

Introduction

Bus shelters are placed across a transit network to serve riders effectively and equitably. A well-planned distribution of shelter considers factors such as population density, ridership levels, vehicle ownership, age, household income, and accessibility to ensure that people who rely on most on public transportation are adequately protected and accommodated. Uneven shelter placement can highlight broader social and economic disparities, as some communities may have greater access to shaded and safe waiting areas while others do not. By analyzing where shelters are located and where gaps exist, transit agencies can make more informed decisions that improve rider comfort, safety, and overall system usability.

Research Goals

- Evaluate whether bus shelters are distributed equitably across different communities and aligned with rider needs
 - Examine whether shelters are located in areas with higher needs such as neighborhoods with lower income, high transit dependency, or vulnerable populations
 - Identify stops where riders are exposed to extreme weather without adequate protection

Methodologies

Quantitative, mixed-method approach combining field observation of 315 bus stops and solicited 18 interview, transit route analysis , and demographic data analysis to evaluate bus shelter distribution .

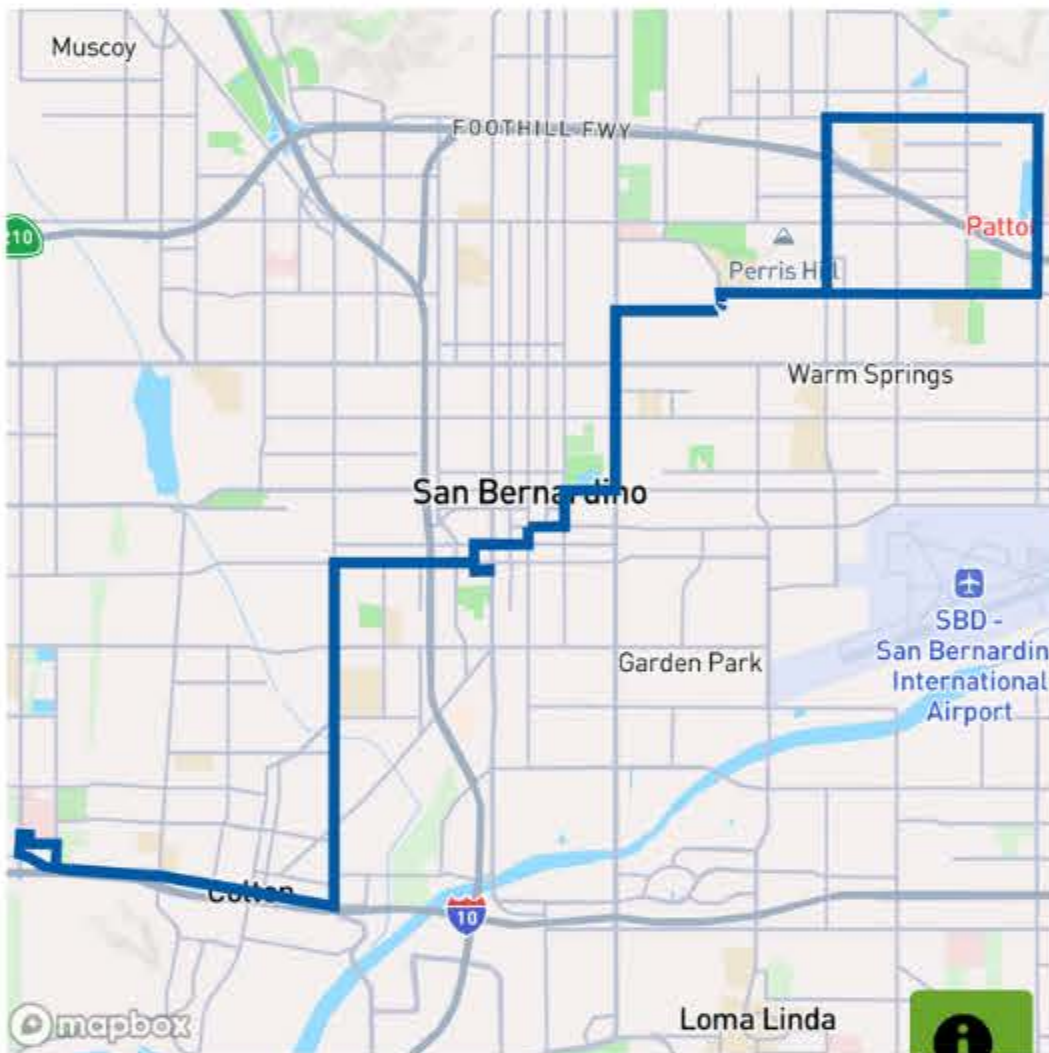
San Bernardino County Demographics



	2024/2025 Data
Population	> 2 million residents
Race	White - 74.5% Hispanic/Latino - 56.4% African American - 9.3%
Median Household Income	\$85,069
Educational Attainment	Bachelor’s or Higher - 24% High School Graduate - 86%
Average Commute Time	32-33 minutes
Vehicle Ownership	1.78 million registered vehicles (2% decrease from 2021)

Field Observation & Key Findings

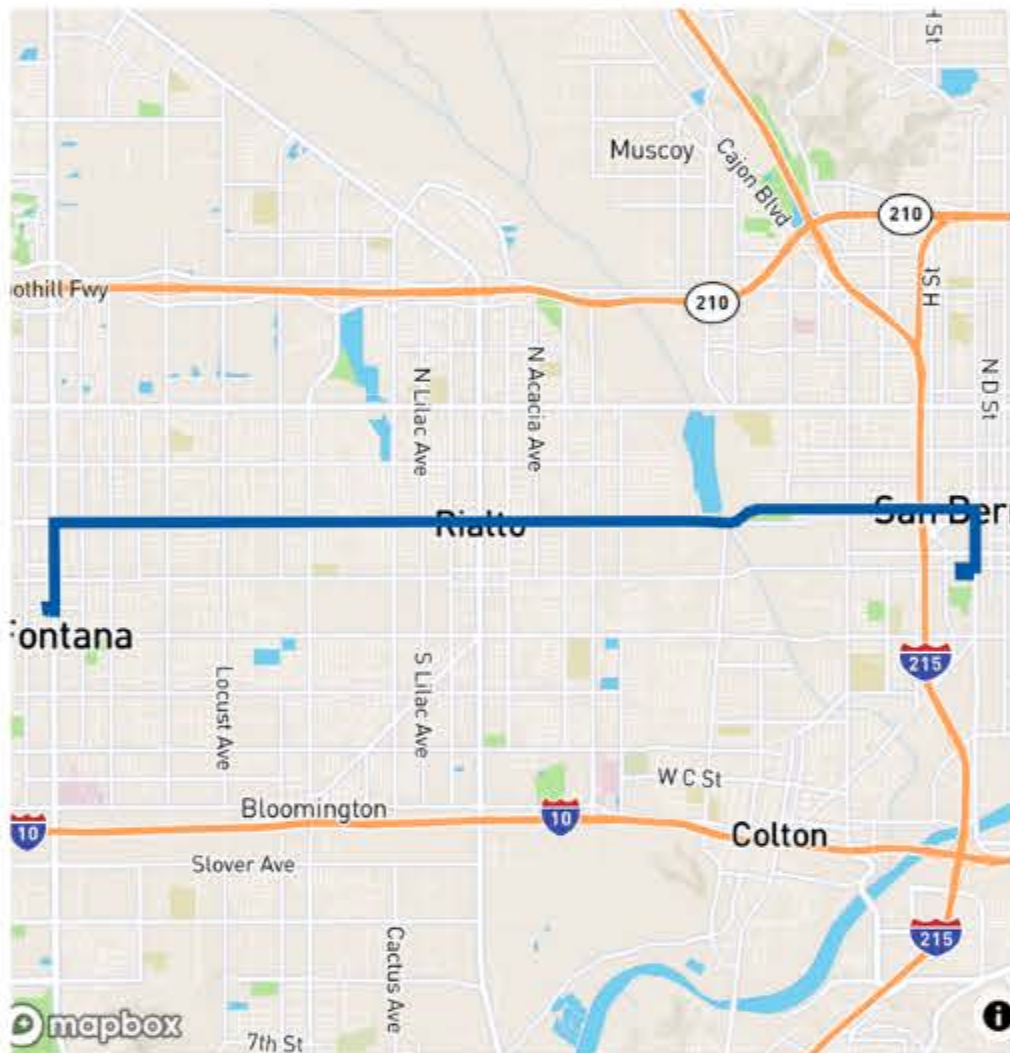
Route #1



Serves Colton and San Bernardino
Every 30mins.

Total Stops: 80
Shaded: 25
Non-Shaded: 55

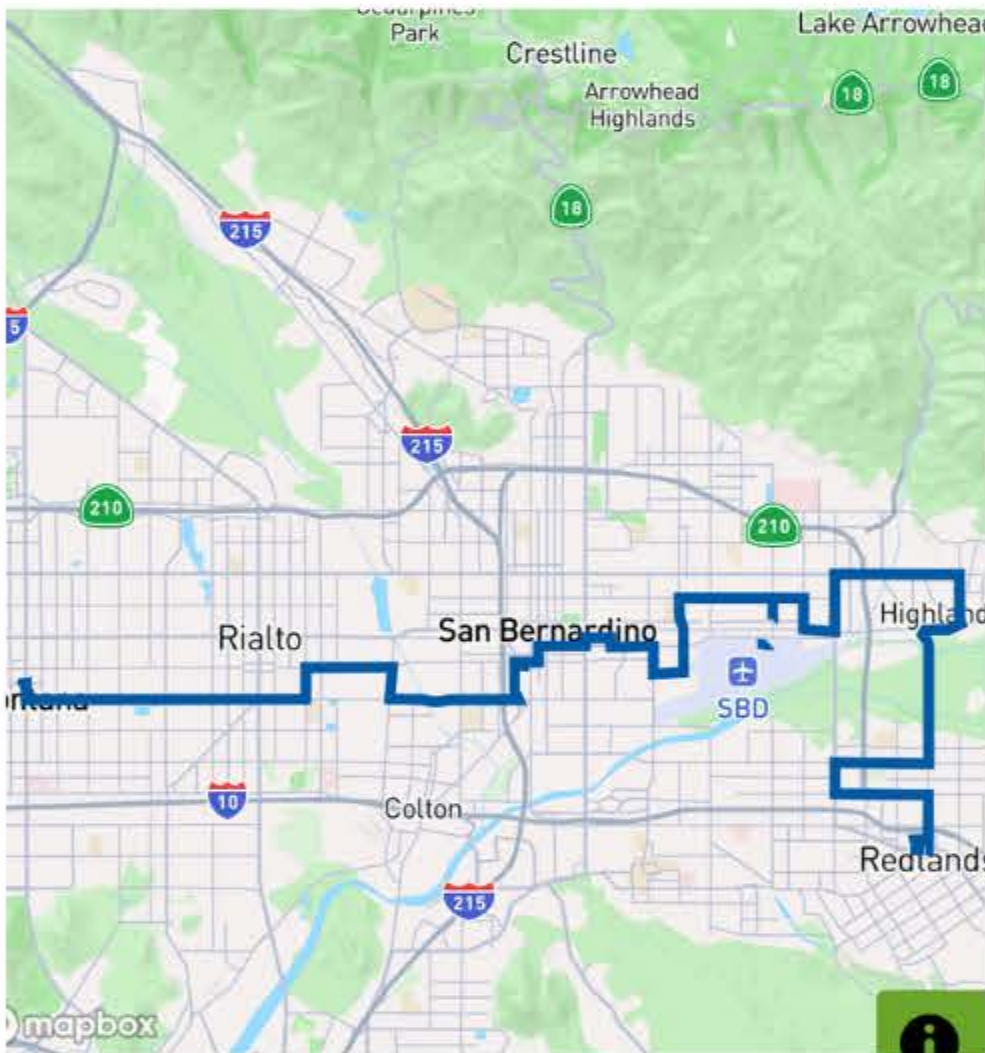
Route #14



Serves Fontana and San Bernardino Via Rialto
Every 20mins.

Total Stops: 69
Shaded: 33
Non-Shaded: 36

Route #15



Serves Fontana and Redlands via Rialto and San Bernardino
Every 60mins.

Total Stops: 166
Shaded: 24
Non-Shaded: 142

Interview Findings

Route #1

- Rode transit weekly/Daily
- Main form of transportation
- Painting, Shade & Seating
- average wait time 20-30min
- Student Pass (*Free*)/Daily (\$6)

Route #14

- Rode transit Daily
- No consecutive time of arrival
- average wait time 10-20min
- Add shade & Seating
- Monthly (\$60)/Daily Pass (\$6)

Route #15

- Rode transit daily/sometimes
- Some provide shade & seating
- Safety
- Average wait time more than 1hr
- Monthly (\$60)/Daily Pass (\$6)
- Student Pass

Conclusion & Recommendations

- Prioritize high-need stops
 - bus stops with higher ridership and longer wait times
 - Stops near greater passenger demands
- Focus on Equity
 - Improvements should consider the need of communities that rely on public transportation the most
 - low-income populations, students, seniors etc.
- Improve basic shelter features
 - View seating/shelter placement
 - Improve basic shelter features to enhance rider comfort and safety
- Implement Phased Improvements
- Engage the community

By comparing shelter locations with demographics and ridership data, it became clear that some communities are better served than others with the disregard of transit use. By addressing these issues we can improve the transit experience for those who rely on public transportation the most, ensuring that all riders have access to safe and comfortable waiting environments.

