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Advancing Shade and Lighting Equity at Bus Stops in Los Angeles

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Issue

Across Los Angeles, sufficient shade at bus stops is crucial for protecting transit riders from extreme heat during the day, and adequate lighting is vital for ensuring riders' safety at night. While bus shelters are physical infrastructure that can provide both shade and lighting, many bus stops across Los Angeles have been left without such shelters. Historically, the Los Angeles Bureau of Streets Services (StreetsLA) has provided shelters through advertising contracts that prioritize locations with high advertisement value over locations that need shelters most. As a result, many transit riders are left vulnerable to extreme heat and safety concerns.

StreetsLA's new Sidewalk and Transit Amenities Program (STAP) seeks to change the current situation by increasing the overall number of bus shelters. Further, STAP plans to use an equity-driven prioritization framework to determine the location of these shelters. However, bus shelters cannot be installed on narrow sidewalks or in certain residential areas, and there has been minimal attention on the extent to which these constraints may limit shelter installation at priority locations. Additionally, research about bus shelters has generally focused on protection from heat and precipitation, overlooking the critical role that shelters play in providing lighting, although shelters differ in terms of their size and features, including whether they include integrated lighting (Figure 1). Finally, there is limited understanding of how other aspects of the built environment, such as street trees and streetlights, affect the equitable distribution of shade and lighting.

To address these knowledge gaps, this project assessed the adequacy of shade and lighting at bus stops across Los Angeles, the alignment between the current locations of bus shelters and priority bus stops, and the magnitude and spatial distribution of site constraints that complicate the installation of bus shelters.

Study Approach

This project conducted an in-depth analysis of three neighborhoods in Los Angeles — Sawtelle, Sun Valley, and Watts — that used original data collected during 202 nighttime site visits. Data from site visits were compiled to create a detailed analysis of bus stop conditions in the three neighborhoods and to assess the current reliability of existing quantitative data, some of which were collected up to a decade ago. Additionally, this project used existing quantitative data that were found to be reliable through the comparisons to site-visit data to conduct a citywide analysis, covering all LA Metro, Big Blue Bus, and LADOT Transit bus stops in Los Angeles. Geospatial analysis of the locations of bus shelters, public trees, and streetlights was used to identify areas with particularly poor access to shade and lighting. Additionally, a "priority score" was calculated for each bus stop based upon its respective ridership, surrounding residential demographics, projected heat exposure, wait times, and proximity to key destinations. The priority scores were then used to understand the alignment between the current locations of bus shelters and the locations where amenities are most needed. Finally, this project used geospatial analysis of existing public data on sidewalks, zoning, and street classifications to investigate how site constraints may limit the installation of bus shelters across Los Angeles.

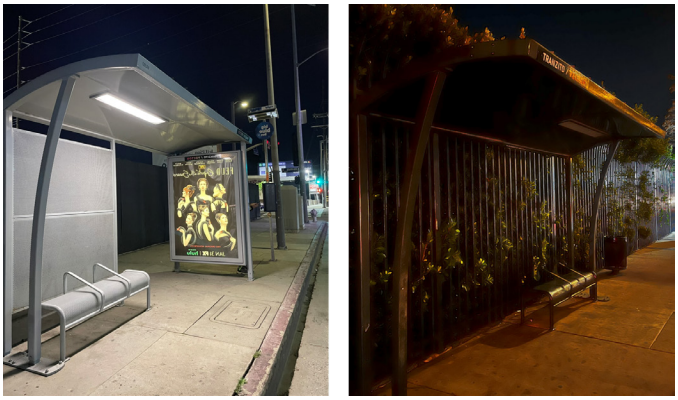

Figure 1. An advertising shelter at Pico / Sepulveda in Sawtelle (left) and a non-advertising shelter at Compton / Century in Watts (right)

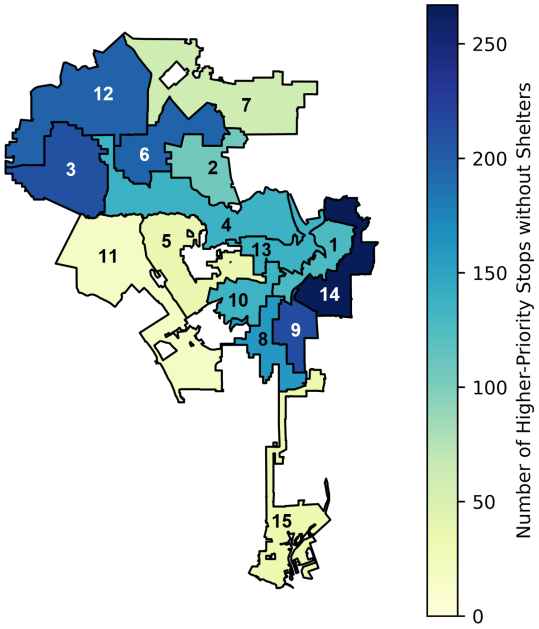

Figure 2. Number of higher-priority stops without shelters by Los Angeles City Council District

Key Findings

Most bus stops in Los Angeles do not have shelters, and shelters are unevenly distributed. Bus stops in some of the hottest neighborhoods in Los Angeles, including the northeast San Fernando Valley, are both the least likely to have shelters and the least likely to be located near trees.

Bus stops in Watts, the lowest-income of the three site-visit neighborhoods, were the least likely to have adequate lighting due to a lack of bus shelters with integrated lighting and insufficient illuminance cast by the surrounding streetlights. Integrated shelter lighting is the most important determinant of measured lighting levels at bus stops, but is less common in non-advertising shelters. Thus, lower-income neighborhoods of color that have historically been labeled as having less "ad-revenue potential" may have the least access to this vital type of light.

Higher-priority stops, where providing shade and lighting is most important, are clustered in the eastern portion of Los Angeles, South L.A., and western portion of the San Fernando Valley. As a result, a small number of council districts — specifically, Districts 3, 6, 9, 12, and 14 — contain the majority of higher-priority stops that currently lack shelters (Figure 2).

Narrow sidewalks may prevent the installation of full-sized advertising shelters at up to 53% of higher-priority bus stops without shelters. Meanwhile, restrictions on installing bus shelters in residential areas may prevent shelter installation at up to 19% of these higher-priority stops.

Recommendations

Bus shelters are a powerful intervention in the built environment that can provide critical protection from heat, as well as safe levels of lighting. Adequate lighting in public spaces plays a key role in promoting safety and perceptions of safety for women and gender minorities. **Thus, when deciding where to install bus shelters, consideration of both lighting and shade needs is vital to advancing gender equity.**

Innovative amenity designs are urgently needed to provide shade and lighting at bus stops. This is particularly applicable to sidewalks that are not currently wide enough to support an advertising shelter with integrated lighting.

Accurate data that reflect bus riders' experiences are vital to understanding current conditions and prioritizing improvements where they are needed most, but existing quantitative data are often insufficient or outdated. **Further collection and publication of updated data on tree canopy, streetlight maintenance, and streetlight illuminance levels is necessary for supporting equity-focused policy and planning.**

Reginald, M. (2024). Progress, Priorities, and Obstacles to Providing Adequate Shade and Lighting at Bus Stops in Los Angeles (Master's capstone, UCLA). Retrieved from: https://escholarship.org/uc/item/91p6c5zv

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