Transit Station Deficiency Analysis: A Countywide GIS Approach

Public Transit Accessibility and Deficiency Analysis

Wednesday, July 12th, 2017

Joe Punsalan, PTP/GISP/LCI
Senior Associate

Diana Smith, GISP
GIS Technical Manager

Riverside Transit Agency

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Project Overview

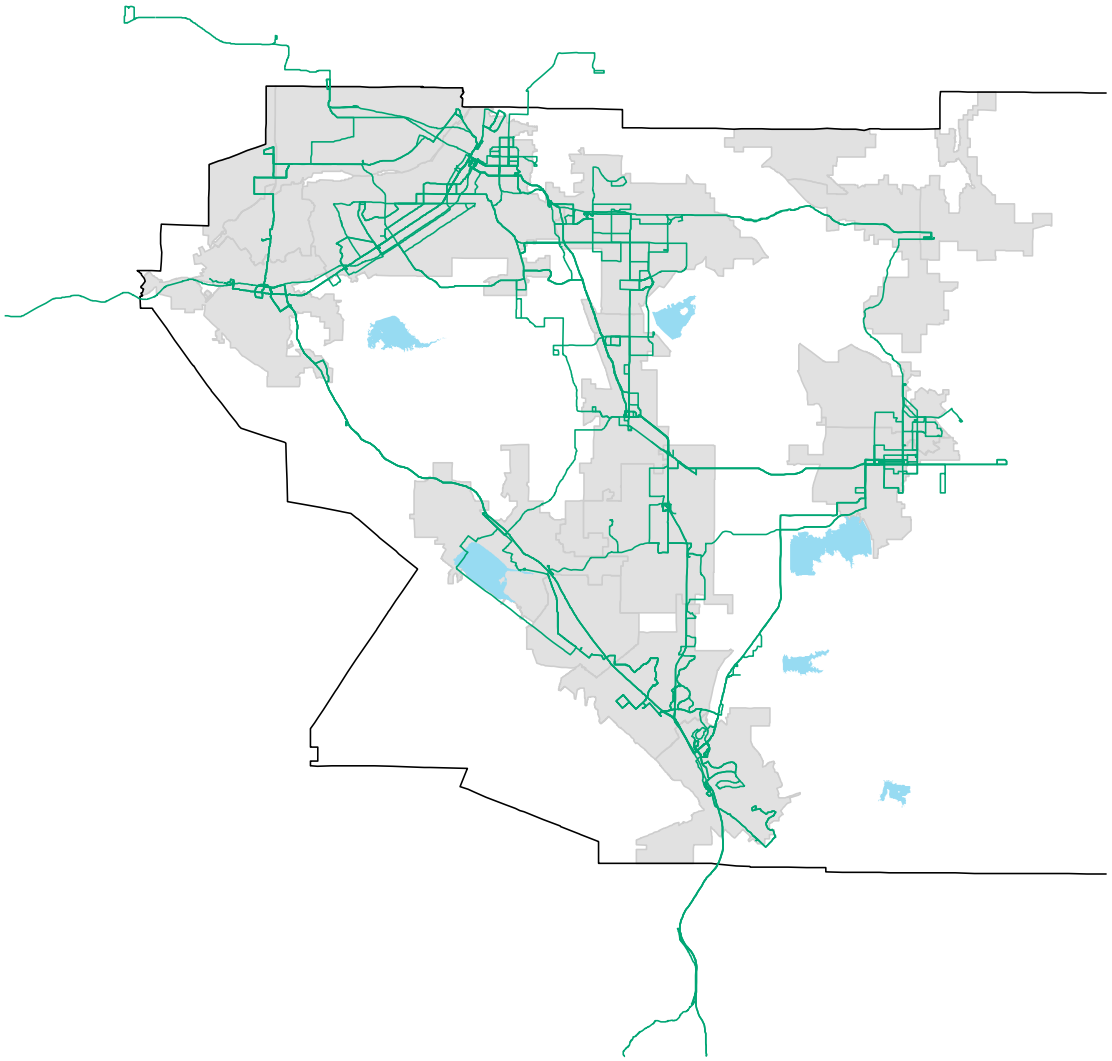
- Project Introduction
- First & Last Mile Strategies
- Public Outreach
- Station Typologies
- Initial Rankings

What the RTA First Mile/Last Mile IS about.

Providing Safe and Connected Access to Transit

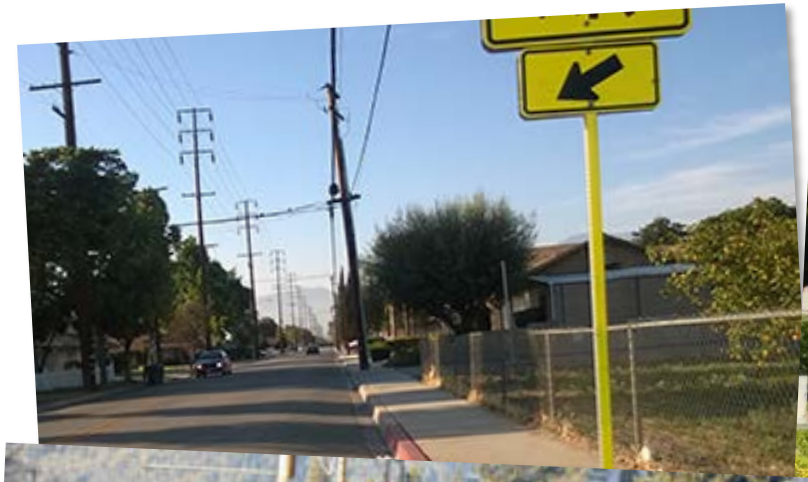
What the RTA First Mile/Last Mile IS about.

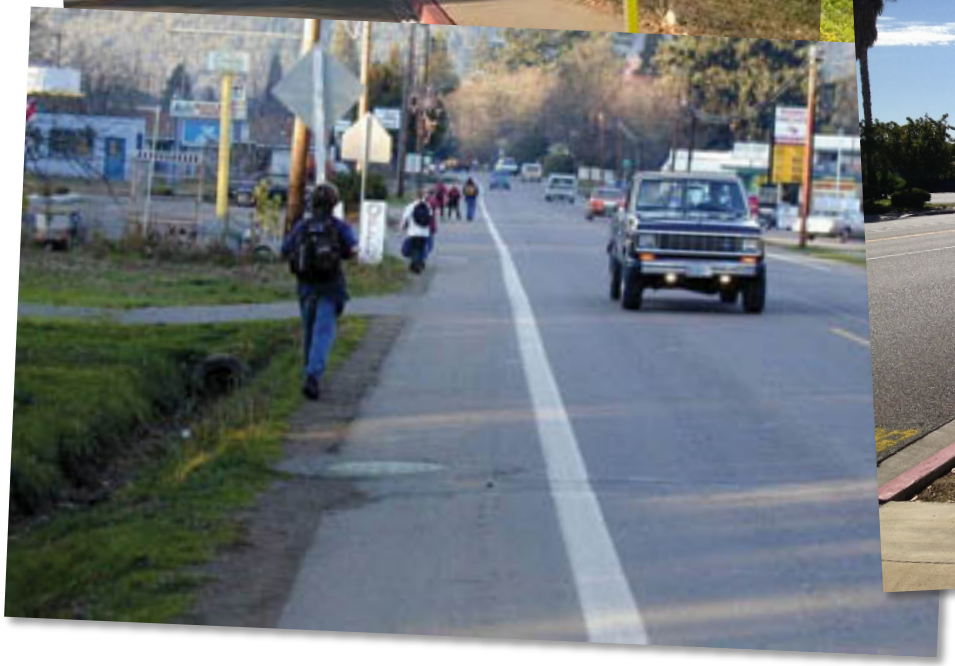
RTA Service Area First Mile Last Mile Access to Transit



Typical Problems:

Pedestrian Deficiencies





Typical Problems:

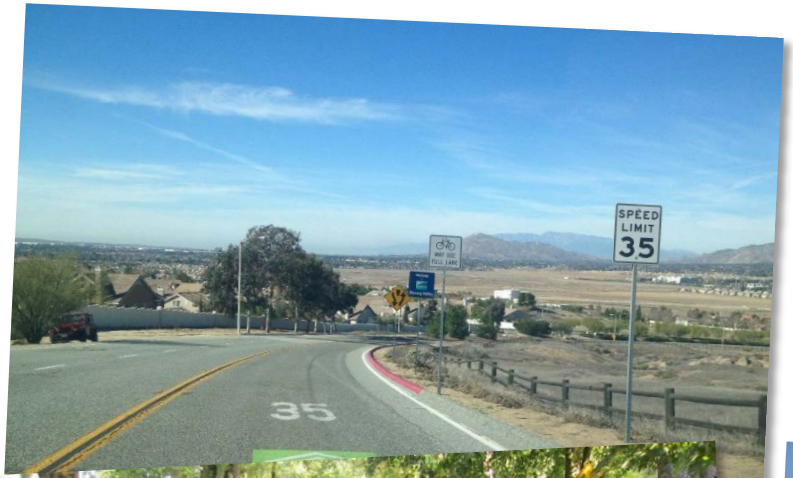
Bicycling Deficiencies

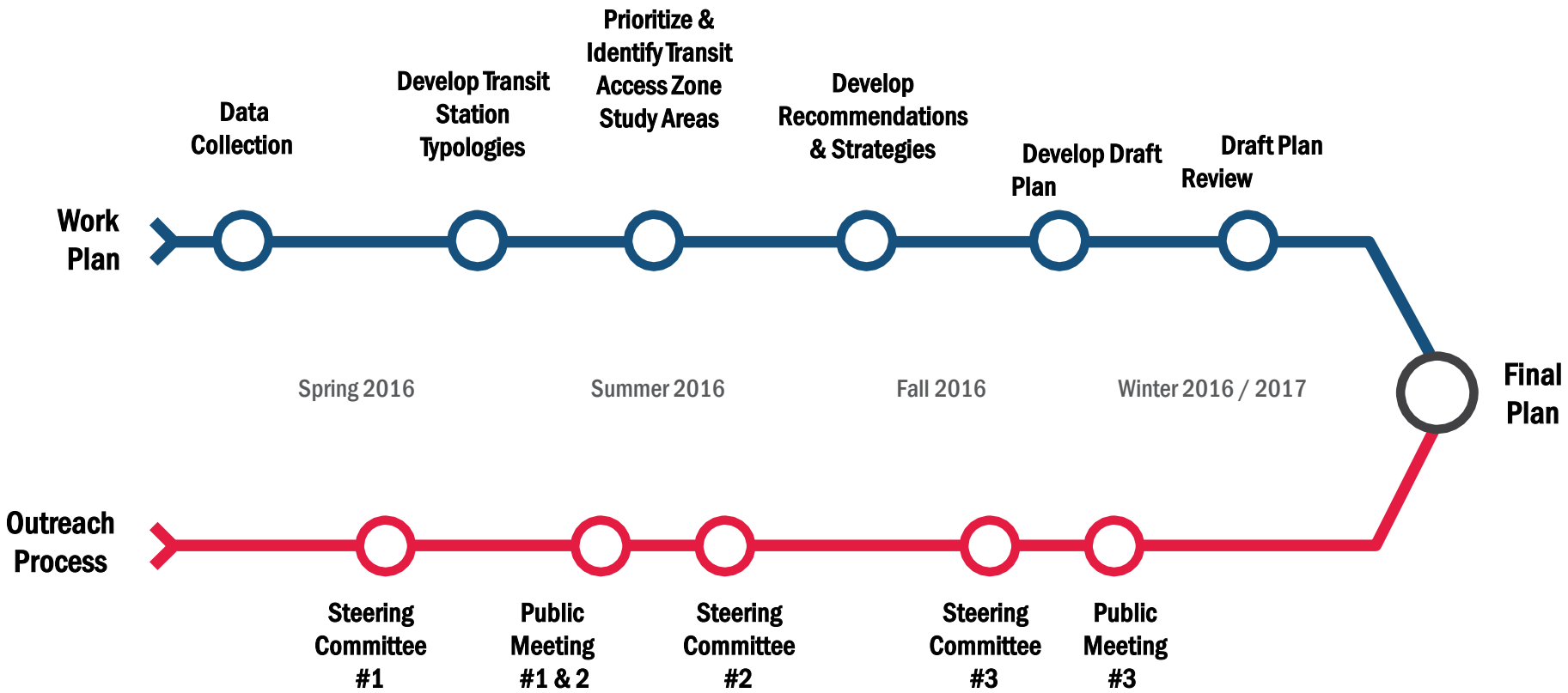
Typical Solutions:

Pedestrian Recommendations

Typical Solutions:

Bicycle Recommendations- Phased and Implementable





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First & Last Mile Mobility Plan

Outreach Survey

RTA Riverside Transit Agency

(951) 565-5002 / RiversideTransit.com
For more information or to complete a survey, visit:
http://www.riversidetransit.com/firstlastmile

Help us improve access to transit throughout western Riverside County. With your feedback, RTA will create a First Mile-Last Mile Mobility Plan to improve access to transit stops across our service area.

What is First and Last Mile?

Whether it's a trip to work, shopping, or a lift home, public transportation rarely stops directly in front of a passenger's origin or destination. That's why transit users often rely on other ways to get to and from their bus stop - like walking, biking or using a wheelchair or skateboard, among other things. These types of connections are referred to as "first and last mile" methods of travel, although actual distances, of course, are different for every person.

Barriers

This study intends to develop a plan to remove barriers found in the first and last mile of accessing existing bus stops to or from the stops. Some of these barriers include:

- Unsafe pedestrian crossings or routes
- Lack of walkways
- ADA accessibility issues
- Lack of bike facilities
- Lack of vehicle drop-off or parking areas
- Inadequate lighting, seating or shade
- Lack of real-time transit information
- Lack of other options to get to the stop

Solutions

Solutions to these barriers can be achieved by providing safe, efficient, and comfortable access to transit facilities, such as:

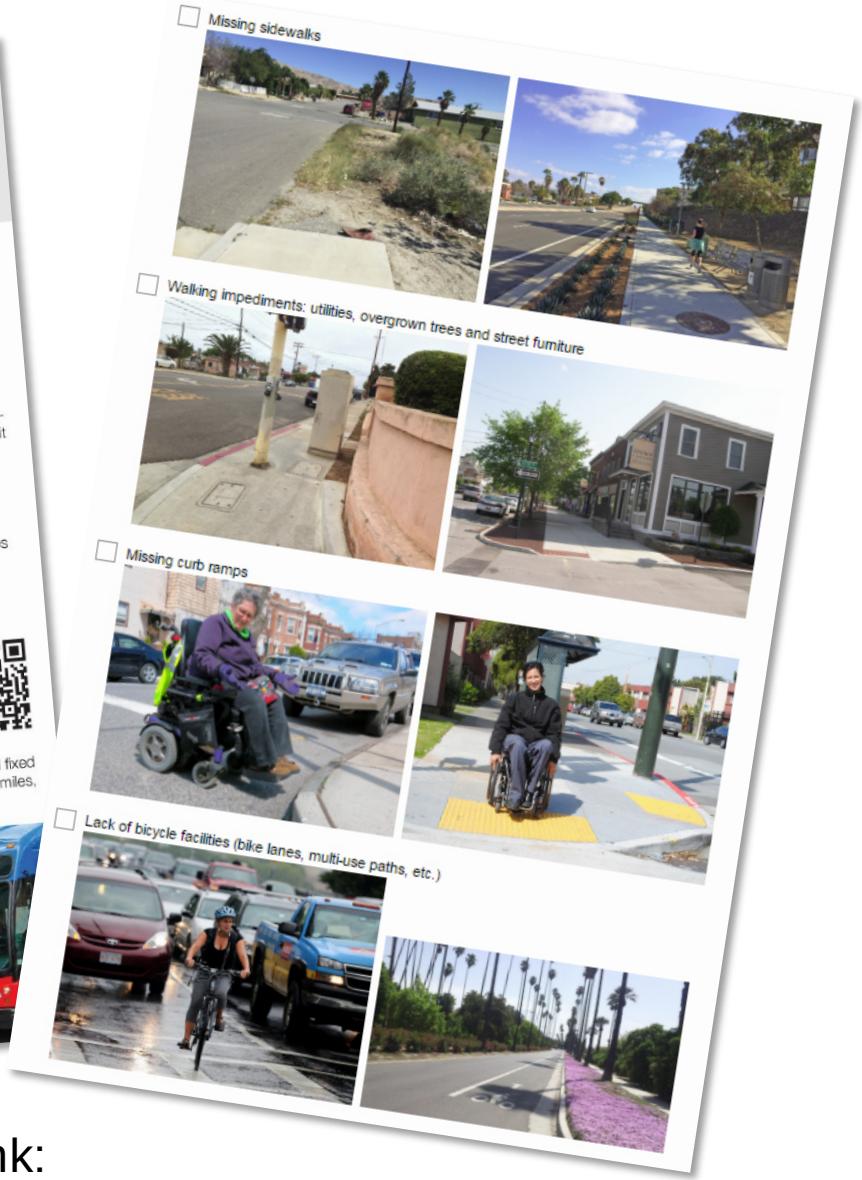
- Improved pedestrian crossings
- Improved and connected walking paths
- Improved ADA access with curb ramps and connected sidewalks
- New bike paths, lanes, routes and storage facilities
- Improved lighting, increased shade and seating
- Improved access to transit information
- Bike share or car share opportunities

Tell Us What You Think and You Could Win $100!

Take the short, 5-minute survey today and be automatically entered into a drawing to win $100! The survey will be available through September 30 at: **https://www.surveymonkey.com/r/RTAFLM**

Who We Are

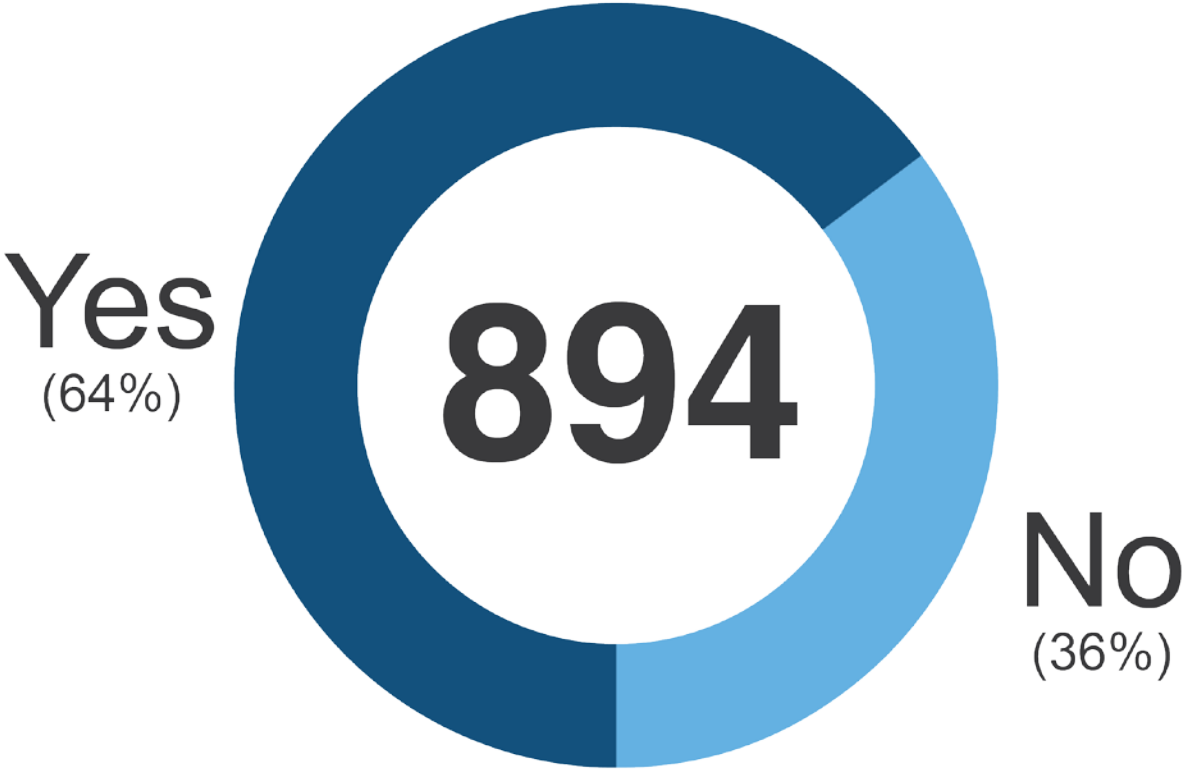
The Riverside Transit Agency provides public transportation for western Riverside County, operating 36 local fixed routes, eight CommuterLink Express routes and Dial-A-Ride service. RTA's service area spans 2,500 square miles, among the largest in the nation.



Please help us by distributing this link:
https://www.surveymonkey.com/r/RTAFLM

What We Heard

Do you experience any problems walking, cycling or accessing transit at a particular location or along a particular route?



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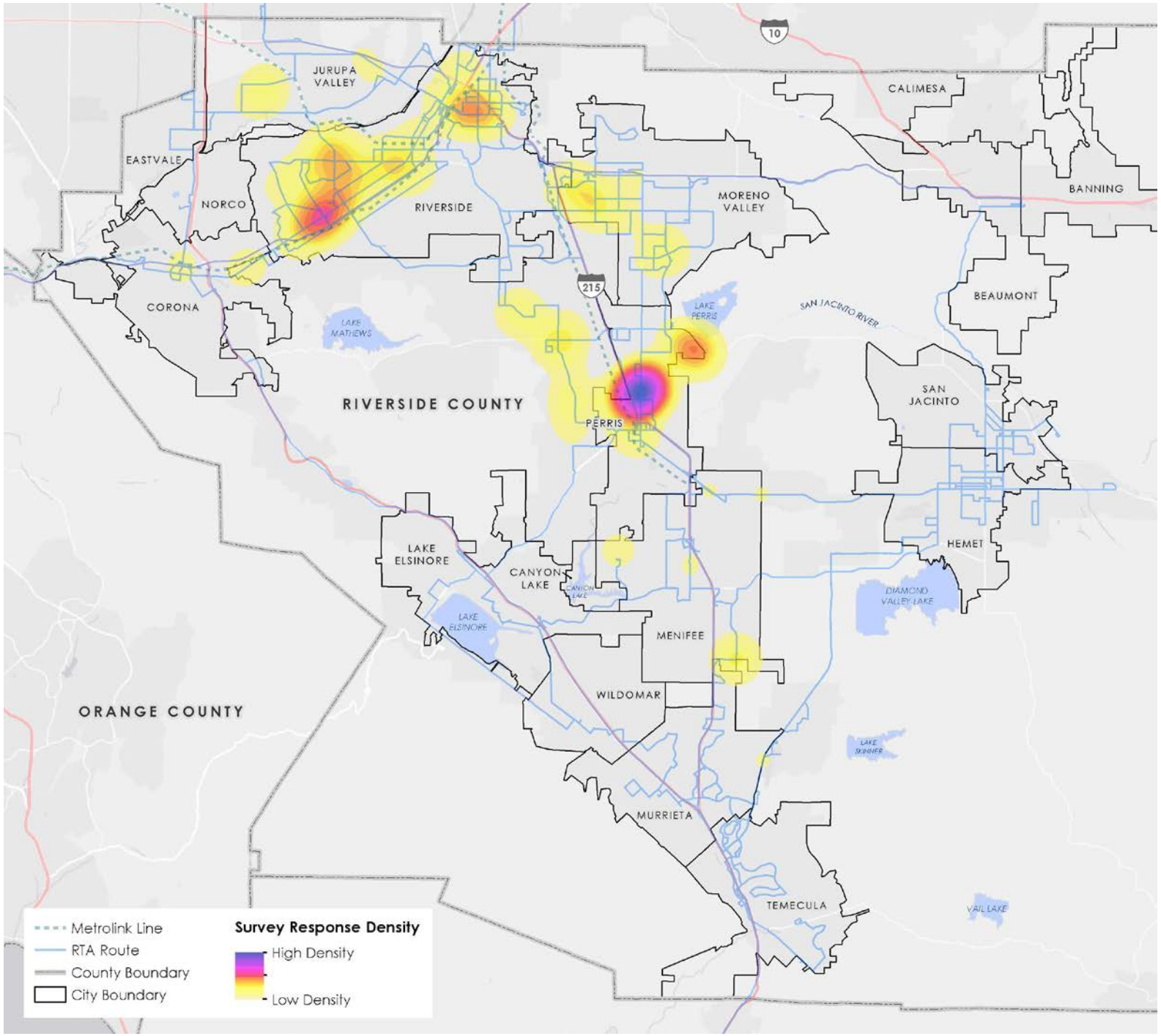
First & Last Mile Mobility Plan

Where We Heard it From



Typology Process

GIS Analysis - Available Datasets

- **Boardings & Alightings**
- **Land Use Mix**
- **Commuting Characteristics (Transit to Work, Walk to Work, etc)**
- **Population and Employment Densities**
- **Street Network**

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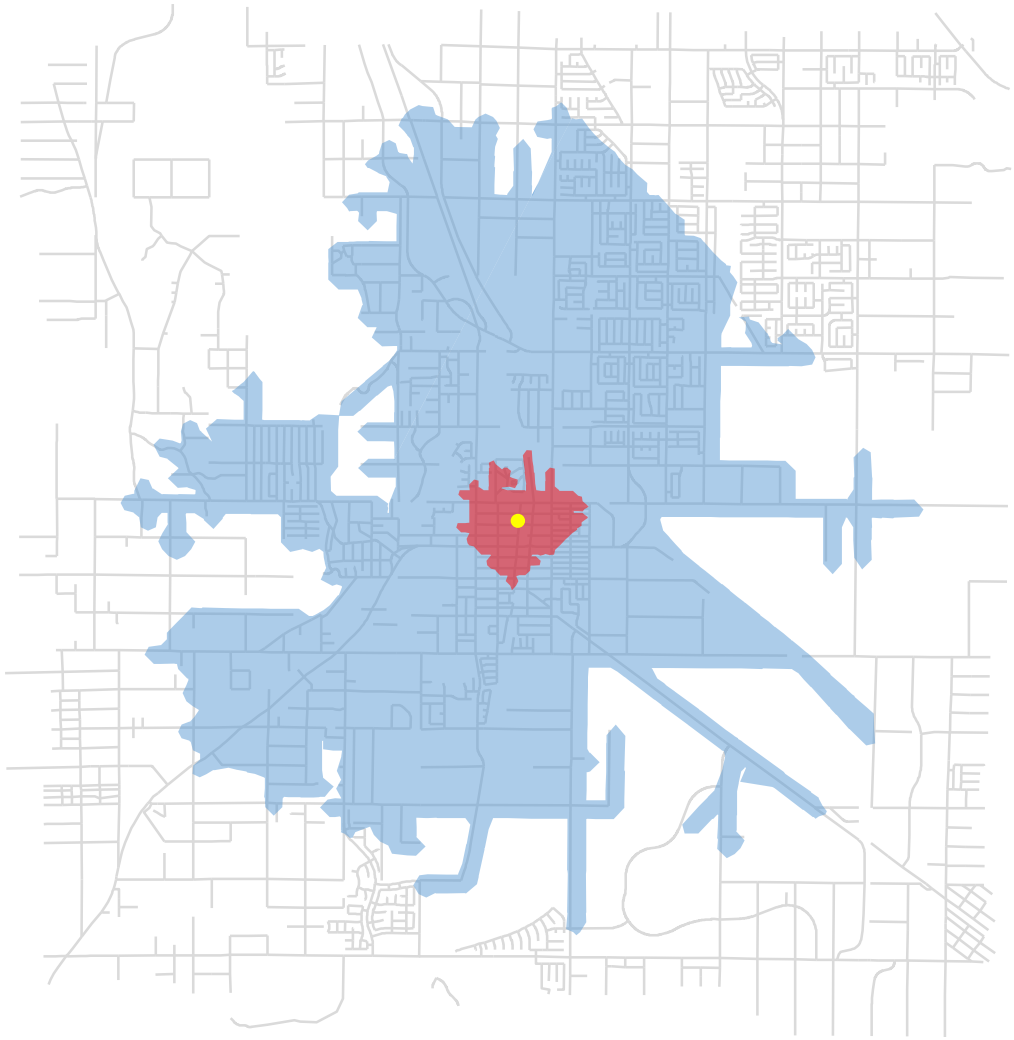
First & Last Mile Mobility Plan

Typology Process:

Station Access Areas



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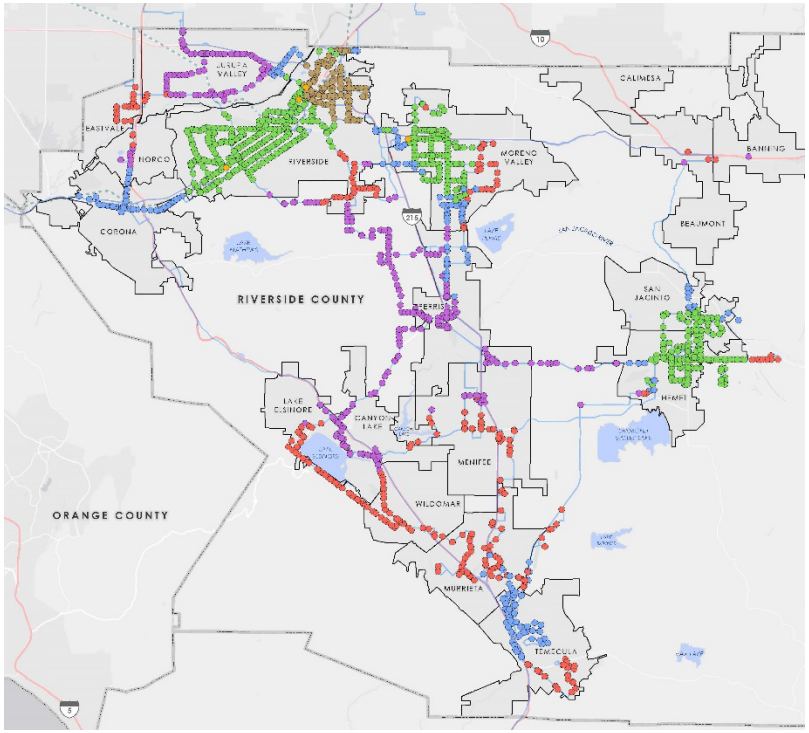
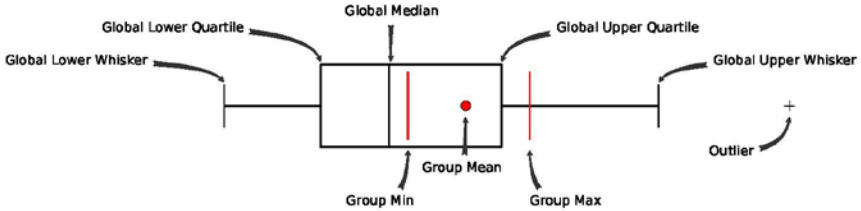
First & Last Mile Mobility Plan

Grouping Analysis:

Identified natural clusters in station area data



Group-Wise Summary



Overall Variable Statistics: Count = 1571, Std. Distance = 1500.2298, SSD = 76.3311

Variable	Mean	Std. Dev.	Min	Max	R2
POPDENS	3557.8880	1500.2298	0.0000	6612.3613	0.9514

Group 1: Count = 350, Std. Distance = 317.4339, SSD = 15.6696

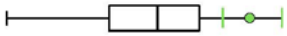
Variable	Mean	Std. Dev.	Min	Max	Share
POPDENS	3429.3245	317.4339	2908.0778	3981.8637	0.1624

Group 2: Count = 324, Std. Distance = 317.4909, SSD = 14.5108

Variable	Mean	Std. Dev.	Min	Max	Share
POPDENS	2386.4026	317.4909	1805.1739	2901.3702	0.1658

Group 3: Count = 239, Std. Distance = 365.8947, SSD = 14.2166

Variable	Mean	Std. Dev.	Min	Max	Share
POPDENS	5832.9232	365.8947	5194.7145	6612.3613	0.2144



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First & Last Mile Mobility Plan

Typology Process

Figure 1: First Mile Last Mile Station Typologies

	Urban Core	Core District	Suburban	Rural	Commercial District	Industrial and Business Park
Description:	• Highest number of activity centers • Highest population & employment densities • Low auto-centric development patterns • Existing walking facilities • Grid street network	• Located just outside of urban core • Moderate densities • More auto-centric development connected by high speed arterials / highways	• Moderate to low density single family residential development • Non-linear street patterns • Disjointed pedestrian facilities	• Remote or underdeveloped area outside of the city or town • Minimal or non-existent pedestrian facilities • Low density development patterns	• Commercial development distributed along a major corridor or concentrated within an area • Includes employment, shopping and community services • Destinations surrounded by high quantities of parking	• Facilities typically utilize large areas of land which limits the diversity of land uses
Typical Transit Service:	Metrolink / Sub-regional, Community, CommuterLink	Metrolink / Sub-regional, Community, CommuterLink	Sub-regional, Community	Sub-regional, Community	Sub-regional, Community	Regional, Community
Number of Stations:	**14**	**201**	**882**	**87**	**229**	**158**

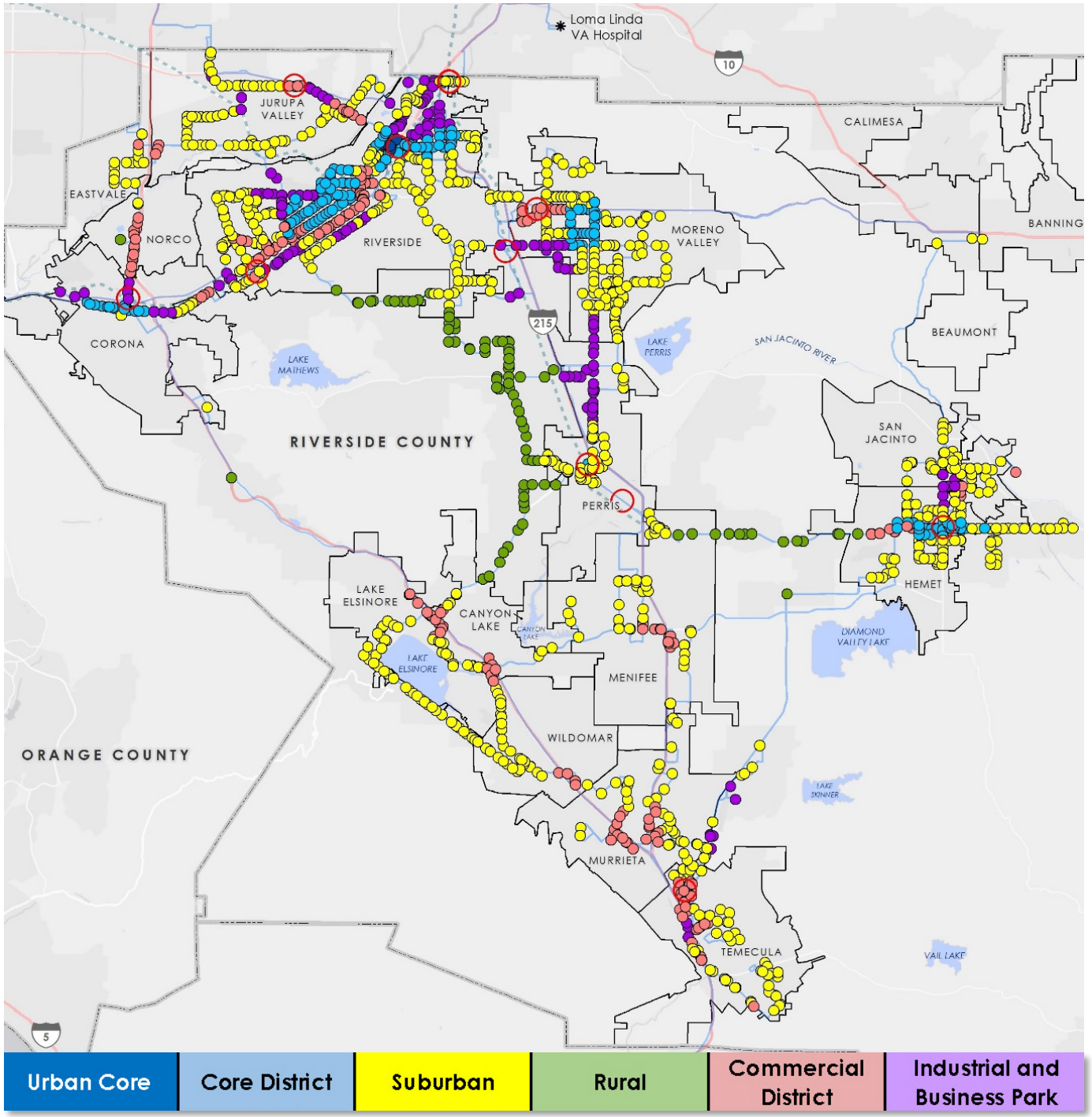
Riverside Transit Agency
First & Last Mile Mobility Plan

Typology Process

Figure 2: Characteristics Found - First Mile Last Mile Station Typologies

	Urban Core	Core District	Suburban	Rural	Commercial District	Industrial and Business Park
General Characteristics						
Frequency of Transit:	10-30 min	30-45 min	30-45 min	45-120 min	30-45 min	30-45 min
Boarding / Alighting Levels:	Very High	High	Moderate	Low	Low	Low
Land Use Mix. Number of transit supportive land uses within 3-mile network. Can include *Mixed-use, Multi-Family, Office, Commercial, Schools, Institutional or Industrial*	High (5+)	Moderate (3-4)	Low (1-2)	Low (1-2)	Low (1-2)	Moderate (3-4)
Commuting Characteristics						
Lack of Vehicle Ownership:	High	High	Moderate	Low	Moderate	High
Non-Motorized Commuter Trips: Walking and bicycling to work	High to Moderate	High to Moderate	Moderate	Low	Low	Moderate
Public Transit to Work:	Moderate (>2%)	Moderate (>2%)	Low (1-2%)	Low (1-2%)	Low (1-2%)	Moderate (>2%)
Percentage of Students: (High School & College)	High	Moderate	Moderate	Moderate	Moderate	High
Population Characteristics						
Employment and Population Densities:	Very High	High	Low to Moderate	Low	Moderate	Moderate to High
Street Network Characteristics (Averages)						
Block Length (Feet):	Short	Short	Moderate	Long	Moderate	Moderate
Average Station Characteristics						
Sample Stations:	Downtown Riverside	Downtown Corona, Perris Transit Station, Florida Corridor (Hemet), Riverside	Beaumont, Banning, Hemet, San Jacinto, Murrieta, Lake Elsinore, Menifee, Sun City, Wildomar, Perris, Corona, Eastvale, Jurupa Valley	Mead Valley, North Beaumont, Gilman Springs Road, Perris (South)	Moreno Valley Mall, Hemet Valley Mall, Temecula Town Center, Old Town Temecula	March JPA, Temecula City Office & Business Park, Perris Blvd (Perris/Moreno Valley), Arlington Ave Riverside Airport, Hunter Park Riverside
Number of Stations:	**14**	**201**	**882**	**87**	**229**	**158**

Typology Results



Pilot Stations

- Urban Core
- Core
- Suburban
- Rural
- Commercial
- Industrial and Business Parks
- Metrolink Line
- Regional Destination
- RTA Route
- City Boundary

Final Pilot Study Stations

Pilot Stations

- Urban Core
- Core
- Suburban
- Rural
- Commercial
- Industrial and Business Parks

Pilot Station Transitshed

- Urban Core
- Core
- Suburban
- Rural
- Commercial
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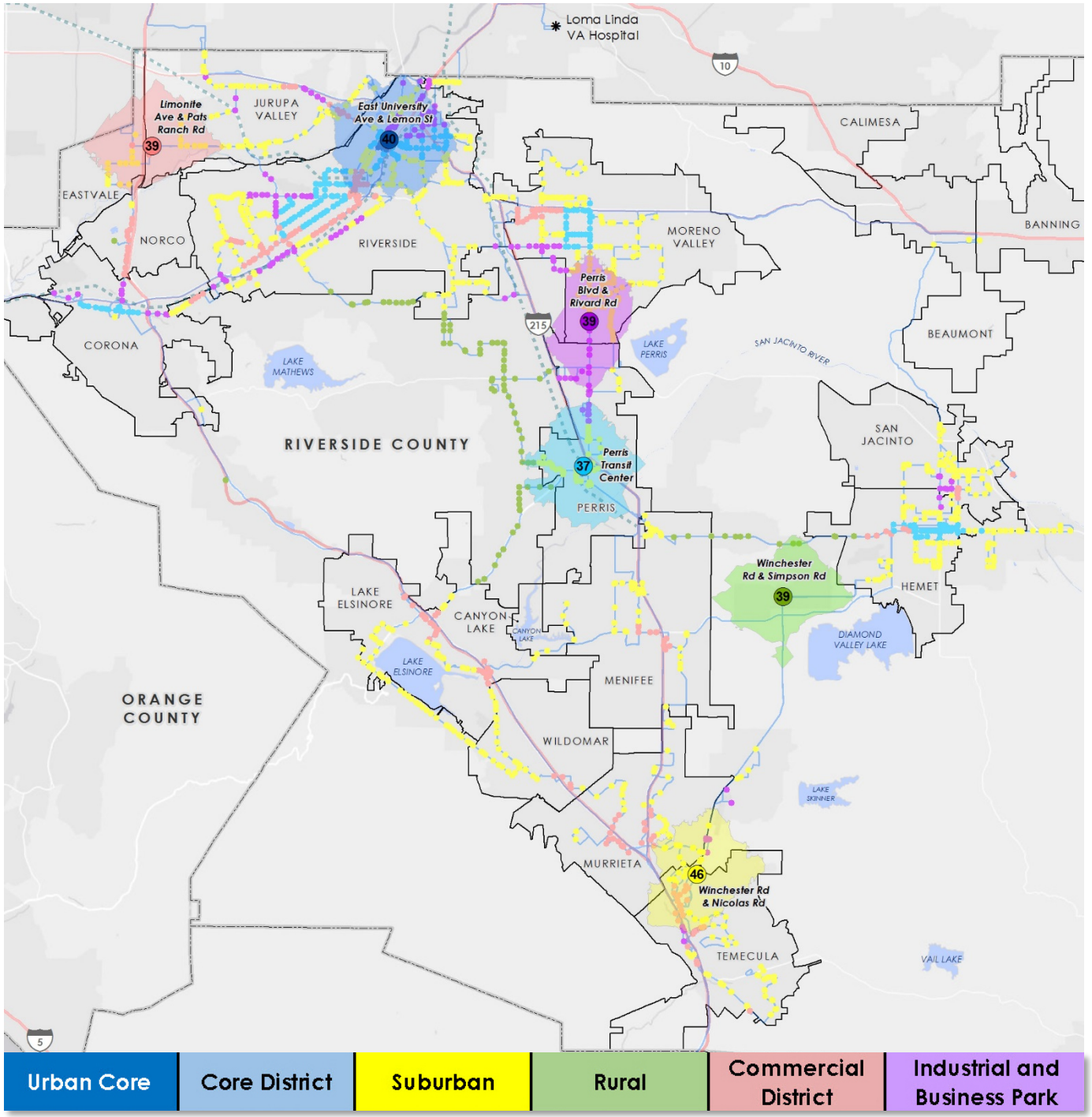
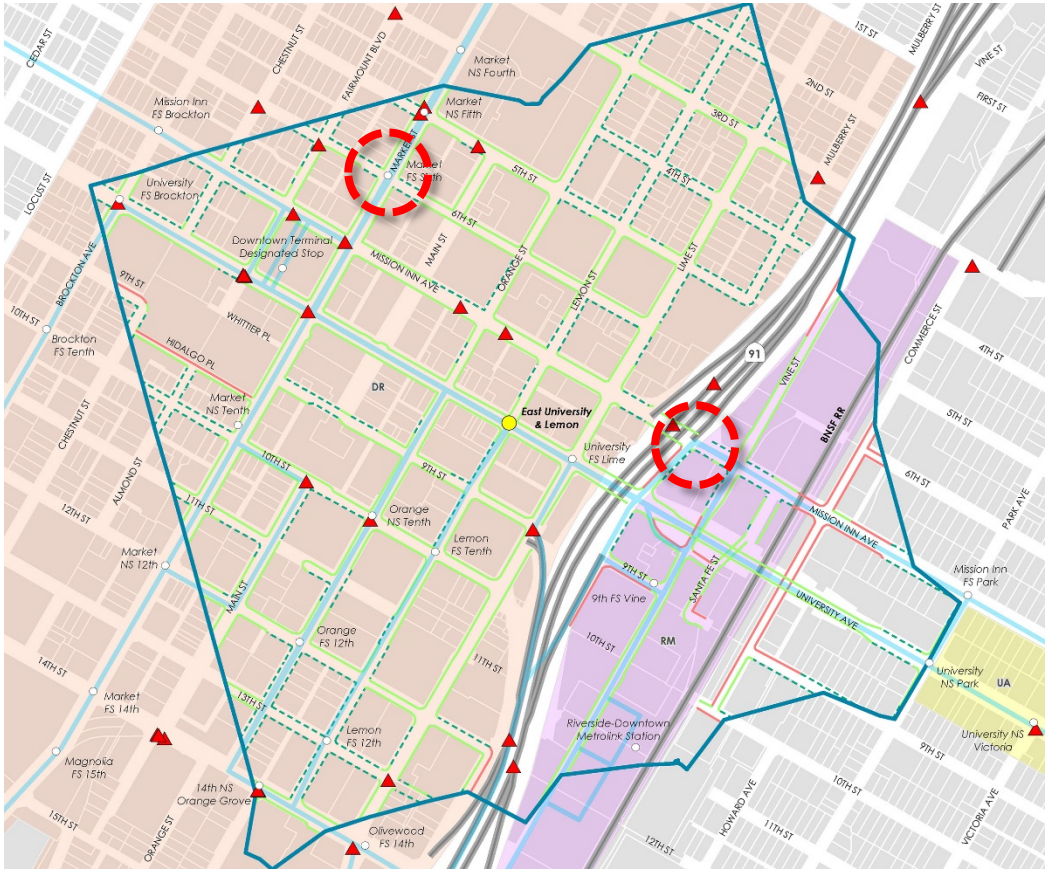
RTA staff will work with Hemet and San Jacinto directly with these cities on their specific plan projects to include a First Mile Last Mile element.



Final Pilot Study Stations

Urban Core

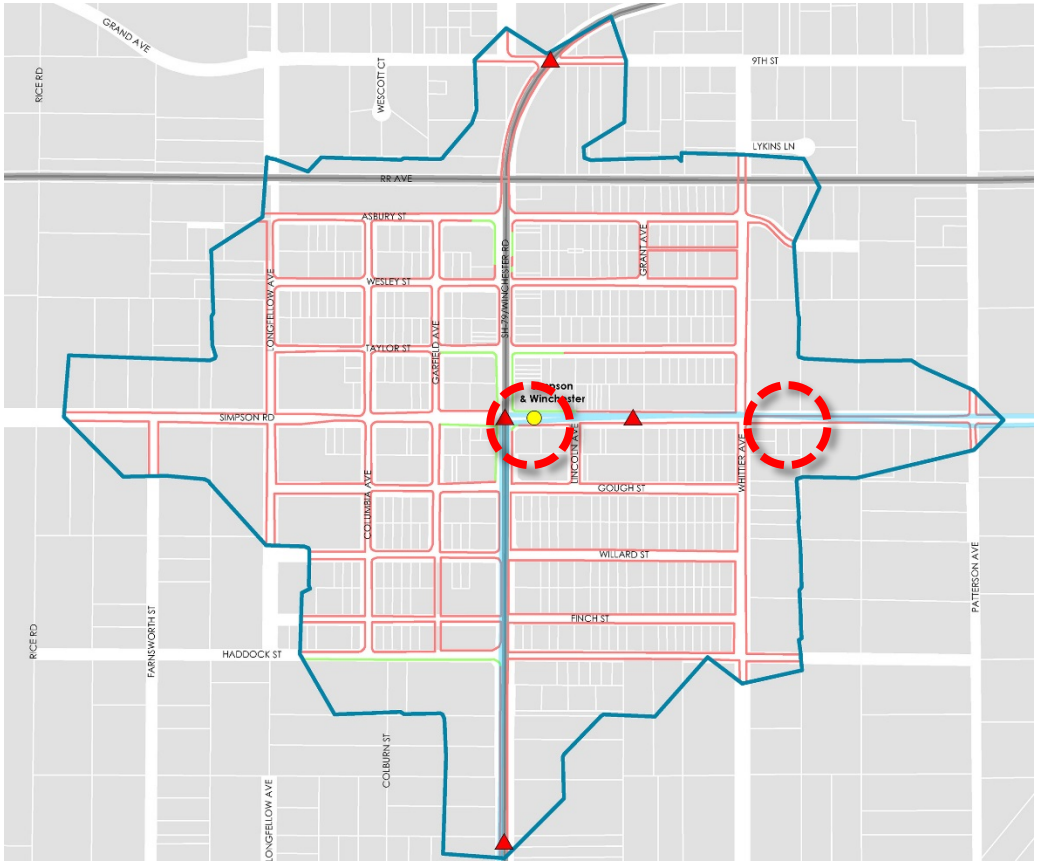
Station: East University Avenue and Lemon Street
Location: City of Riverside
Transitshed Coverage: City of Riverside, Jurupa Valley
Status: Highest ranking Urban Core station



Final Pilot Study Stations

Rural

Station: Winchester Road and Simpson Road
Location: Riverside County
Transitshed Coverage: Riverside County - Winchester, Hemet
Status: High ranking rural station, low density residential, less stops and isolated, and typical of rural development patterns. Covers eastern edge of RTA's service area.



Questions?

Joe Punsalan
joe@ktua.com

Diana Smith
dianas@ktua.com