1st Avenue: River Road to Grant Road

1st Avenue Citizens' Task Force Meeting

10/17/2024

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1ST AVENUE
PUBLIC OUTREACH

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Public Outreach Update

Survey

325 responses

In-person open house

30 attendees

Virtual open house

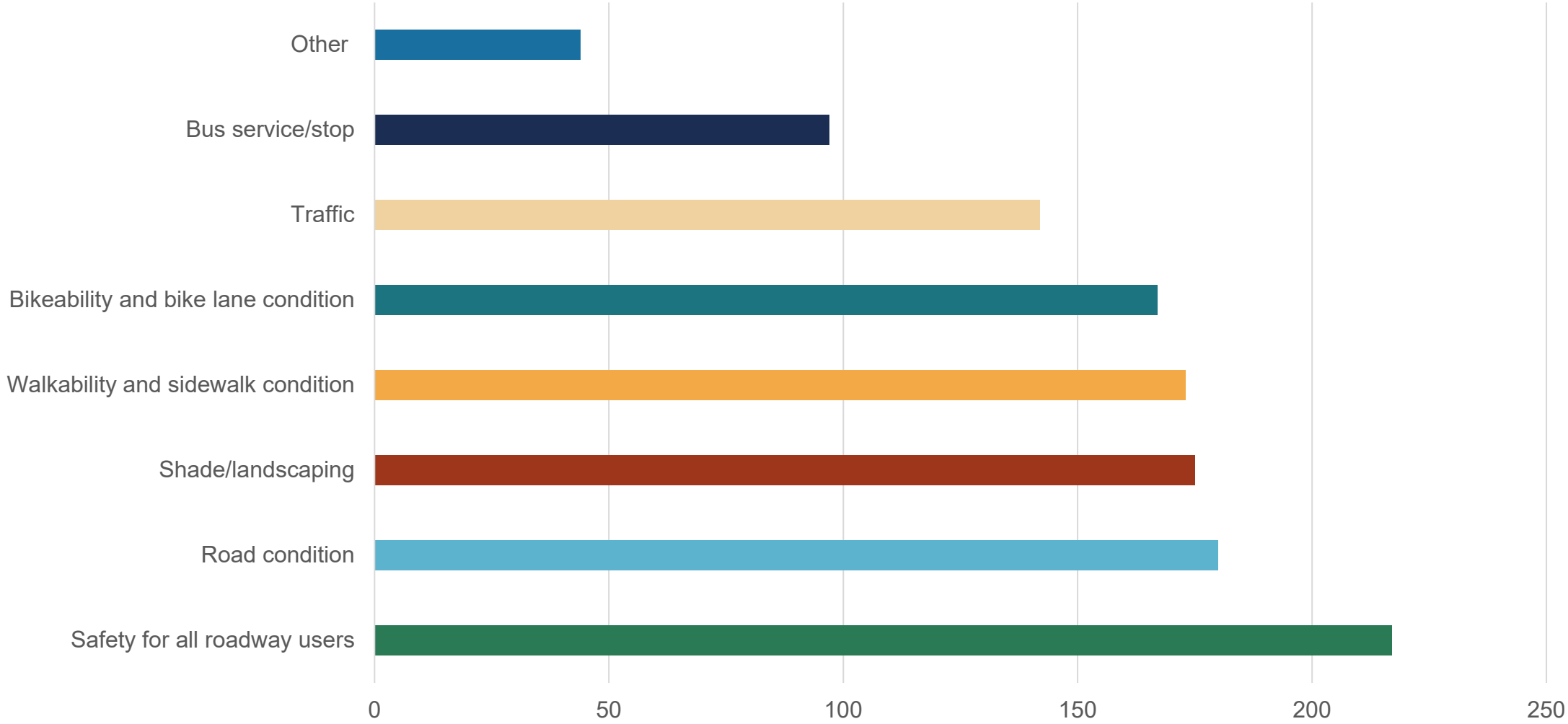
13 attendees

Pop-up events

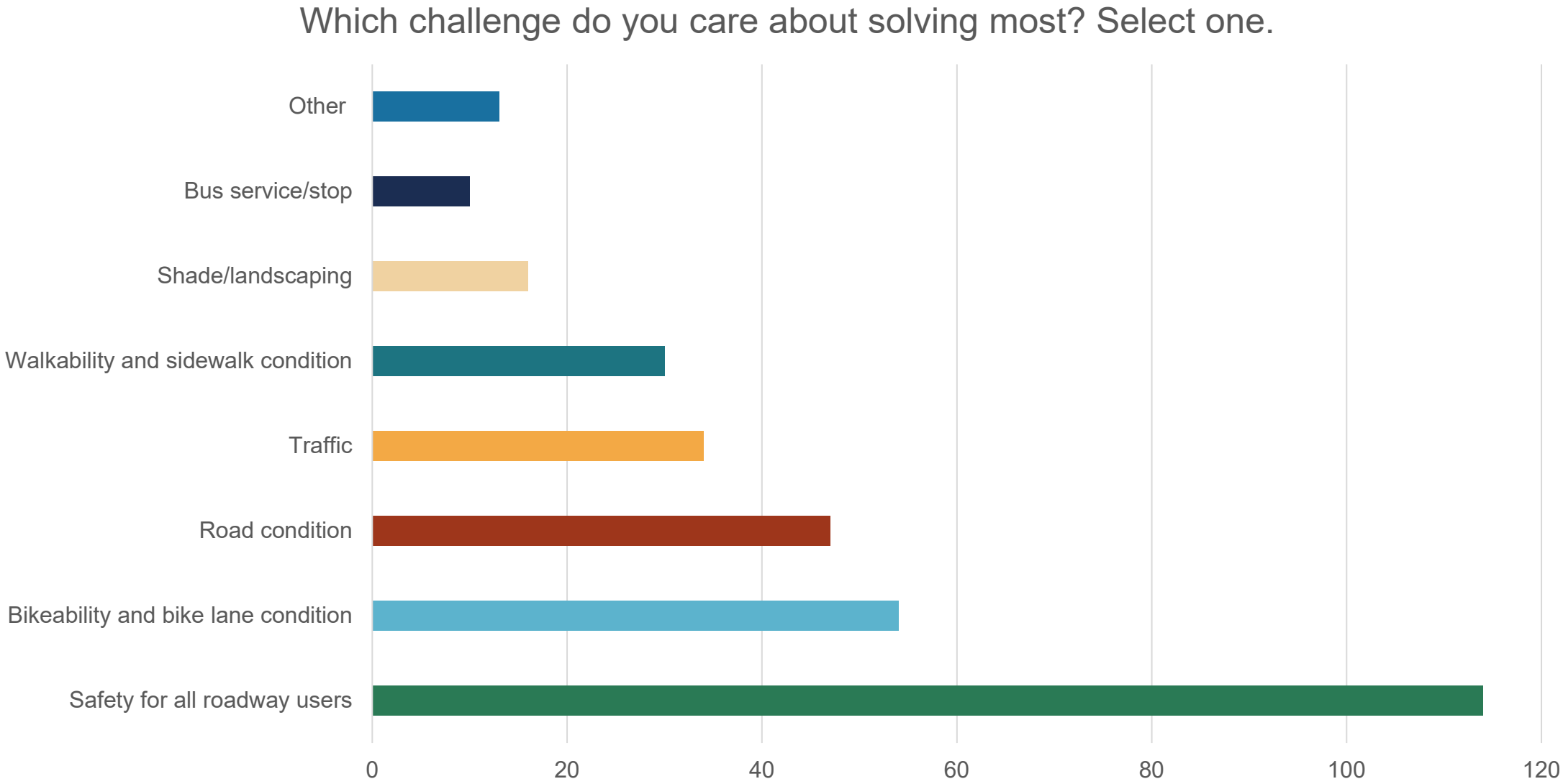
- Heirloom Farmer's Market | October 20
- Woods Memorial Library | October 23
- Presta Coffee | TBD
- Amphi Cyclovita | December 7

Preliminary Results

What challenges do you have as a corridor user? Select all that apply.

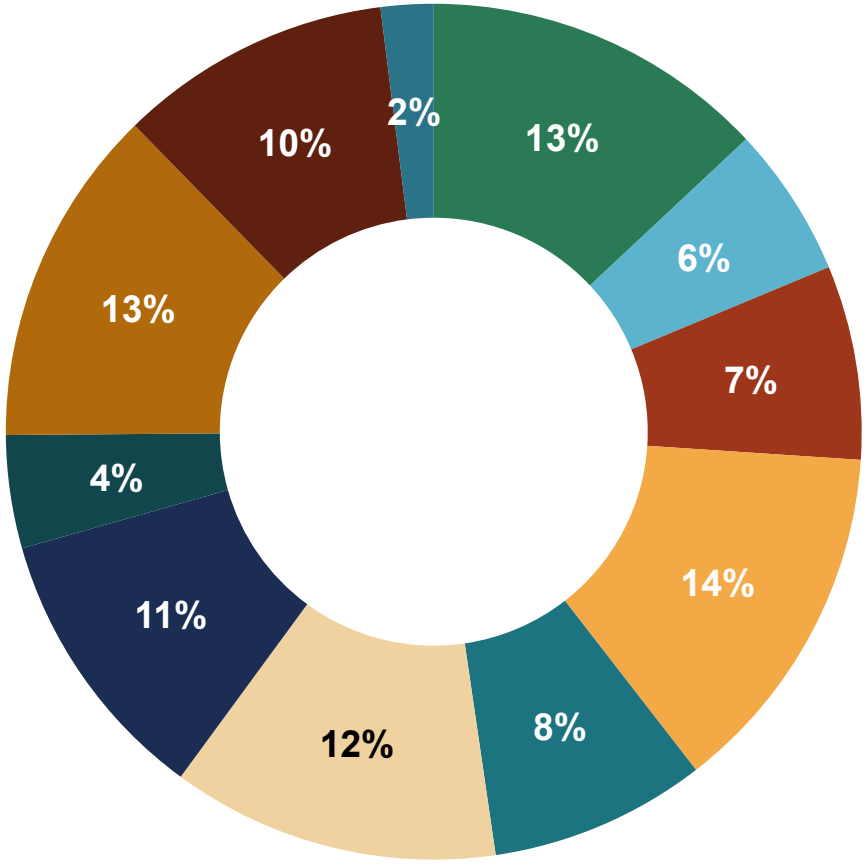


Preliminary Results



Preliminary Results

Which challenge do you care about solving most? Select one.



- **Better bike lanes (including protected bike lanes)**
- Better drainage
- Better lighting
- **Comfortable and accessible sidewalks**
- Improved bus service and stops
- Improvements at major (signalized) intersections for people walking and biking
- More places to safely cross the street
- More turn lanes at intersections
- **More trees and landscaping**

1ST AVENUE
Improvement
Project

Existing Conditions Traffic Operations and Mobility Analysis

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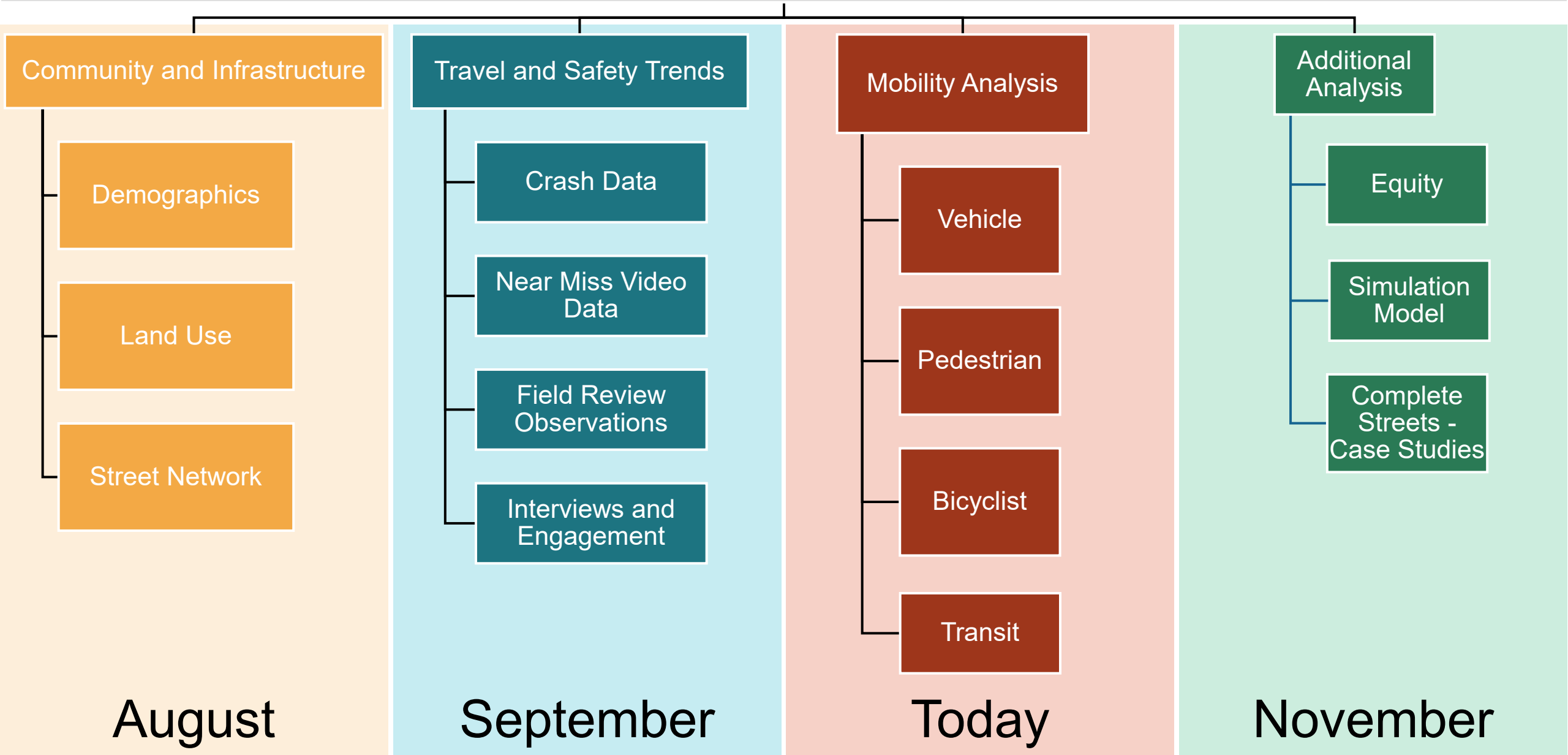
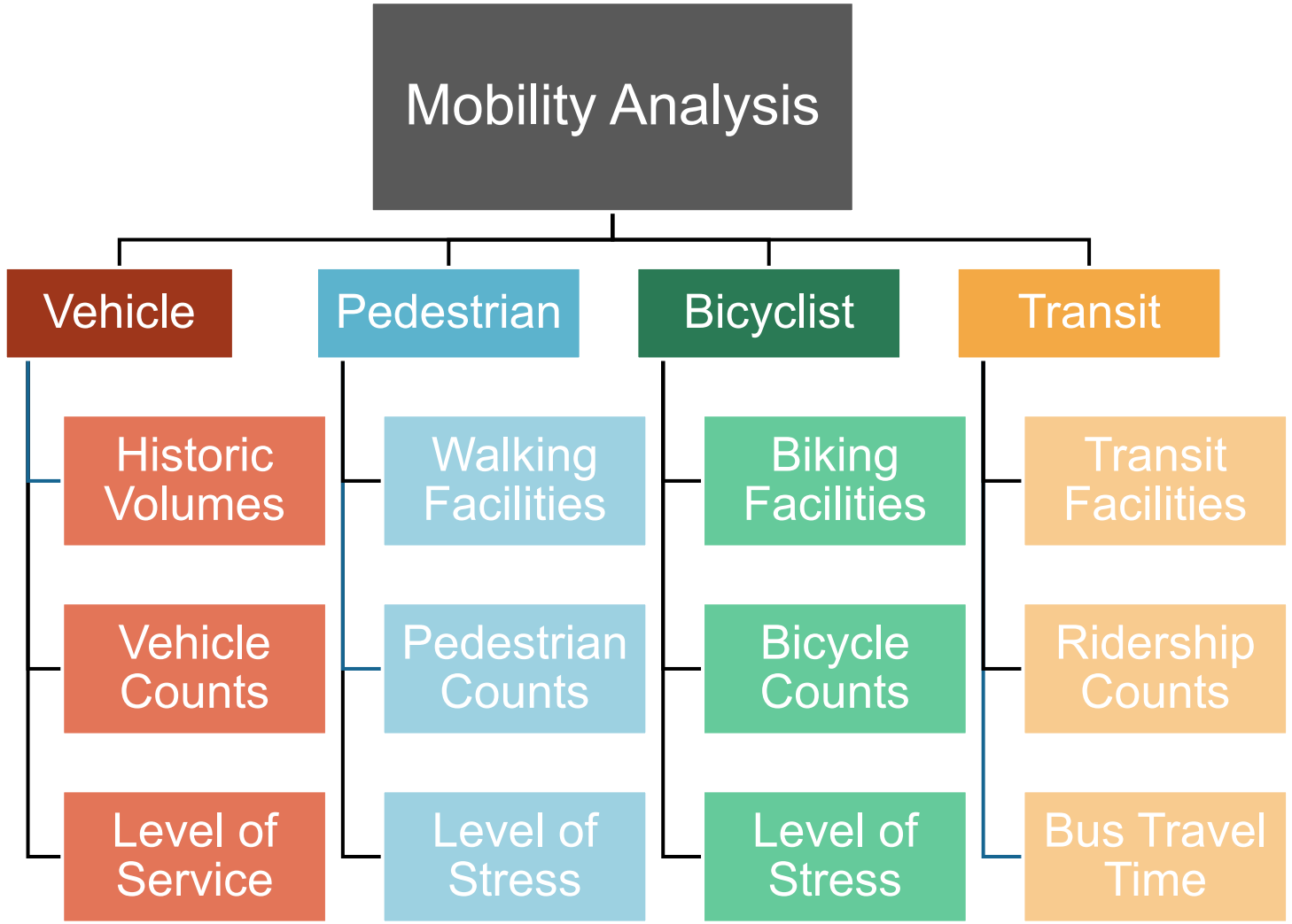
1st Avenue DCR Data Analysis



How Can We Assess Corridor and Intersection Operations?



1ST AVENUE
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1. TRAVEL BEHAVIOR

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Replica Data

Trips by day:

- **Trips taken during weekday**

  Replica considers Thursday as the typical weekday
- **Trips taken during weekend**

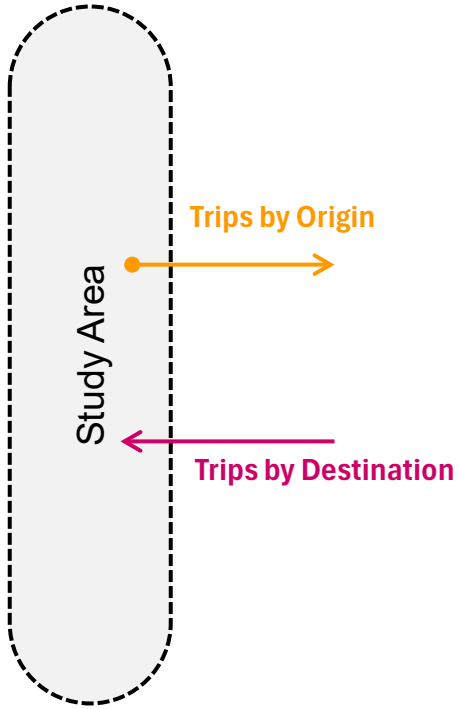
  Replica considers Saturday as the typical weekend day

Trips by location:

- **Trips by Origin**

  Trips originating in the study area
- **Trips by Destination**

  Trips ending in the study area



The data presented here was obtained from Replica.

Modes & Purposes

Trip Modes:

walking

biking

public transit

auto

This includes private auto trips (driver and passenger trips) and on-demand auto trips (Uber, Lyft, etc.)

commercial

This includes trips made by medium and heavy trucks

other modes

Trips made by all other modes

Trips Purposes:

Getting Home

All trips that end at a person's home.

Getting to Work

All trips that end at a person's workplace (including commute trips and things like a trip back from lunch).

Getting to School

All trips to a person's school or college.

Travel for Daily Needs

All social trips and trips to places where people shop, dine, and run errands.

Getting Outside

All trips to recreational destinations like parks and trailheads (this does not include trips without a destination, like walking the dog or jogging).

Other Purposes

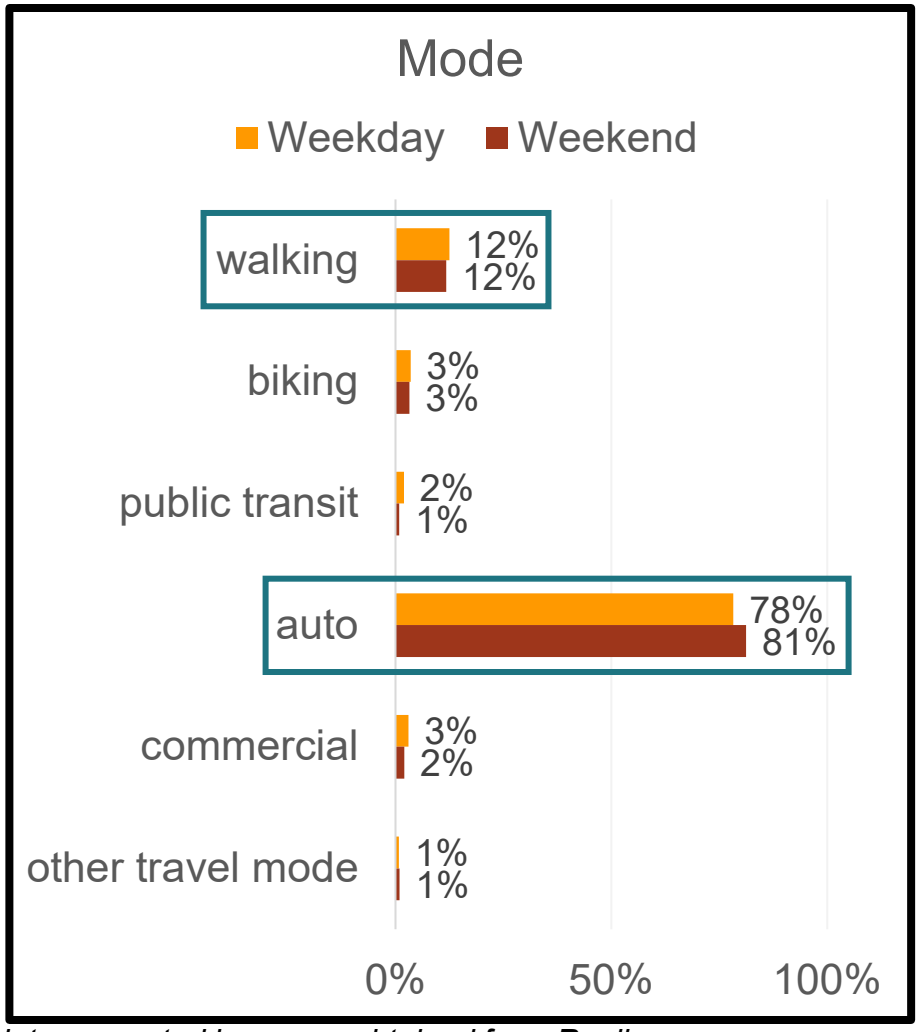
A catch-all category for all other trips not assigned any of the purposes listed

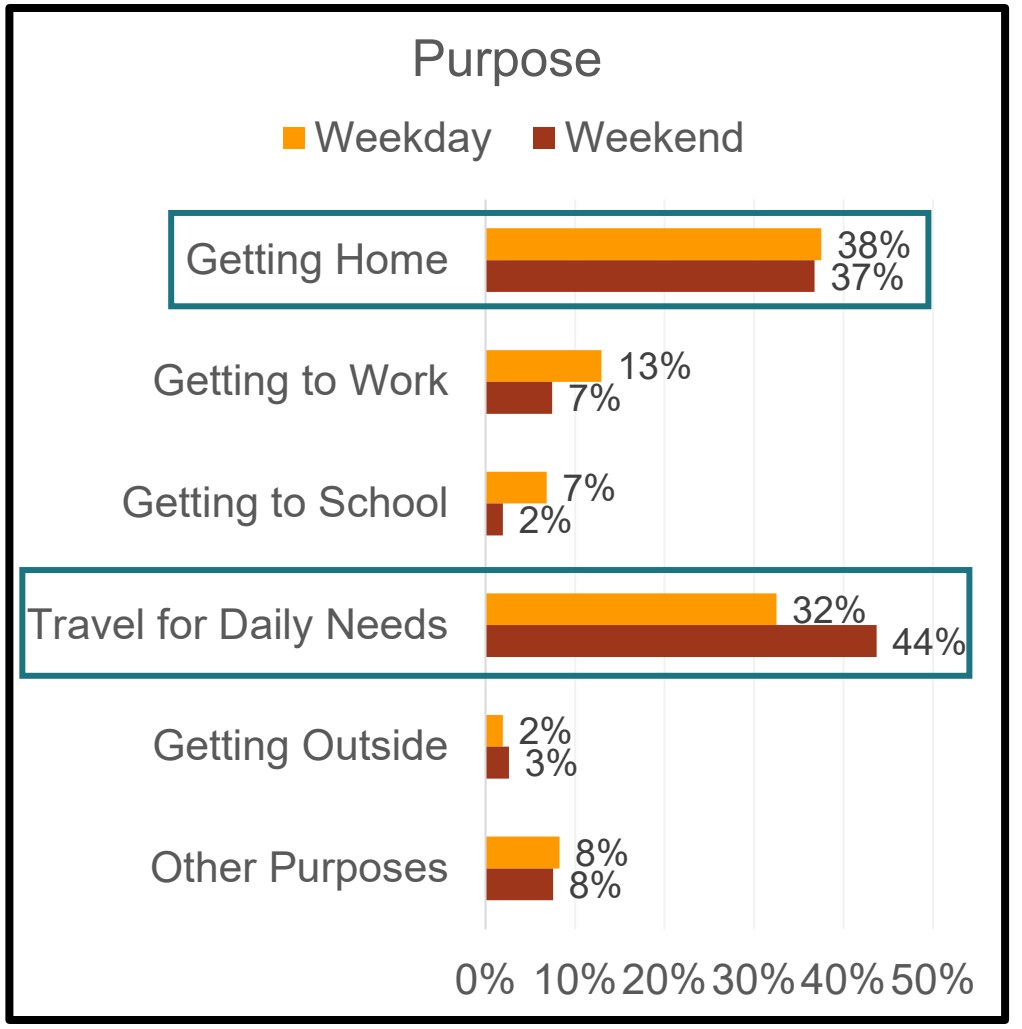
The data presented here was obtained from Replica.

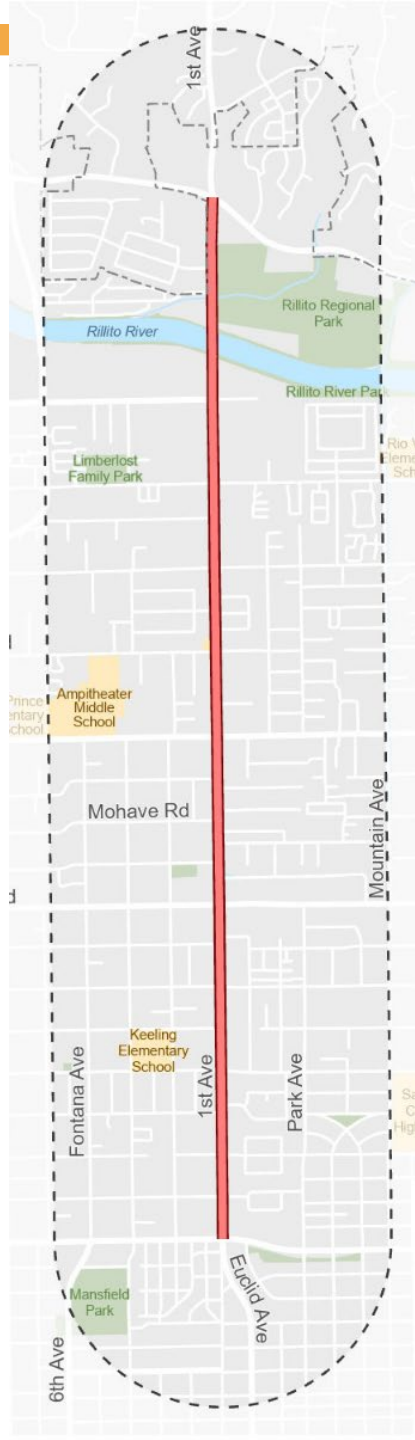
Study Area Trips

Weekday: approximately 82,000

Weekend: approximately 76,000

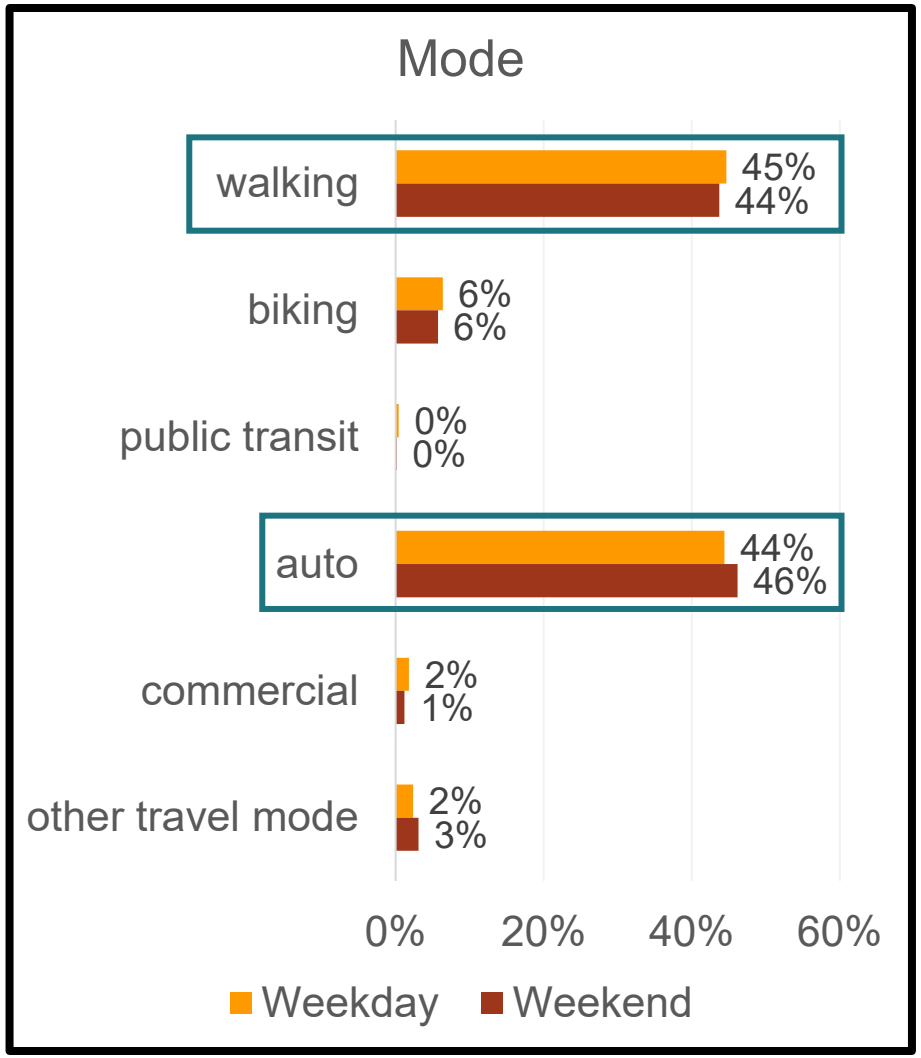


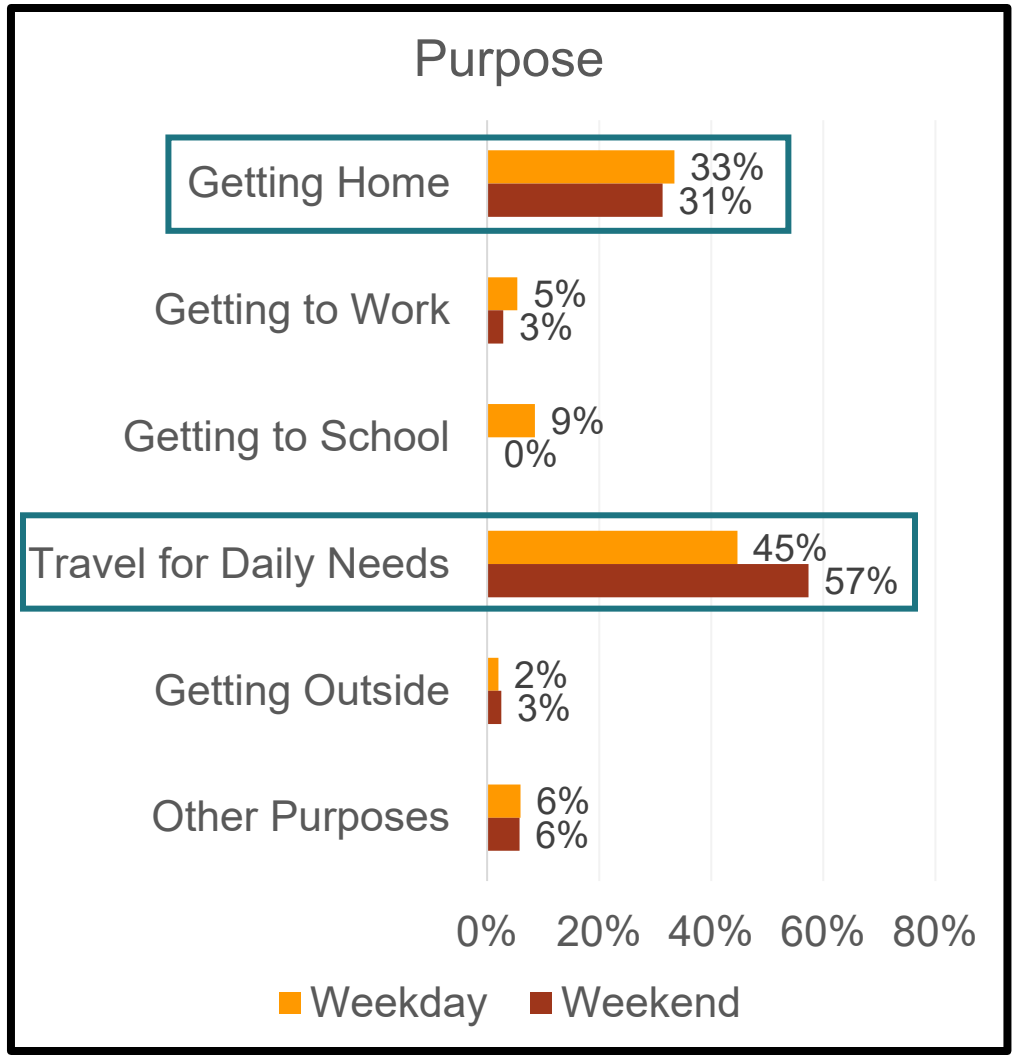


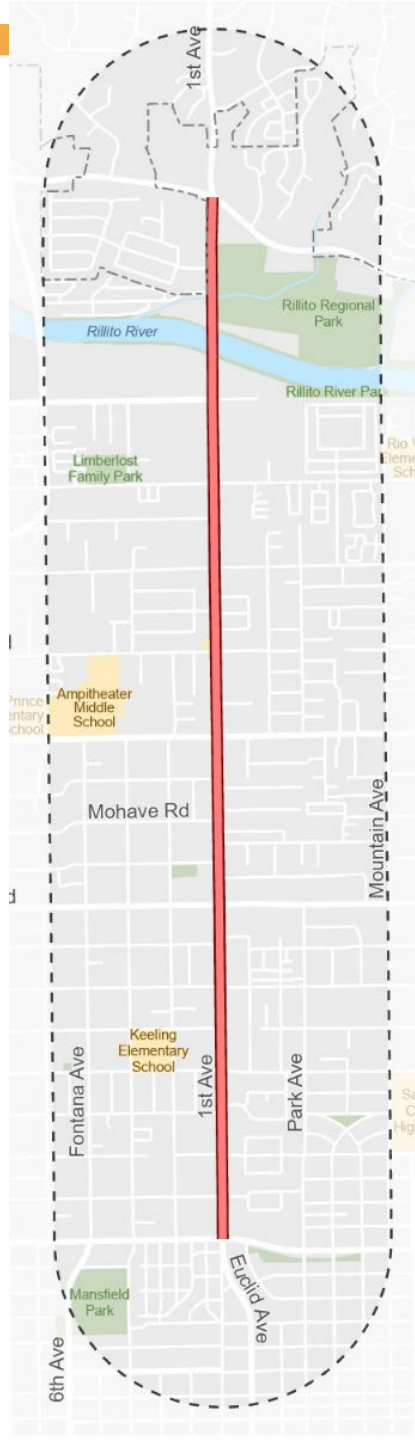


The data presented here was obtained from Replica.

Trips Under 1 Mile







The data presented here was obtained from Replica.

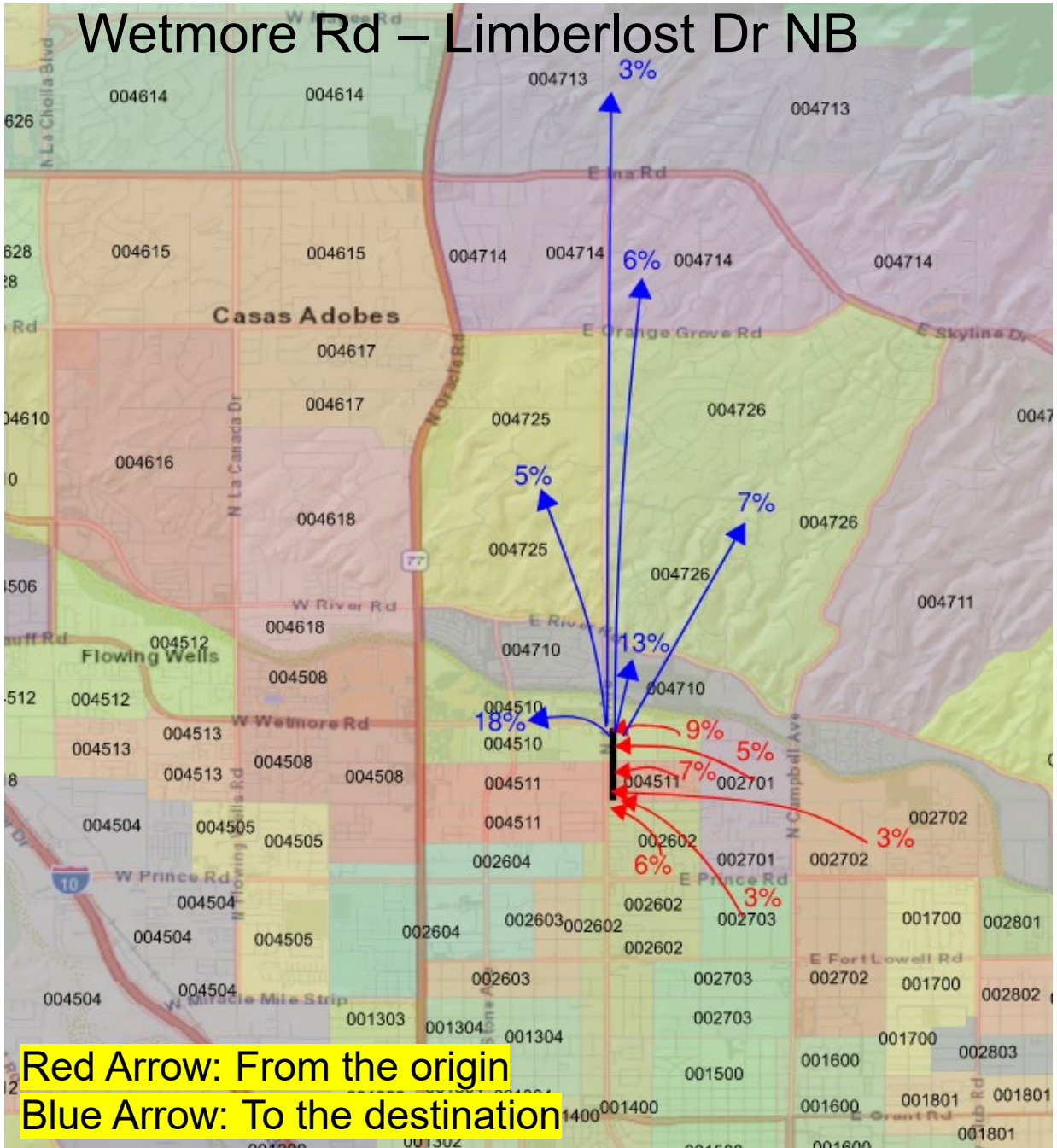
Walking & Biking Trips

- **Walk trips**
  - Weekday: approximately 10,500
  - Weekend: approximately 8,900
  - More than 70% are less than 1 mile long
- **Bike trips**
  - Weekday: approximately 3,000
  - Weekend: approximately 2,500
  - More than 80% are less than 5 miles long

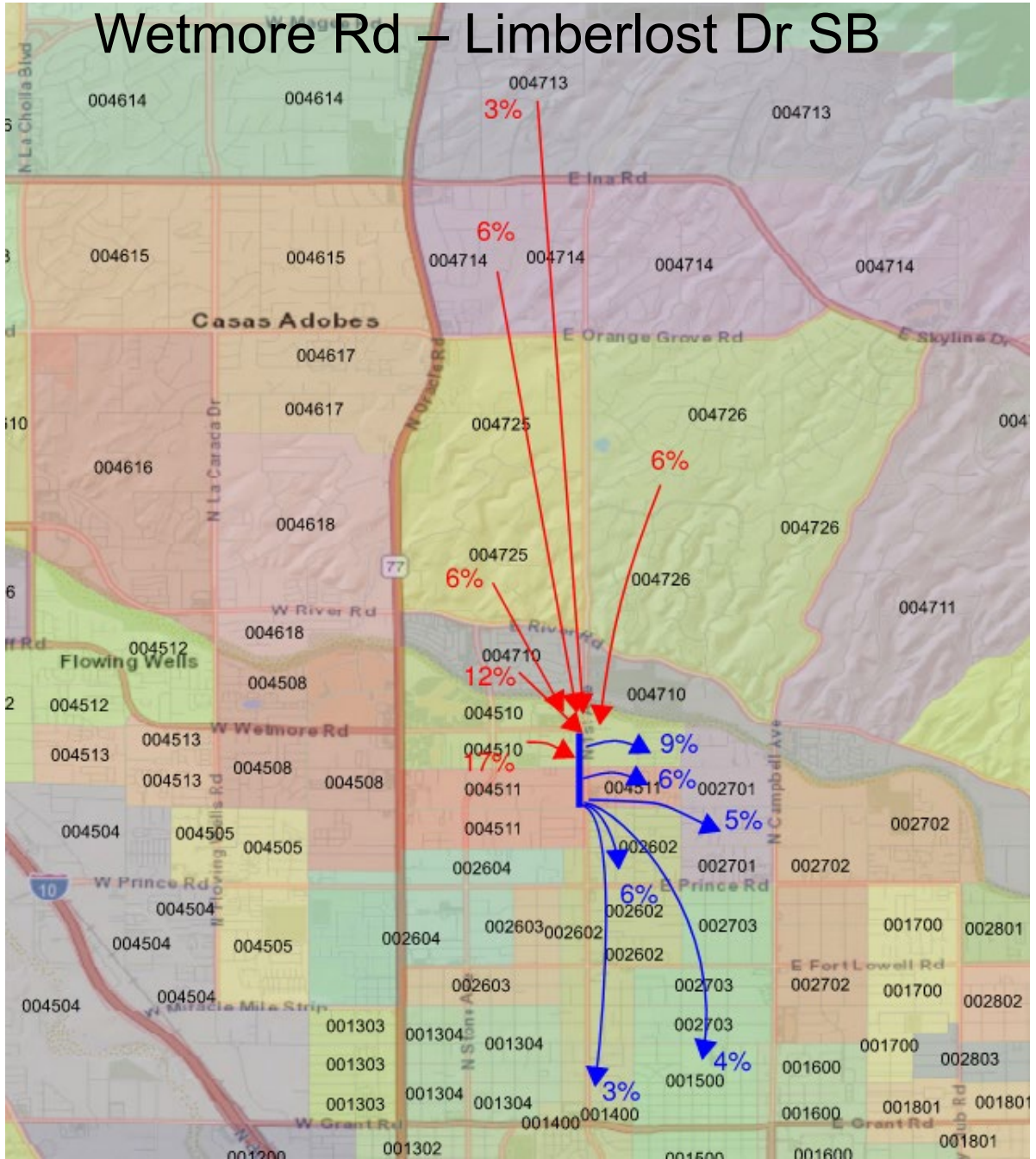
- **Daily needs** is the most common trip purpose.
  - Weekdays: 50%
  - Weekends: 63%
- Other common trip purposes: home, school, and work.

The data presented here has a lower trip volume and hence it has limitations. Replica classifies these results as having medium certainty.

Wetmore Rd – Limberlost Dr NB



Wetmore Rd – Limberlost Dr SB



Replica Data Findings:

- Most trips on 1st Avenue between Wetmore Rd and Grant Rd start and end along 1st Avenue.
- People from north of River Road are more likely to use 1st Avenue than those from south of River Road.
- Most trips are relatively short.
- Traffic is busier in the south than in the north

2. DRIVING TODAY

Historical Daily Volumes

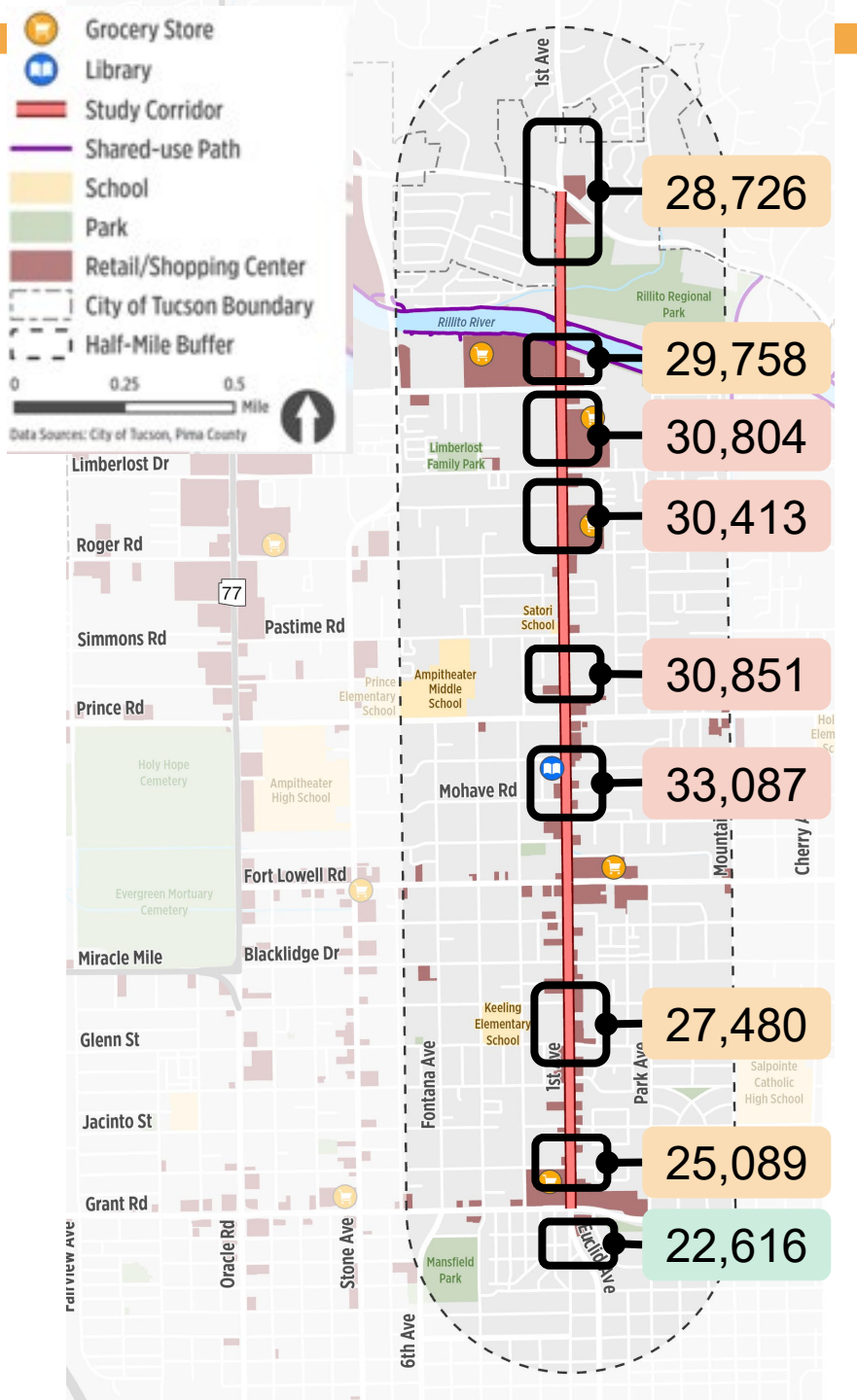
- 15% decrease in vehicle volumes since 1998
- Currently approximately 30,000 vehicles per day

Year	Daily Volume	% Change
1998	33,290	-
2000	34,116	+1.2%
2003	35,500	+1.3%
2006	35,078	-0.4%
2010	35,525	+0.3%
2012	30,616	-7.2%
2015	31,675	+1.1%
2018	31,258	-0.4%
2024	28,178	-1.7%

The data presented here was obtained from Pima Association of Governments and counts collected for this project.

Existing Daily Volumes

- Counts Collected March of 2024
- Highest daily volumes between Fort Lowell Rd and Wetmore Road
  - Average Volume: 28,758 Vehicles per Day
- 4 Lane Roadway Capacity ~36,000 Vehicles per Day*

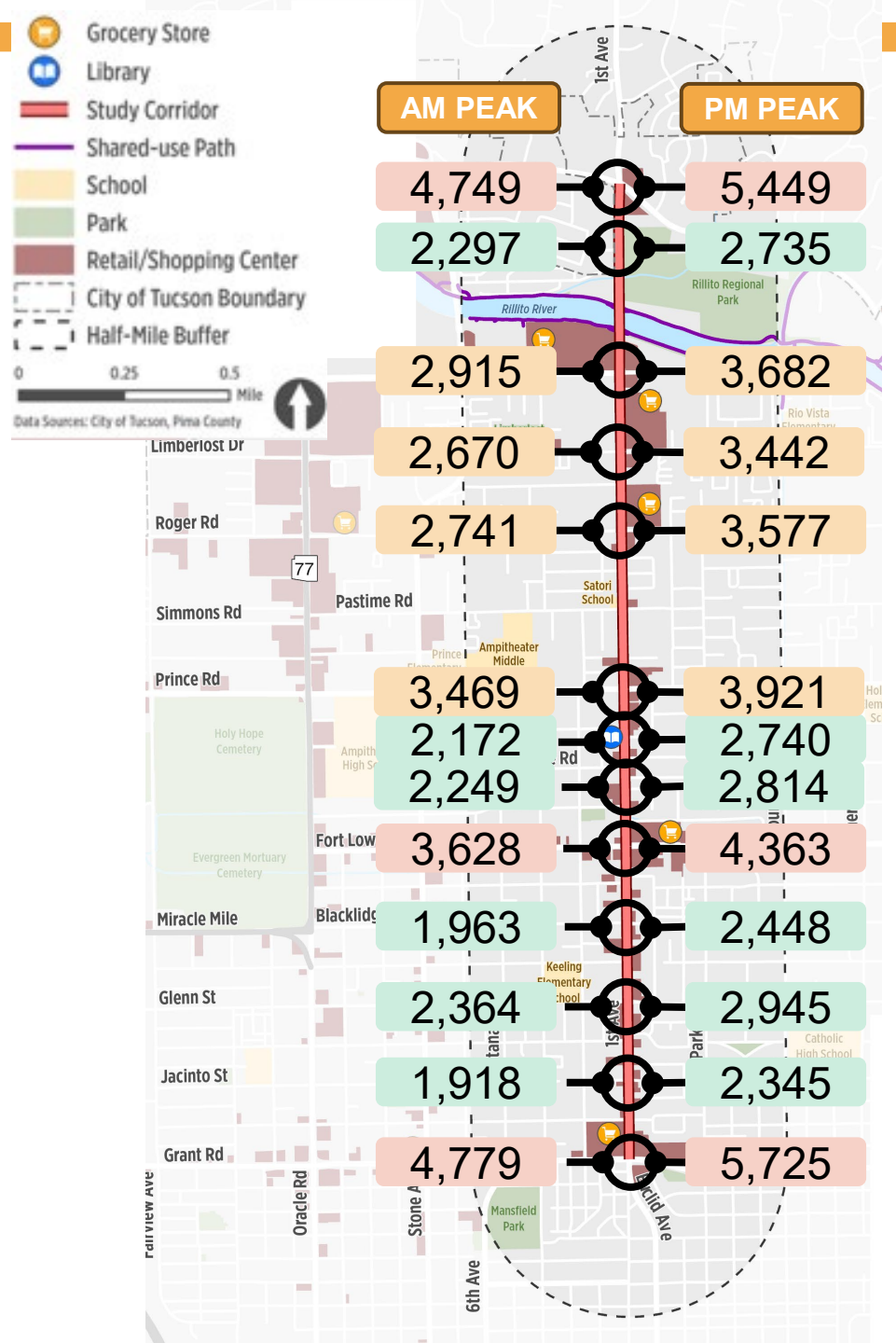


*FDOT Motor Vehicle Arterial Generalized Service Volume Tables

Intersection Peak Hour Volumes

Highest PM peak intersection entering volumes at:

- Grant Road
- River Road
- Fort Lowell Road



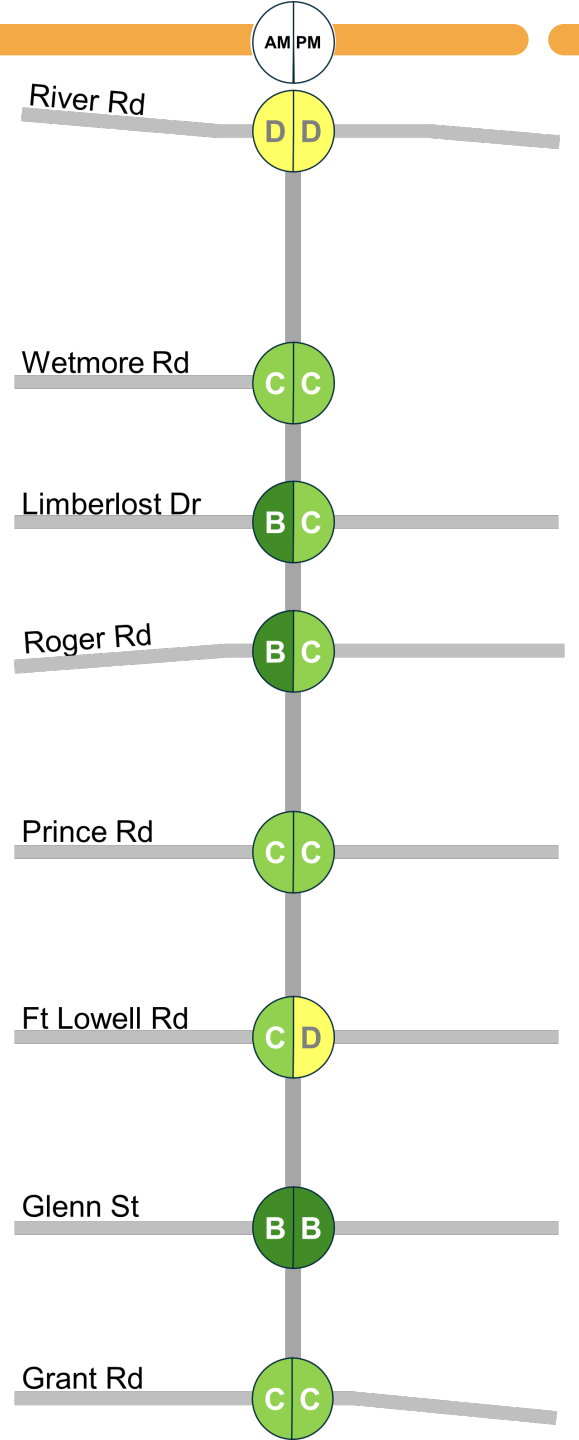
Quantifying Traffic Operations

- **Level of Service (LOS)** quantifies operating conditions for vehicle travel.
- **Highway Capacity Manual (HCM)** outlines the methods for computing LOS.
  - Considers delay times and volume-to-capacity (V/C) ratio to assign a grade ranging from A to F.

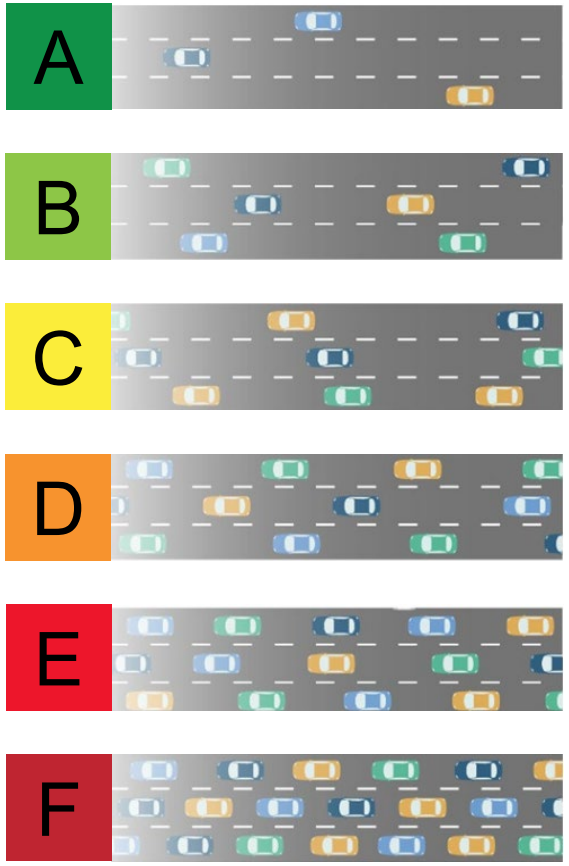
Intersection Operations

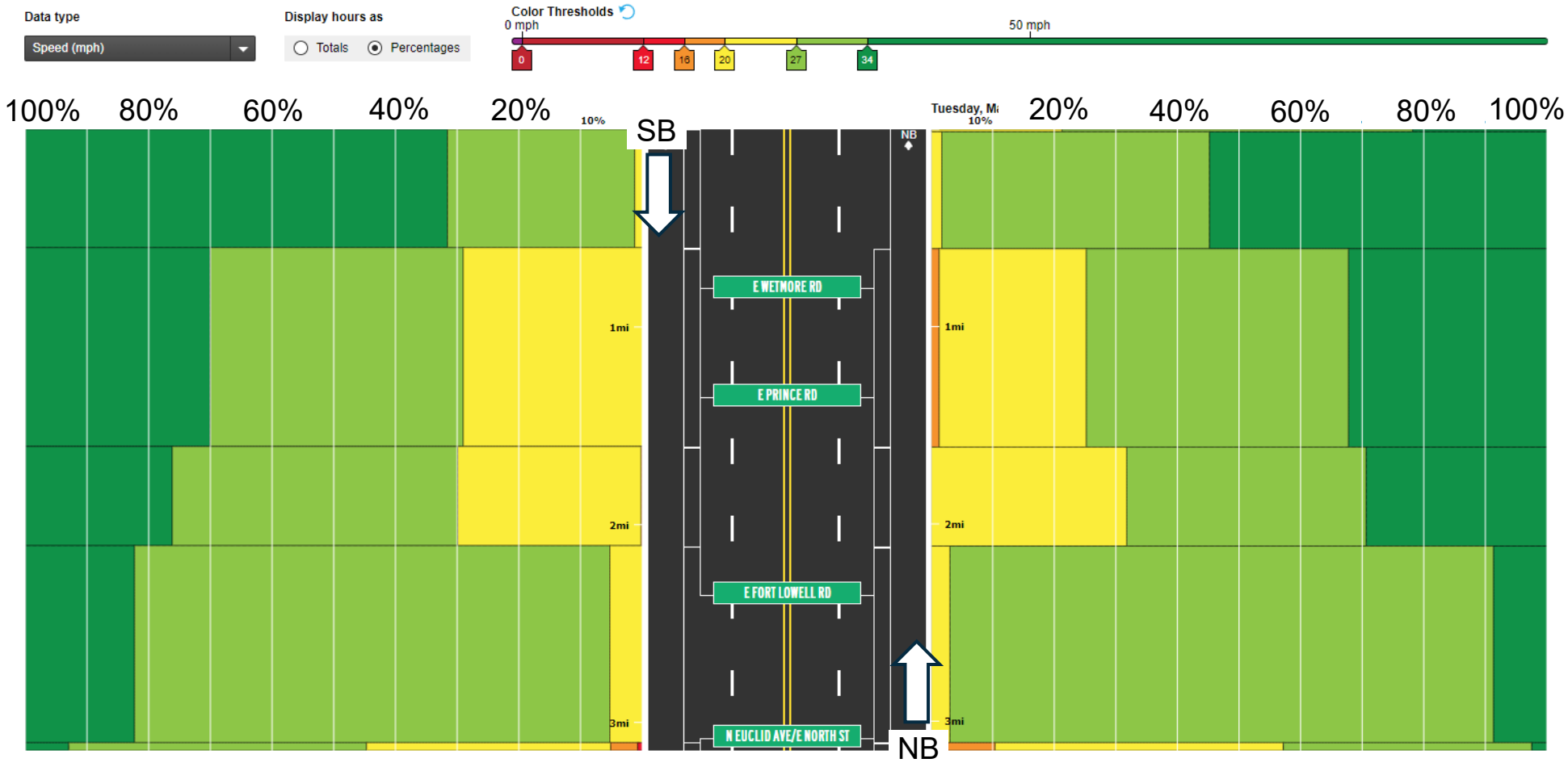
- **A** — **Very low delay** and most vehicles do not stop.
- **B** — **Low delay** and some vehicles stop.
- **C** — **Moderate delay** and a significant number of vehicles stop.
- **D** — The **limit of acceptable delay** in an urban area; many vehicles stop and some in the queue may not make it through in one cycle.
- **E** — **High delay** with poor progression; most vehicles will not make it through in one cycle.
- **F** — **Unacceptable** delay; demand exceeds intersection capacity. Many vehicles require two or more cycles to make it through.

Intersections currently **operate at an acceptable** Level of Service (LOS).

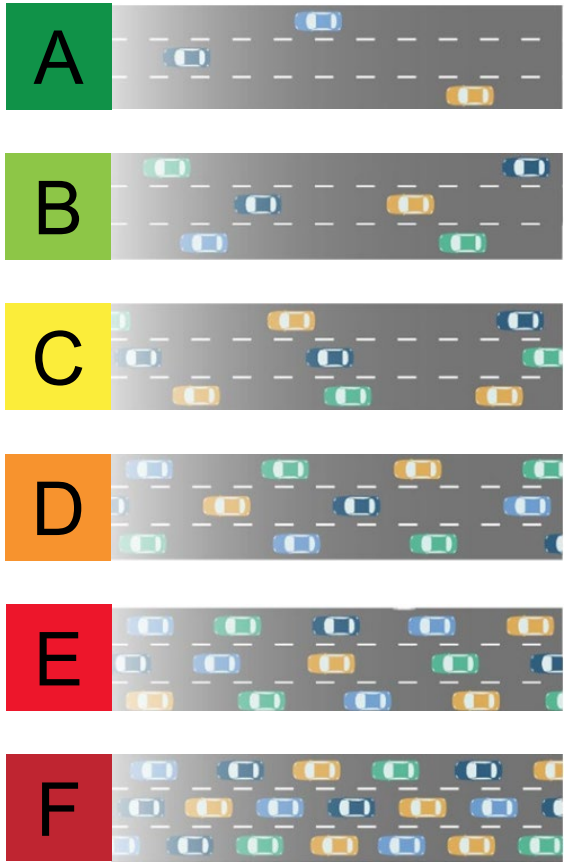


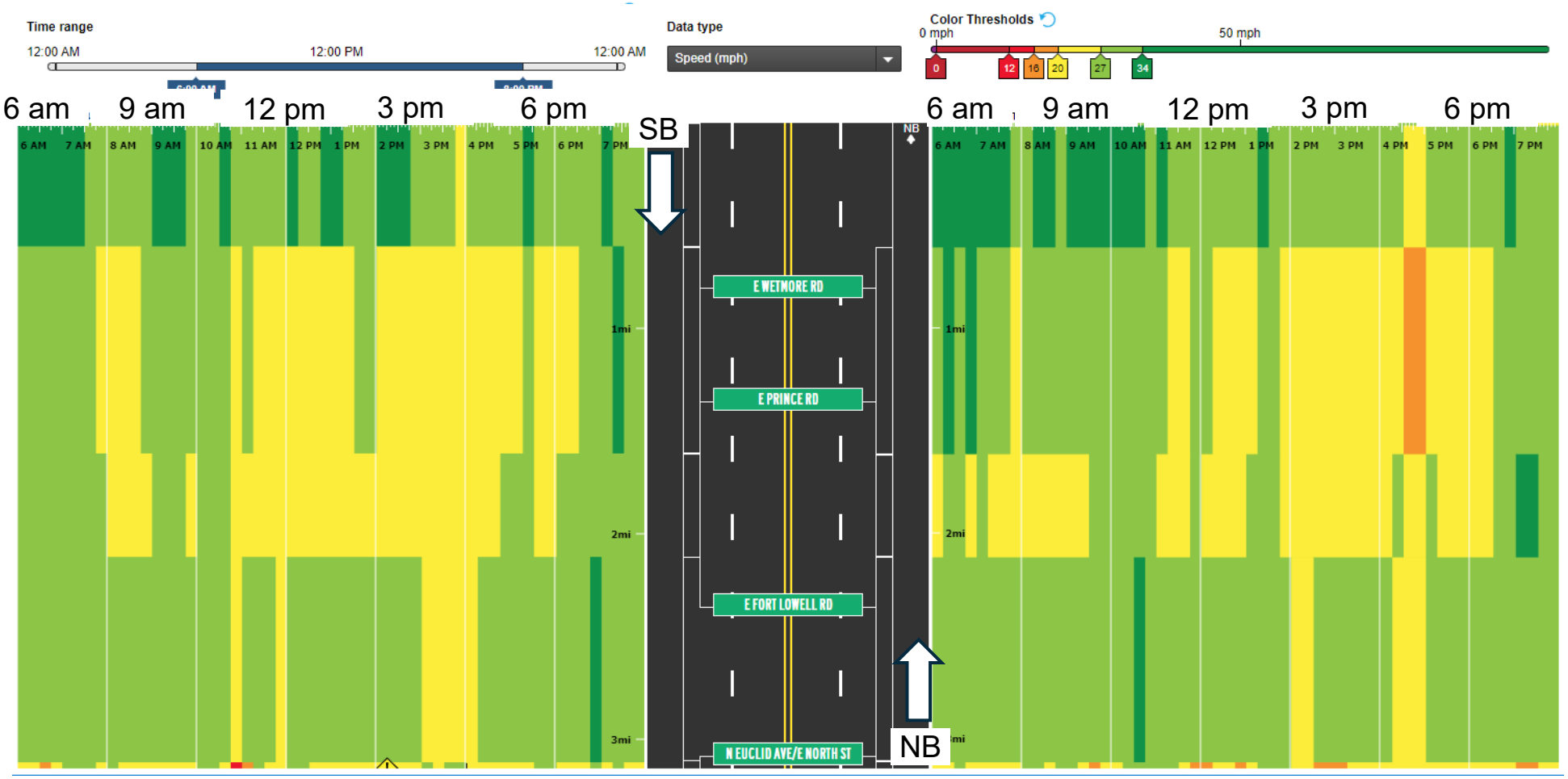
Corridor Ops – Time Spent at Different LOS





Corridor Level of Service – Time of Day





1ST AVENUE
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3. WALKING TODAY

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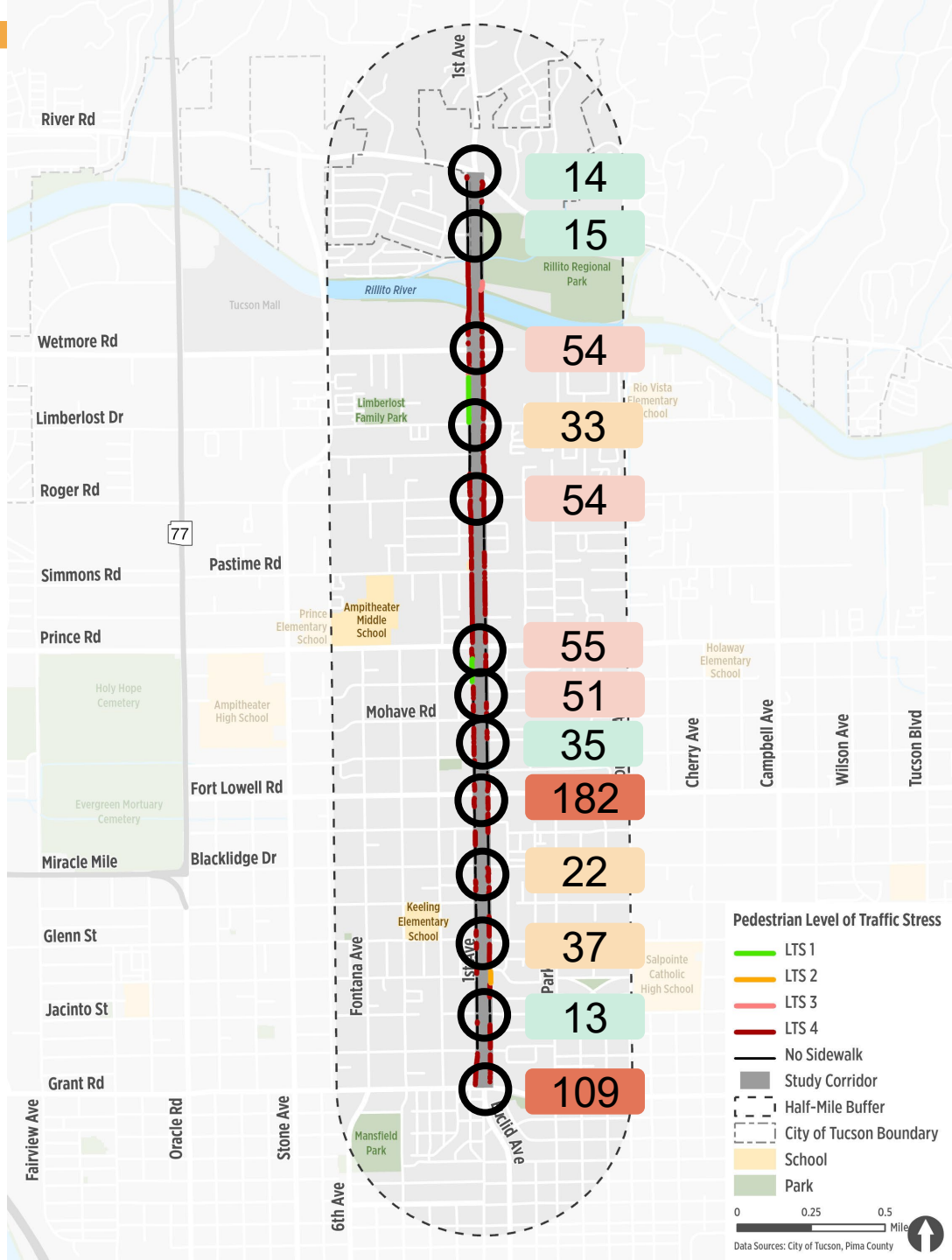
Pedestrian Volumes at Signalized Intersections

- PM peak hour volumes

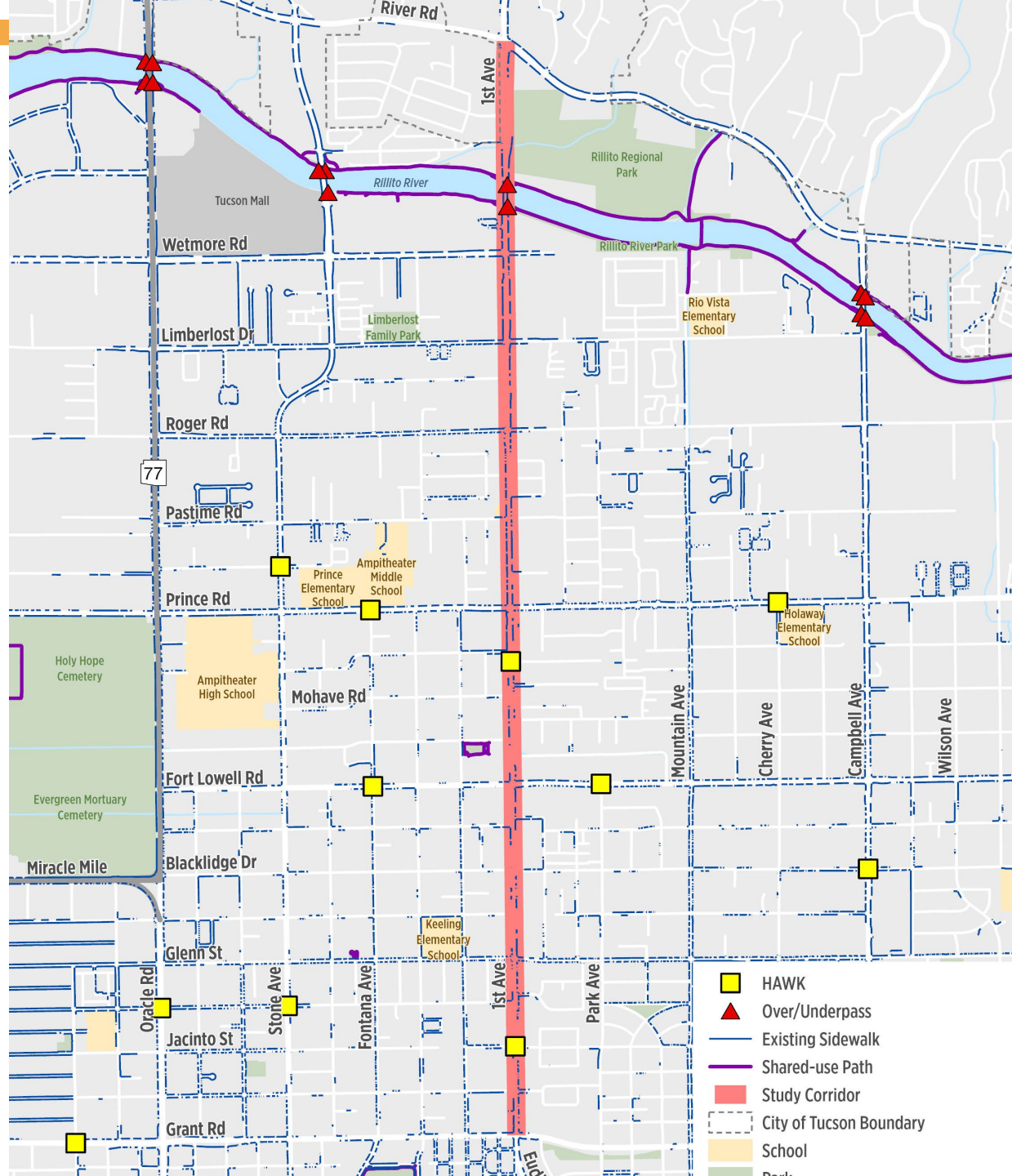
- Highest pedestrian volumes at:
  - Grant Road
  - Fort Lowell Road (field review; near miss data)

- Moderately high pedestrian volumes at…
  - Graybill Drive (HAWK)
  - Prince Road
  - Roger Road
  - Wetmore Road (field review; near miss data)



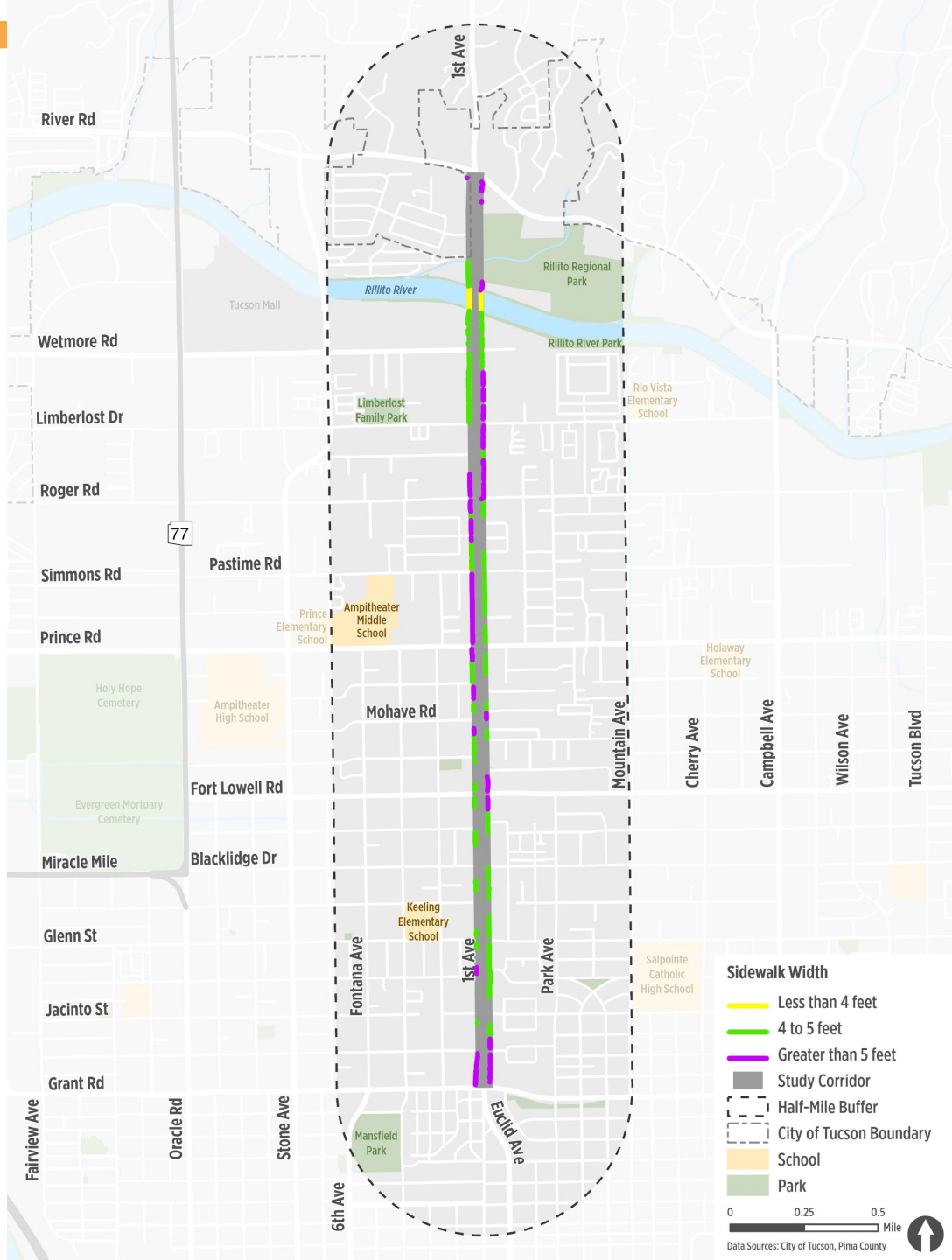
Sidewalk Network

- 60% of the 1st Avenue corridor has sidewalks.
- Marked crosswalks at 8 signalized intersections.
- 2 pedestrian hybrid beacons (HAWKs).
- Connection to the Loop path at Rillito River.



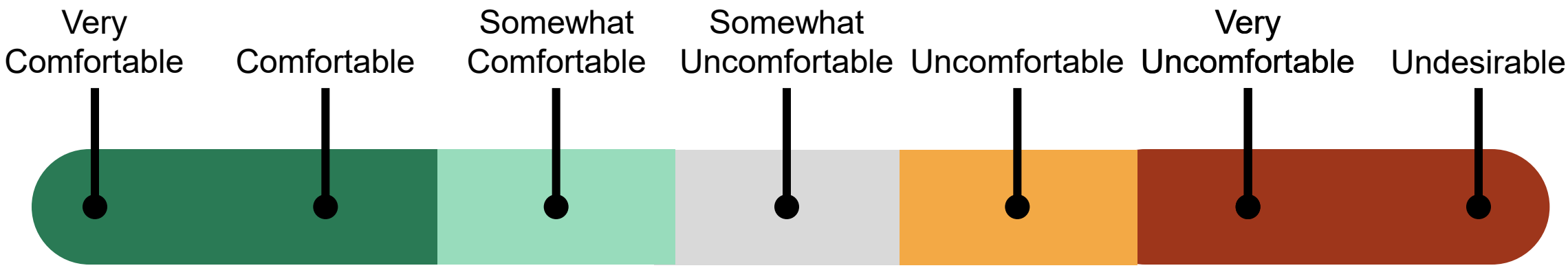
Sidewalk Width

- Often 4 to 5 feet in width.
  - 5% <4 Feet
  - 55% 4 to 5 Feet
  - 40% >5 Feet
- Tucson 2021 Street Design Guide prefers a 6 - 8 ft sidewalk width.
- Narrow sidewalks can increase stress/discomfort on pedestrians.

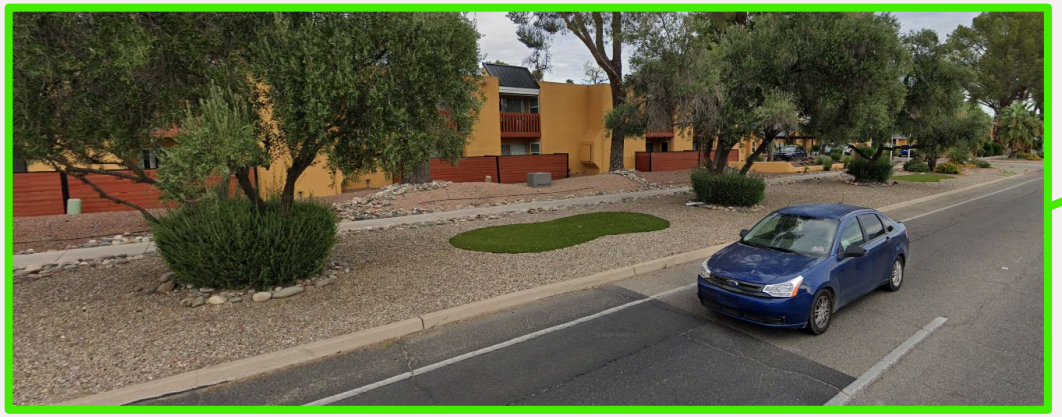


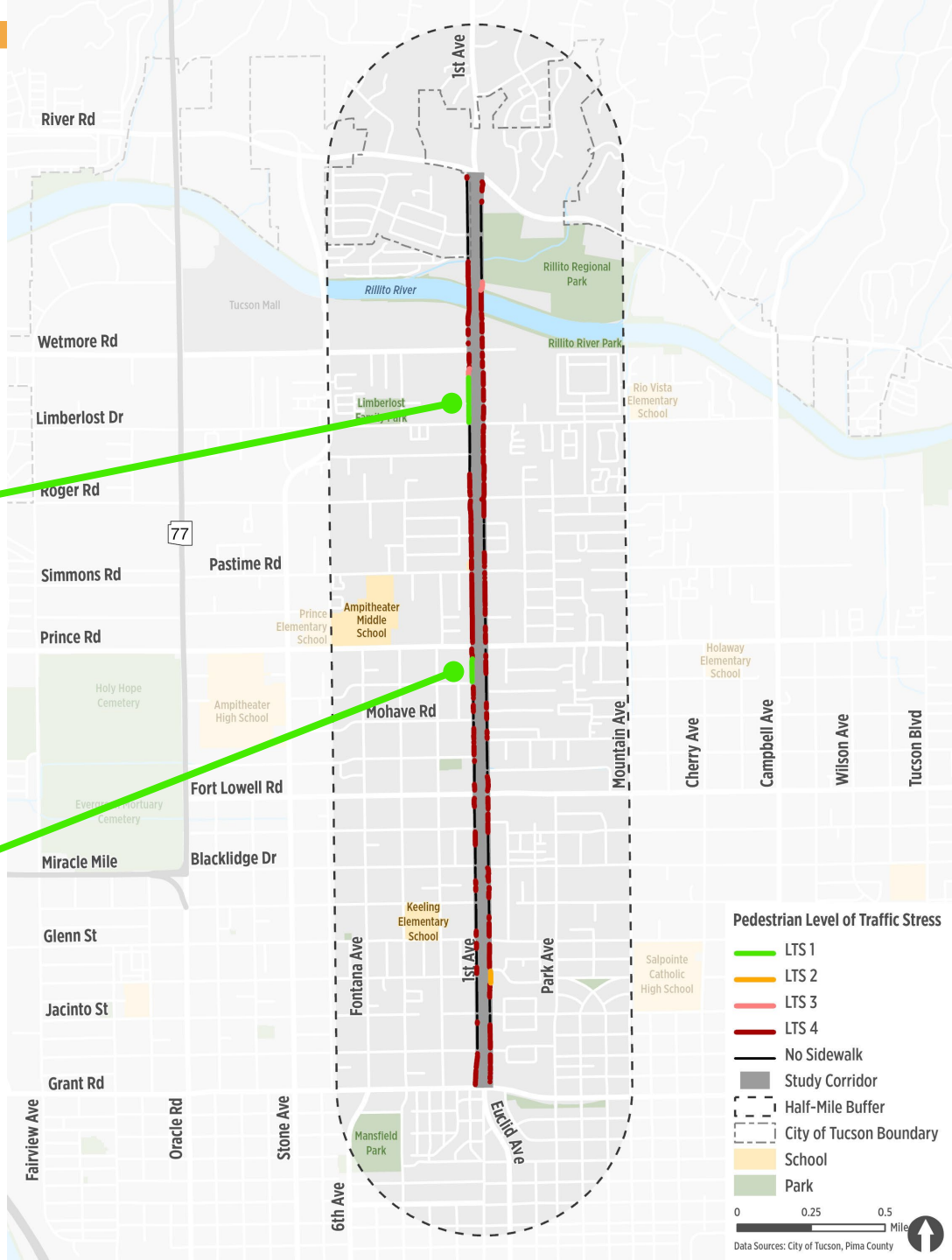
Measuring Pedestrian Stress

- **Pedestrian Level of Traffic Stress (PLTS)** qualitatively measures pedestrian comfort along a corridor (source: Oregon Department of Transportation)
- Considers sidewalk and buffer widths, posted speed limit, and presence of bike lanes and on-street parking.



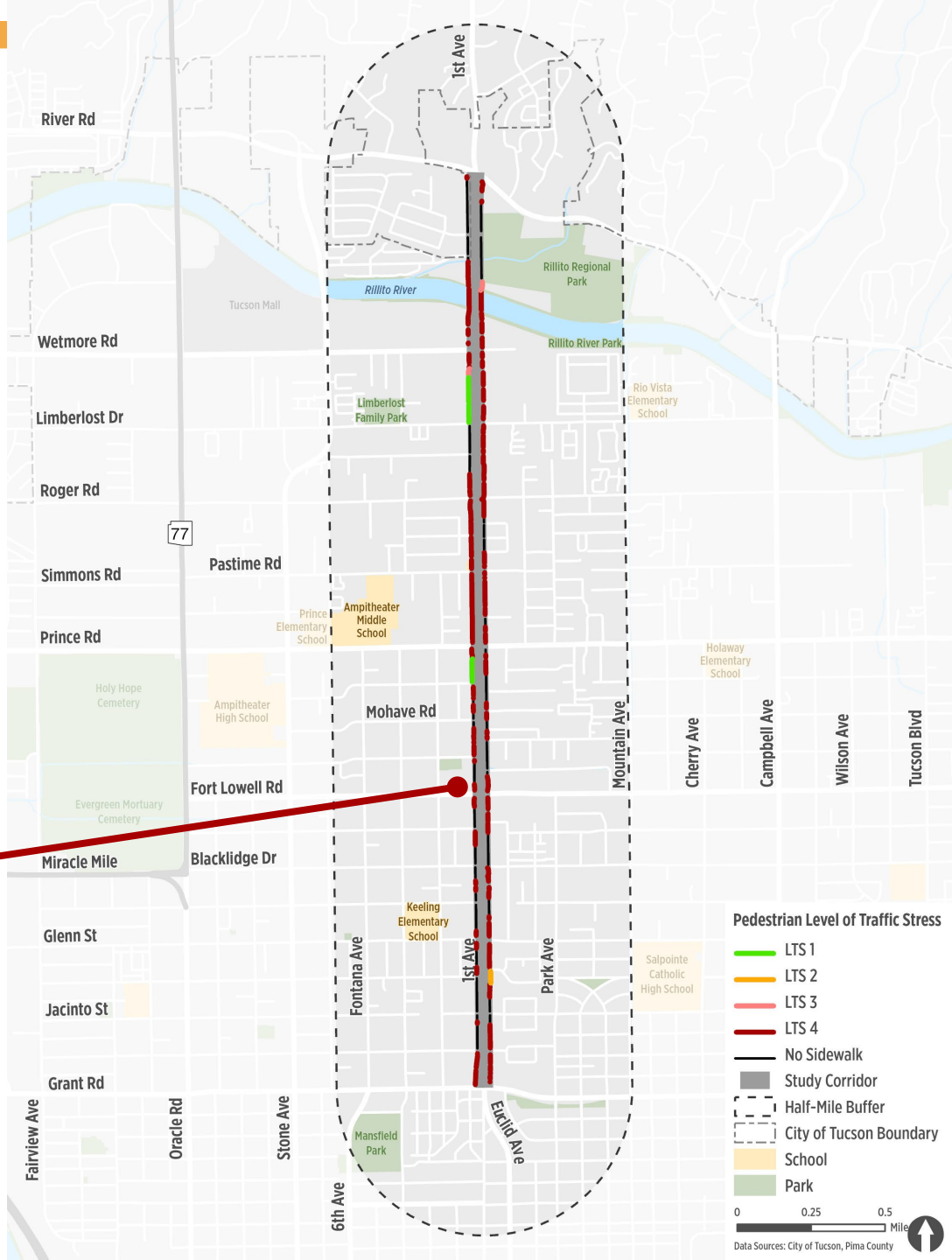
Existing PLTS – High Scores





Existing PLTS – Low Scores

- PLTS of 4 along most of the corridor.
- Minimal instances of PLTS 1, 2, and 3.



HAWK Crossing Locations

Jacinto Street

Why? Provides a low-stress, high-compliance, crossing facility for bicyclists.

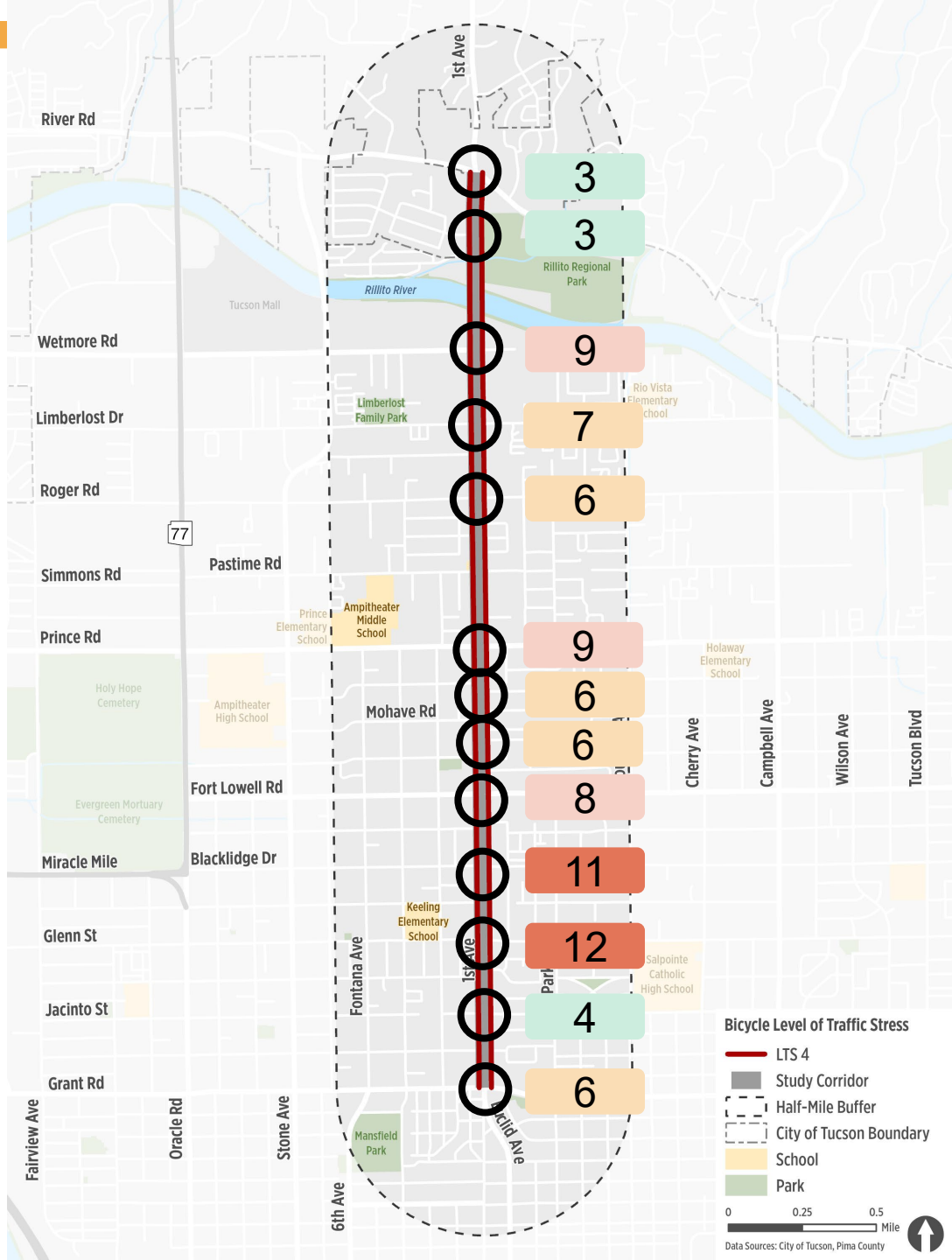
Graybill Drive

How? Vertical delineation and push button activated lights to alert drivers.

4. BIKING TODAY

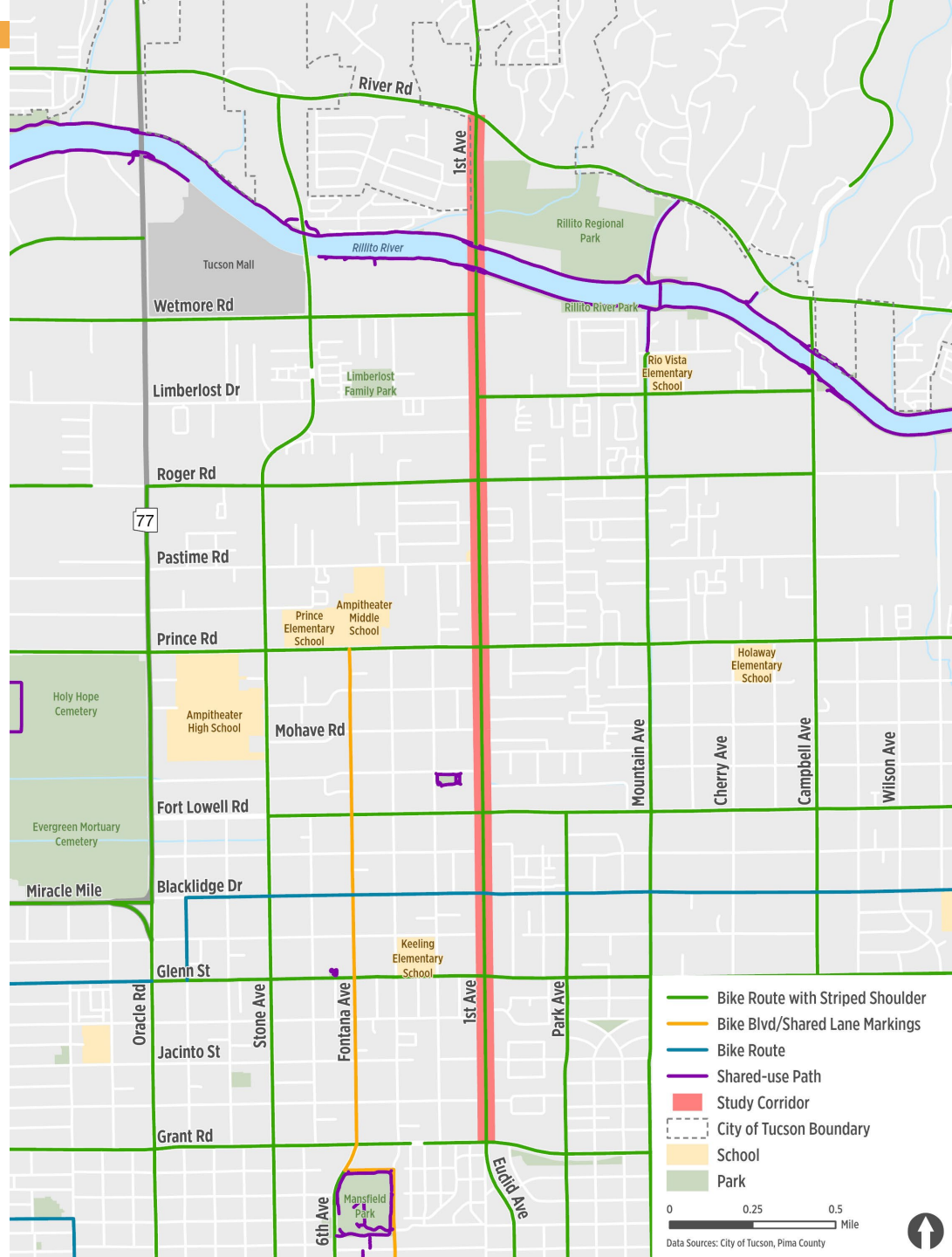
Existing Bicyclist Intersection Volumes

- Peak PM hour volumes
  - Bicycles on road; does not include crosswalk volumes
- Highest bicyclist volumes at:
  - Blacklidge Drive (Future bike boulevard)
  - Glenn Street
- Moderately high bicyclist volumes at…
  - Prince Road
  - Wetmore Road
  - Fort Lowell Road (field review; near miss data)

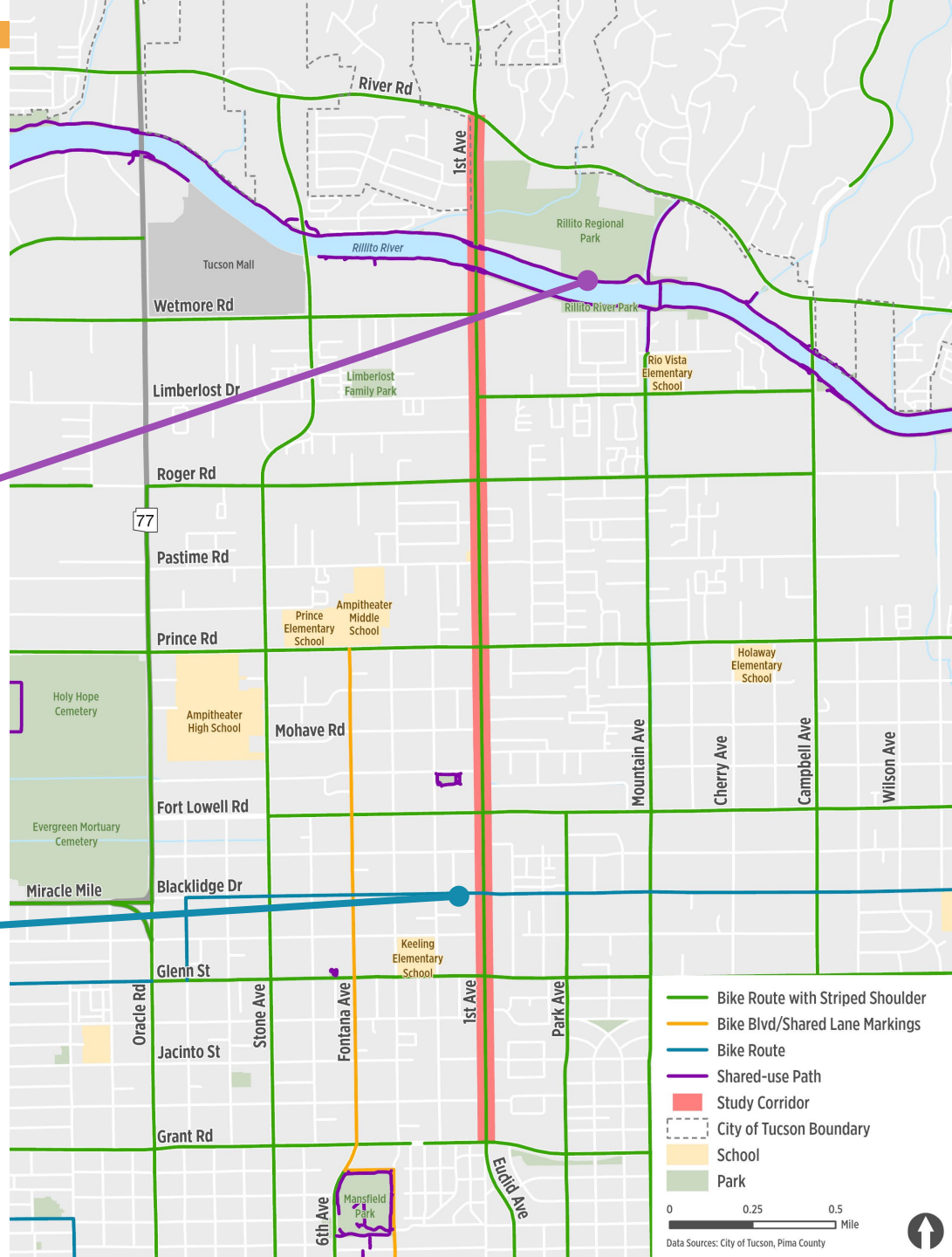


Bike Network

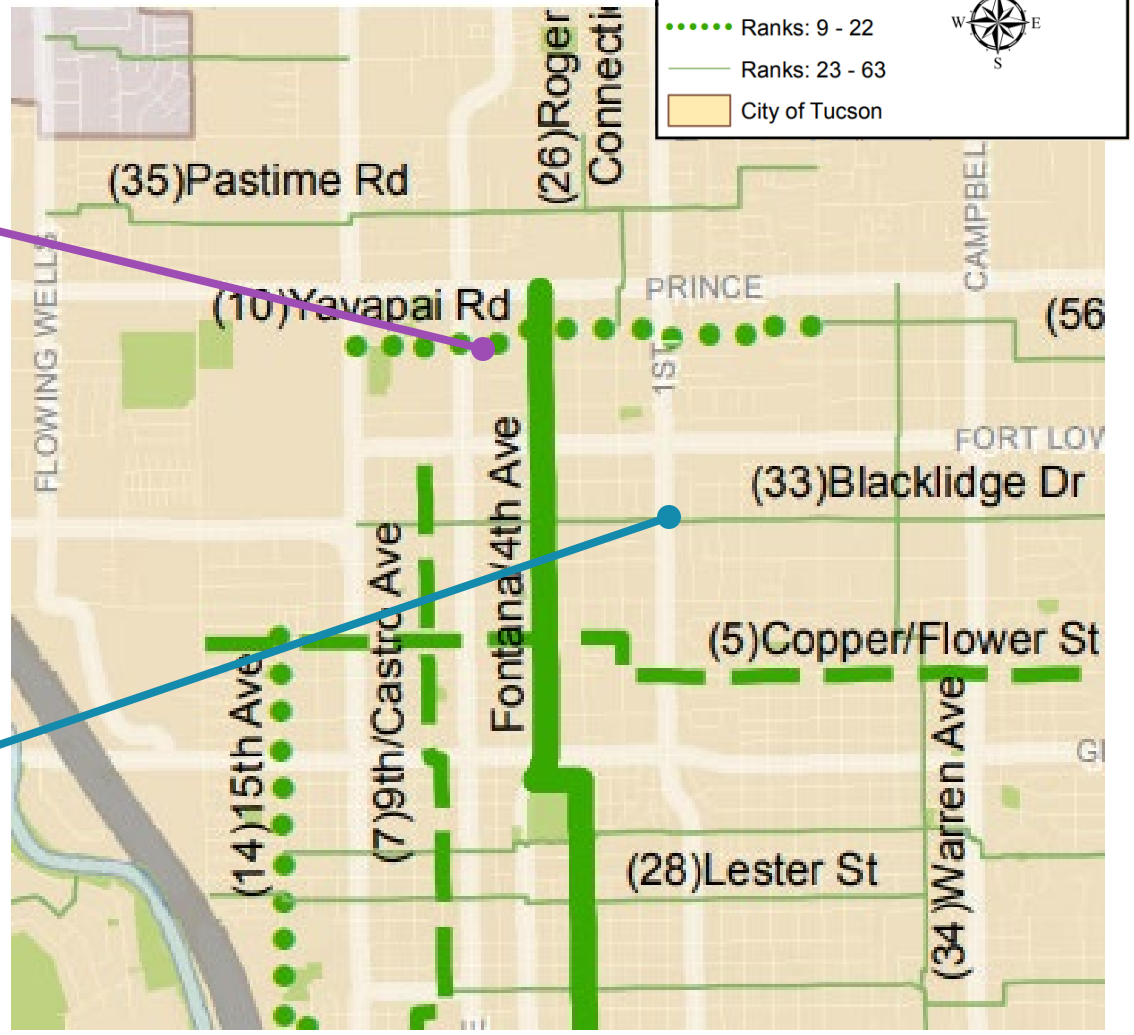
- Primarily striped shoulder - bike lane/route on 1st Avenue.
  - Approximately 5 feet
- Intersects with…
  - Blacklidge Drive bike route
  - Rillito River shared-use path
  - Bike routs on major cross-streets



Bike Network



Future Bike Network



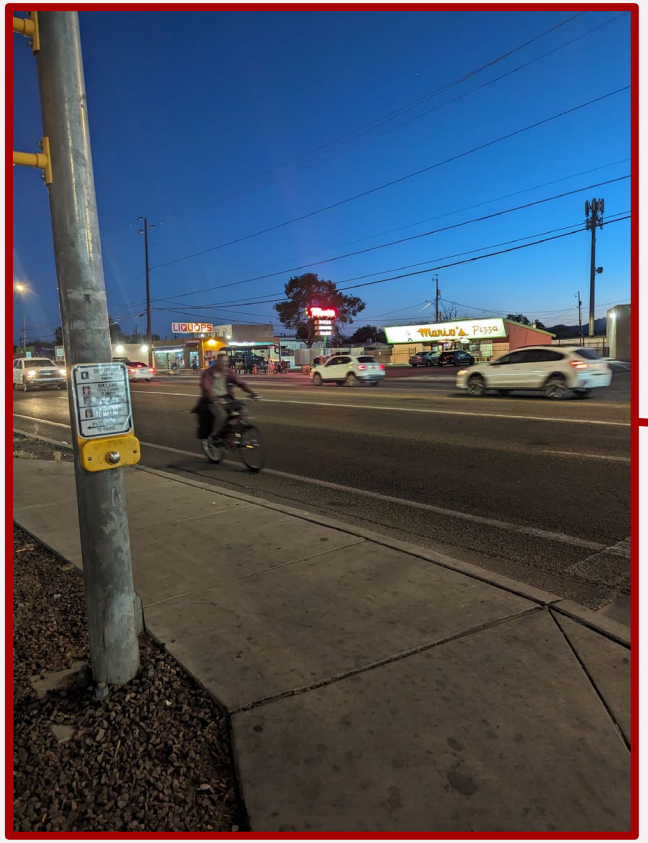
Measuring Bicyclist Stress

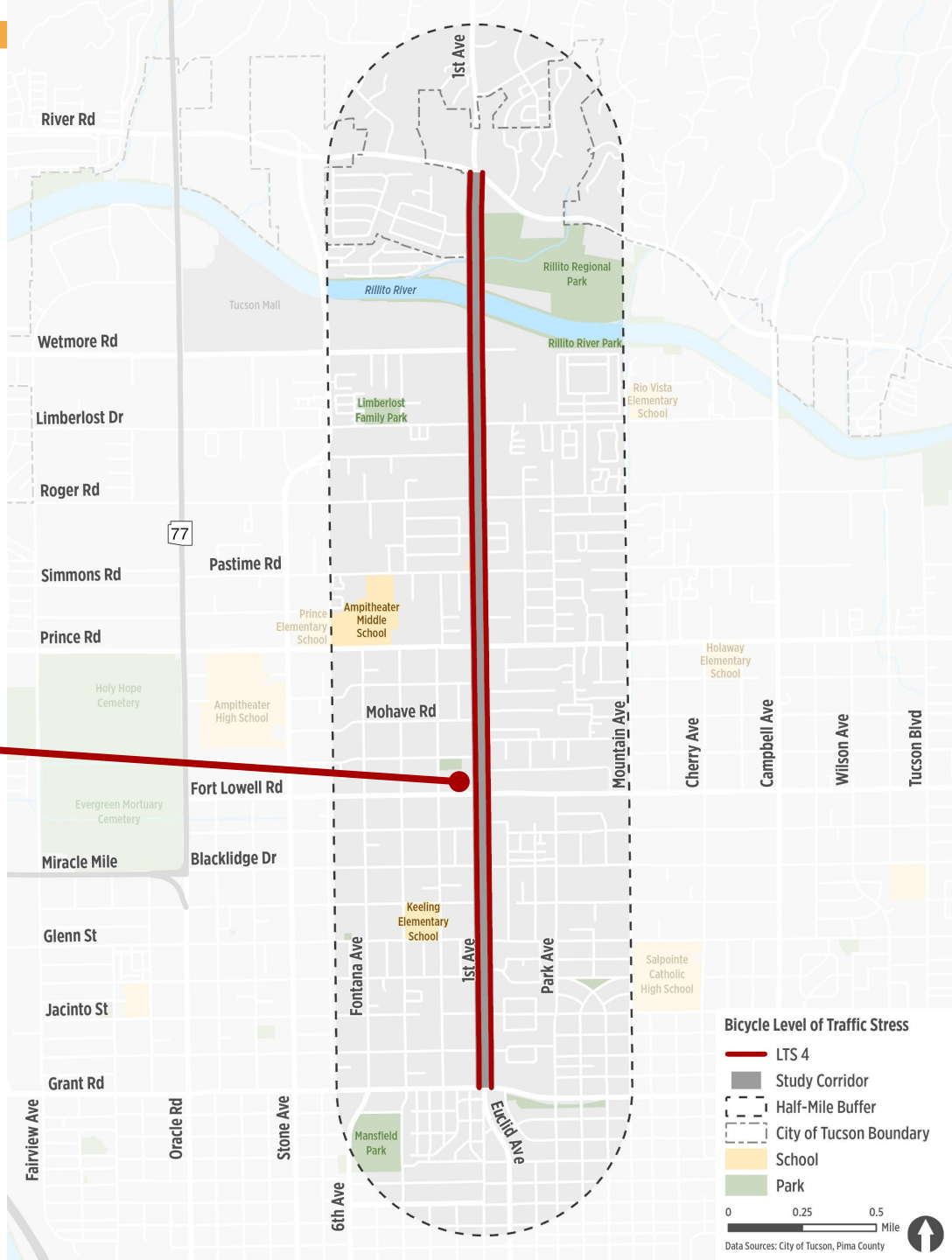
Bicyclist Level of Traffic Stress (BLTS) measures bicyclist comfort along a corridor.

- Speed
- Number of Lanes
- Bike Facility Type
- Presence of On-Street Parking

Existing BLTS

BLTS 4 along entire corridor.





1ST AVENUE
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5. TRANSIT SERVICE

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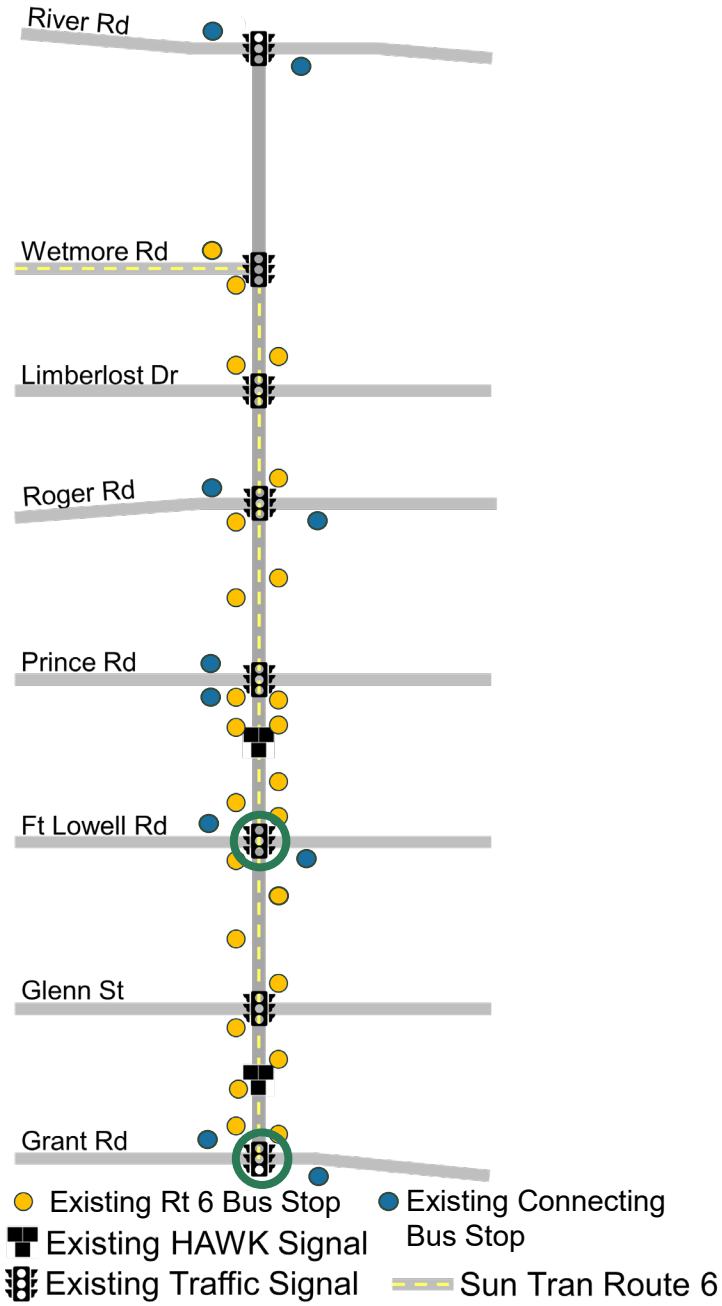
Existing Transit Infrastructure

- 23 bus stops
  - 6 Bus Pullouts/Right Turn Lane Stops
  - 17 In Lane Stops
- Crosswalks at 8 traffic signals and 2 HAWKs
- Routes Crossing 1st Avenue
  - River Rd: Rt 103X
  - Roger Rd: Rt 15
  - Prince Rd: Rt 17
  - Ft Lowell Rd: Rt 34
  - Grant Rd: Rt 9



Existing Transit Ridership

Route 6 Northbound Average Transit Ridership

Stop Location	Weekday			Saturday			Sunday		
	On	Off	Total	On	Off	Total	On	Off	Total
1st Ave/Grant	**102**	**118**	**220**	**63**	**71**	**134**	**32**	**36**	**68**
1st Ave/Copper	15	20	35	10	9	19	5	3	8
1st Ave/Glenn	22	32	54	16	19	35	8	11	19
1st Ave/ Blacklidge	17	26	43	12	17	29	6	13	19
1st Ave/Ft Lowell	**89**	**135**	**224**	**61**	**83**	**144**	**31**	**45**	**76**
1st Ave/Halcyon	9	16	25	6	9	15	4	6	10
1st Ave/Graybill	11	34	45	8	25	33	2	6	8
1st Ave/Prince	**41**	**68**	**109**	**29**	**37**	**66**	**14**	**18**	**32**
1st Ave/Pastime	24	47	71	15	16	31	8	9	17
1st Ave/Roger	**31**	**63**	**94**	**21**	**39**	**60**	**13**	**21**	**34**
1st Ave/Limberlost	18	49	67	12	27	39	7	14	21

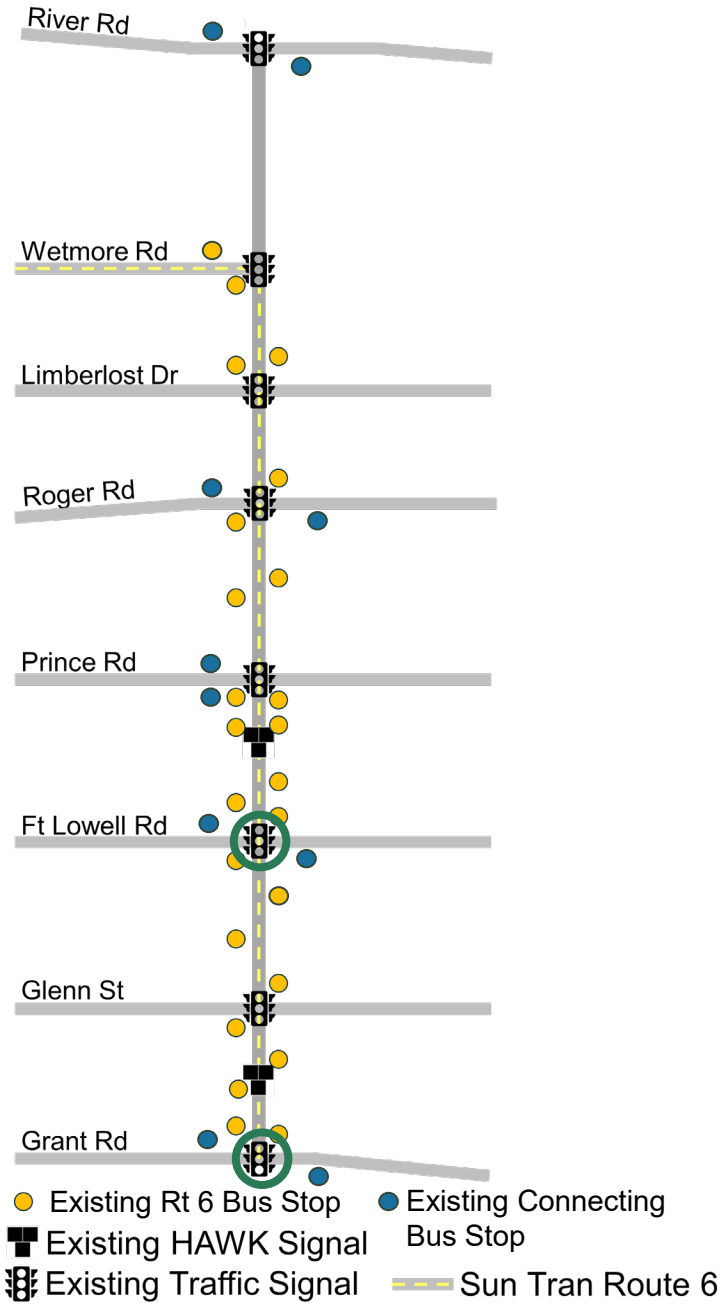
Route 6 Southbound Average Transit Ridership

Stop Location	Weekday			Saturday			Sunday		
	On	Off	Total	On	Off	Total	On	Off	Total
1st Ave/Wetmore	**77**	**10**	**87**	**50**	**5**	**55**	**28**	**3**	**31**
1st Ave/Limberlost	42	12	54	30	3	33	15	5	20
1st Ave/Roger	**64**	**27**	**91**	**36**	**15**	**51**	**20**	**12**	**32**
1st Ave/Pastime	43	18	61	21	11	32	12	6	18
1st Ave/Prince	**79**	**34**	**113**	**45**	**19**	**64**	**25**	**10**	**35**
1st Ave/ Yavapai	26	18	44	19	11	30	7	3	10
1st Ave/Halcyon	27	17	44	17	11	28	11	8	19
1st Ave/Ft Lowell	**130**	**62**	**192**	**84**	**35**	**119**	**49**	**22**	**71**
1st Ave/Blacklidge	28	15	43	24	11	35	13	7	20
1st Ave/Glenn	33	31	64	19	16	35	13	11	24
1st Ave/Jacinto	15	12	27	7	6	13	4	5	9
1st Ave/Grant	**109**	**112**	**221**	**70**	**63**	**133**	**40**	**42**	**82**

Existing Transit Operations

Route 6 Travel Times

Day	Peak Hour	Wetmore Rd to Grant Rd (Southbound)	Grant Rd to Wetmore Rd (Northbound)
Weekday	AM	10-11 Minutes	11-14 Minutes
	PM	11 Minutes	14-15 Minutes
Saturday	AM	10 minutes	12 Minutes
	PM	11 Minutes	13 Minutes
Sunday	AM	10 Minutes	12 Minutes
	PM	11 Minutes	13 Minutes



1ST AVENUE
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Transportation Design 101
Roadway Building Blocks

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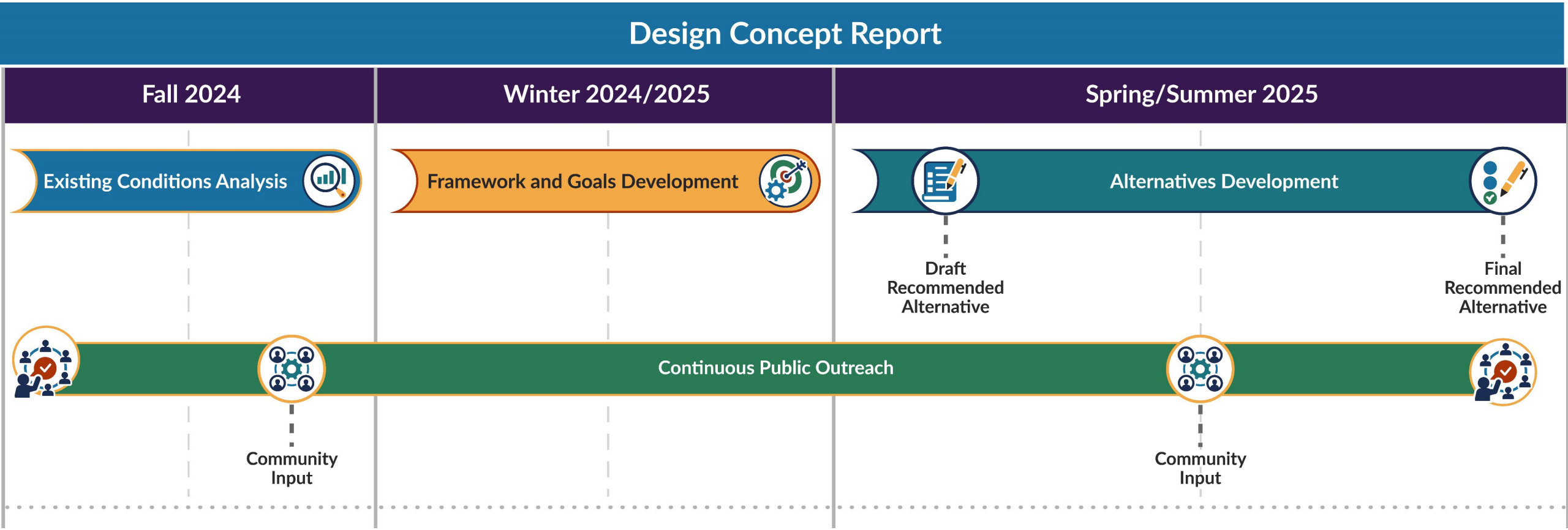
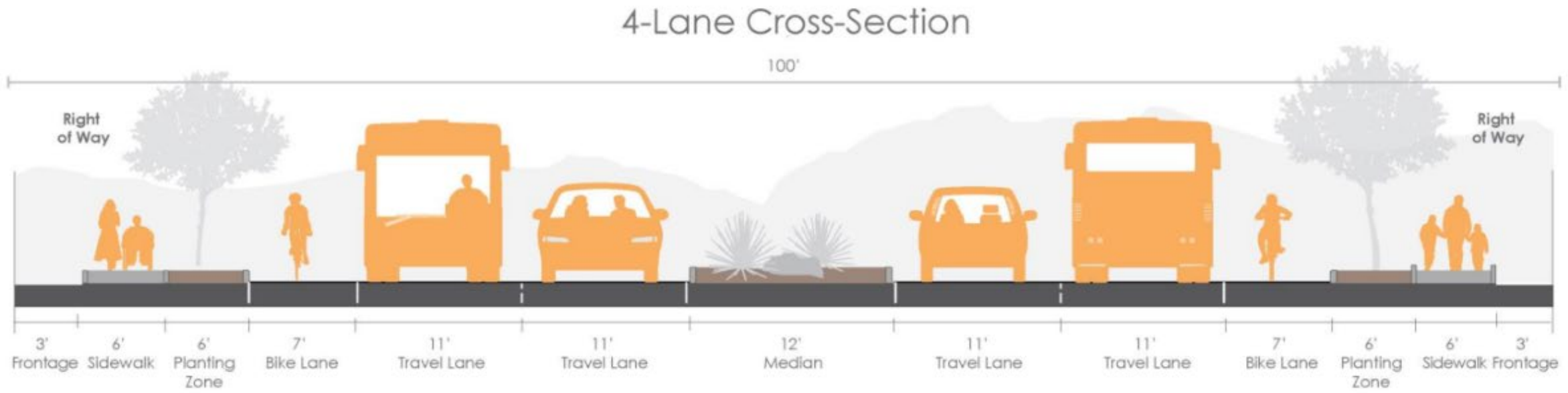
Project Overview



Project Overview

Design Concept Report

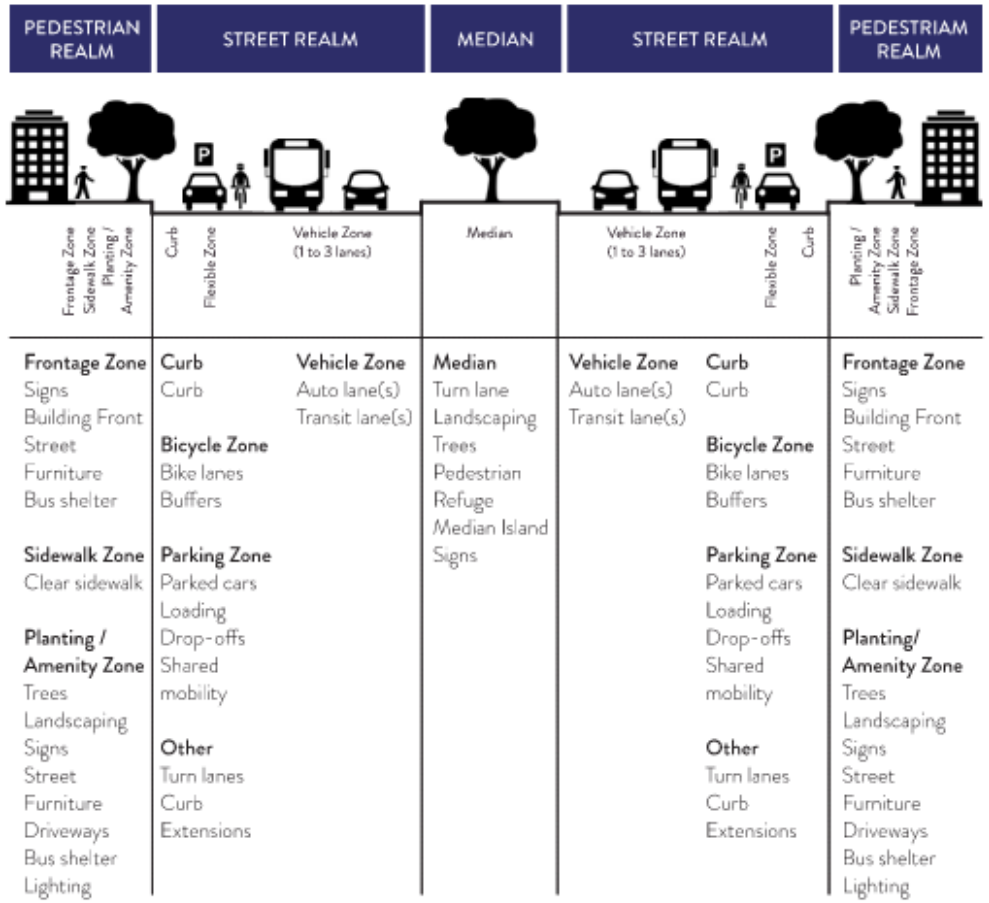
- What will the design team evaluate?
  - Existing Conditions
  - Cross-section and alignment alternatives
  - Constructability and construction phasing
  - Right-of-Way
  - Cost estimation
  - Traffic Design
  - Floodplain and Drainage
  - Utilities (Existing and New)
  - Landscape
  - Social, Economic, and Environmental

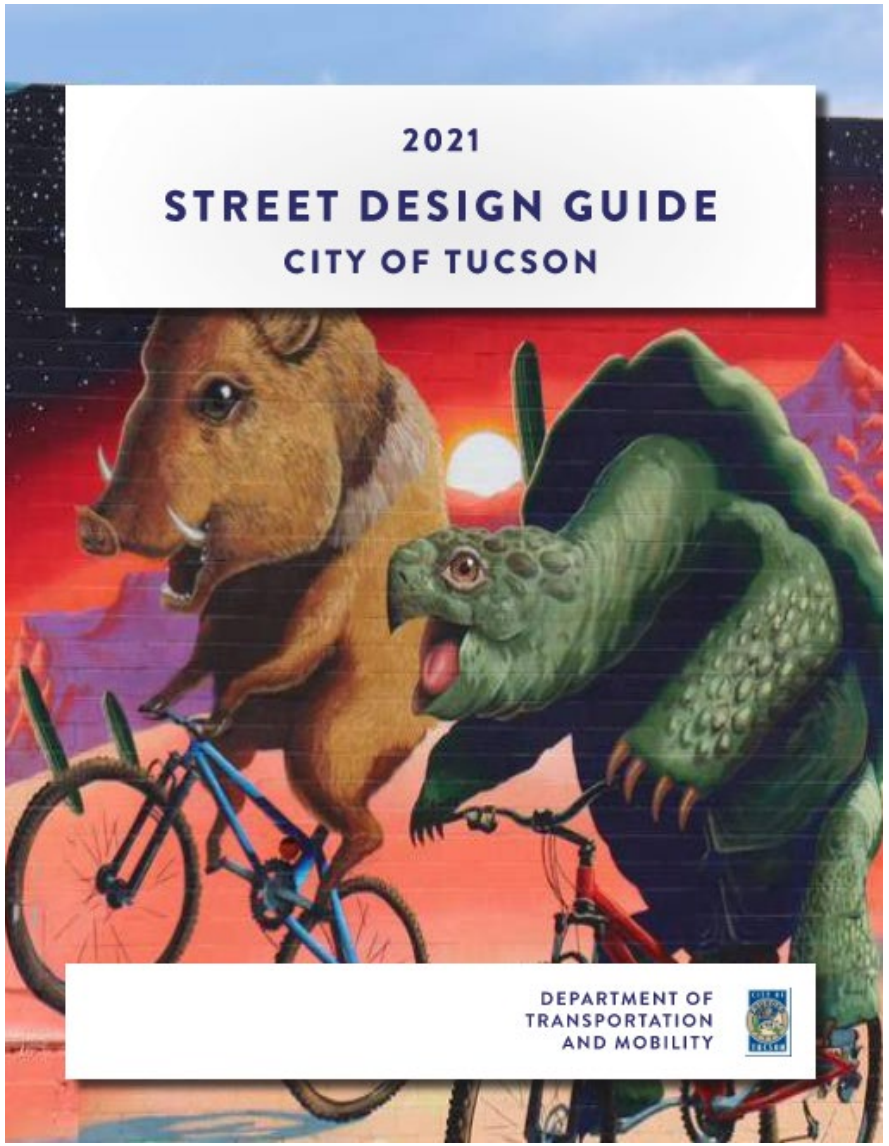


Transportation Design 101
Roadway Building Blocks

Complete Streets

- Designing for the most vulnerable users
- Working from the outside in
- Utilizing the zone system determines how space within the R/W is allocated
- Prioritization



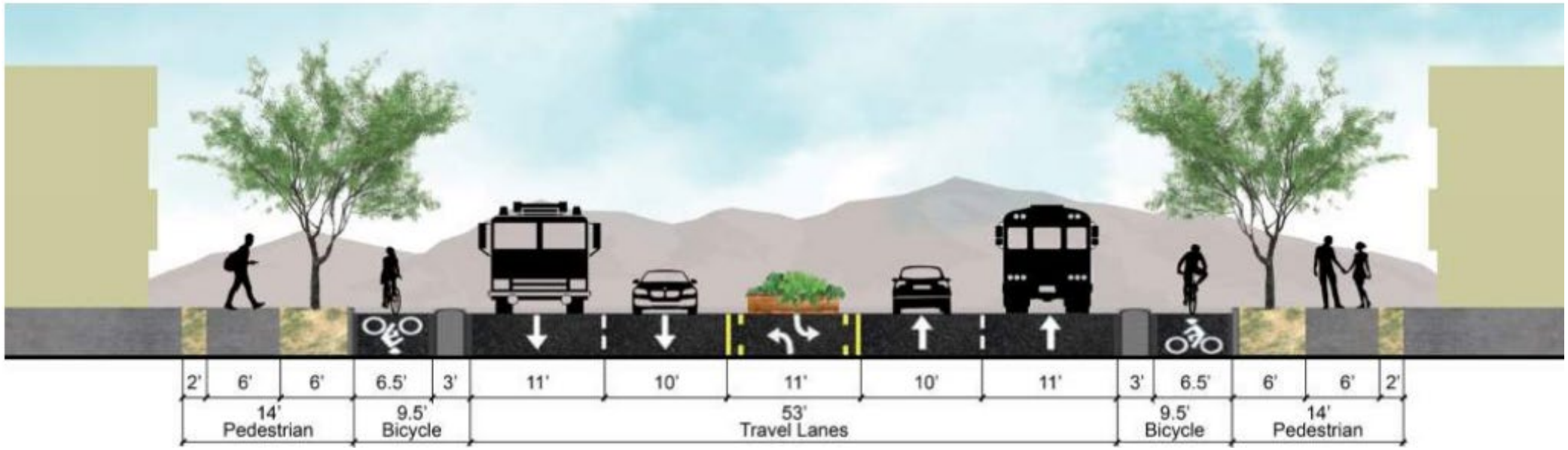


Transportation Design 101
Roadway Building Blocks

Zones

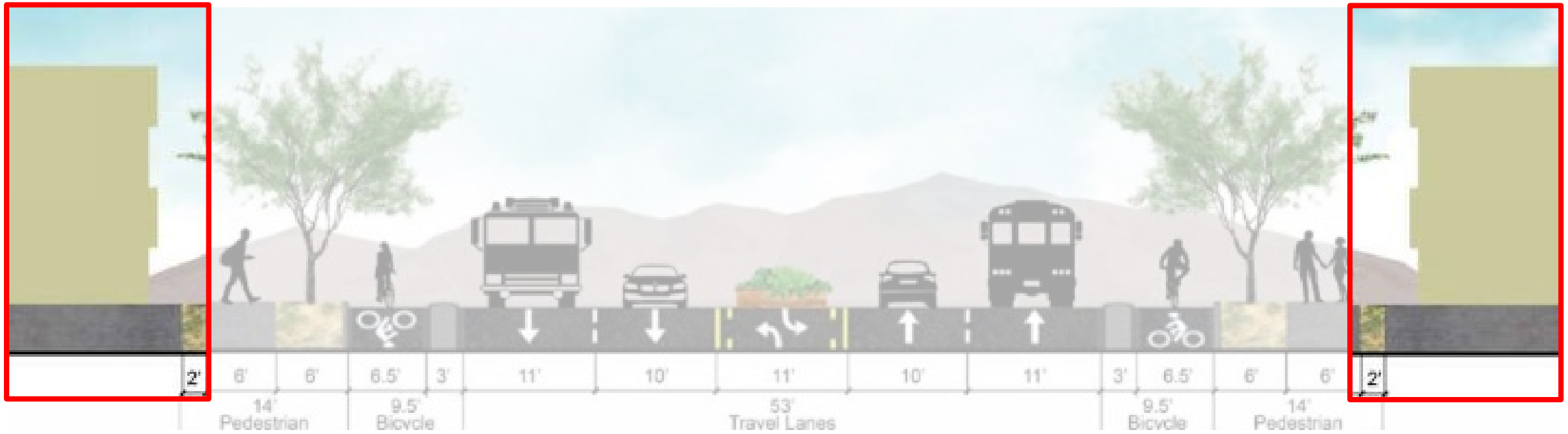
- Frontage
- Sidewalk
- Planting / Amenities
- Bicycle
- Curb Lane
- Inside Lane
- Median

Section 14. 100-ft ROW, urban 5-lane, 2-way street, pedestrian island, curb-protected bicycle lane

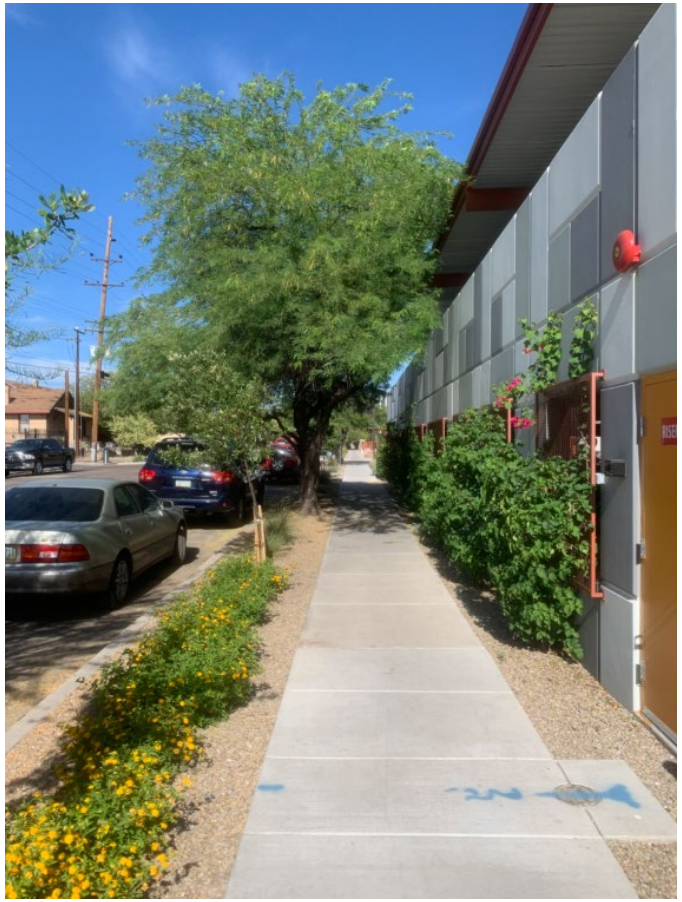


Frontage Zone

- Area between the back of sidewalk and the R/W line
- Width: Minimum = 2’, Maximum = N/A
- Purpose: Location for overhead utilities, street lighting, landscape, construction/maintenance buffer, “shy” distance between private structures and sidewalk

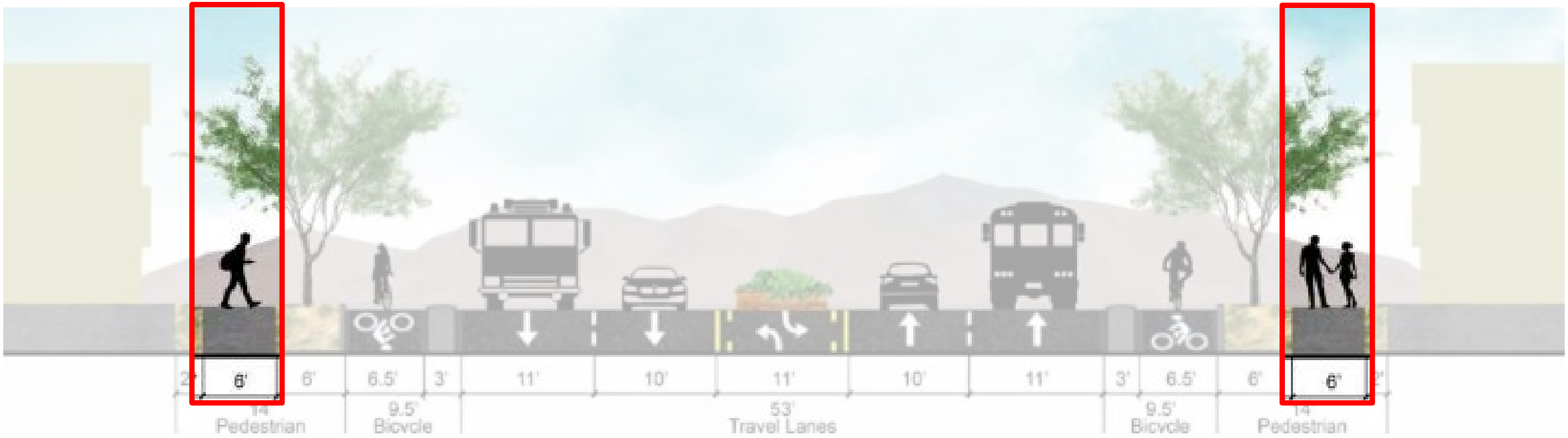


Frontage Zone

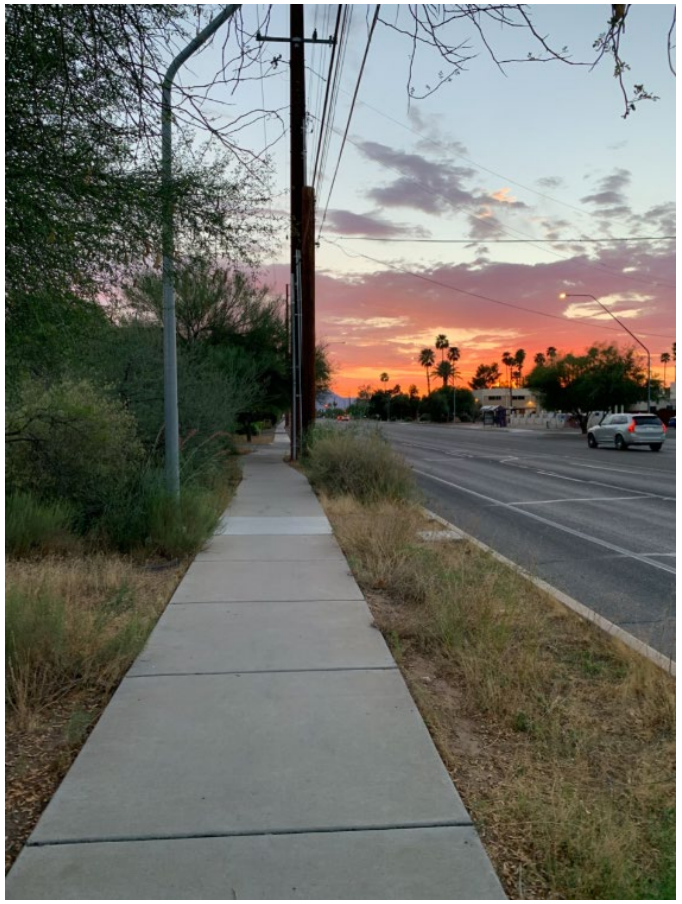


Sidewalk Zone

- Improved surface for pedestrians. Typically, concrete
- Width: Minimum = 4’, Preferred = 6’ to 8’, Maximum = N/A
- Purpose: Allow accessible travel for pedestrians and those using mobility devices

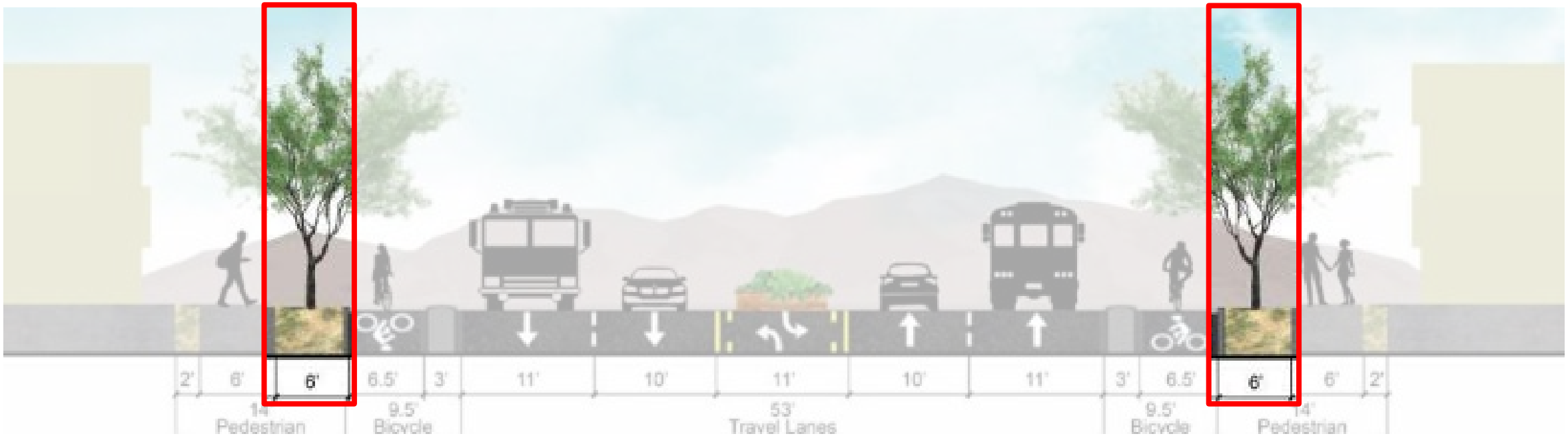


Sidewalk Zone



Planting / Amenities Zone

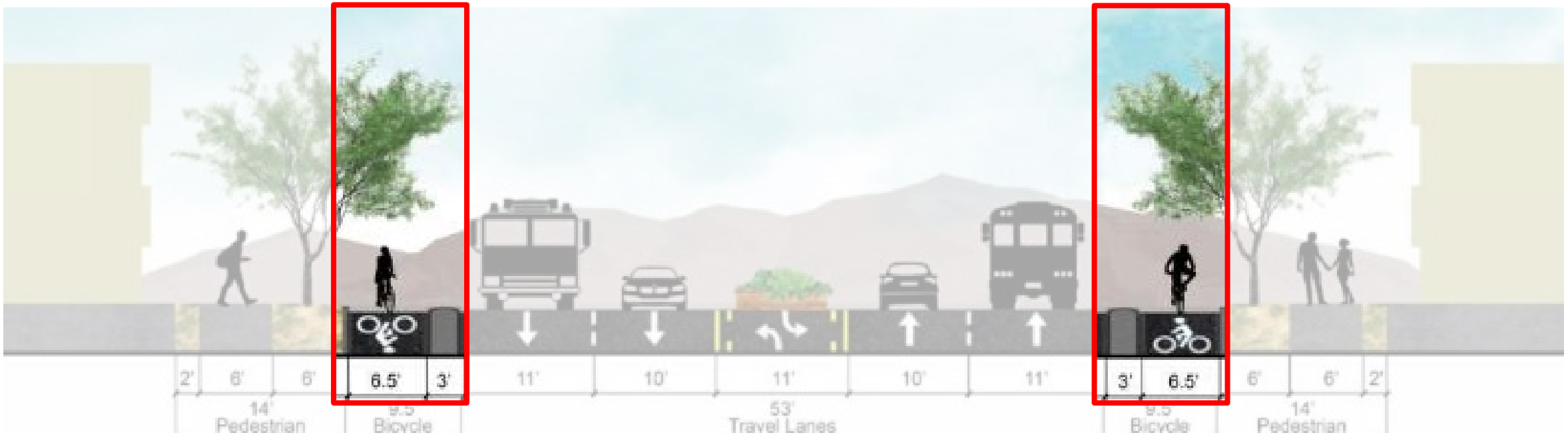
- Area between the front of sidewalk and back of curb
- Width: Minimum = 6’, Preferred = 8’ to 12’, Maximum = N/A
- Purpose: Create separation between sidewalk and roadway
- Benefit: Space for landscape, increased pedestrian comfort, improves aesthetics, location for signs and furniture, driveway design
- Challenge: Acquisition of R/W and property impacts, reduced visibility



Planting / Amenities Zone

Bicycle Zone

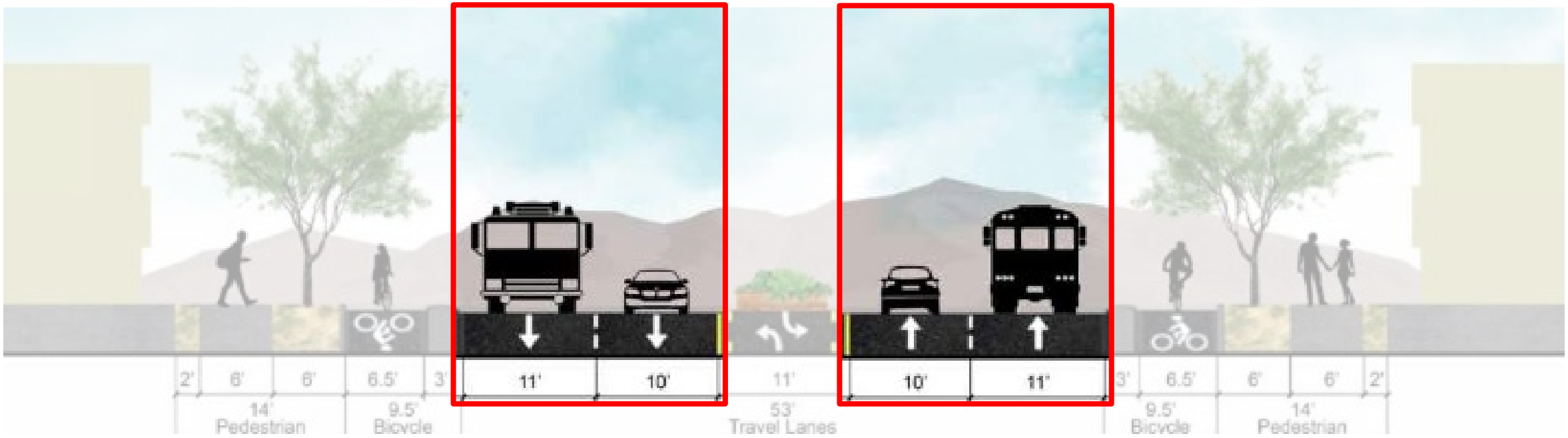
- Dedicated space on the road or behind the curb
- Width: Minimum = 5’, Preferred = 8’ to 11’,
- Purpose: Dedicated space for bicycle riders
- Benefit: Improves comfort and safety. *Protected bike lanes reduce bike/vehicle crashes by 50% of traditional striped bike lanes.*
- Challenge: Necessary R/W width, Driveway frequency, Drainage



Bicycle Zone

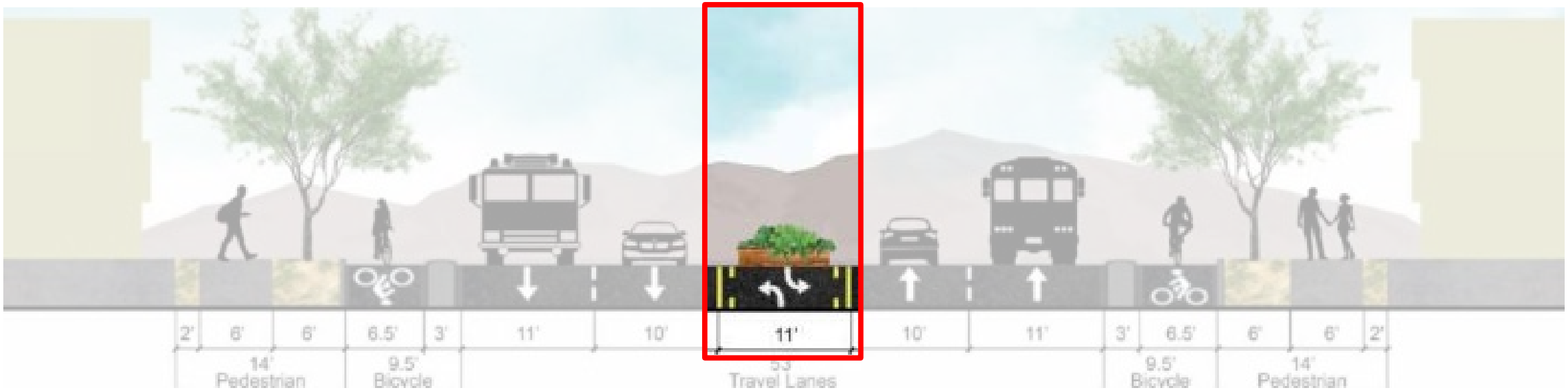
Travel Lane Zone

- Marked / Striped lanes in the roadway for all vehicle travel
- Width: Minimum = 10’, Preferred = 11’, Maximum = 11’
- Curb (Outside) Lane: 11’ width to accommodate buses and large vehicles.
- Inside Lane: 10’ width allows width to be allocated elsewhere without compromising safety. Reduce crossing distance. May slow speeds.



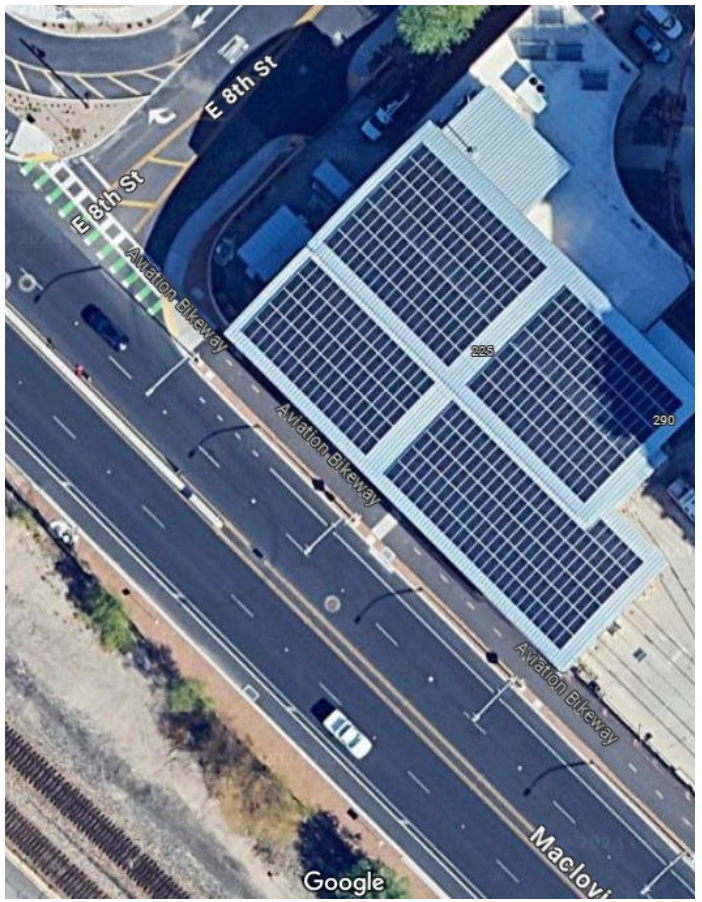
Median Zone

- Area between through travel vehicle lanes
- Width: Minimum = 10’, Preferred = 12’, Maximum = 14’+, Pedestrian Refuge = 6’
- Widths greater than 14’ accommodate opposing 10’ turn lanes, lane offsets at intersections, traffic separators, large vehicle U-turns, and tree planting.
- Benefit: Reduce all crashes by 23%, injury crashes by 21%, and pedestrian crashes between 31% and 46% compared to two-way turn lane
- Challenge: Reduced access, R/W width required



Median Zone


CROSSING
STOP
ON
RED


E 8th St
E 8th St
Aviation Bikeway
Aviation Bikeway
Aviation Bikeway
225
290
Google

Transportation Design 101
Roadway Building Blocks

Zones - Prioritization

Future Agenda Items

- Questions on presented information
- Topics for future agendas
- Additional information requests

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1st Ave Corridor Map