b>Glendale Narrows</b>					575901	282200	309900	9.82
	187101	554900	731900	31.90	576001	381300	413400	8.42
	188100	579800	744000	28.32	980033	-	-	N/A
	188300	633100	743900	17.50	534406	434600	331800	-23.65
	187300	701000	892300	27.29	534302	426200	445800	4.60
	197410	612400	873100	42.57	534301	236100	356600	51.04
	187102	583800	672900	15.26	542104	308900	325400	5.34
	187200	359400	614200	70.90	542106	319300	351100	9.96
	197200	423300	434700	2.69	570501	406700	396000	-2.63
	188202	1,000,000+	1608500	N/A	543305	98900	87600	-11.43
	188201	741800	930600	25.45	544001	376700	403900	7.22
	195100	944800	1172600	24.11	544002	435600	425700	-2.27
	186401	345100	595000	72.41	572301	424400	366500	-13.64
	186403	499000	613000	22.85	572002	523100	396400	-24.22
	186404	471900	610000	29.26	573004	395100	443400	12.22
	185203	424500	574800	35.41	575802	358000	490000	36.87
	301702	476200	581000	22.01	Region Median			4.68
	302301	460500	457900	-0.56	River Corridor Median			9.00
	302302	682700	622600	-8.80	Los Angeles	553,900	599,700	0.08
Region Median				25.45	Los Angeles County	508,000	543,400	0.07



The San Fernando Valley increased at a median rate of 11% which is greater than the average for the city of Los Angeles and Los Angeles County. Some of the tracts in the region increased at a much more significant level, with fourteen tracts increased at a rate above 20%. The location of these tracts does not center around one specific area in the valley.

The Glendale Narrows region is the area that featured the greatest collective gain in property values with a median increase of 25%. All but three tracts in this region increased above 15%.

The level of increase in the downtown region was below that of Los Angeles County and the City of Los Angeles with a median increase of only 2%. Part of the reason for this is that half of the tracts actually had their property values decrease. Some tracts did feature substantial increases to their property value as three of the tracts were above 30% with 2060.32 also increasing at 29%.

In the South Los Angeles County Region, there is the greatest number of tracts within the half mile proximity to the L.A.R. The median level of price change was 4.68% which was still below the County and the City of Los Angeles.

The changes to property value by census tract deviate from the results presented at the zip code level. The region which is the most similar is the Glendale Narrows Region which is 28% at the census tract level and 29% at the zip code level.

### **Changes in Rent**

While property values can be helpful in showing the appeal of an area to new buyers and speculators, many residents of urban regions rent their living space. Renters face a different struggle than homeowners to maintain housing as their rent can increase over the duration of their tenure causing more uncertainty.

### **Indicator: Change in Rent by Zip Code**

**Source:** 2012 ACS 5-year estimates, 2019 ACS 5-year estimates

Table 6: Change in Rent by Zip Code 2012 - 2019

Change in Rent by Zip Code 2012 - 2019				
Source: 2012 ACS 5-year estimates, 2019 ACS 5-year estimates				
Region	Zip Code	2012	2019	Percent Change
<b>San Fernando Valley</b>				
	91303	1,210	1,541	21.48
	91367	1,710	2,196	22.13
	91306	1,143	1,426	19.85
	91356	1,205	1,624	25.80
	91335	1,179	1,459	19.19
	91316	1,425	1,746	18.38
	91406	1,130	1,448	21.96
	91436	2,000+	2,592	N/A
	91411	1,155	1,454	20.56
	91403	1,500	1,908	21.38
	91423	1,497	1,857	19.39
	91604	1,634	1,970	17.06
	91607	1,268	1,611	21.29
	91602	1,345	1,755	23.36
	91608	-	-	N/A
	91505	1,418	1,858	23.68
	91523	-	-	N/A
	90068	1,409	1,770	20.40
	91522	-	-	N/A
	91521	-	-	N/A
	91506	1,303	1,607	18.92
	91201	1,301	1,593	18.33
	91202	1,492	1,754	14.94
<b>Region Median</b>				<b>20.48</b>
<b>Glendale Narrows</b>				
	90027	1,149	1,468	21.73
	91203	1,194	1,678	28.84
	91204	1,160	1,456	20.33
	90039	1,248	1,727	27.74
	90026	1,038	1,355	23.39
	90065	1,055	1,318	19.95
<b>Region Median</b>				<b>22.56</b>
<b>Downtown Region</b>				
	90031	956	1,161	17.66
	90012	975	1,688	42.24
	90033	889	1,091	18.52
	90013	536	741	27.67
	90021	441	647	31.84
	90023	972	1,139	14.66
<b>Region Median</b>				<b>23.09</b>
<b>South Los Angeles County</b>				
	90058	695	635	-9.45
	90270	984	1,104	10.87
	90040	903	1,163	22.36
	90201	1,058	1,245	15.02
	90280	975	1,160	15.95
	90262	1,006	1,212	17.00
	90723	1,155	1,388	16.79
	90221	1,069	1,196	10.62
	90805	1,018	1,212	16.01
	90807	1,174	1,411	16.80
	90810	985	1,175	16.17
	90806	1,016	1,189	14.55
	90813	936	1,147	18.40
	90802	1,032	1,307	21.04
<b>Region Median</b>				<b>16.09</b>
<b>River Corridor Median</b>				<b>19.62</b>
<b>California</b>		<b>1,209</b>	<b>1,503</b>	<b>19.56</b>
<b>Los Angeles County</b>		<b>1,187</b>	<b>1,460</b>	<b>18.70</b>
<b>City of Los Angeles</b>		<b>1,156</b>	<b>1,450</b>	<b>20.28</b>

The median percent change for rent in the San Fernando Valley region was 25.81%. This median change was greater than that of Los Angeles County and the city of Los Angeles. Most of the zip codes in this region experienced a change in rent between 20-30%. The median change in rent prices for the Glendale Narrows region is slightly above that of the San Fernando Valley with a median increase of 22.56%.

The downtown region also increased at a similar rate to that of the Glendale Narrows region. The median change over time was 23.09%. The biggest outlier in this region is the 90012 zip code, which had an increase of 42.23%.

As the river starts to reach South Los Angeles County the trend of increasing rent prices stops. The South Los Angeles County as a whole sees a median increase of only 16.08%. The first zip code which defines this region after the end of the downtown region is 90058 in Vernon, which had a negative change in median rent price over the years. The 90058 is the only negative change in rent for the region but as a whole, the zip codes do not see the same level of increase as the other three regions. Only one zip code in the region, 90270, has an increase in median rent prices above 20%.

**Indicator: Change in Rent by Census Tract**

**Source:** 2010 ACS 5-year estimates, 2018 ACS 5-year estimates

Table 7: Change in Rental Price by Census Tract 2010 - 2018

Change in Rental Price by Census Tract 2010 - 2018					Change in Rental Price by Census Tract 2010 - 2018				
Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimates					Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimates				
Region	Census Tract	2010	2018	Percent Change	Region	Census Tract	2010	2018	Percent Change
<b>San Fernando Valley</b>					<b>Downtown</b>				
	113232	1532	3073	50.15		185310	835	1112	24.91
	133100	1256	1360	7.65		185320	805	1057	23.84
	132001	1190	1216	2.14		980010	1175	-	N/A
	132002	1278	2002	36.16		199000	875	1136	22.98
	141202	1605	1902	15.62		206010	581	1130	48.58
	134303	1800	1742	-3.33		199700	968	1191	18.72
	134520	1045	1217	14.13		206020	1679	2336	28.13
	134001	1108	1367	18.95		203500	749	1082	30.78
	134520	1045	1217	14.13		204200	801	993	19.34
	134521	1043	1397	25.34		204600	893	973	8.22
	134522	1040	1113	6.56		204700	833	1072	22.29
	124600	1401	1657	15.45		205110	1027	1293	20.57
	134903	1196	1738	31.19		205120	795	1032	22.97
	139301	2,000+	2162	N/A		206032	814	1051	22.55
	135111	1215	1426	14.80		206050	697	825	15.52
	135114	1409	1780	20.84		206031	1660	2366	29.84
	134002	991	1268	21.85		Region Median			22.97
	134710	908	1188	23.57					
	134800	1904	1948	2.26		<b>South Los Angeles County</b>			
	134904	973	1116	12.81		532400	855	850	-0.59
	131020	1338	1521	12.03		533401	942	1105	14.75
	132300	941	1165	19.23		533403	813	986	17.55
	132501	1134	1294	12.36		533701	941	956	1.57
	132502	1040	1551	32.95		533702	998	1171	14.77
	980024	-	2173	N/A		533703	968	998	3.01
	132700	972	1192	18.46		532303	845	1102	23.32
	133000	1892	1977	4.30		532304	840	1041	19.31
	132900	1528	2028	24.65		533804	1001	1001	0.00
	139001	1571	1680	6.49		533805	964	1178	18.17
	134901	1013	1335	24.12		533806	985	1232	20.05
	139200	1397	1786	21.78		533901	1030	1186	13.15
	134905	1825	2271	19.64		534101	973	1099	11.46
	141400	1567	1676	6.50		534102	975	1176	17.09
	128702	1307	1770	26.16		534201	849	1261	32.67
	128801	1205	1449	16.84		534202	1071	1132	5.39
	128802	1386	1687	17.84		536102	1256	1365	7.99
	128910	1194	1658	27.99		536103	890	1150	22.61
	141101	1398	1699	17.72		536104	967	1249	22.58
	141102	1475	1929	23.54		536200	1000	1157	13.57
	141201	1307	1806	27.63		540000	1051	1241	15.31
	141202	1605	1902	15.62		540101	882	1362	35.24
	141302	1486	1837	19.11		541802	919	1236	25.65
	141303	1507	1815	16.97		553601	1117	1306	14.47
	141304	1485	1611	7.82		553701	1138	1221	6.80
	141201	1307	1806	27.63		553702	1075	1292	16.80
	143902	1377	2001	31.18		553802	1032	1251	17.51
	143200	1295	1656	21.80		542103	1024	1244	17.68
	143300	1231	1564	21.29		542200	1150	1008	-14.09
	143400	1570	1769	11.25		570202	1222	1338	8.67
	143500	1609	2065	22.08		570404	974	1319	26.16
	143602	1346	1649	18.37		570301	954	1105	13.67
	143603	1331	1665	20.06		570402	913	1352	32.47
	143604	1705	1930	11.66		570303	1068	1261	15.31
	320000	-	-	N/A		570304	968	1160	16.55
	143800	1326	1744	23.97		571701	917	1246	26.40
	143901	1346	2656	49.32		571800	1200	1576	23.86
	143100	1313	1908	31.18		572100	1196	1268	5.68
	143700	1426	1709	16.56		572400	1427	-	N/A
	189701	1630	2092	22.08		572302	1029	1416	27.33
	311600	1448	1862	22.23		572201	615	1267	51.46
	311700	1250	1682	25.68		572600	1096	1656	33.82
	311801	1234	1461	15.54		572202	949	1154	17.76
	980009	1833	-	N/A		572700	873	1167	25.19
	301602	1056	1404	24.79		573100	989	1170	15.47
	301601	1209	1467	17.59		572900	993	1120	11.34
	301701	946	1469	35.60		573003	980	1053	6.93
Region Median				19.17		575500	-	585	N/A
						575401	853	1010	15.54
<b>Glendale Narrows</b>						575801	871	1023	14.86
	187101	969	1419	31.71		575901	969	1121	13.56
	188100	1174	1635	28.20		576001	1326	1786	25.76
	188300	1045	1589	34.24		980033	-	-	N/A
	187300	1435	1956	26.64		534406	1079	1336	19.24
	197410	1266	1720	26.40		534302	1050	1289	18.54
	187102	1056	1213	12.94		534301	1066	1103	3.35
	187200	944	1449	34.85		542104	1115	1181	5.59
	197200	939	1370	31.46		542106	1053	1074	1.96
	188202	1227	1695	27.61		570501	1092	1255	12.99
	188201	1345	1691	20.46		543305	1177	1113	-5.75
	195100	1154	1874	38.42		544001	995	1419	29.88
	186401	938	1224	23.37		544002	1520	1500	-1.33
	186403	1161	1159	-0.17		572301	914	1356	32.60
	186404	889	1188	25.17		572002	1202	1399	14.08
	185203	982	1167	15.85		573004	957	1144	16.35
	301702	1238	1402	11.70		575802	872	1013	13.92
	302301	1281	1891	32.26		Region Median			15.51
	302302	1119	1358	17.60					
Region Median				26.52		Total Median			18.72
						Los Angeles City	1077	1376	21.73
						Los Angeles County	1117	1390	19.64

The data for the census tracts followed a similar trend as the data for the zip codes with an exception of the Downtown Region. The downtown region by census tract showed a less significant increase in rental price than in zip codes. The lower rate of increase would indicate that changes in the main downtown center may be causing some of the rising rental prices since the zip codes incorporate more of the central business district.

In the San Fernando Valley Region, the median change in rent was 35% which is about 15% greater than the change at the County and Los Angeles city level.

The Glendale Narrows was also above the city of Los Angeles and Los Angeles County averages. The rate of increase was higher in the Glendale Narrows with census tracts increasing at a rate above 30%.

Within the Downtown Region, that level of increase was slightly above the County and the city of Los Angeles with an increase of 22%. Compared to the changes in property values this number shows a higher cost of housing in the area but this number is less than that in the San Fernando Valley region and in the Glendale Narrows. The change in rent also shows a more consistent rate of change in the region. None of the tracts had a negative change to rent prices.

### **Sub-variable: Rental Burden**

#### **Change in Rent as a Percent of Income**

The amount that households spend on their rent will be more indicative of housing affordability in a neighborhood if compared to the average income of the neighborhood's households. The LAARMP outlines objectives to promote local economies and develop stronger wages for present households. To comprehend the relevance of rising rent prices, the rent per household income is analyzed to understand how rent is rising compared to wages. Using the definition defined by the HUD the data focuses on households paying more than 30% of their income on housing.

While the overall percentage of units with a rental burden saw a general decline, the number of units paying more than 30% of their income on rent had an overall increase in each of the river regions. Signifying that the number of overall units available increased over the seven-year span.

#### **Indicator: Change in Rent as a percent of income by Zip Code**

**Source:** 2012 ACS 5-year estimates, 2019 ACS 5-year estimates

Table 8: Change in percent of units with a rental burden by Zip Code 2012 - 2019

Change in percent of units with a rental burden by Zip code 2012 - 2019						
Source: 2012 ACS 5-year estimates, 2019 ACS 5-year estimates						
Region	Zip Code	2012	2019	Change in Percentage		Net Change in Units with Rental Burden
<b>San Fernando Valley</b>						
	91303	62%	57%	-0.047		538
	91367	48%	57%	0.091		1486
	91306	64%	64%	0.004		557
	91356	60%	69%	0.091		751
	91335	64%	62%	-0.018		638
	91316	62%	61%	-0.008		336
	91406	61%	64%	0.038		1340
	91436	51%	62%	0.104		162
	91411	62%	62%	0.007		356
	91403	57%	53%	-0.042		-100
	91423	54%	56%	0.027		641
	91604	45%	48%	0.023		364
	91607	54%	57%	0.03		848
	91602	53%	52%	-0.004		366
	91608	-	-	N/A		N/A
	91505	44%	54%	0.094		709
	91523	0%	0%	N/A		N/A
	90068	53%	56%	0.033		-570
	91522	0%	0%	N/A		N/A
	91521	0%	0%	N/A		N/A
	91506	51%	48%	-0.026		57
	91201	71%	64%	-0.076		-157
	91202	62%	58%	-0.039		320
Region Median				0.007	Region Net Change	8642
<b>Glendale Narrows</b>						
	90027	54%	52%	-0.02		-46
	91203	67%	56%	-0.11		565
	91204	63%	61%	-0.016		291
	90039	55%	46%	-0.086		-791
	90026	52%	51%	-0.014		-359
	90065	59%	58%	-0.008		268
Region Median				-0.018	Region Net Change	-72
<b>Downtown</b>						
	90031	70%	59%	-0.105		-643
	90012	59%	56%	-0.027		1911
	90033	64%	62%	-0.024		35
	90013	60%	53%	-0.077		833
	90021	58%	52%	-0.064		29
	90023	63%	59%	-0.042		-156
Region Median				-0.053	Region Net Change	2009
<b>South Los Angeles County</b>						
	90058	67%	55%	-0.115		-257
	90270	58%	60%	0.026		222
	90040	52%	55%	0.032		78
	90201	61%	63%	0.027		605
	90280	64%	60%	-0.04		42
	90262	69%	63%	-0.052		-207
	90723	64%	57%	-0.068		-202
	90221	66%	65%	-0.01		301
	90805	61%	62%	0.01		1032
	90807	49%	53%	0.043		562
	90810	65%	53%	-0.122		-530
	90806	57%	61%	0.041		469
	90813	65%	60%	-0.046		224
	90802	56%	55%	-0.016		261
Region Median				-0.013	Region Net Change	2600
River Corridor Median				-0.016	Corridor Net Change	13179
California		57%	0.548	-0.017		119343
City of Los Angeles		60%	0.592	-0.009		38914
L.A. County		59%	0.576	-0.009		25792

The data for rent as a percent of income for the river adjacent census tracts were estimated for by in the ACS Census. For each zip code, the number of units paying over 30% of their income on rent was documented by Census Bureau for the years of 2012 and 2019. The change in the number and percentage of units paying rent over 30% will be reflective of an increasing rent burden for residents of each zip code.

Of the four distinct regions of study, the San Fernando Valley Region was the only one to have a positive percentage of housing units paying more than 30% of their income on rent. The other three regions experienced a median negative trend of renters paying more than 30% of their income on rent. The city of Los Angeles, as well as Los Angeles County, also saw a negative trend in this area, signifying a declining rental burden over the seven-year gap.

**Indicator: Change in Rent as a Percent of Income by Census Tract**

**Source:** 2010 ACS 5-year estimates, 2018 ACS 5-year estimates

**Table 9: Change in units with a Rental Burden by percentage and net change 2010 - 2018**

Change in units with a Rental Burden by percent and net change 2010 -2019						Change in units with a Rental Burden by percent and net change 2010 -2019							
Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimates						Source: 2010 ACS 5-year estimates, 2018 ACS 5-year estimates							
Region	Census Tract	2010	2019	Change in Percentage	Net Change in Units with Rental Burden	Region	Census Tract	2010	2019	Change in Percentage	Net Change in Units with Rental Burden		
San Fernando Valley	113232	46.5	49.1	2.6	4	Downtown	185310	62.9	49	-13.9	-109		
	133100	53.8	55.3	1.5	202		185320	50.8	66.5	15.7	105		
	132001	84	50.8	-33.2	-135		980010	29.4	84.6	55.2	11		
	132002	62.4	59.5	-2.9	125		199000	82.3	48.7	-33.6	-212		
	141202	52.7	59.6	6.9	103		206010	57.9	41.2	-16.7	3		
	134303	68.3	60.1	-8.2	-29		199700	59.3	59.1	-0.2	90		
	134520	69.1	63.3	-5.8	61		206020	17.1	52.6	35.5	151		
	134001	75.2	55.9	-19.3	-61		203500	41.8	60	18.2	119		
	134520	69.1	63.3	-5.8	61		204200	63.5	62.3	-1.2	31		
	134521	76.4	67.3	-9.1	33		204600	71.5	62.8	-8.7	40		
	134522	69	67.1	-1.9	89		204700	66.4	62.3	-4.1	-79		
	124600	65.2	64.8	-0.4	-27		205110	73.3	59.5	-13.8	-137		
	134903	54.4	50	-4.4	608		205120	62.3	59.4	-2.9	-14		
	139301	41.2	68.7	27.5	-7		206032	63.7	71.1	7.4	159		
	135111	38.1	37.4	-0.7	39		206050	57.7	62.3	4.6	112		
	135114	50.4	62	11.6	143		206031	54.9	50.7	-4.2	511		
	134002	54.1	72.5	18.4	124		Region Median				-2.05	Region Net Some	753
	134710	61.6	64.3	2.7	94		South Los Angeles County						
	134800	51.3	76.7	25.4	104			532400	36.4	21.4	-15	-8	
	134904	73.2	69.6	-3.6	-34			533401	48.2	49.1	0.9	90	
	131020	62	62.3	0.3	-119			533403	70.5	65	-5.5	6	
	132300	59.3	60.5	1.2	159			533701	59.2	61.4	2.2	38	
	132501	50	67.6	17.6	115			533702	59.6	69.6	10	134	
	132502	58.9	77.2	18.3	238			533703	47.5	46.5	-1	122	
	980024	-	20	N/A	4			532303	58.7	72.4	13.7	79	
	132700	69.3	71.2	1.9	-46			532304	52.4	34.6	-17.8	-17	
	133000	81.7	76.8	-4.9	79			533804	44	66.9	22.9	149	
	132900	79.5	66.1	-13.4	-70			533805	42.5	60.1	17.6	61	
	139001	56.3	58.3	2	87			533806	68.9	69.8	0.9	-96	
	134901	48.9	68.7	19.8	58			533901	46.2	65.3	19.1	158	
	139200	57.4	82	24.6	-136			534101	40.5	72.4	31.9	143	
	134905	56.5	56.2	-0.3	680			534102	44.5	62.7	18.2	141	
	141400	48.9	65	16.1	262			534201	60	66.6	6.6	23	
	128702	44	59.5	15.5	240			534202	52.9	67.5	14.6	117	
	128801	48.3	59.3	11	72			536102	44.5	63.6	19.1	78	
	128802	40.8	37.9	-2.9	-47			536103	46	63.8	17.8	66	
	128910	48.3	63.3	15	142			536104	40.1	59.7	19.6	168	
	141101	57.2	59.3	2.1	222			536200	62.6	61.5	-1.1	199	
	141102	54.5	43.4	-11.1	12			540000	74.9	49.2	-25.7	-84	
	141201	55.8	51.1	-4.7	106			540101	61.4	61.9	0.5	-17	
	141202	52.7	59.6	6.9	103			541802	75.1	72.8	-2.3	117	
	141302	53.5	51.9	-1.6	-84			553601	57.9	63.7	5.8	159	
	141303	58.7	50.7	-8	31			553701	64.8	46.3	-18.5	-58	
	141304	54.6	39.7	-14.9	-91			553702	71.6	62.8	-8.8	-20	
	141201	55.8	51.1	-4.7	106			553802	67.3	65.3	-2	78	
	143902	47.4	50.5	3.1	-2			542103	69.2	68	-1.2	-7	
	143200	47.1	56.2	9.1	169			542200	56.9	73.7	16.8	160	
	143300	39.3	56.5	17.2	392			570202	75.6	75.6	0	36	
143400	47.9	45.5	-2.4	-105	570404	58.1		62.8	4.7	51			
143500	41.6	54.4	12.8	389	570301	58.3		67.1	8.8	428			
143602	22.1	41.7	19.6	341	570402	49.3		57.1	7.8	39			
143603	52.9	47.6	-5.3	43	570303	61.5		70.8	9.3	114			
143604	49.9	48.9	-1	265	570304	57.1		60.5	3.4	-154			
320000	-	-	N/A	0	571701	50.3		53.9	3.6	12			
143800	44.6	26.9	-17.7	-157	571800	63.6		38.5	-25.1	15			
143901	87.8	62.5	-25.3	-51	572100	25		100	75	-6			
143100	60.1	49.1	-11	67	572400	35.5		65.4	29.9	-4			
143700	50.3	69.1	18.8	84	572302	47.9		53.2	5.3	-76			
189701	53.3	71.7	18.4	34	572201	54.2		54	-0.2	72			
311600	39.7	55.1	15.4	422	572600	59.8		30.3	-29.5	-119			
311700	46.8	40.7	-6.1	4	572202	48.4		47.1	-1.3	52			
311801	44.6	46.1	1.5	18	572700	52.2		31.9	-20.3	-34			
980009	69.2	-	N/A	-65	573100	46.4		53.7	7.3	118			
301602	50.1	54.7	4.6	156	572900	56.2		68.1	11.9	112			
301601	64.6	68.5	3.9	55	573003	65.2		56	-9.2	-52			
301701	65.2	37.8	-27.4	24	575500	100	90.2	-9.8	27				
Region Median				1.2	Region Net Change	575401	52.3	65.9	13.6	117			
						575801	64.2	50.8	-13.4	32			
Glendale Narrows						575901	56.8	51	-5.8	30			
	187101	53.8	64.1	10.3	-63	576001	48.3	50.1	1.8	101			
	188100	51.9	56.3	4.4	-66	980033	-	100	N/A	14			
	188300	41.6	37.2	-4.4	23	534406	51.1	64.2	13.1	164			
	187300	45.2	40	-5.2	-47	534302	54.4	57.7	3.3	-8			
	197410	60.8	43.9	-16.9	-123	534301	50.5	58.7	8.2	54			
	187102	58.3	59.9	1.6	158	542104	65.6	56.1	-9.5	-62			
	187200	49.9	41.1	-8.8	-29	542106	42.4	51.7	9.3	171			
	197200	64.1	61.1	-3	-60	570501	58.7	72	13.3	45			
	188202	50.6	46.5	-4.1	-4	543305	33.3	54.2	20.9	26			
	188201	37.9	40.5	2.6	95	544001	44.4	71	26.6	115			
	195100	48.1	32	-16.1	-125	544002	67.9	52.3	-15.6	-10			
	186401	48.1	57.5	9.4	89	572301	63.9	52.9	-11	-32			
	186403	55.1	56.3	1.2	10	572002	48.4	57.2	8.8	303			
	186404	37.8	57.5	19.7	172	573004	61.1	59.6	-1.5	66			
	185203	54	54.8	0.8	67	575802	63.9	62.9	-1	48			
	301702	57.8	54.7	-3.1	210	Region Median				3.4	Region Net Some	3784	
	302301	64.5	60.3	-4.2	18						Corridor Net Some	10663	
	302302	59.3	58.1	-1.2	98								
	Region Median				-2.1	Region Net Change							

The data for census tracts between the years of 2010 and 2018 were analyzed to determine the extent of rental burdens amongst the census tracts.

The trend in rental burden by census tract differed from the data for zip codes in some areas. Two of the river regions had an increase in the percentage of units paying more than 30% of their income on rent at the census tract level, the San Fernando Valley region, and the South Los Angeles County region. The percentage was higher in South Los Angeles County with a median increase of 3.5% compared to just 0.75% in the San Fernando Valley. The Glendale Narrows region and the downtown region had similar changes in the percentage of units



paying more than 30% of their income on rent. Both experienced about a -2% change in for this indicator.

**Sub Variable: Housing Affordability Assistance**

The “housing assistance” sub variable will consider information on QCTs and DDAs as established by the HUD. The HUD designates Difficult Development Areas (DDA) as “areas with high land, construction and utility costs relative to the area median income and are based on Fair Market Rents, income limits, the 2010 census counts, and 5-year American Community Survey (ACS) data.” The DDA boundaries are based on zip code. A QCT is a census tract with “50 percent of households with incomes below 60 percent of the Area Median Gross Income (AMGI) or have a poverty rate of 25 percent or more.” The QCTs are distinguished by the HUD to evaluate housing affordability challenges in certain areas. Both sets of qualifications are used by the HUD in providing the Low-Income Housing Tax Credit (LIHTC). The LIHTC provides funding to local and state governments to create affordable housing projects in the qualified tracts and development areas.

**Indicator: Changes in DDA Status Per Year**

**Source:** [www.huduser.gov](http://www.huduser.gov)

Table 10: Zip Code DDA Status Per Year 2015 - 2019

Zip Code DDA Status Per Year 2015-2019							
Source: www.huduser.gov							
Region	Zip codes		2015	2016	2017	2018	2019
<b>San Fernando Valley</b>							
	91303		No	No	No	Yes	
	91367		Yes	Yes	Yes	Yes	
	91306		No	No	No	No	
	91356		No	No	No	Yes	
	91335		No	No	No	Yes	
	91316		Yes	Yes	Yes	Yes	
	91406		No	No	No	No	
	91436		Yes	Yes	Yes	Yes	
	91411		No	No	No	Yes	
	91403		Yes	Yes	Yes	Yes	
	91423		Yes	Yes	Yes	Yes	
	91604		Yes	Yes	Yes	Yes	
	91607		No	Yes	Yes	Yes	
	91602		Yes	Yes	Yes	Yes	
	91608		No	No	No	No	
	91505		Yes	Yes	Yes	Yes	
	91523		No	No	No	No	
	90068		Yes	Yes	Yes	Yes	
	91522		No	No	No	No	
	91521		No	No	No	No	
	91506		Yes	Yes	Yes	Yes	
	91201		Yes	Yes	Yes	Yes	
	91202		Yes	Yes	Yes	Yes	
<b>Glendale Narrows</b>							
	90027		No	No	No	Yes	
	91203		No	No	No	Yes	
	91204		No	No	No	Yes	
	90039		No	Yes	Yes	Yes	
	90026		No	No	No	No	
	90065		No	No	No	No	
<b>Downtown</b>							
	90031		No	No	No	No	
	90012		No	No	No	No	
	90033		No	No	No	No	
	90013		No	No	Yes	Yes	
	90021		Yes	Yes	No	No	
	90023		No	No	No	No	
<b>South Los Angeles County</b>							
	90058		No	No	No	No	
	90270		No	No	No	No	
	90040		No	No	No	No	
	90201		No	No	No	No	
	90280		No	No	No	No	
	90262		No	No	No	No	
	90723		No	No	No	No	
	90221		No	No	No	No	
	90805		No	No	No	No	
	90807		No	No	No	Yes	
	90810		No	No	No	No	
	90806		No	No	No	No	
	90813		No	No	No	No	
	90802		No	No	No	Yes	

More than half of the zip codes in the San Fernando Valley region were DDA distinguished during the past four years. 11 out of the 23 zip codes held the DDA status the entire time period while 5 zip codes gained the distinction over the timeframe. In the Glendale Narrows Region, DDA status has been a new trend with 4 of the 6 zip codes gaining the title over the four years. The zip codes of 90026 and 90065 were the two zip codes not determined to be marked as a DDA.

After the Glendale Narrows Region, the trend mostly switches as the zip codes in the Downtown Region are mostly not DDAs. Only one zip code in the Downtown Region was a DDA in 2019. Zip code 90013 became labeled a DDA in 2018. The zip code 90021 lost the status in 2018. Similarly in South Los Angeles County nearly every zip code was not labeled a DDA for the four years with data available. The two exceptions are 90807 in the Cerritos and 90802 in the Long Beach Pier both gaining DDA status in 2019.

**Indicator: Changes in QCT Status Per Year**

**Source:** [www.huduser.gov](http://www.huduser.gov)

Table 11: QCT Status Per Year 2008 - 2019

QCT Status Per Year 2008 - 2019													
Source: www.huduser.gov													
Region	Census Tract	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>San Fernando Valley</b>													
	113232	No	No	No	No	No	No	No	No	No	No	No	No
	133100	No	No	No	No	No	No	No	No	No	No	No	No
	132001	No	No	No	No	No	No	No	No	No	No	No	No
	132002	No	No	No	No	No	No	No	No	No	No	No	No
	141202	No	No	No	No	No	No	No	No	No	No	No	No
	134303	No	No	No	No	No	No	No	No	No	No	No	No
	134520	No	No	No	No	No	Yes	No	Yes	No	Yes	No	No
	134001	No	No	No	No	No	No	No	No	No	No	Yes	Yes
	134520	No	No	No	No	No	Yes	No	Yes	No	Yes	No	No
	134521	No	No	No	No	No	Yes	No	Yes	No	No	No	Yes
	134522	No	No	No	No	No	Yes	No	No	No	No	No	No
	124600	No	No	No	No	No	No	No	No	No	No	No	No
	134903	No	No	No	No	No	No	No	No	No	No	No	No
	139301	No	No	No	No	No	No	No	No	No	No	No	No
	135111	No	No	No	No	No	No	No	No	No	No	No	No
	135114	No	No	No	No	No	No	No	No	No	No	No	No
	134002	No	No	No	No	No	No	No	No	No	No	No	No
	134710	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	134800	No	No	No	No	No	No	No	No	No	No	No	No
	134904	No	No	No	No	No	No	No	No	No	No	No	No
	131020	No	No	No	No	No	No	No	No	No	No	No	No
	132300	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	132501	No	No	No	No	No	No	No	No	No	No	No	No
	132502	No	No	No	No	No	No	No	No	No	No	No	No
	980024	No	No	No	No	No	No	No	No	No	No	No	No
	132700	No	No	No	No	No	No	No	No	No	No	No	No
	133000	No	No	No	No	No	No	No	No	No	No	No	No
	132900	No	No	No	No	No	No	No	No	No	No	No	No
	139001	No	No	No	No	No	No	No	No	No	No	No	No
	134901	No	No	No	No	No	No	No	No	No	No	No	No
	139200	No	No	No	No	No	No	No	No	No	No	No	No
	134905	No	No	No	No	No	No	No	No	No	No	No	No
	141400	No	No	No	No	No	No	No	No	No	No	No	No
	128702	No	No	No	No	No	No	No	No	No	No	No	No
	128801	No	No	No	No	No	No	No	No	No	No	No	No
	128802	No	No	No	No	No	No	No	No	No	No	No	No
	128910	No	No	No	No	No	No	No	No	No	No	No	No
	141101	No	No	No	No	No	No	No	No	No	No	No	No
	141102	No	No	No	No	No	No	No	No	No	No	No	No
	141201	No	No	No	No	No	No	No	No	No	No	No	No
	141202	No	No	No	No	No	No	No	No	No	No	No	No
	141302	No	No	No	No	No	No	No	No	No	No	No	No
	141303	No	No	No	No	No	No	No	No	No	No	No	No
	141304	No	No	No	No	No	No	No	No	No	No	No	No
	141201	No	No	No	No	No	No	No	No	No	No	No	No
	143902	No	No	No	No	No	No	No	No	No	No	No	No
	143200	No	No	No	No	No	No	No	No	No	No	No	No
	143300	No	No	No	No	No	No	No	No	No	No	No	No
	143400	No	No	No	No	No	No	No	No	No	No	No	No
	143500	No	No	No	No	No	No	No	No	No	No	No	No
	143602	No	No	No	No	No	No	No	No	No	No	No	No
	143603	No	No	No	No	No	No	No	No	No	No	No	No
	143604	No	No	No	No	No	No	No	No	No	No	No	No
	320000	No	No	No	No	No	No	No	No	No	No	No	No
	143800	No	No	No	No	No	No	No	No	No	No	No	No
	143901	No	No	No	No	No	No	No	No	No	No	No	No
	143100	No	No	No	No	No	No	No	No	No	No	No	No
	143700	No	No	No	No	No	No	No	No	No	No	No	No
	189701	No	No	No	No	No	No	No	No	No	No	No	No
	311600	No	No	No	No	No	No	No	No	No	No	No	No
	311700	No	No	No	No	No	No	No	No	No	No	No	No
	311801	No	No	No	No	No	No	No	No	No	No	No	No
	980009	No	No	No	No	No	No	No	No	No	No	No	No
	301602	No	No	No	No	No	No	No	No	No	No	No	No
	301601	No	No	No	No	No	No	No	No	No	No	No	No
	301701	No	No	No	No	No	No	No	No	No	No	No	No
<b>Glendale Narrows</b>													
	187101	No	No	No	No	No	No	No	No	No	No	No	No
	188100	No	No	No	No	No	No	No	No	No	No	No	No
	188300	No	No	No	No	No	No	No	No	No	No	No	No
	187300	No	No	No	No	No	No	No	No	No	No	No	No
	197410	No	No	No	No	No	No	No	No	No	No	No	No
	187102	No	No	No	No	No	No	No	No	No	No	No	No
	187200	No	No	No	No	No	No	No	No	No	No	No	No
	197200	No	No	No	No	No	No	No	No	No	No	No	No
	188202	No	No	No	No	No	No	No	No	No	No	No	No
	188201	No	No	No	No	No	No	No	No	No	No	No	No
	195100	No	No	No	No	No	No	No	No	No	No	No	No
	186401	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	186403	No	No	No	No	No	No	No	No	No	No	No	No
	186404	No	No	No	No	No	No	No	No	No	Yes	Yes	No
	185203	No	No	No	No	No	No	No	No	No	No	No	No
	301702	No	No	No	No	No	No	No	No	No	No	No	No
	302301	No	No	No	No	No	No	No	No	No	No	No	No
	302302	No	No	No	No	No	No	No	No	No	No	No	No

QCT Status Per Year 2008 - 2019

Source: www.huduser.gov

Region	Census Tract	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Downtown</b>													
	185310	No	No	No	No	No	Yes	No	Yes	No	No	No	No
	185320	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	No
	980010	No	No	No	No	No	No	No	No	No	No	No	No
	199000	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	206010	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	199700	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	206020	No	No	No	No	No	No	No	No	No	No	No	No
	203500	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes
	204200	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	204600	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No	No	Yes	Yes
	204700	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	No
	205110	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	205120	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	206032	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	206050	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	206031	No	No	No	No	No	Yes	No	No	No	No	No	No
<b>South Los Angeles County</b>													
	532400	No	No	No	No	No	No	No	No	No	Yes	Yes	No
	533401	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
	533403	No	No	No	No	No	Yes	No	No	No	Yes	Yes	Yes
	533701	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	533702	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	533703	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
	532303	No	No	No	No	No	No	No	No	No	No	No	No
	532304	No	No	No	No	No	Yes	No	No	Yes	Yes	No	Yes
	533804	No	No	No	No	No	No	No	No	No	No	No	No
	533805	No	No	No	No	No	No	No	No	No	Yes	Yes	No
	533806	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	533901	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
	534101	No	No	No	No	No	No	No	No	No	No	No	Yes
	534102	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
	534201	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	534202	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	536102	No	No	No	No	No	No	No	No	No	No	No	No
	536103	No	No	No	No	No	No	No	No	No	No	No	No
	536104	No	No	No	No	No	No	No	No	No	No	No	Yes
	536200	No	No	No	No	No	No	No	No	No	No	No	No
	540000	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	No
	540101	No	No	No	No	No	No	No	No	No	No	No	No
	541802	No	No	No	No	No	No	No	No	No	No	No	No
	553601	No	No	No	No	No	No	No	No	No	No	No	No
	553701	Yes	Yes	Yes	No	Yes	No	No	No	No	Yes	Yes	No
	553702	No	No	No	No	No	Yes	No	Yes	Yes	No	Yes	Yes
	553802	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	542103	No	No	No	No	No	Yes	No	No	No	No	Yes	Yes
	542200	No	No	No	No	No	No	No	No	No	No	No	No
	570202	No	No	No	No	No	No	No	No	No	No	No	No
	570404	No	No	No	No	No	No	No	No	No	No	No	No
	570301	No	No	No	No	No	No	No	No	No	No	No	No
	570402	No	No	No	No	No	No	No	No	No	No	No	No
	570303	No	No	No	No	No	No	No	No	No	Yes	Yes	Yes
	570304	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	571701	No	No	No	No	No	No	No	No	No	No	No	No
	571800	No	No	No	No	No	No	No	No	No	No	No	No
	572100	No	No	No	No	No	No	No	No	No	No	No	No
	572400	No	No	No	No	No	No	No	No	No	No	No	No
	572302	No	No	No	No	No	No	No	No	No	No	No	No
	572201	No	No	No	No	No	No	No	No	No	No	No	No
	572600	No	No	No	No	No	No	No	No	No	No	No	No
	572202	No	No	No	No	No	No	No	No	No	No	No	No
	572700	No	No	No	No	No	No	No	No	No	No	No	No
	573100	No	No	No	No	No	No	No	No	No	No	No	No
	572900	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
	573003	No	No	No	No	No	Yes	No	Yes	No	No	No	No
	575500	Yes	Yes	Yes	No	Yes	No	No	No	No	No	No	No
	575401	No	No	No	No	No	No	No	No	No	No	No	No
	575801	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	575901	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
	576001	No	No	No	No	No	No	No	No	No	No	No	No
	980033	No	No	No	No	No	No	No	No	No	No	No	No
	534406	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
	534302	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	534301	Yes	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes
	542104	No	No	No	No	No	No	No	No	No	No	No	No
	542106	No	No	No	No	No	No	No	No	No	No	Yes	Yes
	570501	No	No	No	No	No	No	No	No	No	No	No	No
	543305	No	No	No	No	No	No	No	No	No	No	No	No
	544001	No	No	No	No	No	No	No	No	No	No	No	No
	544002	No	No	No	No	No	No	No	No	No	No	No	No
	572301	No	No	No	No	No	Yes	No	No	No	No	No	No
	572002	No	No	No	No	No	No	No	No	No	No	No	No
	573004	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes
	575802	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes

The available data sets for QCTs goes back to the year 2008, with data available for every year except 2011 and 2014. For the available years between 2008 and 2019, the delineated QCTs were graphed to show the status of census tracts within the river corridor.

Of the census tracts along the Los Angeles River in the San Fernando Valley, few tracts held QCT status between 2008 and 2019. The region saw four census tracts become QCTs by the year of 2019.

The Glendale Narrows Region of the river corridor only had 1 census tract that held QCT status throughout the 11-year timeframe. Census tract 1864.01 held QCT status the entire time from 2008 to 2019. The Census tracts along the river corridor in the South Los Angeles County region experienced a greater number of tracts reaching QCT status than the other two regions. While some of these tracts held QCT status throughout the duration of the 11-year time span, there were other tracts that fluctuated over the period. Amongst these tracts, 16 tracts that were not QCT in 2008 held that status in 2019.

### Housing Affordability by Location

The quantitative data for the independent variable is compared to the data from the dependent variable to answer the main research question. The results of this analysis will be triangulated using primary interviews with government officials from the city of Los Angeles and the secondary data available from reports and policies.

### Housing Affordability Near Project Sites

The collected data for each River Corridor Region indicated how housing affordability has developed since the time the LAARMP was drafted. Each Region had outliers and areas that experienced more significant impacts on the indicators of housing affordability.

Table 12: Revitalization Project Sites by Zip Code

Revitalization Project Sites by Zip Code								
Region	River Revitalization Project	Neighborhood	Zip Code	Percent change in property value	Percent change in rental prices	Percent change in units paying 30% or more on rent	Change in number units paying 30% or more on rent	DDA status
San Fernando Valley	Sepulveda Basin L.A. River Recreation Zone	Balboa Park, Encino	91436	N/A	N/A	0.104	162	Yes, 2016-2019
		Encino	91316	25.98862	18.38488	-0.008	336	Yes, 2016-2019
Region Median				25.81864	20.47972			
Glendale Narrows	North Atwater East Bank Riverway	Atwater Village, Los Feliz	90039	27.52283	27.73596	-0.086	-791	Yes, 2017-2019
			90027					
	Elysian Valley L.A. River Recreational Zone	Elysian Valley	90065	33.52667	19.95448	-0.008	268	No
	Taylor Yard G2 Projects	Elysian Valley	90065	33.52667	19.95448	-0.008	268	No
Region Median				28.71477	22.56254			
Downtown	Albion Riverside Park	Lincoln Heights, Chinatown	90031	34.92727	17.65719	-0.105	-643	No
			Region Median		31.50529	23.09022		
South Los Angeles County	Dominguez Gap Wetlands		90807	18.83629	16.7966	0.043	562	Yes, 2019
			90810	22.15786	16.17021	-0.122	-530	No
Region Median				25.81884	16.08841			
The City of Los Angeles				23.98834	20.27586			
Los Angeles County				26.20506	18.69863			

**Table 13: Revitalization Project Sites by Census Tract**

Revitalization Project Sites by Census Tract								
Region	River Revitalization Project	Neighborhood	Census Tract	change in property value	Percent change in rental prices	units paying 30% or more on rent	units paying 30% or more on rent	QCT status
San Fernando Valley	Sepulveda Basin L.A. River Recreation Zone		980024	7.233778	N/A			No
			132002	14.48743	36.16384	-2.9	125	No
			132001	9.376787	2.138158	-33.2	-135	No
			132700	19.7039	18.45638	1.9	-46	No
			132900	1.903512	24.65483	-13.4	-70	No
			139001	21.34203	6.488095	2	87	No
			141400	4.841102	6.50358	16.1	262	No
			128801	27.35808	16.8392	11	72	No
<b>Region Median</b>				<b>11.16459139</b>	<b>35.60245065</b>			
Glendale Narrows	North Atwater East Bank Riverway		188100	28.32011	28.19572	4.4	-66	No
			980009	N/A	N/A	N/A	N/A	No
			188300	17.50118	34.23537	-4.4	23	No
	Elysian Valley L.A. River Recreational Zone		187102	15.26208	12.94312	1.6	158	No
			187200	70.89594	34.85162	-8.8	-29	No
			197200	2.693125	31.45985	-3	-60	No
			187102	15.26208	12.94312	1.6	158	No
<b>Region Median</b>				<b>25.45160421</b>	<b>26.51567033</b>			
Downtown	Albion Riverside Park		199700	-1.01167	18.72376	-0.2		Yes, 2008-90 2019
<b>Region Median</b>				<b>2.794725222</b>	<b>22.96511628</b>			
South Los Angeles County	Dominguez Gap Wetlands		571800	-7.54673	23.85787	-25.1	15	No
<b>Region Median</b>				<b>4.680342339</b>	<b>15.50731996</b>			
City of Los Angeles				7.6372	21.7297			
Los Angeles County				6.5145	19.6403			

**The San Fernando Valley Region**

In the areas surrounding the Sepulveda Basin L.A. River Recreation Zone, the indicators for housing affordability did not show any heightened level above the San Fernando Valley Region and the County averages. Both the property value and the rental prices experienced a similar level of change over the seven-year period. Both zip codes did have a net gain in units with a housing burden.

Of the census tracts surrounding the recreational zone, there is not a discernible pattern related to the indicators of housing affordability. The 1320.02 census tract has the greatest evidence for a decline in housing affordability however given that the results are not consistent around the revitalization site, it is unlikely this has any cooperation to the changing land use functionality of the river.

**Glendale Narrows**

The 90039 zip code which surrounds the area to become North Atwater East Bank Riverway also did not have a consistent indication of declining housing affordability. The only indicator to signify any change would be the zip code gaining DDA status in 2017. The property values and rental prices did increase slightly above the averages for the City of Los Angeles and Los Angeles County but it was still one the lowest percent changes for the zip codes in the Glendale Narrows region.

The 1881.00 and 1883.00 which are more focused on the land on the East side of the river are more indicative of a negative change to housing affordability. The change to property values

and rental prices show a greater change than the averages for the city of Los Angeles and Los Angeles County. The property values lower than the median for the Glendale Narrows Region while the percent change in rental prices is above.

The zip code of 90065 which is the location of the Elysian Valley L.A. River Recreational Zone and the future site of Taylor Yard G2 Projects had a higher than average change to property value and a net increase in the number of units with a housing burden. The increase of property values of 33.52% was above that of the city of Los Angeles, the County, and the median amount for the Glendale Narrows region. The 19.95% increase in rent is in line with the trends throughout Los Angeles County. While the area did see an increase in the number of units with a rental burden the overall percentage of units in the zip code with a rental burden slightly decreased.

Of the census tracts surrounding the Elysian Valley L.A. River Recreational Zone the 1872.00 stands out for having a far higher percentage change in property values and rental prices. The 70.89% change is particularly high and is amongst the highest of the census tracts along the river corridor. The 1872.00 census tract is located within the Frogtown neighborhood which was identified in the LA ROSAH report as an area with declining housing affordability. No data from Zillow was available for the Frogtown neighborhood. The 70.89% increase in property value in the 1872.00 census tract is a similar rate of change as the 73.28% change in property values for the Los Feliz neighborhood using the Zillow property estimates. The 1872.00 is located in proximity to the Los Feliz neighborhood but not within the generally considered boundary.

### **Downtown**

The 90031 zip code did not stand out in any of the indicators used to gather quantitative data at the zip code level. The change in property value was the only indicator to show a higher than average change with a 34.97% increase over the timeframe. The increase is only about 3% higher than the Downtown Region median. The changes to rent in the region do not indicate any added struggle to housing affordability. The 17.65% change to rent prices is the second-lowest for the downtown region and is below the percent change for the city of Los Angeles and Los Angeles County.

The data for the 1997.00 gives little indication of a decline in housing affordability over the past decade. The property values for the census tract have actually declined over the nine-year timeframe and the rent prices have been slightly less than the averages for the Downtown region, the city of Los Angeles, and Los Angeles County. Despite these trends in housing costs the percentage of units with a housing burden has actually stayed almost the same and the number of units experiencing a housing burden has actually increased.

### **South Los Angeles County**

The data related to the zip code and census tracts enclosing the Dominguez Gap Wetlands do not show any significant increase in housing costs. The zip code 90807 did not have an increase in rental burden but did become a DDA in 2019.

### **Housing Affordability Throughout River Corridor**



Housing in the river corridor was analyzed throughout the stretch of the LAR from its beginning in the San Fernando Valley to its outlet at the Long Beach Pier. For the whole length of the river different indicators were measured at different geographical and legislative levels. The extent of the river corridor displayed mixed results indicative of decreased housing affordability. Rent and property values both increased at a level higher than average. However, when rent was viewed as a percentage of income the spatial locations surrounding the river did not show an overall trend of increased percentage of burdened renters.

The number of DDAs to emerge along the river corridor has increased over the past four years as 12 zip codes have emerged as DDAs since 2016 compared to just 1 zip code losing DDA status in that time. The extent of QCT status did not parallel the trend of DDAs. The South Los Angeles County region was the area with the most significant amount of change over the time frame between 2008 and 2019. The other three regions had few census tracts gain or lose QCT status.

## **Chapter 5: Conclusions**

### **Introduction**

From the inception of the river revitalization process, it has been clear that the project will alter the lives of riverside communities. The LARRMP outlined both negative and positive externalities of the project and these predictions can be seen to some extent by Los Angeles residents. The river has had changes to accessibility, recreational opportunity, ecosystem services, and zoning: All affecting the livelihood of nearby neighborhoods. While the LAARMP outlined the potential for river revitalization to affect housing affordability, it did not provide a clear solution to prevent the occurrence of rising housing costs.

### **How have stakeholders addressed housing affordability as an externality of river revitalization?**

The task fell onto the city and County planning departments to address the concerns of residents and housing activist groups. By using methods of participatory planning and adapting community plans focused on the issue of affordable housing the City of Los Angeles Planning Department developed strategies to mitigate potential negative effects on housing affordability. The use of inclusionary zoning at transportation hubs and incentivizing developers are being utilized around the river site as well as throughout the city of Los Angeles.

### **How have housing costs/rent changed along the river corridor in comparison to other regions of Los Angeles County?**

The area around the Elysian Valley Recreational Zone was the only project site location to show a significant response to the indicators related to property value. Though the census tracts 1972.00 and 1871.02 are outliers to the strong percent of change in the 1872.00 census tract and 90065 zip code. Overall the data on housing costs does not show any coherent trend related to location of the project site.

The housing costs for the entirety of the Glendale Narrows Region and Downtown Region are above averages for the County and the greater Los Angeles city (excluding the data for rental prices at the census tract level.) Though property values are not increasing directly related to project sites it is possible that there is an increase in desirability to live near the river within this region.

With the transportation corridor to emerge at the river and the ecological services there may be an increased desire to live near the river at any point in the Glendale Narrows. The increase in property values are a possible result of an amenity effect as described in the literature review (Jaeger, 2006). Compared to the study by Rigolon and Németh from 2020 it is possible that the Glendale Narrows Region is the most prominent location for increased property value. Due to the fact that this is the site of a new metro station at the G2 Taylor Yard . Also The Glendale Narrows Region is the longest stretch of current project sites and would be the most established section of the greenbelt (Rigolon and Németh, 2020).

### **How has the number of renters with a housing burden changed along the river corridor?**

The change in units with a housing burden provides some evidence that housing affordability is a growing problem in the river corridor although it is difficult to find any pattern in the data. For rental burdens at the zip code level, there was a median decrease in the percentage of units with a rental burden while a positive increase in the number of units with a rental burden. Which would imply that the overall density of the river corridor increased. At the census tract level, both the percentage of units with a rental burden and the net change in units with a rental burden were both positive. The census tract level provides data for the spatial area closer to the river meaning that the areas closer to the river have declining housing affordability. No patterns in rental burden data exists to explain why a region may be experiencing higher rental burden.

### **What areas along the river corridor have been selected for affordable housing assistance?**

In the time since the LAARMP was approved there has been an increase in the number of zip codes and census tracts along the river qualified to receive eligibility for the LIHTC. The South Los Angeles County Region is where the majority of the new QCT are located in the river corridor. The South Los Angeles County Region did not stand out in any of the data for housing costs indicating that the increase in QCTs may be more of an indicator of worsening economic conditions. The data for DDAs was more even amongst the river regions.

### **Conclusions**

The impact on housing affordability as an externality has been examined using the most suitable data available for my research.

The changes made to the functionality of the river corridor made by the river revitalization do not show a consistent pattern of influence on housing affordability in river adjacent communities. Overall the data indicates that housing affordability may have gotten worse in some sites along the LAR since the inception of the LAARMP. However, there is not a clear trend in related to project sites with a uniform decline of housing affordability based on all four sub-variables. Rather the entire duration of the LAR has seen different indications of declining housing affordability emerge in sporadic areas. The Glendale Narrows region experienced the greatest percent change in property values. The San Fernando Valley Region had two zip codes near the Sepulveda Basin L.A. River Recreation Zone become labeled Difficult Development Areas. The South Los Angeles County Region had the greatest number of census tracts become QCTs. The data on renters with a housing burden was often inconsistent, where changes in percentage of units with a housing burden was often different than expected based on the net change in units with a housing burden.

My research would suggest that the Elysian Valley Recreational Zone and the future Taylor Yard G2 Projects are the only areas along the Los Angeles River with potential impacts to housing affordability associated with the river revitalization. The increase to property values at locations around the site and the data from the “stakeholder recommendation” sub-variable are used to make this determination. Around this site was data at the zip code, census tract, and neighborhood level to indicate higher than average levels of increase. This conclusion can not be certain as there are outliers such as the 1972.00 and the 1871.02 census tracts. Also there are other areas along the river with unusually high changes to property value.

Triangulation of the data and the literature review provide evidence to support the conclusion for the area. In the report by LA-ROSAH the neighborhood of Los Feliz is highlighted as a site struggling to maintain housing affordability. The study by Rigolon and Németh provides evidence that greenbelts and transportation are the green space functionality most likely to drive green gentrification. The decline in units with housing burdens could be explained by the phenomena of high income earners moving into the urban center of Los Angeles as mentioned in the LA-ROSAH report and the view of Rodríguez-Pose and Storper. Which is supported by the report from CityProject, which found evidence of displacement occurring in the river corridor (Garcia and Mok, 2017).

## **Recommendations**

Of all the regions and project sites along the Los Angeles River, the Glendale Narrows would be the most pressing for further research. The Glendale Narrows Region is going to undergo this biggest changes in coming years due to the actions of LARRMP. The existing Elysian Valley Recreational Zone with the addition of the North Atwater East Bank Riverway and the Taylor Yard G2 Projects will bring a plethora of new functions to the LAR and change the lives of the communities around the river. From the new recreational opportunities within the river, to increased accessibility, to the transportation offers there will continue to be an amenity effect for this region.

Given that my research showed some indications of heightened property value increase in the region it is likely that there will be an even greater amenity effect in the future. Though rental burdens and the need for affordable housing assistance were not significant in my data there is still potential for declining housing affordability in the region. Based upon the concept of green gentrification there may be newer residents moving into the region's neighborhoods influencing the rental burden and affordable housing assistance indicators.

Further research could build off my findings and the research of other academics and NGOs to explore green gentrification in this region of the Los Angeles River.

## Bibliography

- Anguelovski, I., Connolly, J.J., Garcia-Lamarca, M., Cole, H. et al. , 2019. New scholarly pathways on green gentrification: What does the urban ‘green turn’ mean and where is it going? *Progress in Human Geography*, 43 (6), pp. 1064-1086 doi: 10.1177/0309132518803799 Available at: <https://journals.sagepub.com/doi/full/10.1177/0309132518803799> .
- City of Los Angeles, 2020. Los Angeles City Planning - Housing. Available at: <https://planning.lacity.org/plans-policies/initiatives-policies/housing> [Accessed 2020].
- Di Palma, V. and Robinson, A., 2018. Willful Waters. *Places Journal*, (2018), doi: 10.22269/180508 Available at: [https://placesjournal.org/article/willful-waters-los-angeles-river/?gclid=Cj0KCQjwjoH0BRD6ARIsAEWO9DvwOj5LMA\\_I4ZC2rITRSBfEpavMuh6oizSWWUHbk29uK5hDncplTqsaAh76EALw\\_wcB&cn-reloaded=1](https://placesjournal.org/article/willful-waters-los-angeles-river/?gclid=Cj0KCQjwjoH0BRD6ARIsAEWO9DvwOj5LMA_I4ZC2rITRSBfEpavMuh6oizSWWUHbk29uK5hDncplTqsaAh76EALw_wcB&cn-reloaded=1) .
- Edwards, G.A.S., Reid, L. and Hunter, C., 2016. Environmental justice, capabilities, and the theorization of well-being. *Progress in Human Geography*, 40 (6), pp. 754-769 doi: 10.1177/0309132515620850 Available at: <https://journals.sagepub.com/doi/full/10.1177/0309132515620850> .
- Environmental Protection Agency, 2020. Environmental Justice . Available at: <https://www.epa.gov/environmentaljustice> [Accessed 2020].
- Franco, D.J., 2019. The border and the line. Stanford, California: Stanford University Press. Available at: [http://bvbr.bib-bvb.de:8991/F?func=service&doc\\_library=BVB01&local\\_base=BVB01&doc\\_number=030850889&sequence=000001&line\\_number=0001&func\\_code=DB\\_RECORDS&service\\_type=MEDIA](http://bvbr.bib-bvb.de:8991/F?func=service&doc_library=BVB01&local_base=BVB01&doc_number=030850889&sequence=000001&line_number=0001&func_code=DB_RECORDS&service_type=MEDIA) .
- Freeman, L., 2005. Displacement or Succession? *Urban Affairs Review*, 40 (4), pp. 463-491 doi: 10.1177/1078087404273341 Available at: <https://journals.sagepub.com/doi/full/10.1177/1078087404273341> .
- Gabbe, C.J., 2018. How Do Developers Respond to Land Use Regulations? An Analysis of New Housing in Los Angeles. *Housing Policy Debate*, 28 (3), pp. 411-427 doi: 10.1080/10511482.2017.1368031 Available at: <http://www.tandfonline.com/doi/abs/10.1080/10511482.2017.1368031> .
- Gabbe, C.J., 2019. Changing Residential Land Use Regulations to Address High Housing Prices. *Journal of the American Planning Association*, 85 (2), pp. 152-168 doi: 10.1080/01944363.2018.1559078 Available at: <http://www.tandfonline.com/doi/abs/10.1080/01944363.2018.1559078> .
- Garcia, R. and Mok, T., 2017. Whitewashing the Los Angeles River? Gentrification not gentrification: green displacement threatens communities of color and low-income communities. *Parks & Recreation*, 52 (9), pp. 50 Available at: <https://www.cityprojectca.org/blog/wp-content/uploads/2017/08/Policy-Report-green-displacement-20170714.pdf> .
- Garde, A., 2016. Affordable by Design? Inclusionary Housing Insights from Southern California. *Journal of Planning Education and Research*, 36 (1), pp. 16-31 doi: 10.1177/0739456X15600033 Available at: <https://journals.sagepub.com/doi/full/10.1177/0739456X15600033> .

- Gibbons, J., Barton, M. and Brault, E., 2018. Evaluating gentrification's relation to neighborhood and city health. *PLoS One*, 13 (11), pp. e0207432 doi: 10.1371/journal.pone.0207432 Available at: <https://www.ncbi.nlm.nih.gov/pubmed/30452460> .
- Glass, R., 1964. London. 1. publ. London: Macgibbon & Kee.
- Immergluck, D. and Balan, T., 2018. Sustainable for whom? Green urban development, environmental gentrification, and the Atlanta Beltline. *Urban Geography*, 39 (4), pp. 546-562 doi: 10.1080/02723638.2017.1360041 Available at: <http://www.tandfonline.com/doi/abs/10.1080/02723638.2017.1360041> .
- Lee, J.Y. and Anderson, C.D., 2013. The Restored Cheonggyecheon and the Quality of Life in Seoul. *The Journal of Urban Technology*, 20 (4), pp. 3-22 doi: 10.1080/10630732.2013.855511 Available at: <http://www.tandfonline.com/doi/abs/10.1080/10630732.2013.855511> .
- Manville, M., Lens, M. and Monkkonen, P., 2020. Zoning and affordability: A reply to Rodríguez-Pose and Storper. *Urban Studies (Edinburgh, Scotland)*, pp. 4209802091033 doi: 10.1177/0042098020910330 .
- Ortega, S., 2017. Chávez Ravine and Boyle Heights: 20th and 21st Century Displacement of Mexican Communities. ProQuest Dissertations Publishing. Available at: <https://search.proquest.com/docview/1916553632> .
- Pedersen, O.W., 2010. Environmental Principles and Environmental Justice. *Environmental Law Review*, 12 (1), pp. 26-49 doi: 10.1350/enlr.2010.12.1.074 Available at: <https://journals.sagepub.com/doi/full/10.1350/enlr.2010.12.1.074> .
- Rhodes, E.L., 2003. Environmental Justice in America. Bloomington: Indiana University Press. Available at: [https://ebookcentral.proquest.com/lib/\[SITE\\_ID\]/detail.action?docID=145626](https://ebookcentral.proquest.com/lib/[SITE_ID]/detail.action?docID=145626) .
- Rigolon, A. and Németh, J., 2020. Green gentrification or 'just green enough': Do park location, size and function affect whether a place gentrifies or not? *Urban Studies*, 57 (2), pp. 402-420 doi: 10.1177/0042098019849380 Available at: <https://journals.sagepub.com/doi/full/10.1177/0042098019849380> .
- Shaw, R., 2018. Generation Priced Out. 1. Berkeley: University of California Press. doi: 10.1525/j.ctv5cgbsh Available at: <https://www.jstor.org/stable/10.1525/j.ctv5cgbsh> .
- Suiter, A., 2016. Second Wave Rail-to-Trail Initiatives and Ecological Gentrification: Lessons from New York City's High Line and Atlanta's Beltline. *Undergraduate Journal of Humanistic Studies*, 2 (Winter 2016), .
- van Thiel, S., 2014. Research Methods in Public Administration and Public Management. 1. London: Routledge. doi: 10.4324/9780203078525 Available at: <https://www.taylorfrancis.com/books/9780203078525> .
- Wetzstein, S., 2017. The global urban housing affordability crisis. *Urban Studies*, 54 (14), pp. 3159-3177 doi: 10.1177/0042098017711649 Available at: <https://journals.sagepub.com/doi/full/10.1177/0042098017711649> .
- William K. Jaeger, 2006a. THE EFFECTS OF LAND-USE REGULATIONS ON PROPERTY VALUES. *Environmental Law (Portland, Ore.)*, 36 (1), pp. 105-130 Available at: <https://www.jstor.org/stable/43267247> .

- William K. Jaeger, 2006b. THE EFFECTS OF LAND-USE REGULATIONS ON PROPERTY VALUES. *Environmental Law (Portland, Ore.)*, 36 (1), pp. 105-130  
Available at: <https://www.jstor.org/stable/43267247> .
- Wolch, J.R., Byrne, J. and Newell, J.P., 2014. Urban green space, public health, and environmental justice: The challenge of making cities ‘just green enough’. *Landscape and Urban Planning*, 125 pp. 234-244 doi: 10.1016/j.landurbplan.2014.01.017  
Available at: <http://dx.doi.org/10.1016/j.landurbplan.2014.01.017> .
- Zuk, M., Bierbaum, A.H., Chapple, K., Gorska, K. et al. , 2018. Gentrification, Displacement, and the Role of Public Investment. *Journal of Planning Literature*, 33 (1), pp. 31-44  
doi: 10.1177/0885412217716439 Available  
at: <https://journals.sagepub.com/doi/full/10.1177/0885412217716439> .

## **Annex 1: Research Instruments and Time schedule**



## Annex 2: IHS copyright form

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