

EXAMINING THE LOS ANGELES METRO

A NEEDS-BASED TRANSPORTATION ANALYSIS

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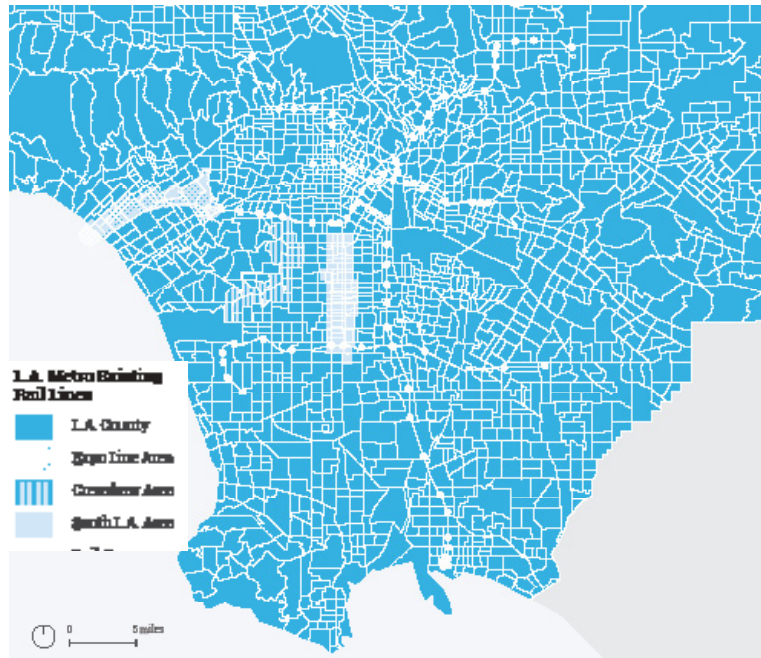
The planned expansion of the Los Angeles Metro Rail promises to provide Angelinos with access to public transportation. However, some critics of the L.A. Metro Rail believe that the expanding network will primarily serve tourist destinations and powerful economic hubs rather than supporting the residents most in need of public transportation. Through spatial analysis, we find that the L.A. Metro Rail expansion will not benefit the residents most in need of public transportation.

In the early 1900s Los Angeles County contained one of the largest public transportation systems in the United States. The Pacific Electric Red Car system serviced multiple counties in Southern California with over 1,000 miles of streetcar lines. However, with the introduction of the automobile, most of the rail network fell into disrepair and was subsequently dismantled in the 1950s. Over the next few decades, the automobile became the primary mode of transportation and its infrastructure transformed Los Angeles from an interconnected region into a sprawling metropolis dominated by the personal vehicle. As a result, Los Angeles has become a classic example of how planning for personal vehicles can have negative impacts on cities and their inhabitants. Examining L.A.'s transportation history helps highlight some of the serious transportation issues that many of the city's lower-income and minority residents still deal with today.

The sprawling nature of the city leaves many residents, especially those without access to a personal vehicle, geographically isolated. Although hundreds of buses service L.A. County, public transportation has historically underserved certain groups (Borah, 2008). Furthermore, the available transit options are often unreliable and inefficient due to congestion on major roads and highways. In fact, L.A. residents spend more time in traffic than residents of any other metropolitan city in the United States (Frizell, 2014). Statistics like these strongly suggest a need for infrastructure improvements that can help residents reach their destinations more efficiently.

The Los Angeles Metro Rail has sought to address the need for more efficient public transportation for over 20 years. It opened its first light rail line in 1990 as part of a master plan intended to introduce light rail as an alternative form of regional transportation. Since then, the system has expanded dramatically and now consists of five

separate rail lines and 73 miles of track (LA Metro 2008). The continuing expansion of the L.A. Metro Rail presents a great opportunity for residents who rely on public transportation.

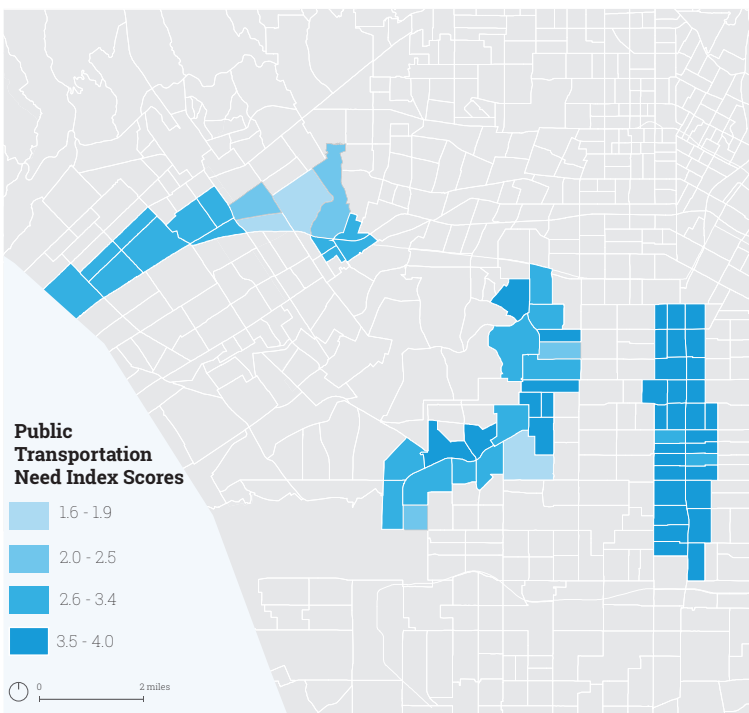


Map 1
 Frank Romo and John Woodward. Existing rail lines and existing stops in the Los Angeles Metro rail system, 2013

This research focuses on two rail lines that are currently under construction, the Expo Line extension to Santa Monica and the Crenshaw Corridor to Los Angeles International Airport, in order to determine whether or not those most dependent on public transportation will have greater access to transit options with the line extensions.

TRANSPORTATION NEEDS INDEX AND ASSESSMENT

We created a transportation needs index to identify the neighborhoods most in need of greater access



Map 2
 Frank Romo and John Woodward. The Expo Line extension area, Crenshaw and South L.A. study areas.

to public transportation. We used four separate variables from the 2010 American Community Survey to establish the baseline criteria for the transportation needs index: access to a personal vehicle, access to public transportation to work, household income, and population density. This combination of variables creates the formula used to assess an area's need for transportation.

We weighted each variable based on its relevance in determining a community's need for public transportation. For instance, we weighted the variable "households without access to a personal vehicle" the heaviest because people without access to a personal vehicle are more dependent on public transportation. The transportation needs index produced a range of scores from 1 to 5, with 1

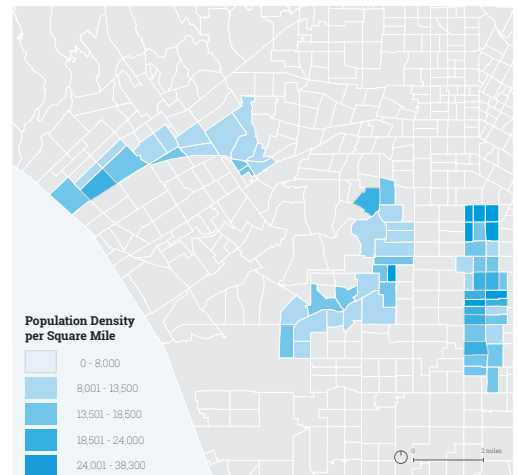
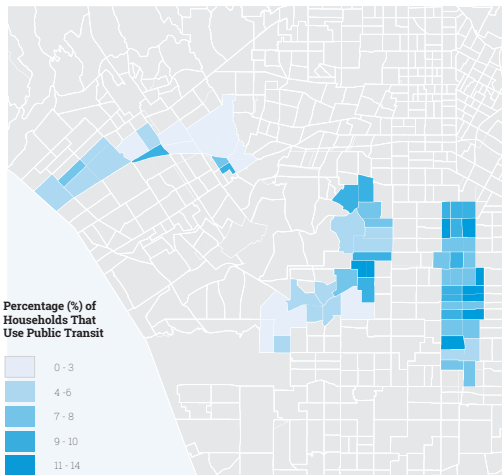
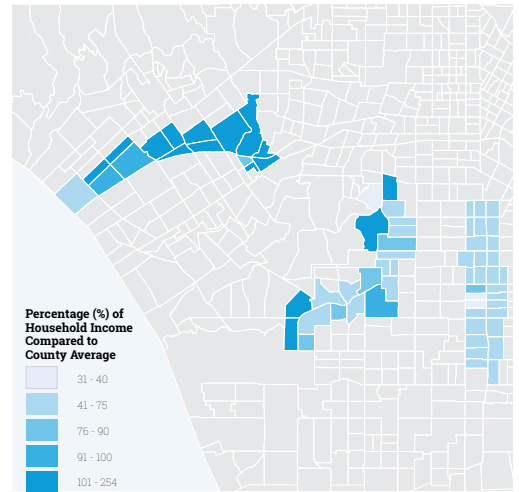
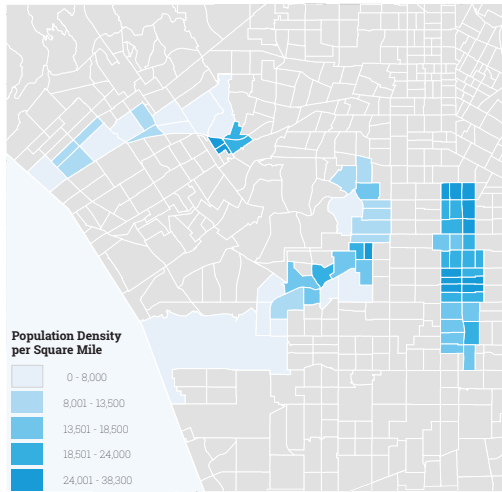
indicating minimal need for public transportation and 5 indicating maximum need for public transportation. We then reclassified the resulting scores at the census tract level to assess which neighborhoods in L.A. County demonstrated the greatest need for access to public transportation.

LIMITATIONS

One limitation of this model is that it does not take into account other forms of public transportation. The transportation needs index focuses only on available census variables and does not include proximity to other forms of public transportation such as bus routes or commuter rail. This analysis focuses solely on the expanding light rail lines and therefore assumes that light rail is the only available mode.

SITE SELECTION

After creating the transportation needs index, we used the resulting scores to identify neighborhoods that demonstrated a maximum need for public transportation. South L.A. was selected as the primary study area because 26 out of the 30 census tracts in this area demonstrated a maximum need for public transportation. This neighborhood scored significantly higher than many other census tracts in L.A. County, most likely because of the lack of access to personal vehicles and the large amount of public transit ridership. Although rail lines surround the South L.A. census tracts on either side, the tracts remain outside of a reasonable walking distance from any single station. Residents in the middle of the study area demonstrated the least amount of access to public transportation because of their distance from the surrounding three Metro Rail lines. They also possessed the highest need scores in all of L.A. County. This cluster proved to be the most relevant because nowhere else in L.A. County was there such a high concentration of residents with such minimal access to light rail transportation.



Maps 3-6

Frank Romo and John Woodward. Neighborhood characteristics of each study area. Source: ACS (2010)

We then compared the South L.A. study area to two separate neighborhoods on the Westside that the future rail line expansion will service within the next five years. The purpose of this comparison was to provide greater context for the severity of the lack of transit availability in South L.A.

COMPARABLE STUDY AREAS AND PRELIMINARY FINDINGS

We compared the areas surrounding the two new rail lines to the South L.A. study area based on their scores in the transportation needs index. The Expo Line extension, slated to open in 2015, will service residents from Culver City to Santa Monica. The

new Crenshaw Corridor line, expected to open in 2019, will service Inglewood residents and will terminate at the Los Angeles International Airport. According to the transportation needs index, the Expo Line extension does not service any census tracts indicating maximum need. In fact, the Expo Line extension primarily serves higher-income residents who have greater access to personal vehicles and are less dependent on public transportation.

Similarly, the Crenshaw Corridor line will service neighborhoods with a lower need for access to public transportation based on its population density and access to personal vehicles. Although the Crenshaw Corridor line runs adjacent to the South L.A. study area, it fails to incorporate any of the census tracts most in need of public transportation in South L.A. In fact, out of a total of 14 new stations from both rail lines, only two, which are along the Crenshaw Corridor line, will service census tracts that indicate maximum

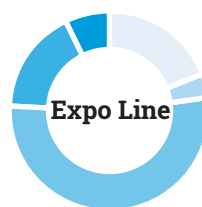
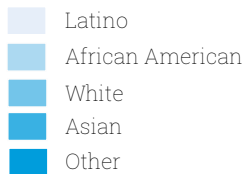
need. Comparing the demographic information of the three study areas reveals that residents in the South L.A. study area are less affluent, on average earning only about half of the L.A. County median household income. Conversely, a majority of the residents in the Expo Line study area report a median household income significantly higher than the Los Angeles County average.

The Crenshaw Corridor area services some communities in high need of public transportation, but mostly services areas only in moderate need of public transportation as compared to South L.A.

CONCLUSIONS

Los Angeles Metro Rail does not effectively connect the residents most in need of public transportation to the greater transit network. Although residents in South L.A. indicate a maximum need for public transportation, they remain outside of a reasonable walking distance from any single station. This

Racial Makeup



Average Household Income

\$28,581

\$67,601

\$44,885

Average Need Score

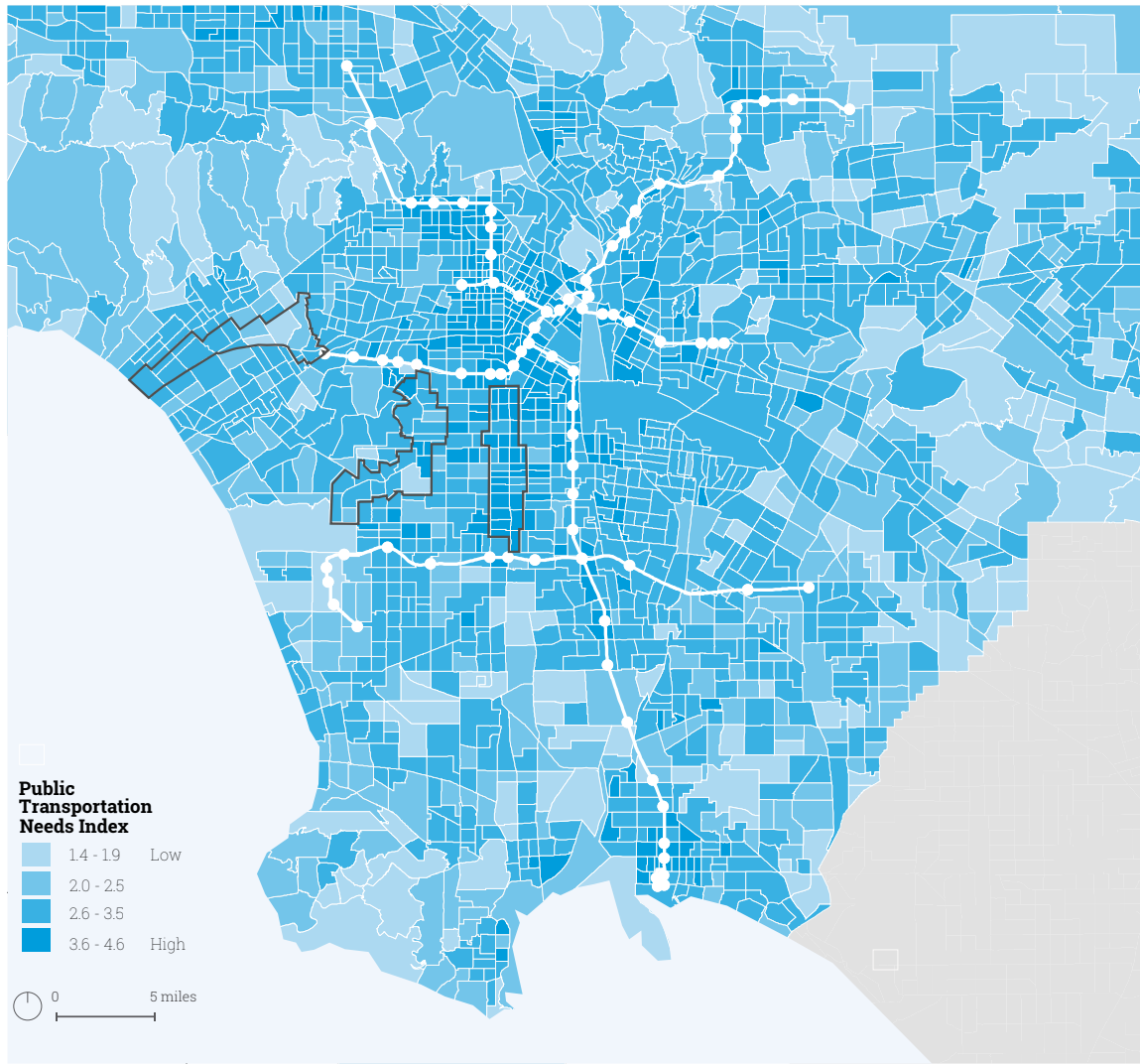
3.56

2.79

2.98

Figure 1

Demographic information of the three study areas. ACS (2010)



Map 7

Frank Romo and John Woodward. Final decision map showing overall indexed need for public transportation for each census tract in Los Angeles County. Source: ACS (2010)

reveals that the L.A. Metro Rail will remain inaccessible to the entire South L.A. neighborhood. Although residents of South L.A. would benefit the most from additional public transportation options, they will remain dependent upon the bus system and will have minimal access to the expanding rail system.

PLANNING IMPLICATIONS

Deeper examination of the results of the transportation needs index for all three study areas indicates that lower-income communities of color will remain underserved by public transportation despite the massive expansion of the Los Angeles Metro Rail. If the city and county expect L.A.

residents to use public transportation, residents who are most dependent on public transportation should take priority over communities that have access to alternate forms of transportation. Planners must reevaluate their priorities to create more equitable transportation systems by focusing on the communities that are most in need of public transportation investment. ■

Research performed with John Woodward, Master of Science in Urban Planning, Graduate School of Planning and Preservation, Columbia University.

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