

PPD 631 GIS PROJECT

2018 FALL

LIVABILITY IN WESTCHESTER: HOME OF LAX

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Table of Contents

01 INTRODUCTION

02 DATA COLLECTION

02-03 METHODOLOGY

03-05 CONCLUSION AND RECOMMENDATION

05 LIMITATION

06 REFERENCE

07-11 APPENDIX



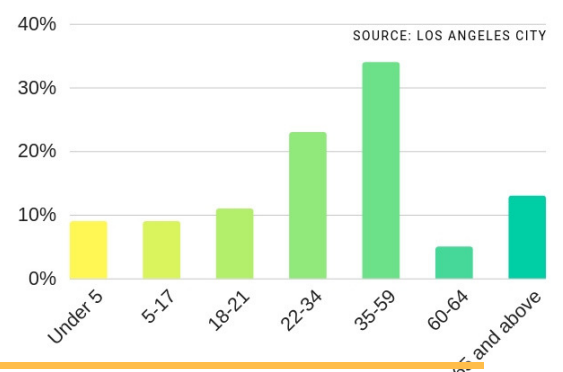
Introduction

A livable environment is the ultimate goal of the urban planning process; Planners, politics, community organizations, and other stakeholders have been pursuing a friendly living environment for residents with diverse needs. However, the physical environment is a significant component of a livable environment. For instance, the built environment with diverse facilities which satisfied different groups of residents, and the accessibility of destinations are factors for achieving a residential friendly living environment.

Background: Westchester has the 5th busiest international airport - LAX in the neighborhood that brings both positive and negative effects to its residents. It can be convenient for residents who travel frequently but have terrible traffic during the peak hour of the airport. It might be interesting to see flights from around the world when looking up in the sky, but noise pollution can damage the living quality. For providing a better living environment in the community, the needs of local residents have to be the priority consideration during the planning/redeveloping process.

Objective: Divide four livability categories: Recreation Facilities, Education, Mobility, and Public Health. These indicators play an important role in urban environmental quality and need to be aware during the planning process. The spatial development of the city is extremely important to guarantee the livability of spaces. Nevertheless, a “lock-in” effect is attached to the urban form, meaning that once it is defined, retrofitting is not only complex but also expensive (Salat et al., 2014). The purpose of this projects is to increase awareness of physical facilities for future development strategy and improve the livability of space in Westchester.

Figure1. Population in Westchester (2018)



Data Collection

- **California Street and Blocks Shapefiles** was retrieved from U.S. Census Bureau TIGER products. Both block and street shapefiles are used as the base map of other map layers to show data on street/block level in Westchester.
- **Los Angeles Community Boundaries Shapefiles** was retrieved from Los Angeles County GIS Data Portal, combined with street/blocks shapefiles from U.S. Census Bureau and used as the foundation of data map layers in different categories.
- **Environmental/Infrastructural Data** including open space, bike ways, educational institutes, bus stops, bus stop benches, and noise pollution were retrieved from Bureau of Transportation Statistics, USGS, Metro GIS, and Big Blue Bus GIS Database.

Methodology

- **Figure 2** was created by the layer with parks and green spaces in Los Angeles with a layer contains community boundaries in Los Angeles to display the density of open spaces in Westchester. According to PalceWorks, the parks and green spaces in data information, showed as green color in the map, includes 16 amenities: tennis, basketball, baseball, soccer, multi-purpose fields, fitness zones, skate parks, picnic, playground, pools, splash pads, dog park, gym, community center, senior center, restroom. And the orange line on the boundaries layer defines the range of Westchester on the map.
- **Figure 3** was generated with educational resources and libraries information in Westchester. Education institutes map layer includes colleges, universities, and other specialized institutions by the US Department of Education. And public libraries map layer which contains Los Angeles City libraries in the city. Over 60% of the population in Westchester is from aged 18 to 59 (See Figure 1) that have potential needs of education in the local area. And the library resources in the community indicate the knowledge resources for residents and students in the local area.

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- Figure 4 displays bus stops with and without benches, triangle symbol for stops with benches and circle for just bus stop that bus riders have no benches to rest while waiting for buses. The bus stops layer combined bus stop data from Metro and Big Blue bus; the layer with bus stop benches was generated from Los Angeles County GIS Data Portal. The purpose of figure 4 is to show if bus routes facilities are friendly for passengers in Westchester and the way to improve transit facilities for encouraging bus ride.
 - Figure 5 was created by 3 layers including community boundaries from Los Angeles County GIS Data Portal, U.S. Census street map in California, and City of Los Angeles bike ways. The map expresses the connectivity of bike route between Westchester and other nearby regions, such as Playa Vista, Marina Del Rey, and Venice. Also, the map shows if it is biking friendly for residents or even the airport users in Westchester.
 - Figure 6 shows the last category in the project. Westcher is the home of LAX, the map was generated with the scale of noise pollution of aviation and road in Westchester and compared with nearby communities. Red color represents the most serious noise pollution and the navy color has the least noise pollution issues compared with others.

Conclusion and Recommendation

Figure 2 Park and Open Space in Westchester (2016): There's low density of open space in Westchester. Even the reaction center provides multiple amenities in the middle of the community but it's the only option for residents to spend leisure time in the local area. Moreover, Westchester is not only the home for its residents but the home of LAX, the first impression for travelers. Westchester can take advantage of having one of the busiest international airports worldwide and provide diverse options of entertainment for both citizen and visitors.

Figure 3 Education and Resources in Westchester (2010): Westchester has five colleges, universities, and other specialized institutions with thousands of students, but merely one public library in the neighborhood. Because of the high density of educational institute in Westchester, there are potential needs of studying spots, educational resources, and gathering spots. An educational media center on the East side of Westchester can be one of the suitable future development plans that can satisfy the needs of education.

Figure 4 Transit Passenger Friendly in Westchester (2017): So far, there's no metro line serving in Westchester and traffic has been a serious problem because of LAX. Encourage residents using buses to travel can be an effective strategy. Except for expanding bus network, bus facility improvement can attract more bus riders in the area. Surprisingly, there are only 6 bus stops provide benches for bus riders in Westchester where has over 40 bus stops and at least 5 bus routes in the community. However, built environment affects human behavior. The practice of bus infrastructure renewal, provide benches, shades, and clear signs at bus stops. That might affect the way local residents commute and attract airport traveler to use public transit to their destinations in Los Angeles. Eventually, reduce the traffic issues around the airport.

Figure 5 Bike Routes in Westchester (2107): Biking is a popular option to avoid traffic in the city nowadays. From Figure 5, the connectivity of bike ways can be improved in Westchester, the bike route network can be more comprehensive instead of focusing on the main street mostly. Moreover, to create a tourist spot, a bike path surround LAX with the view of flights next to the bike path can be attractive for travelers and for Angelenos. Outside of Westchester, the bike routes can be more connected with close by regions that encourage residents to commute by bike rather than driving.

Figure 6 Noise Pollution in Westchester (2018): Thinking of living in Westchester can be convenient since the location of LAX, but noise pollution can also be a serious concern when it comes to the quality of life.

Compared with nearby regions in the map, Westchester suffers from noise pollution much more than other neighborhoods. The noise pollution generated by aviation can be reduced by different building materials. But for ground noise from the airport, Amsterdam's Schiphol Airport is a suitable example for this situation. They built maze-like landscape to reflect ground noise from the airport.

Limitation

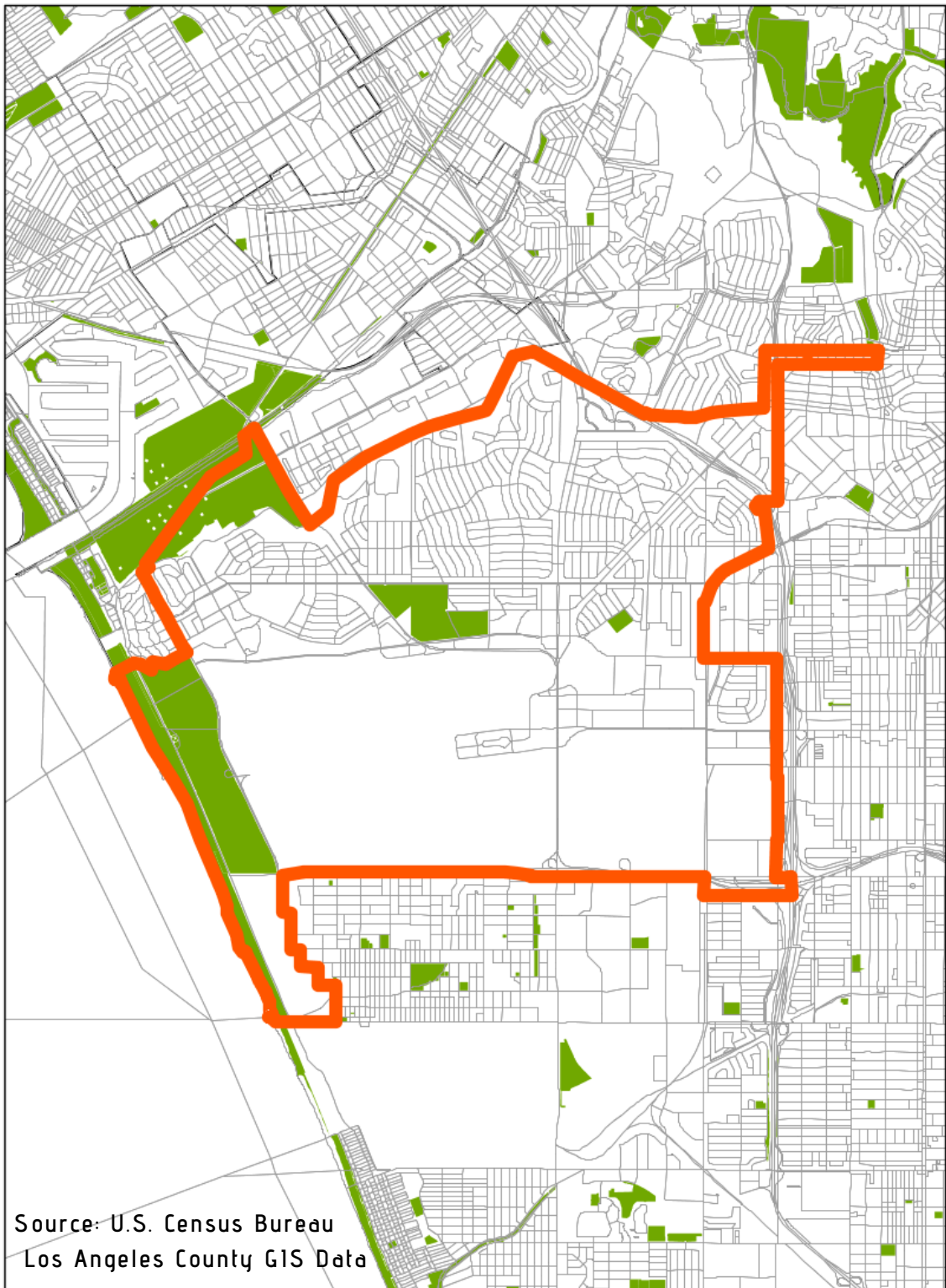
- Because of the time limit, the project is focused on the physical facilities in Westchester while livability is a broad topic and has demographics and other dynamic factors involved. Such as community meeting and survey with residents are necessary for identifying "Livability". Since local residents are the users in Westchester and people might have a different expectation of quality of life. But this could help the redevelopment plan next to LAX and future community (re)development in Westchester.
- Data in this paper were collected online which might not be the newest updated version or have limited accuracy due to the scale of data.

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Appendix

Figure 2. Park and Open Space in Westchester (2016)



2 Miles

Westchester
PARKS/OPENSACE

Figure 3. Education and Resources in Westchester (2010)

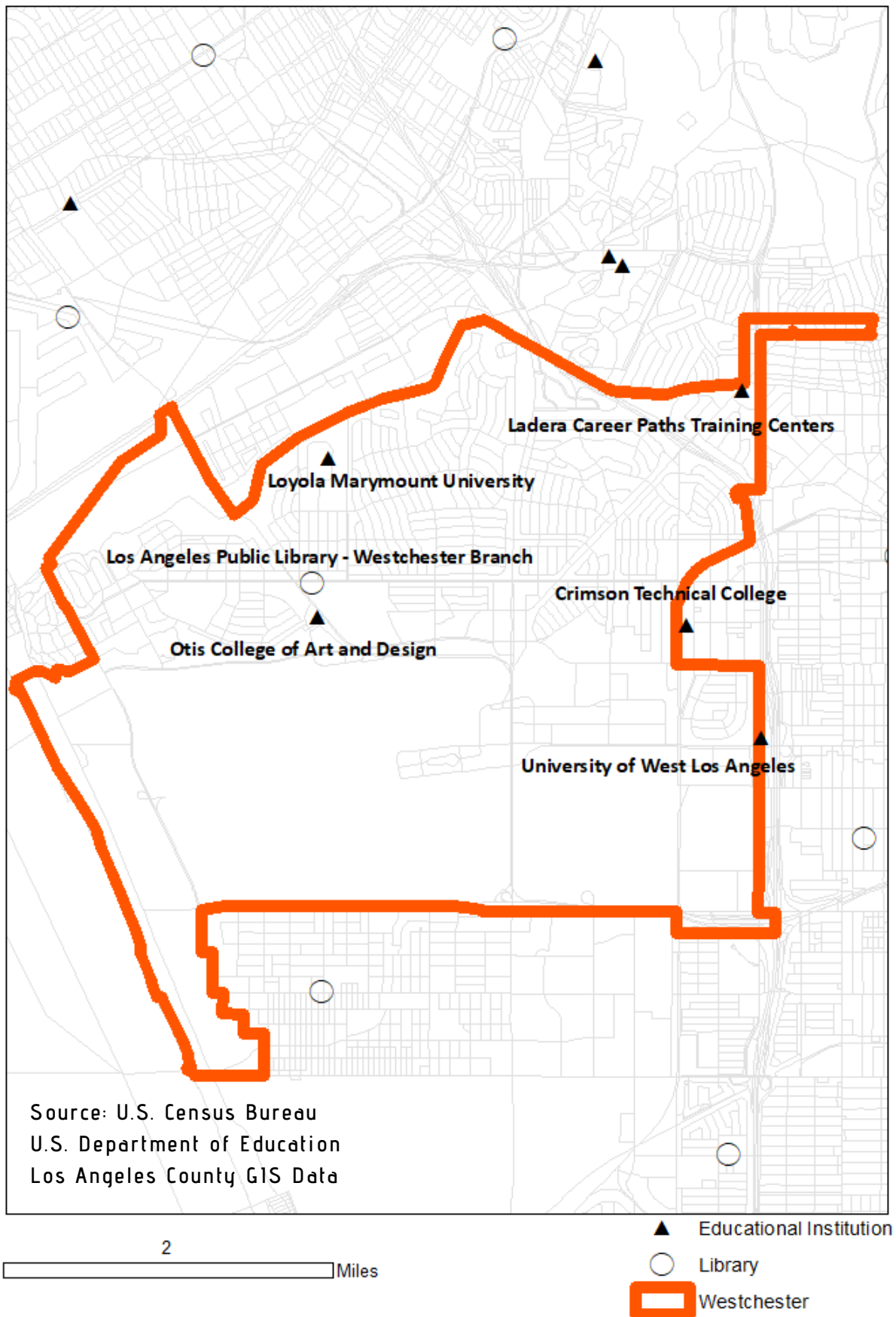
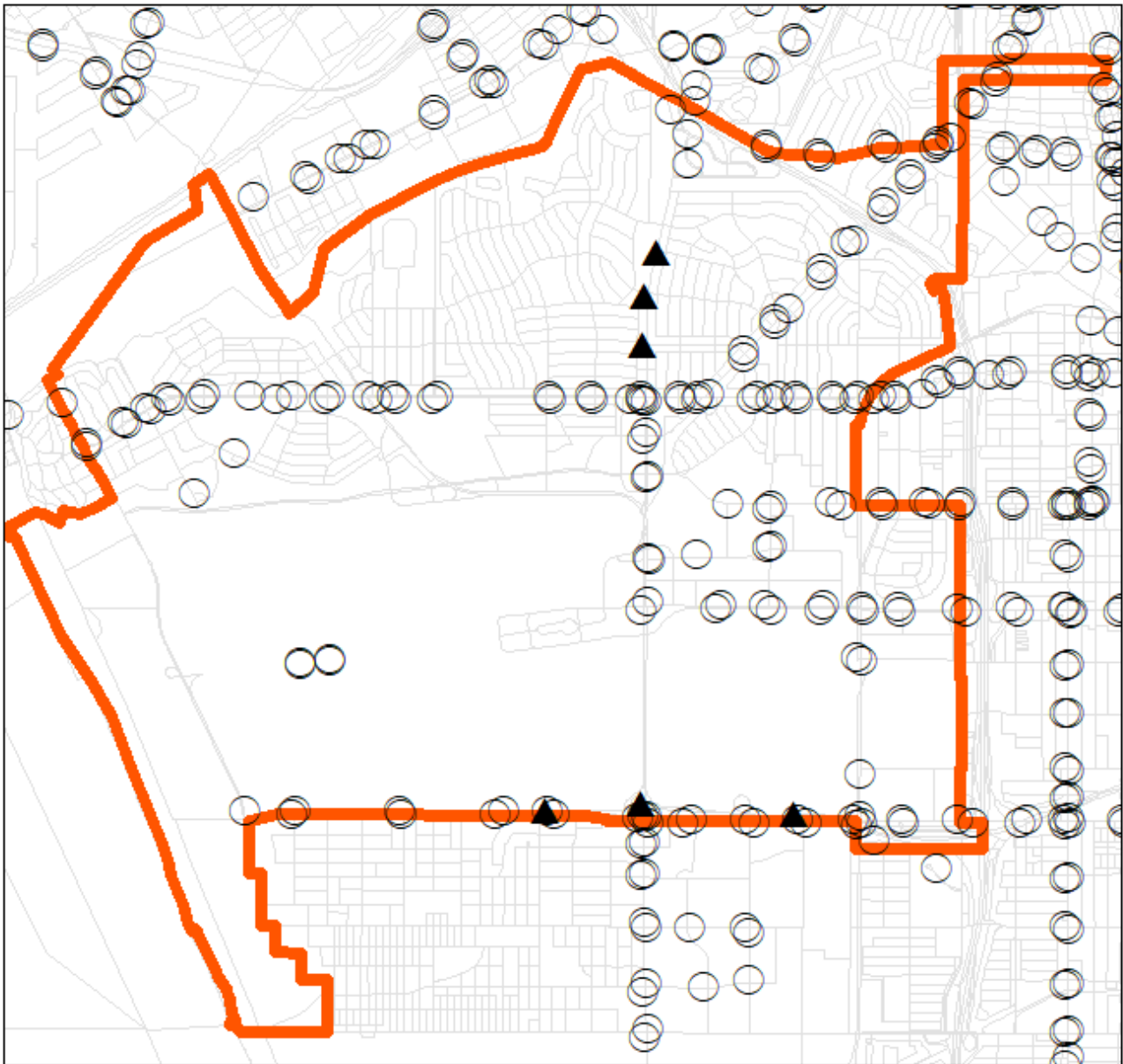
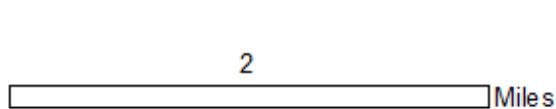


Figure 4. Transit Passenger Friendly in Westchester (2017)

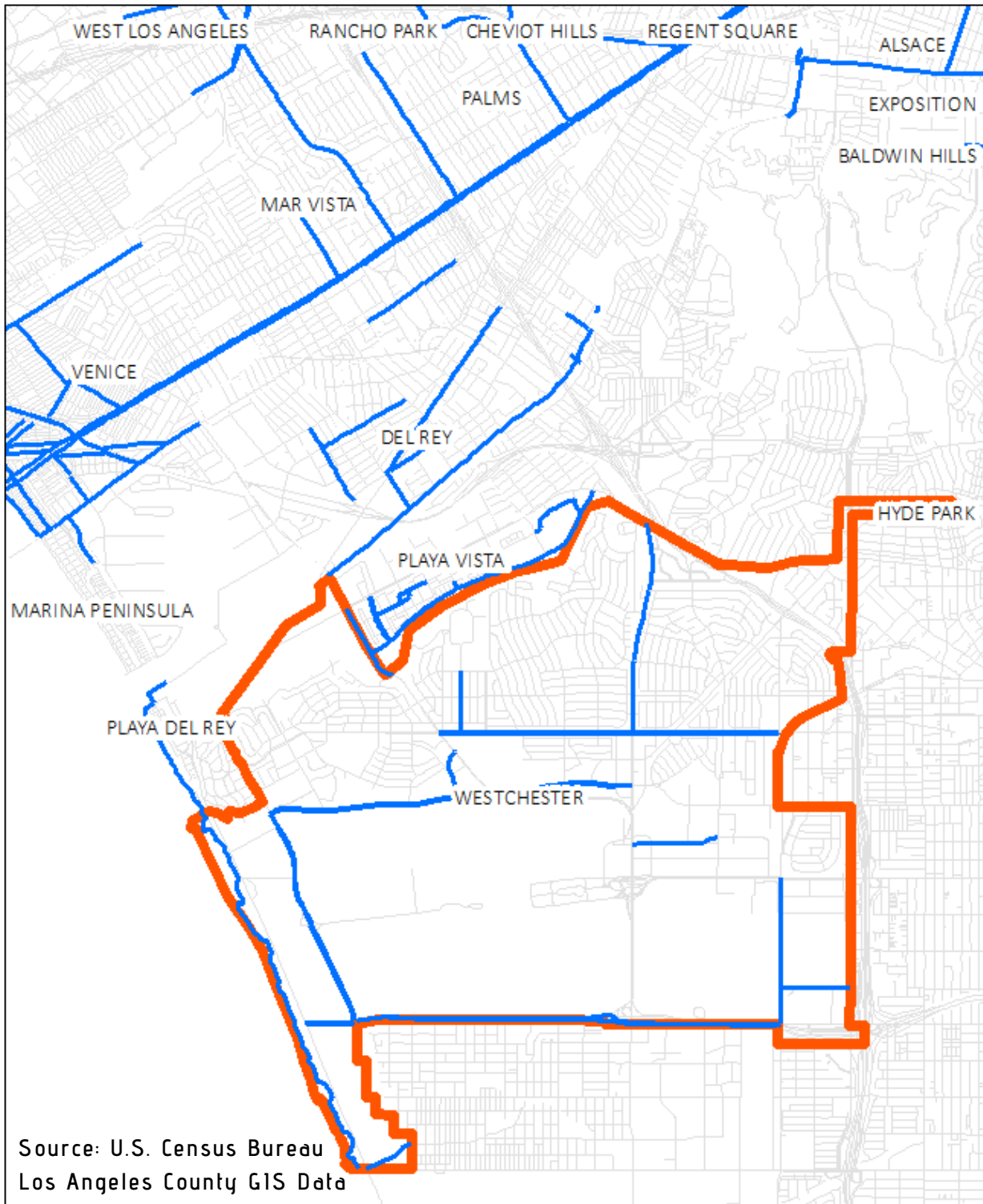


Source: U.S. Census Bureau
Metro GIS Data, Big Blue Bus GIS,
Los Angeles County GIS Data



- ▲ Bus Stop Benches
- Bus Stop
- ▭ Westchester

Figure 5. Bike Routes in Westchester (2017)



Source: U.S. Census Bureau
Los Angeles County GIS Data

2 Miles




-  Bike Routes
-  Westchester
-  Streets

Figure 6. Noise Pollution in Westchester (2018)

