

1st Avenue: River Road to Grant Road

1st Avenue Citizens' Task Force Meeting
09/19/2024



Project Overview

Design Concept Report

Fall 2024

Existing Conditions Analysis



Winter 2024/2025

Framework and Goals Development



Spring/Summer 2025



Draft
Recommended
Alternative

Alternatives Development



Final
Recommended
Alternative

Continuous Public Outreach

Community
Input

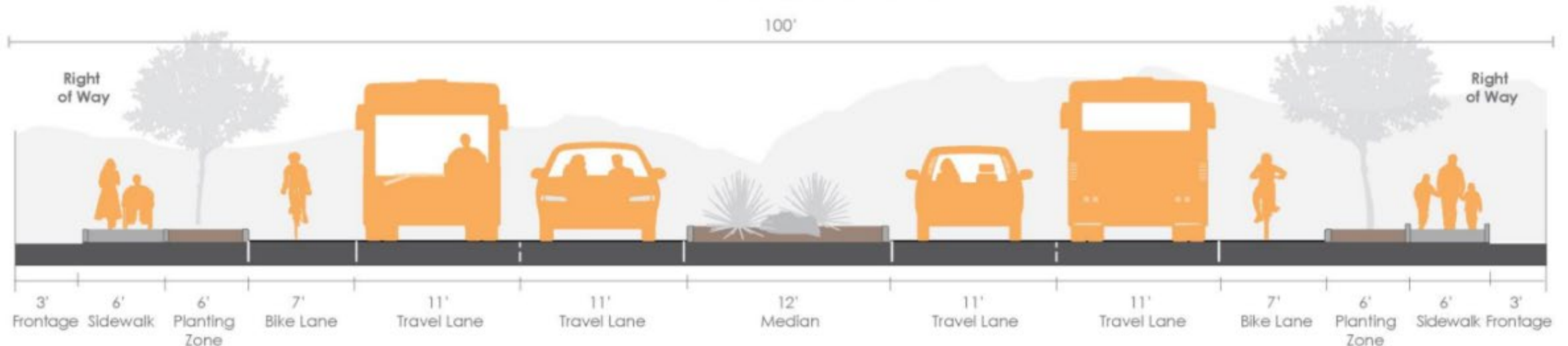
Community
Input

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

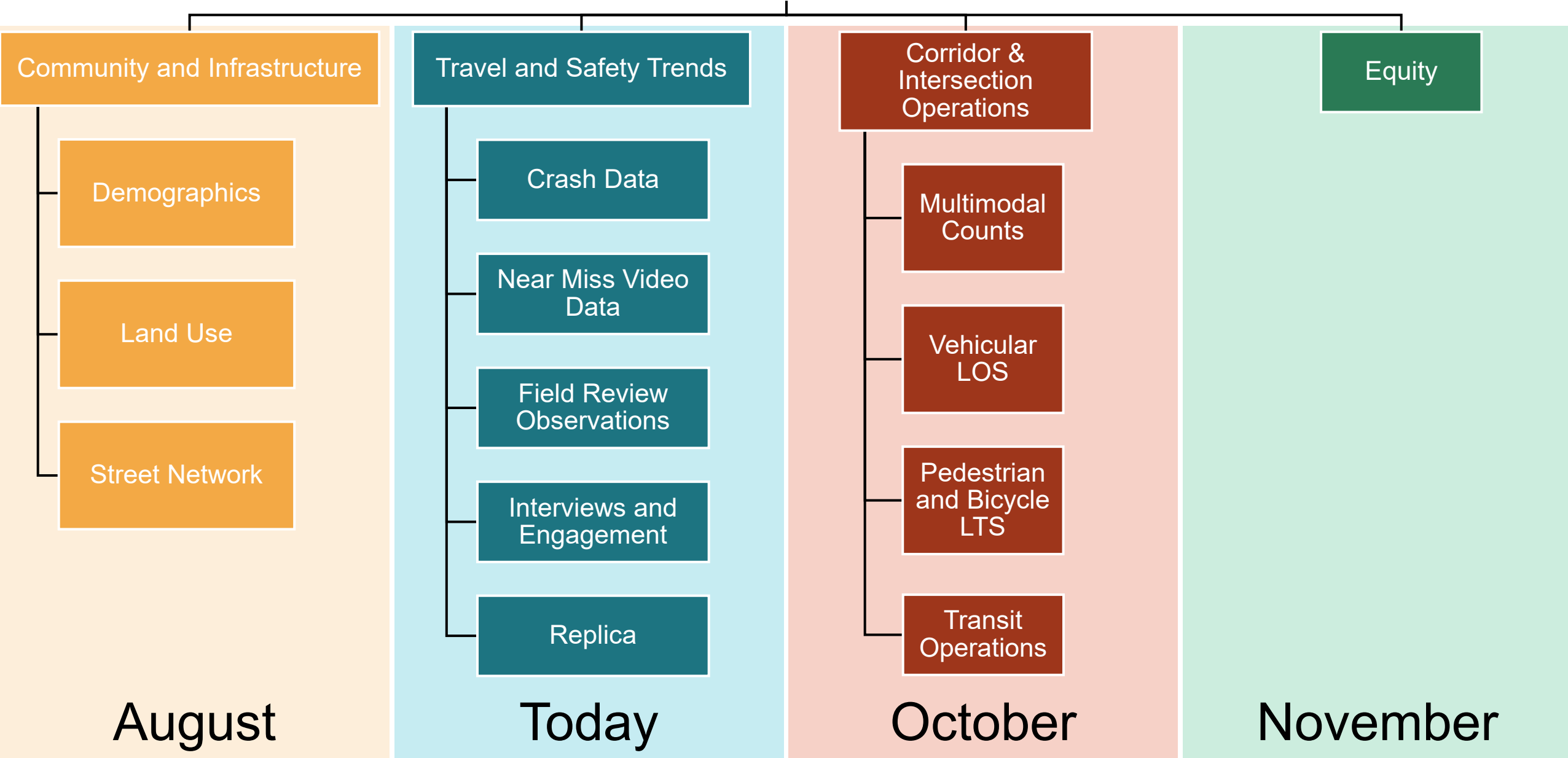
4-Lane Cross-Section



1ST AVENUE CRASH ANALYSIS



1st Avenue DCR Data Analysis



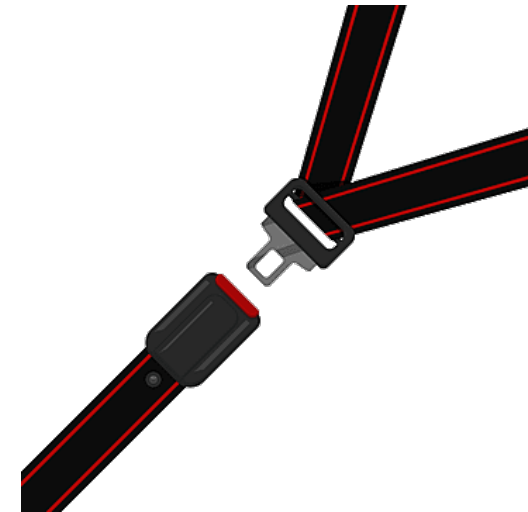
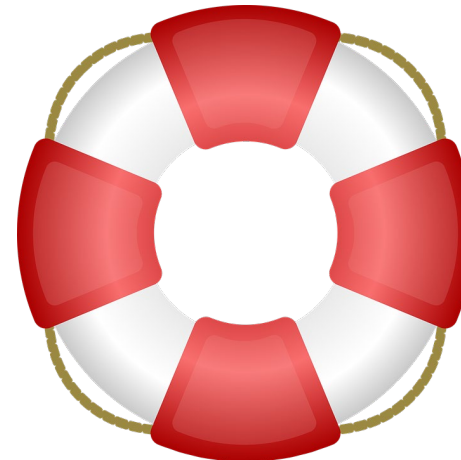


1. Safety

What is Safety?



Protecting from danger, risk, injury etc.



What is Transportation Safety?

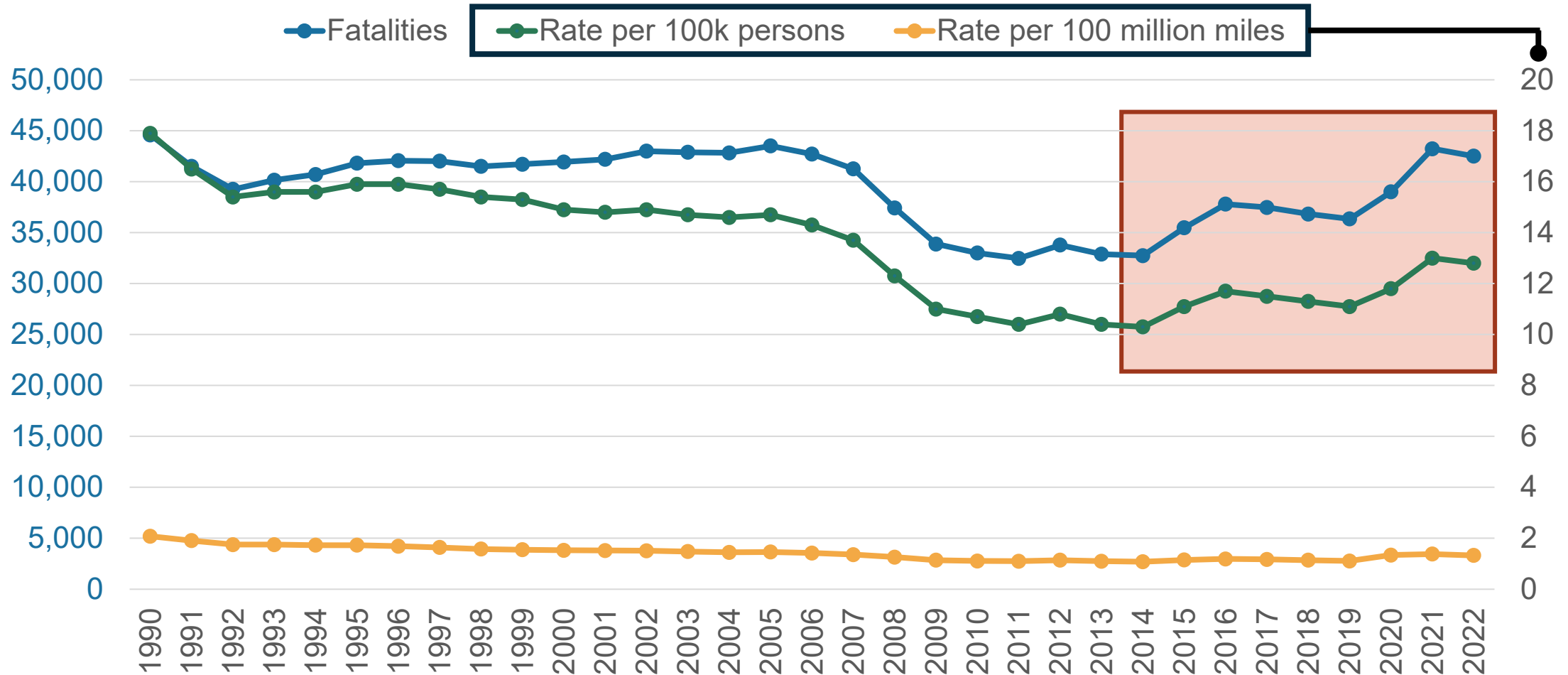
Protecting from danger, risk, injury etc....



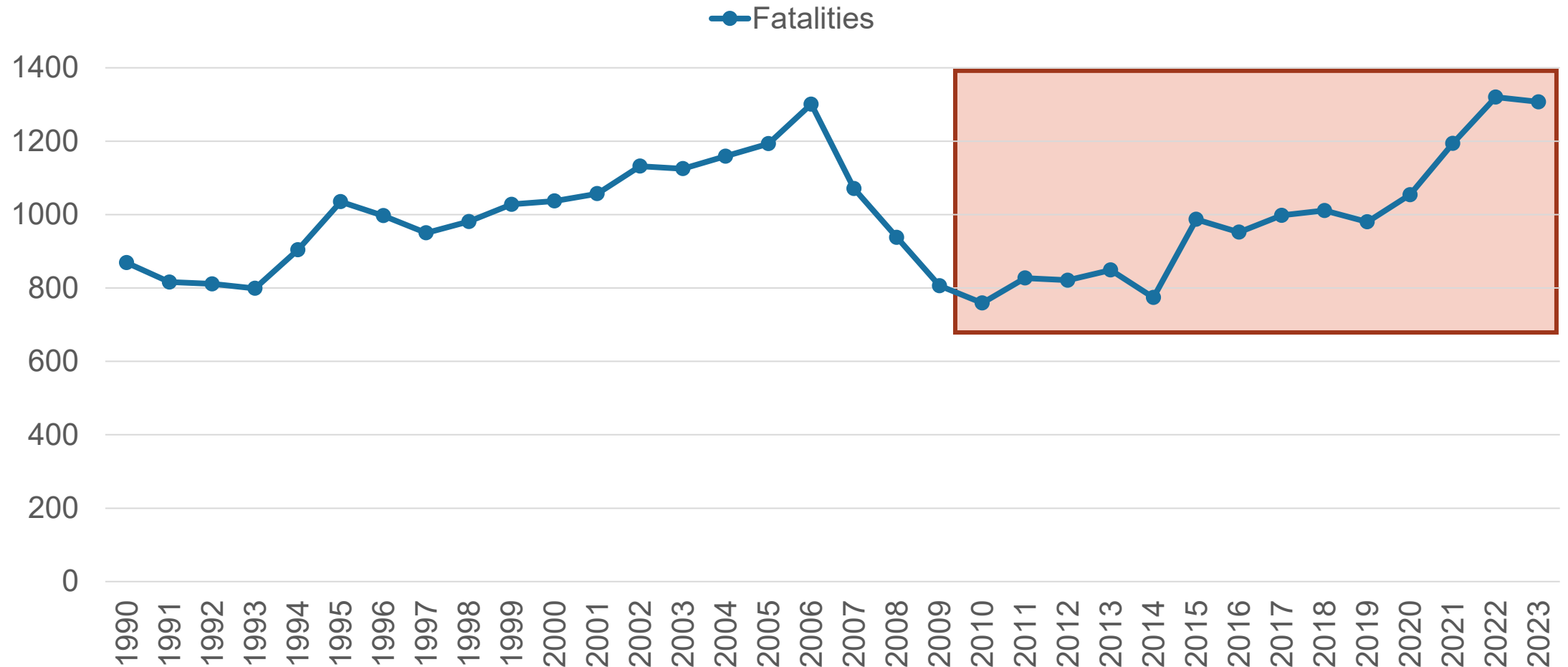
On Our Roadways!



Transportation Safety in the US



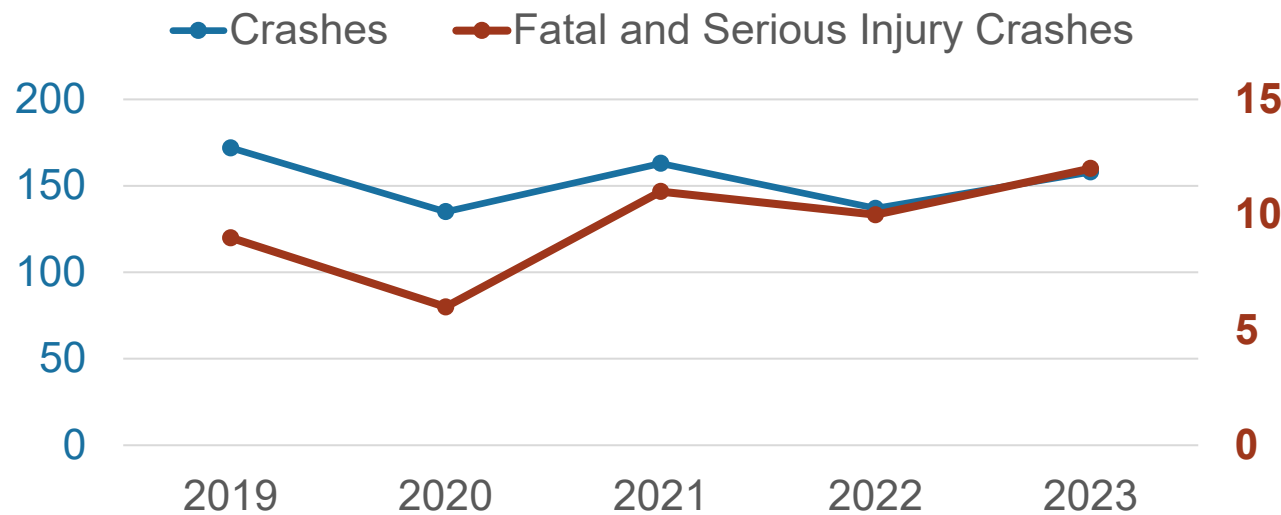
Transportation Safety in AZ



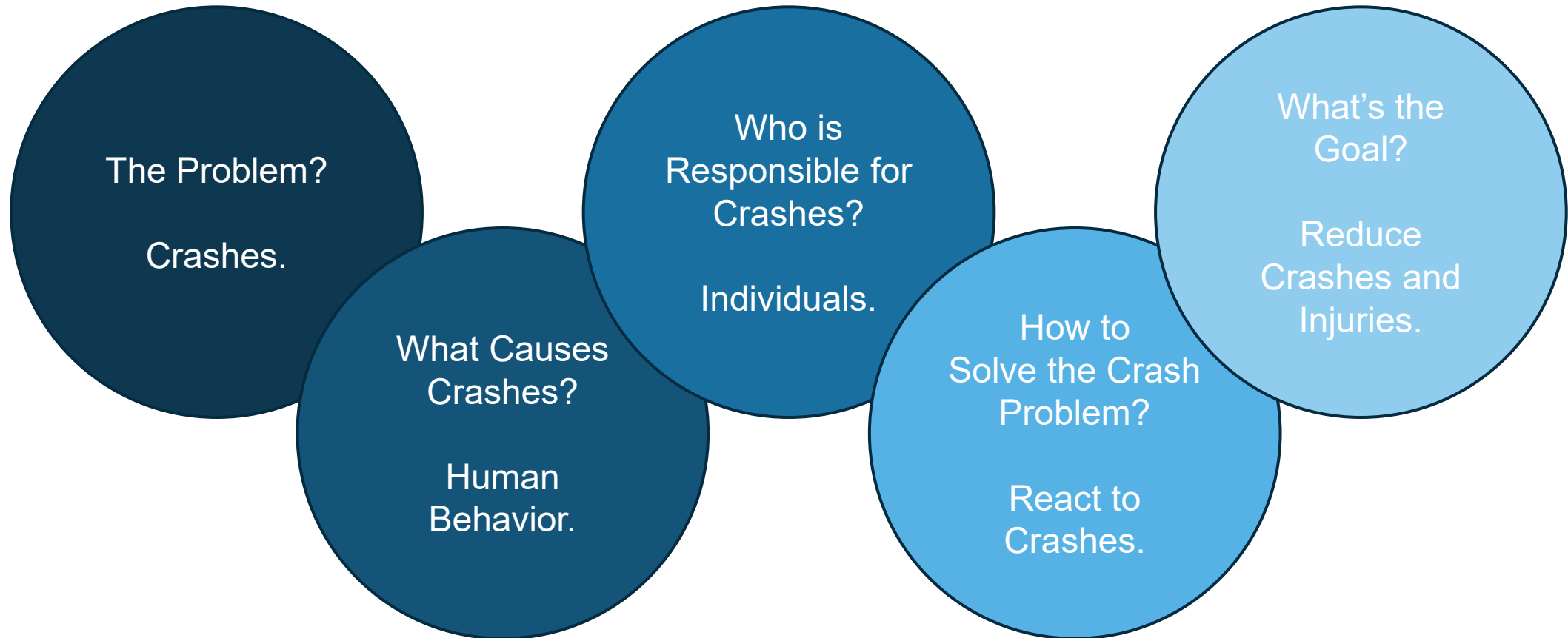
Transportation Safety on First Avenue

Every year, there are...

- 153 crashes.
- 10 fatal and serious injury crashes.

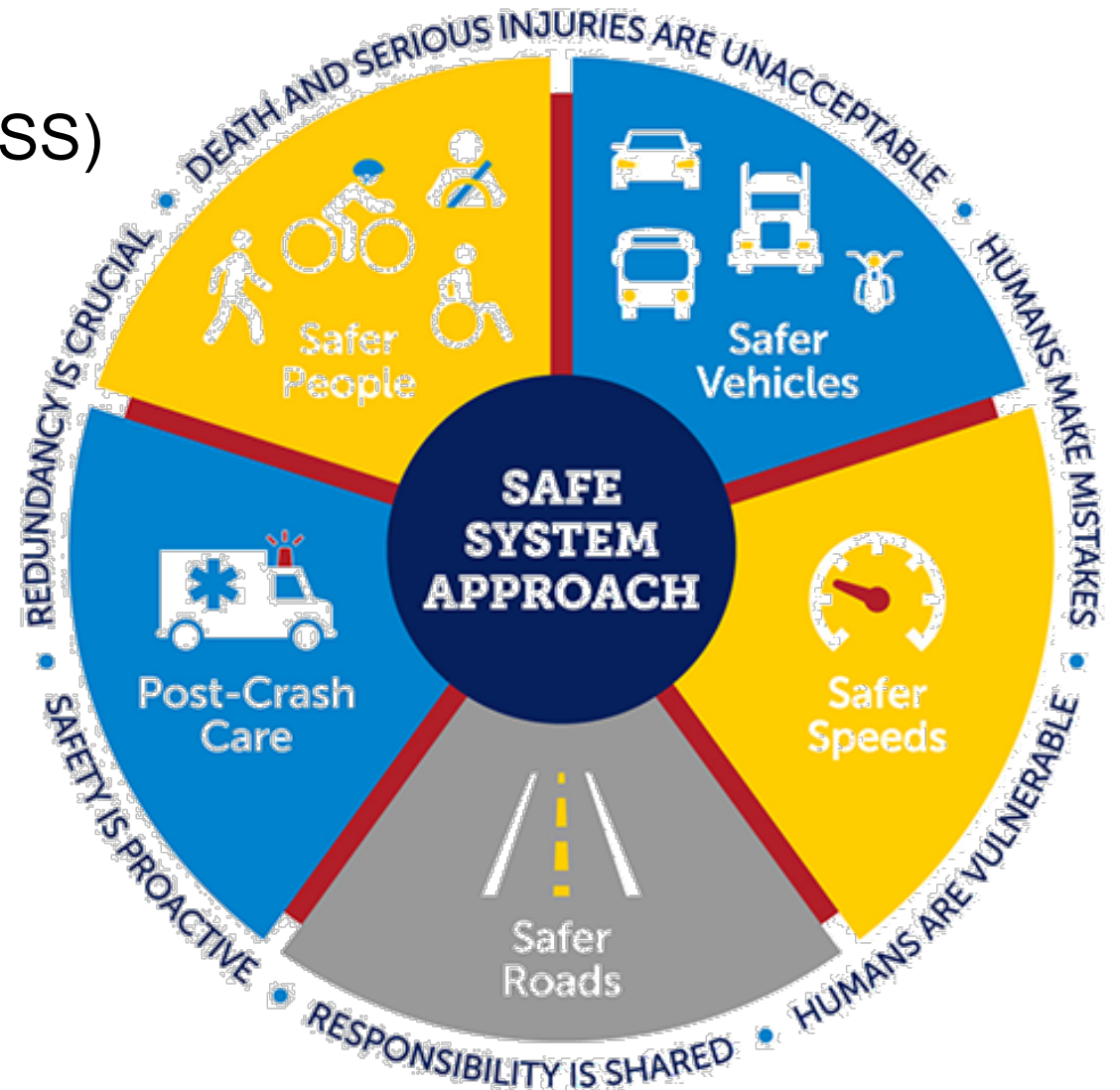


Traditional Approach to Transportation Safety



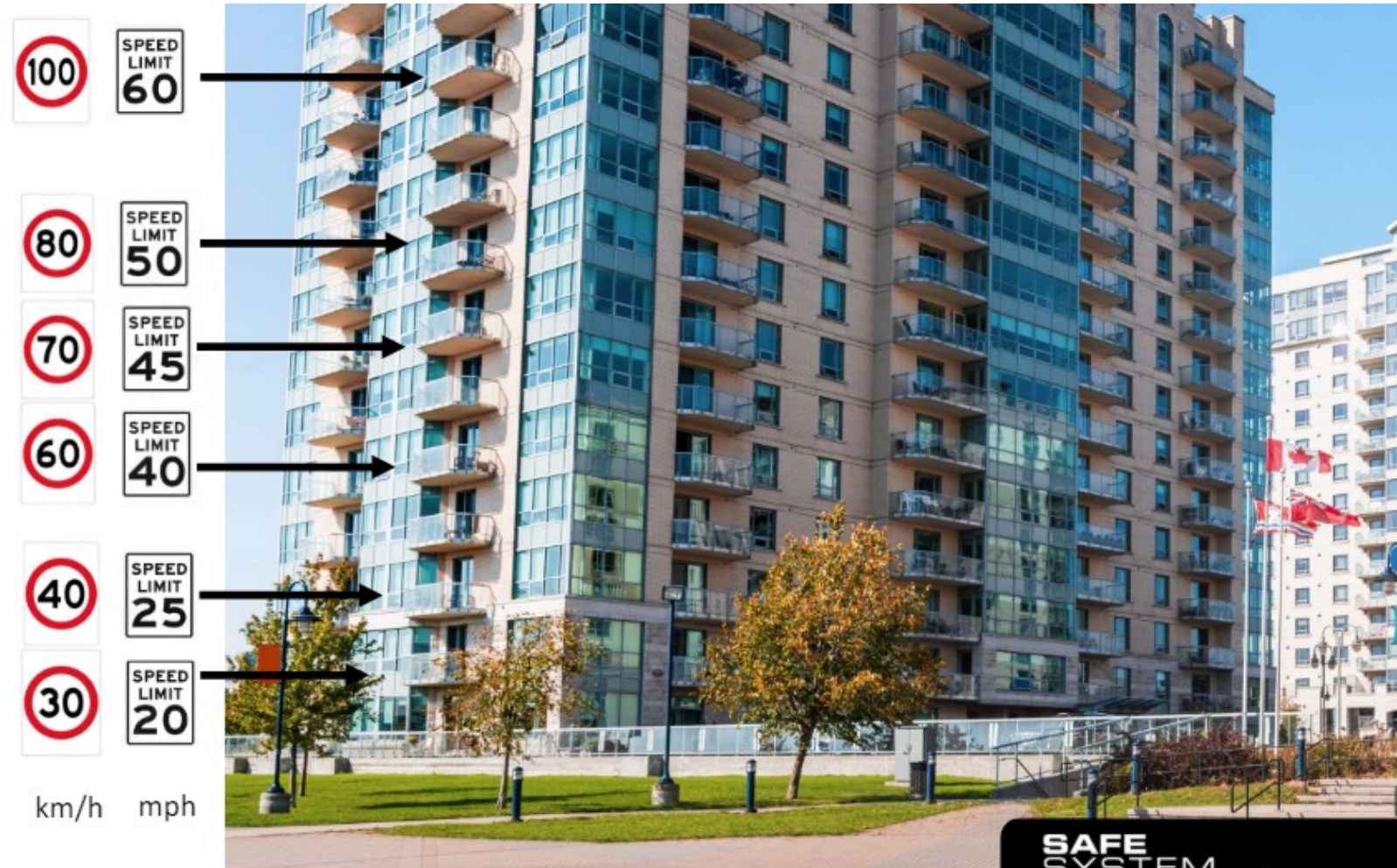
New Approach to Transportation Safety

- National Roadway Safety Strategy (NRSS)
- Safe System Approach
- 5 Elements, 6 Principles



SSA in Practice

- Humans are vulnerable
- Death and serious injuries are unacceptable



Source: Kenn Beer, Safe System Solutions

SSA in Practice

Source: Kenn Beer, Safe System Solutions



Humans make mistakes | Responsibility is shared

SSA in Practice



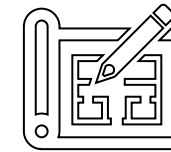
Source: Kenn Beer, Safe System Solutions



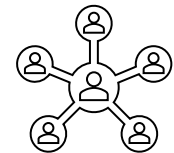
Redundancy is crucial | Safety is proactive

Complete Streets is...

an approach to transportation **PLanning & Design**

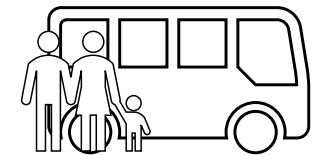


that guides the development of a **Safe, equitable, and connected**



transportation network for everyone – regardless of...

WHO THEY are, WHERE THEY LIVE, and HOW THEY get around.



Safety

Access

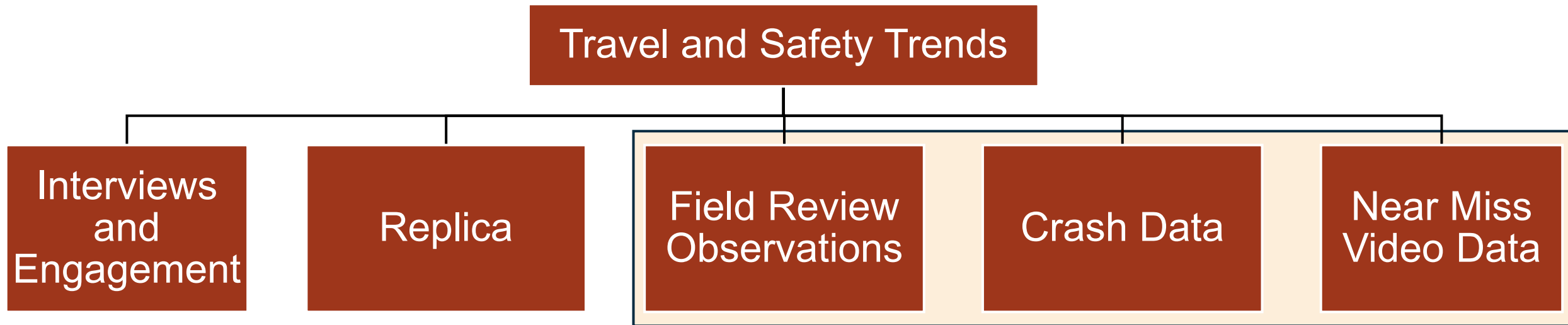
DEI

Land Use

Health

Economic

How Can We Assess Safety?





2. Field Review

Wednesday May 1, 2024 – PM and Nighttime

Field Observations

- Fort Lowell and First Avenue
- Wetmore Road and First Avenue
- Afternoon review
- Nighttime review

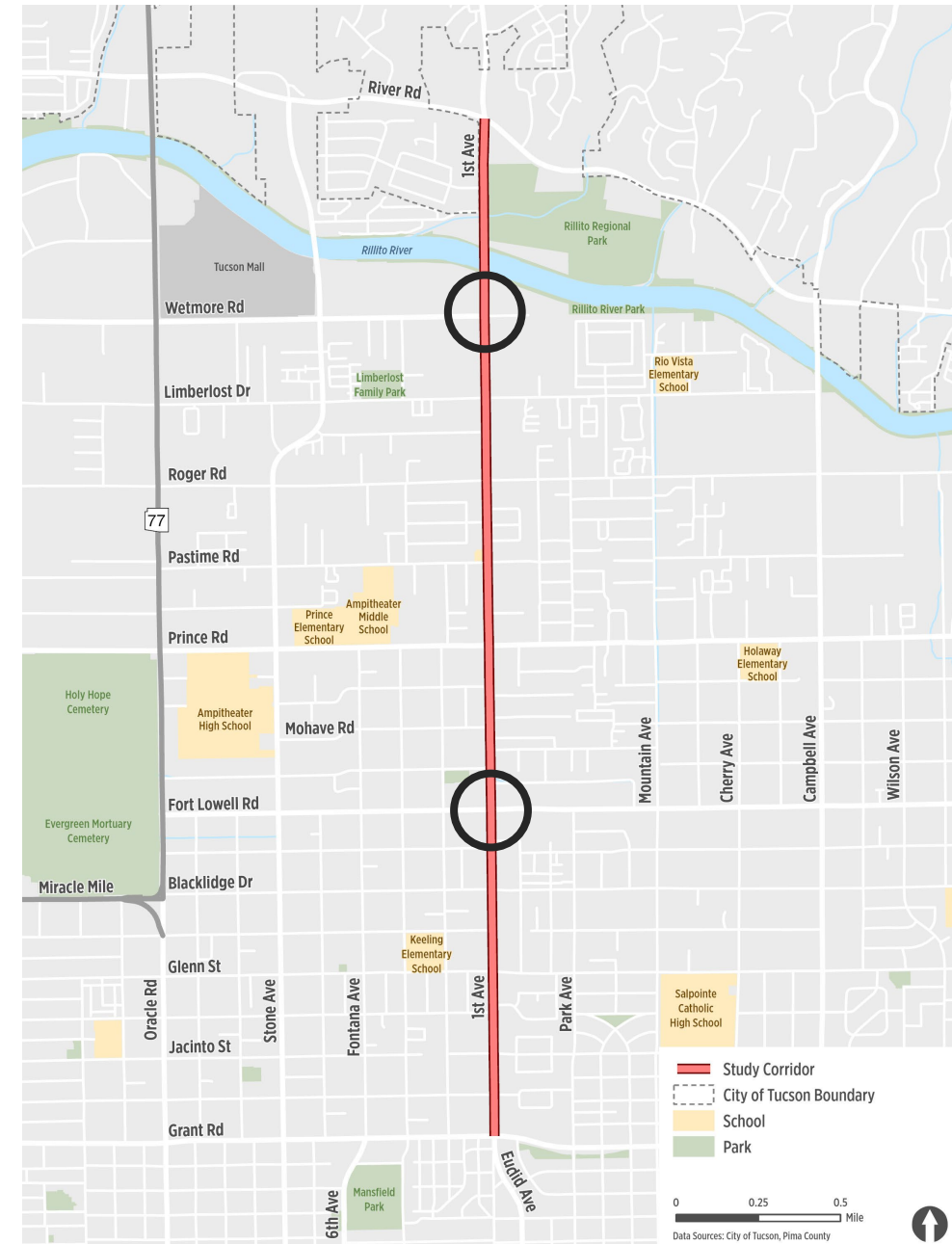
 Road user behaviors and trends

 Multi-modal facilities

 Roadway design

 Traffic operations

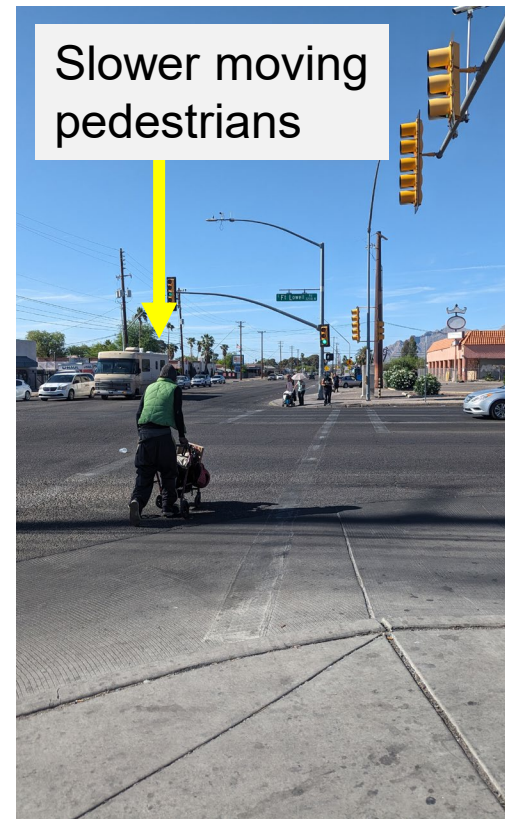
 Lighting



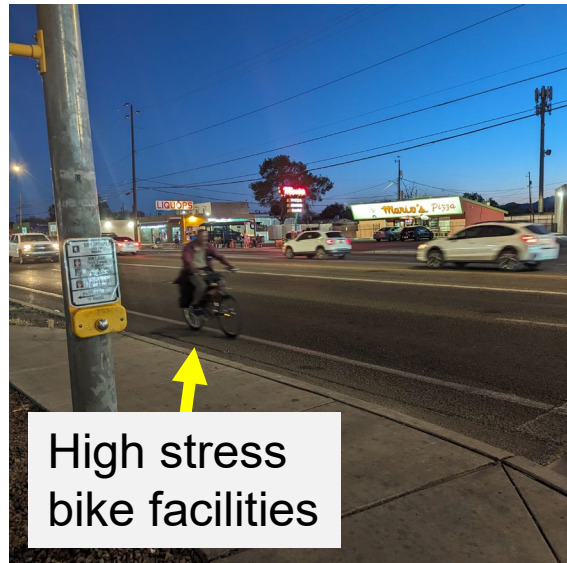
Fort Lowell and First Avenue



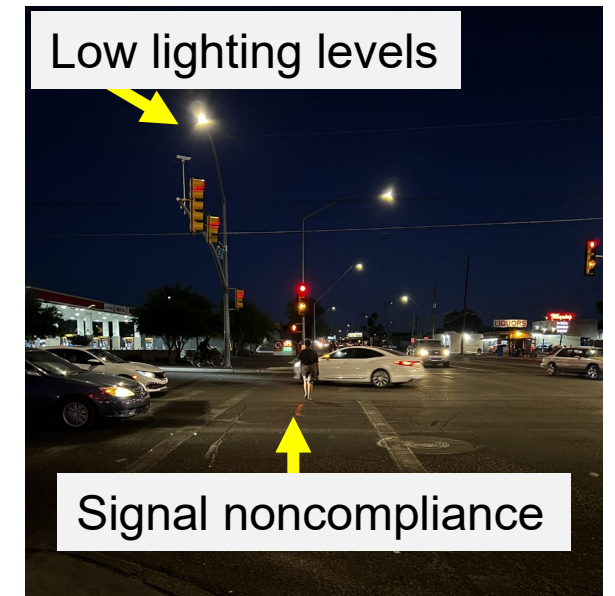
Midblock crossing



Slower moving pedestrians



High stress bike facilities



Low lighting levels

Signal noncompliance

Fort Lowell and First Avenue

Limited number of signal heads and permissive left turn movements

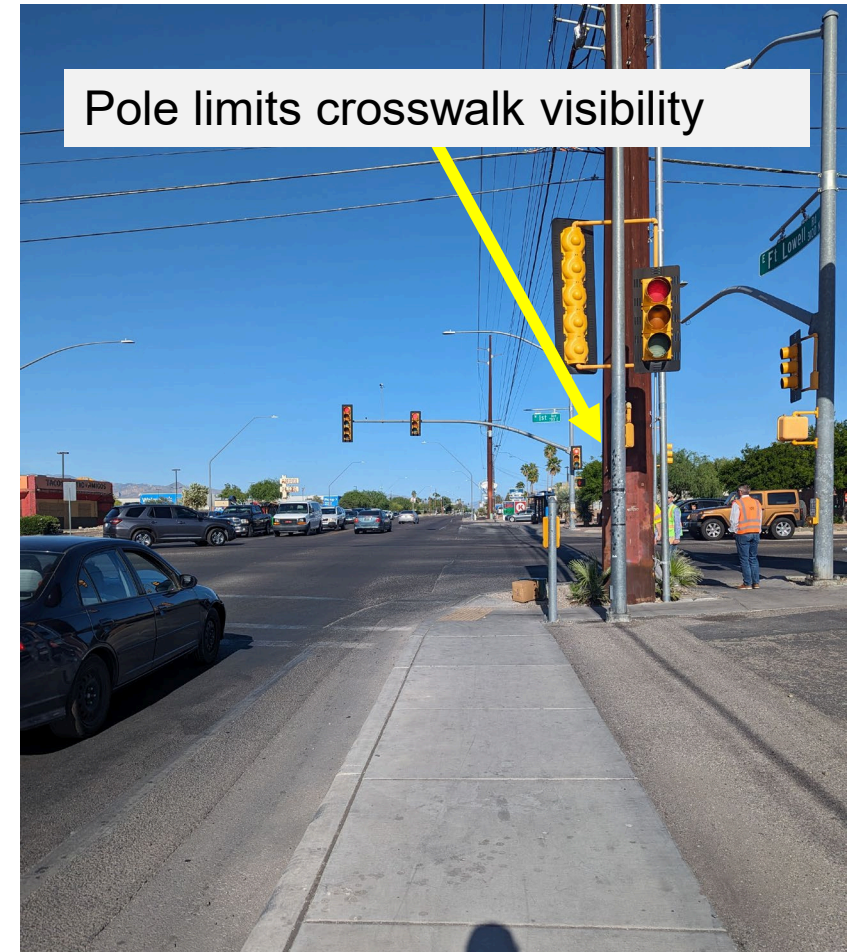


Faded pavement markings



Push activation is not accessible

Pole limits crosswalk visibility



Wetmore Road and First Avenue





3. Crash Data

ADOT Crash Data; 2019 through 2023
Tucson PD Crash Dashboard (2024)

Crash Data Source

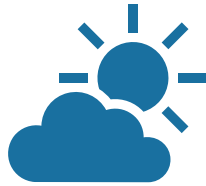
- Arizona Department of Transportation (ADOT)
 - Five years of data (2019 through 2023)
 - Police reports
- Tucson PD Dashboard (2024)



Injury



Crash Type



Weather



Lighting



Contributing
Factors



Impairment

Crash Data Summary

2019 – 2023

Crash Mode	Vision Zero Crashes		Minor Injury	Possible Injury	No Injury (PDO)	Total
	Fatal	Serious Injury				
Vehicle	4	19	132	125	414	694
Single Vehicle	1	3	10	12	25	51
Multi-Vehicle	3	16	122	113	389	643
Pedestrian	11	11	22	12	0	56
Bicyclist	1	2	6	6	0	15
Total Crashes	16	32	160	143	414	765

48 fatal and serious
injury crashes

765
crashes

Crash Locations 2019 – 2023

75% of crashes occurred
at an intersection.



Annual Trends

2019 – 2023

Every year on average there are...

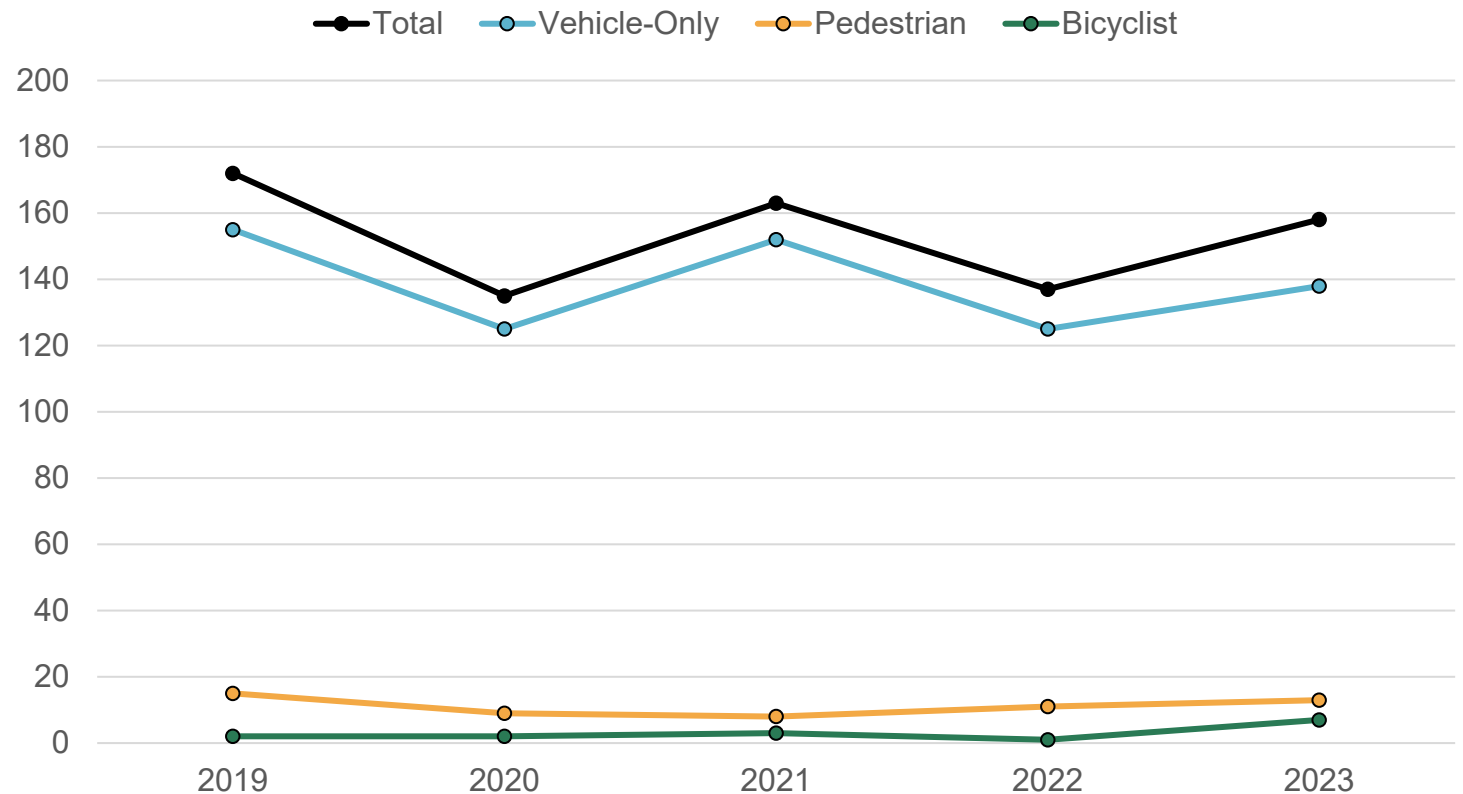
153 crashes

7 serious injury crashes

4 fatal crashes

15 crashes involving a pedestrian or bicyclist

Takeaway: High number of road users involved in fatal and injury crashes.



2024 Data (January – April)

Every year on average there are...

153 crashes

7 serious injury crashes

4 fatal crashes

15 crashes involving a pedestrian or bicyclist

In the first four months of 2024 there were...

63 crashes

1 serious injury crash

1 fatal crash

9 crashes involving a pedestrian or bicyclist

If we project these numbers, there will be...

189 crashes

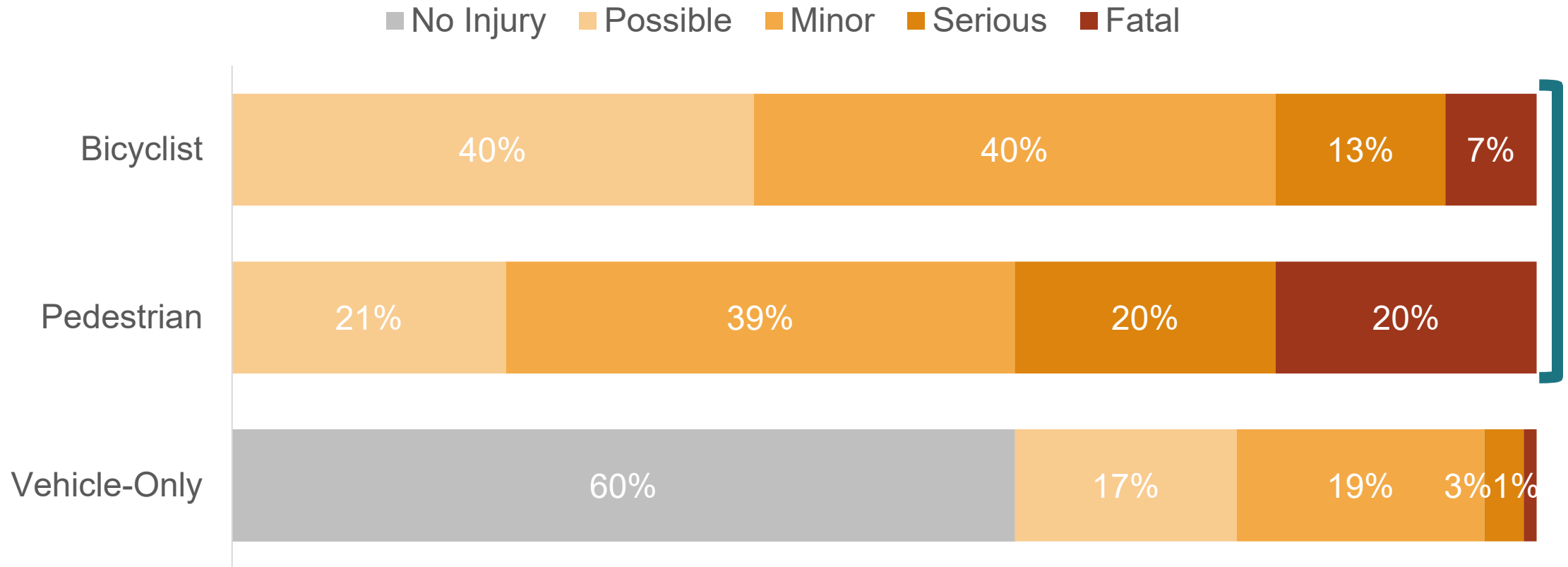
4 serious injury crash

4 fatal crash

36 crashes involving a pedestrian or bicyclist

Crash Severity and Crash Mode

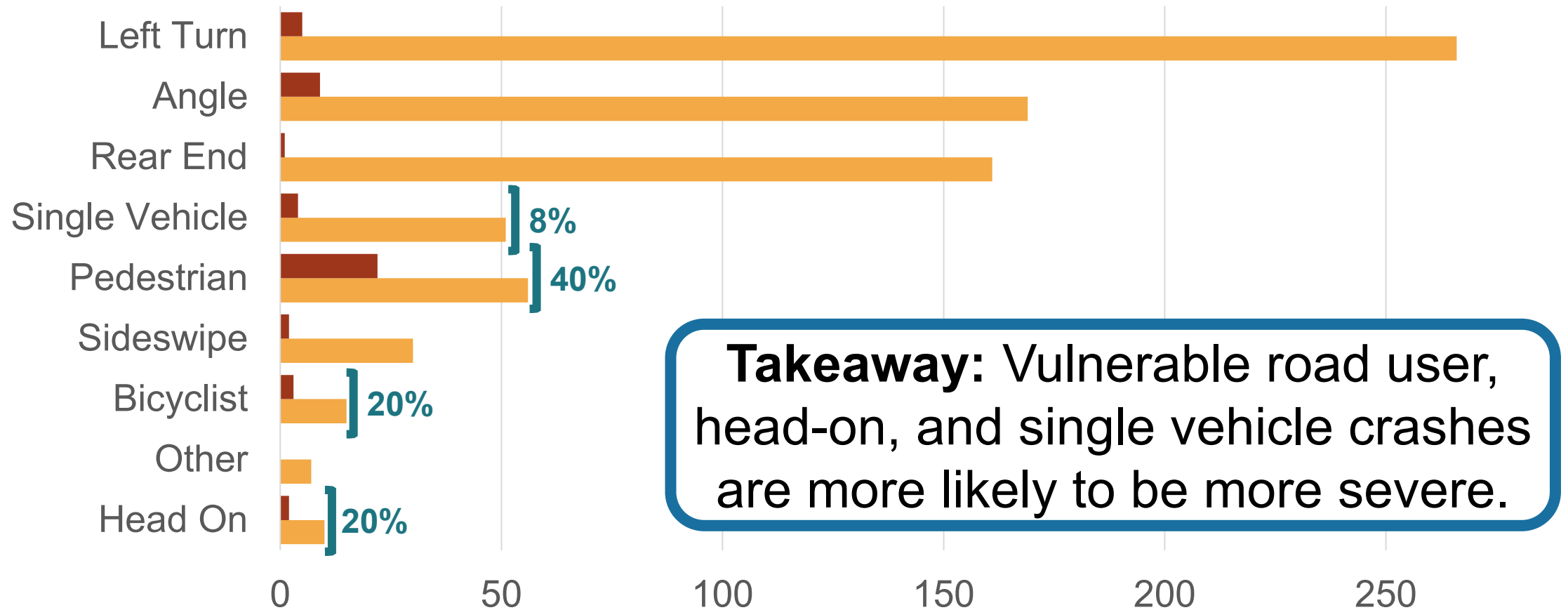
2019 – 2023



Takeaway: Pedestrians and bicyclists are vulnerable.

Crash Type

2019 – 2023



Contributing Factors

2019 – 2023

All Crashes

Fatal and Serious
Injury Crashes



Failure
to yield

235 (31%)

11 (23%)



Speeding

102 (13%)

4 (8%)



Did not use
crosswalk

20 (36%*)

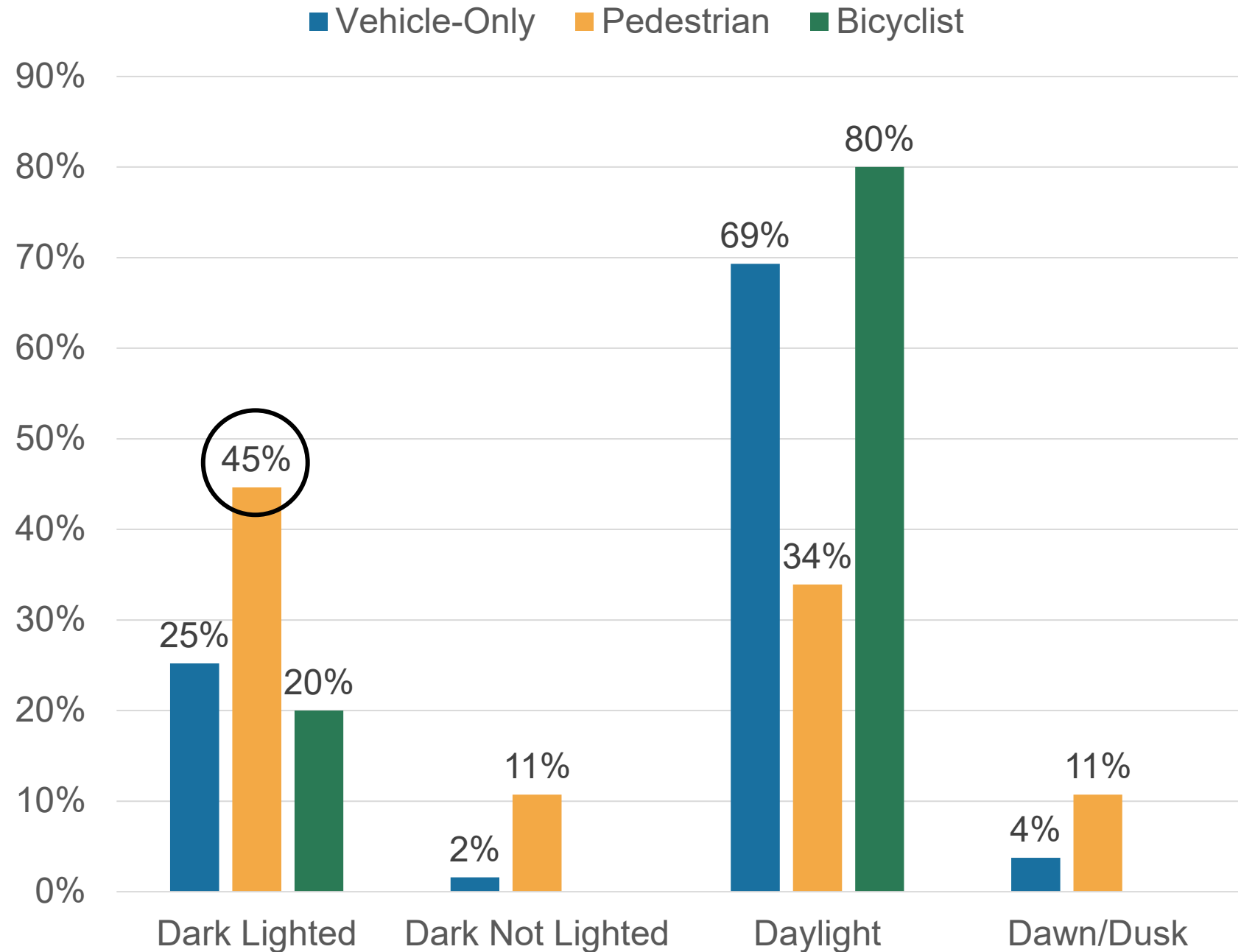
8 (32%*)

*percent of pedestrian crashes

Takeaway: Speeding, not yielding, and non-compliant crossing are common factors in high severity crashes.

Lighting 2019 – 2023

Takeaway:
Dark lighting
is contributing
to pedestrian
crashes.



Impairment

2019 – 2023



16%

7%



57%
of 15 bicyclists

0%



4%

0.5%

Takeaway: A comprehensive approach should be considered to enhance safety: safer roads, speeds, people, and emergency response.

Key Findings

A high number of road users are involved in **fatal** and **injury** crashes. Pedestrian and bicyclist collisions are **6-12 times more likely** to result in a fatal or serious injury.

Pedestrian, bicyclist, head-on, and single vehicle crashes are more likely to be more severe. Other common crash types, like left turn and angle crashes, can still result in high severity injuries.

Speeding, not yielding, and non-compliant crossing are common factors in high severity crashes.

Dark lighting is contributing to pedestrian crashes.

A **comprehensive approach** should be considered to enhance safety: safer roads, speeds, people, and emergency response.



4. Near Miss Video Data

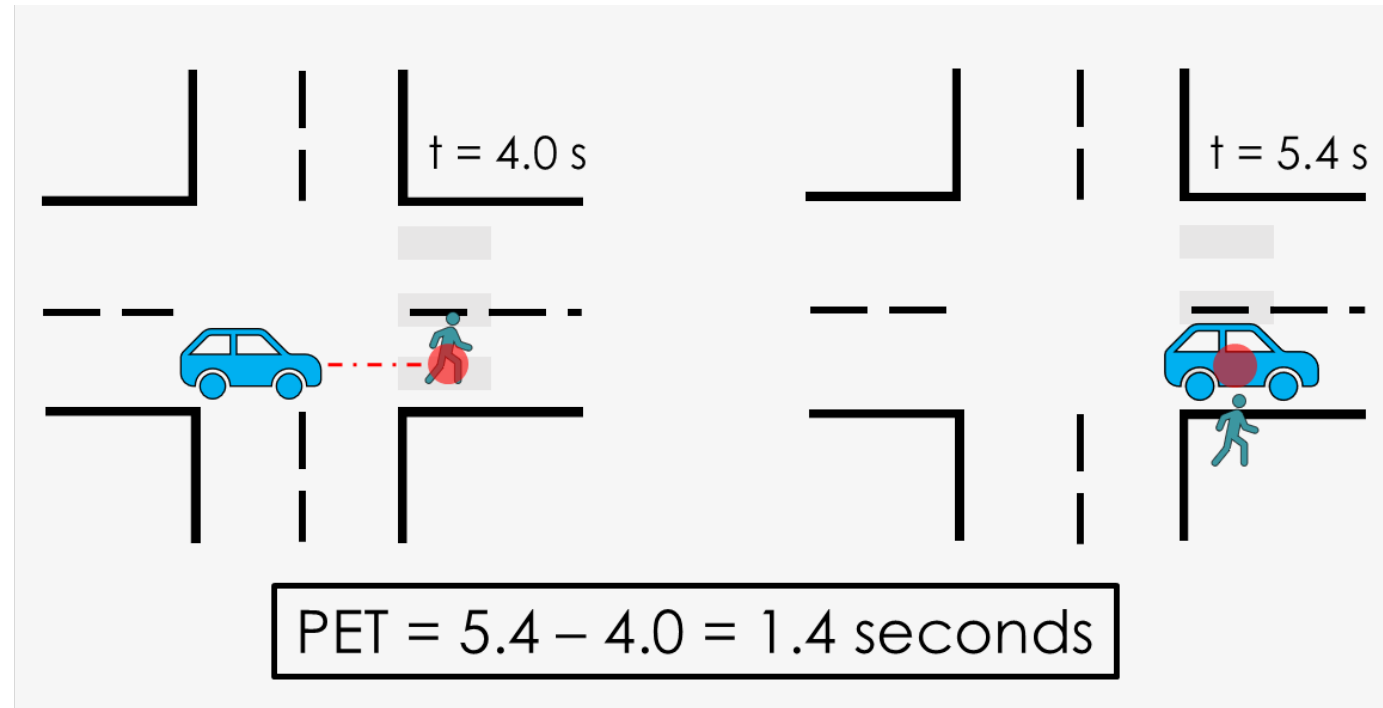
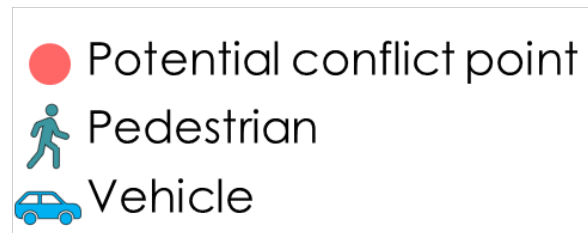
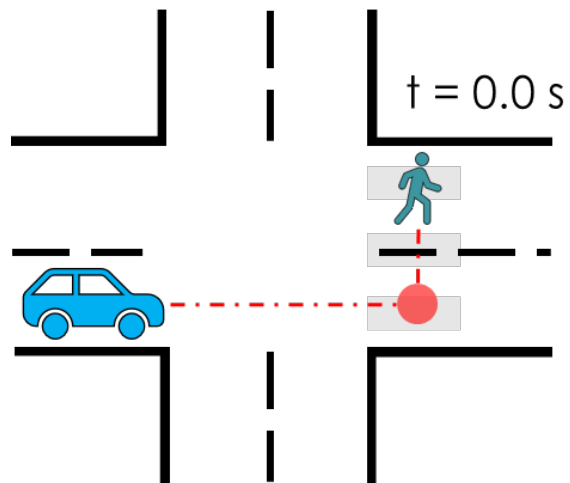
Street Simplified 24-Hour Video Data
Tuesday March 26th – Wednesday March 27th



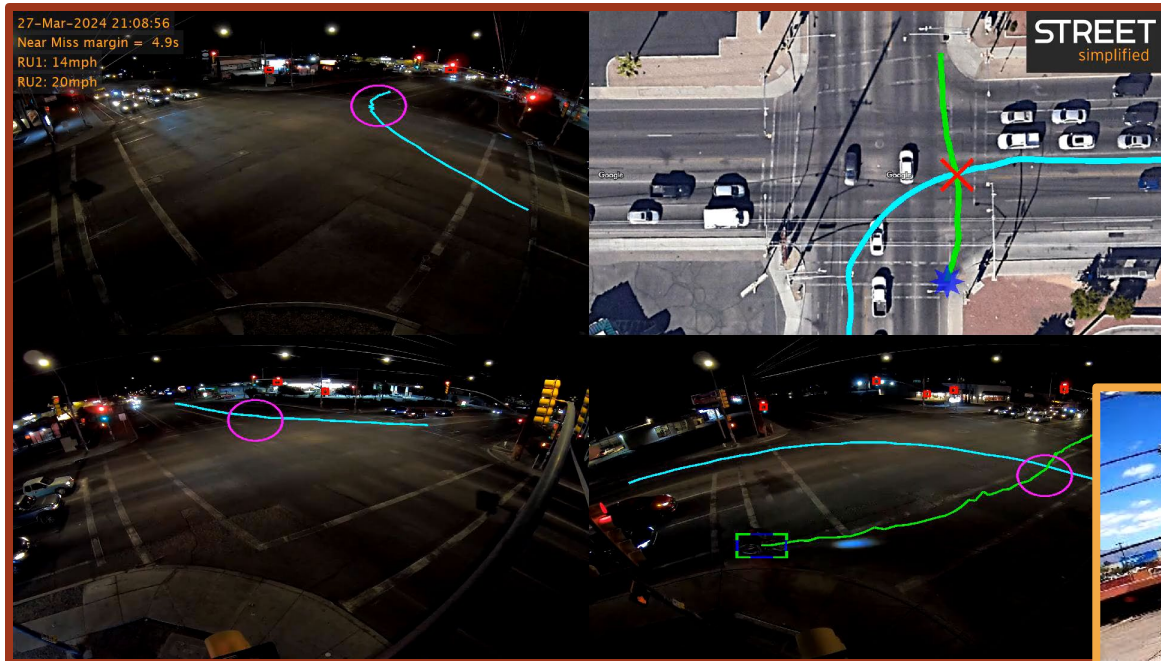
Near Miss Definition and Severity

Definition: two road users passing through the same point in space with a small window of time between their two arrivals (less than 5 seconds).

Measuring severity: post encroachment time (PET)

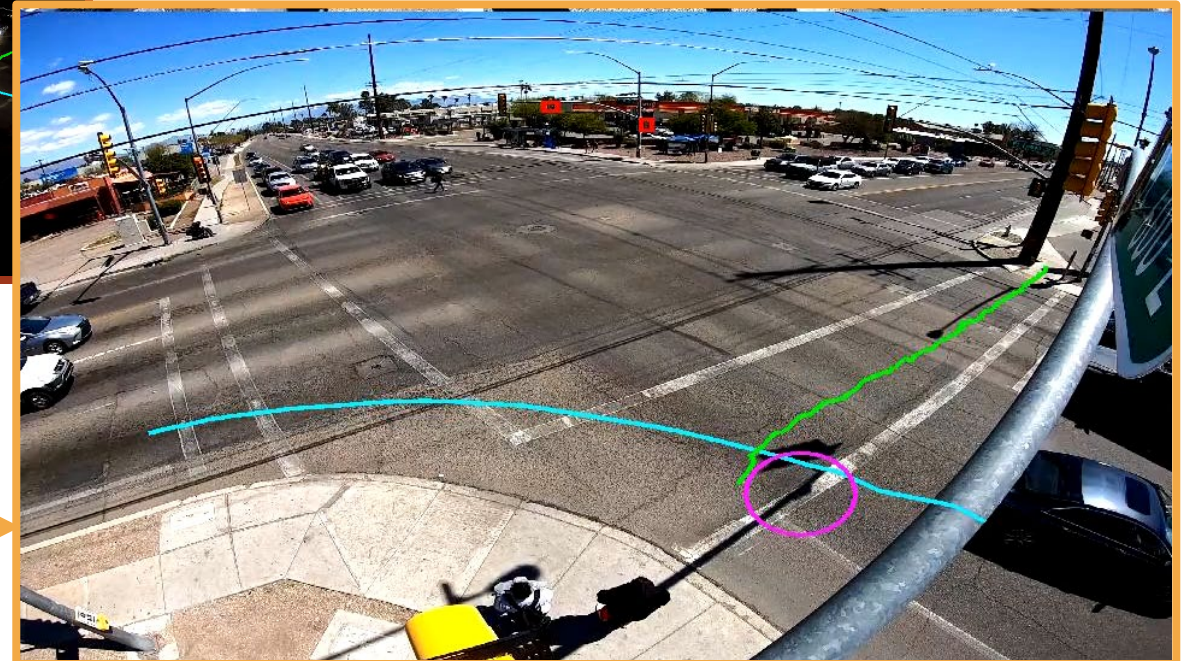


PET Examples



PET = 4.9 seconds
Bicyclist-Vehicle
East leg crosswalk
Fort Lowell Road

PET = 0.4 seconds
Vehicle-Pedestrian
West leg crosswalk
Fort Lowell Road



Near Miss Data Summary

Critical Near Miss: PET of 0.1 – 1.9 seconds

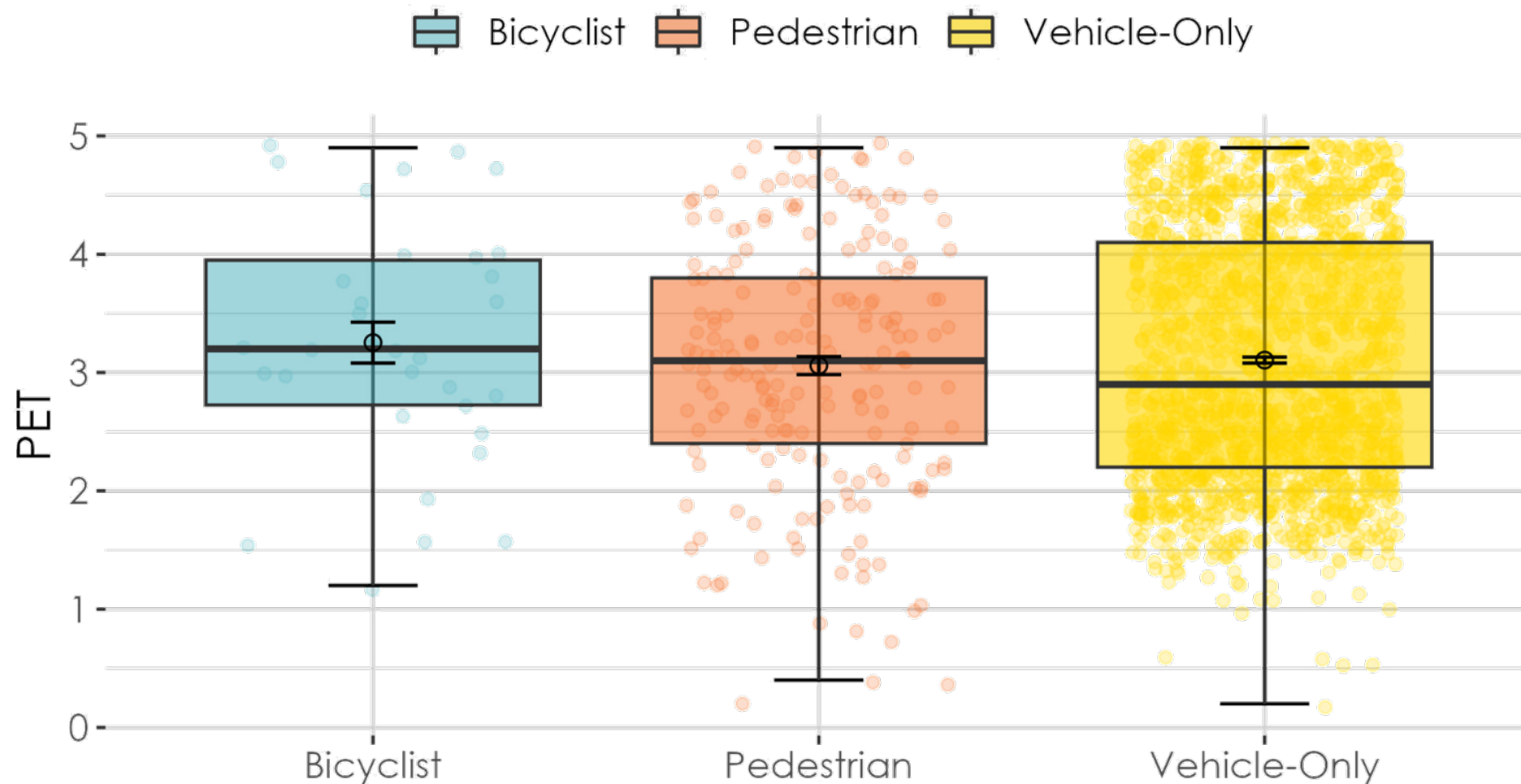
Potential Near Miss: PET 2.0 – 4.9 seconds

Why are we
analyzing near
miss data?

Proactive safety!

Mode	Critical Near Misses		Potential Near Misses		Total	
	Fort Lowell	Wetmore	Fort Lowell	Wetmore	Fort Lowell	Wetmore
Vehicle	101	147	689	784	790	931
Pedestrian	23	7	121	43	144	50
Bicyclist	3	2	19	9	22	11
Total	127	156	829	836	956	992
	283		1,665		1,948	

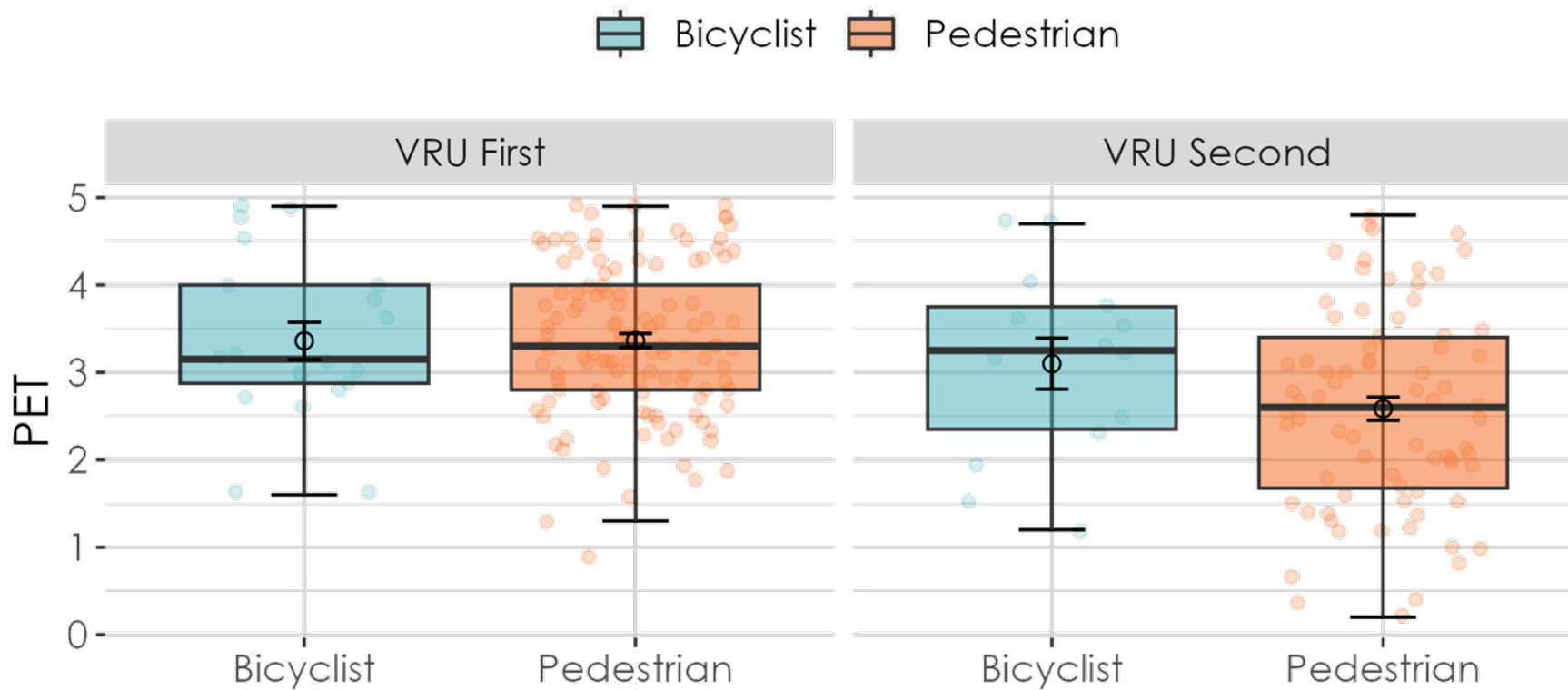
PET Distribution by Mode



Post Encroachment Time (PET)

VRU Near Misses

PETs are lower when the VRU is arriving at the potential conflict point second.



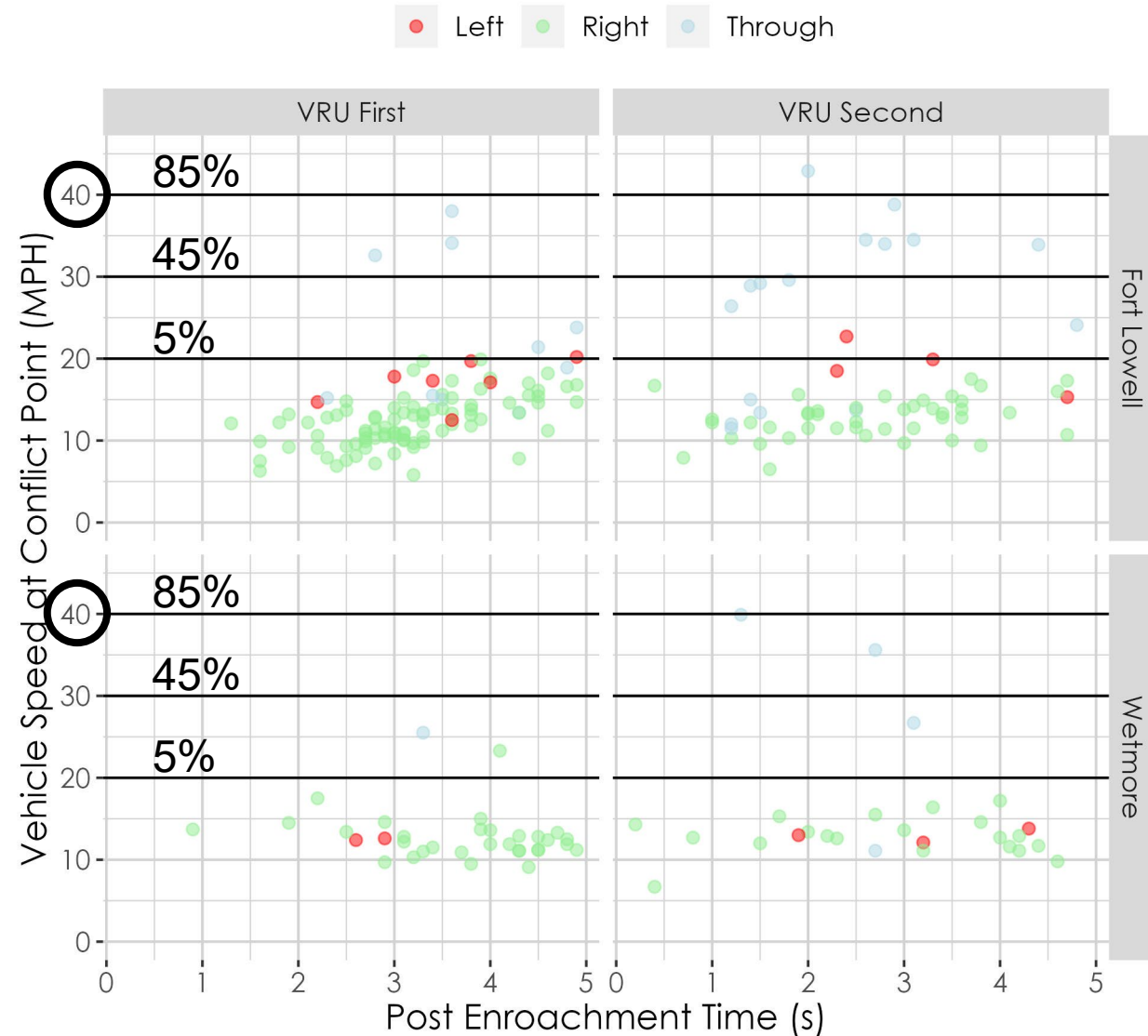
Takeaway:
VRU near misses vary in severity by order of arrival.

Vehicle Speed and Movement

VRU Near Misses

- All vehicles traveling 25+ MPH were traveling straight.
- Turning vehicles are moving at slower speeds.
- Through vehicles conflicting with VRUs indicates non-compliance.

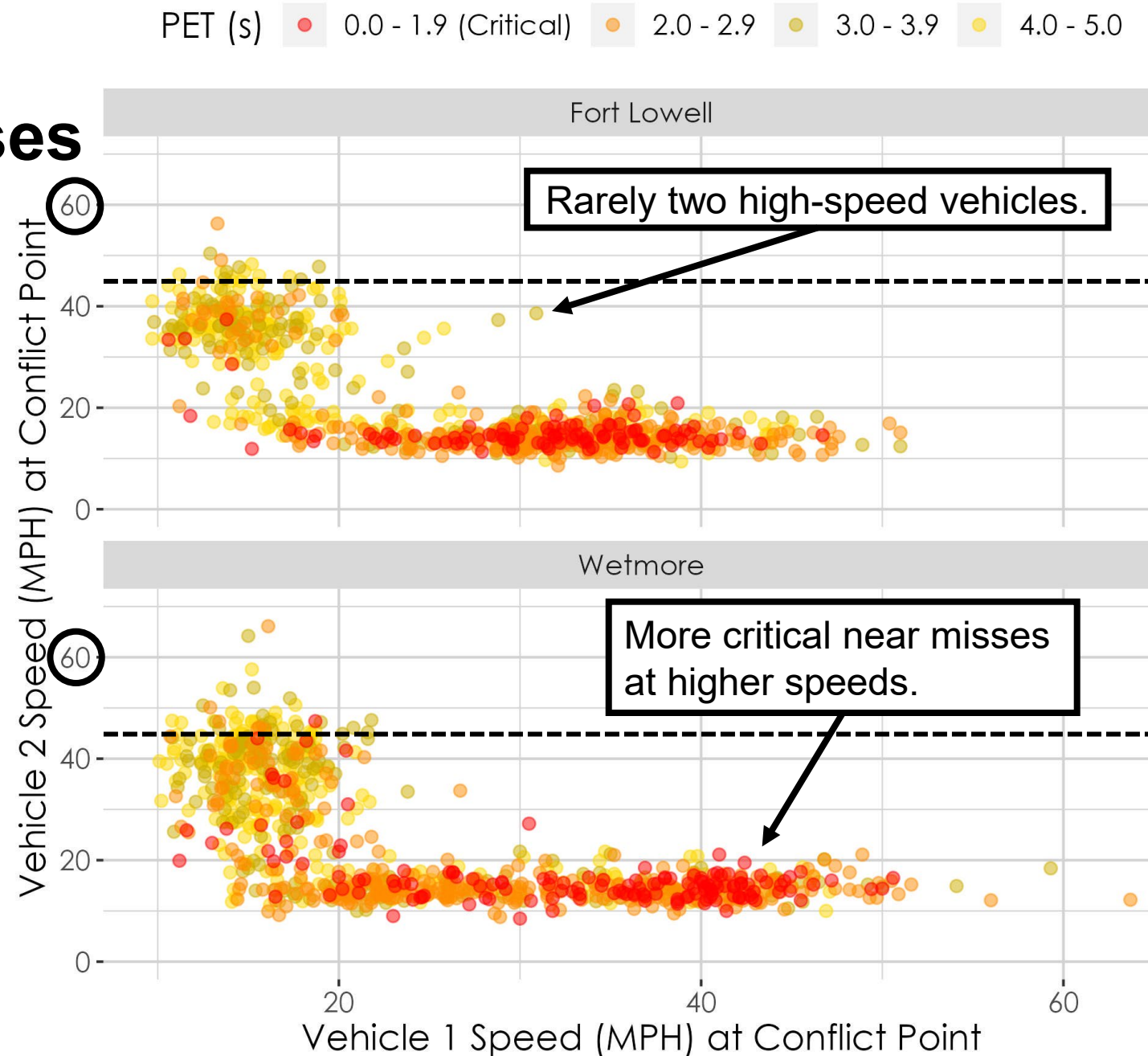
Takeaway: It will take multiple countermeasures to address VRU near misses.



Vehicle Speed

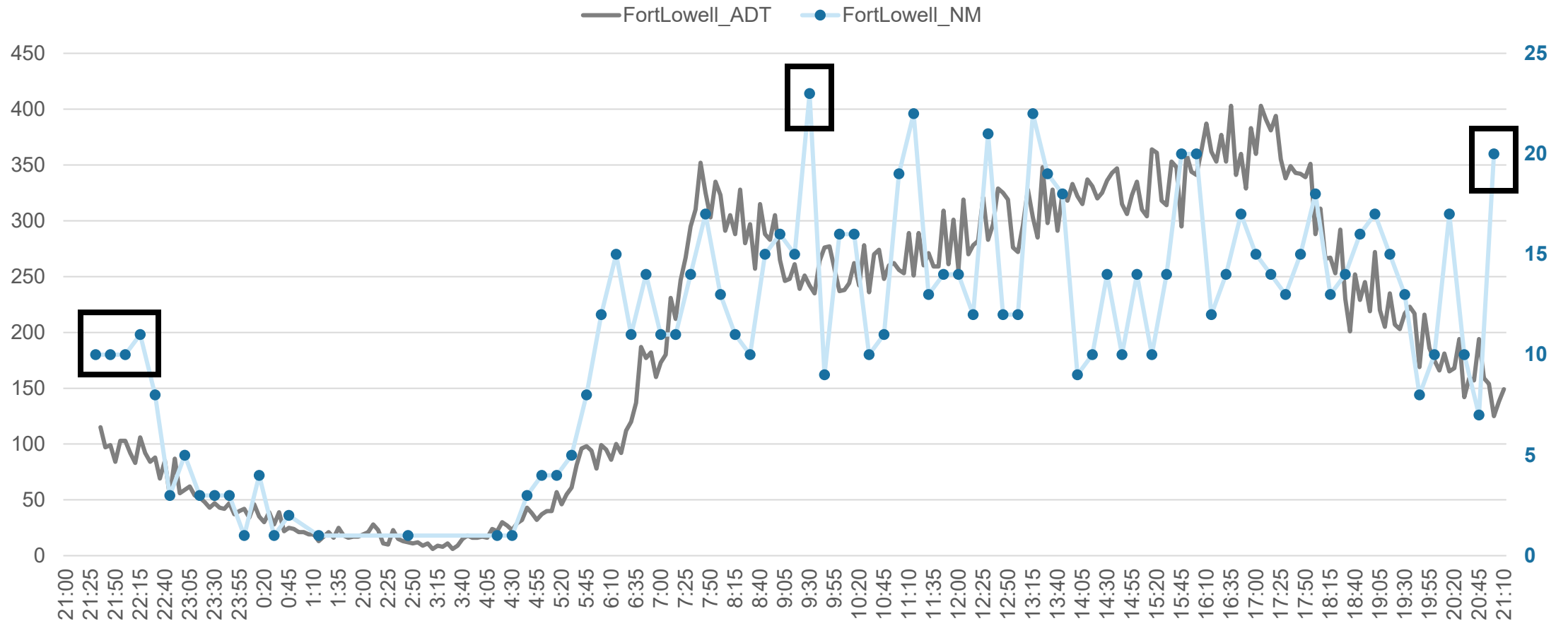
Vehicle-Only Near Misses

Takeaway: Vehicle-only near misses involve higher speeds.



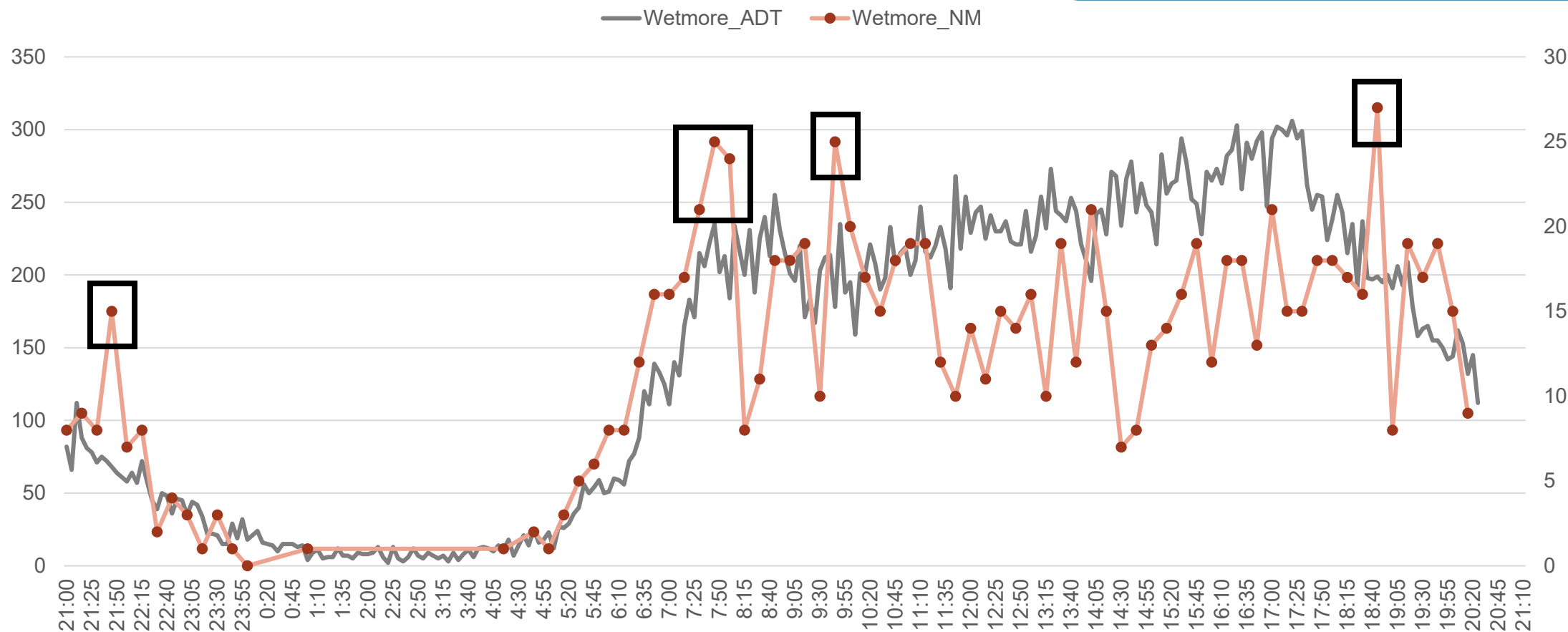
Near Miss Time of Day

Takeaway: Near misses increase during daytime at off-peak periods.



Near Miss Time of Day

Takeaway: Near misses increase during daytime off-peak periods.

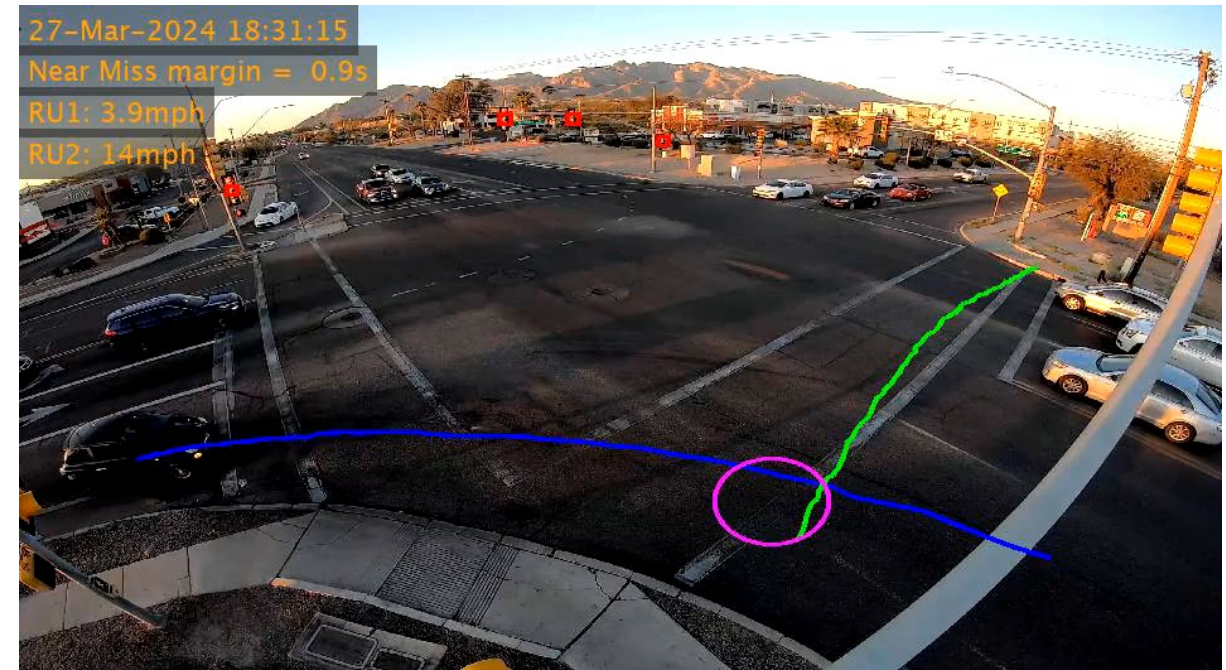


Crosswalk Near Miss Videos

North leg crosswalk at Fort Lowell Road



South leg crosswalk at Wetmore Road

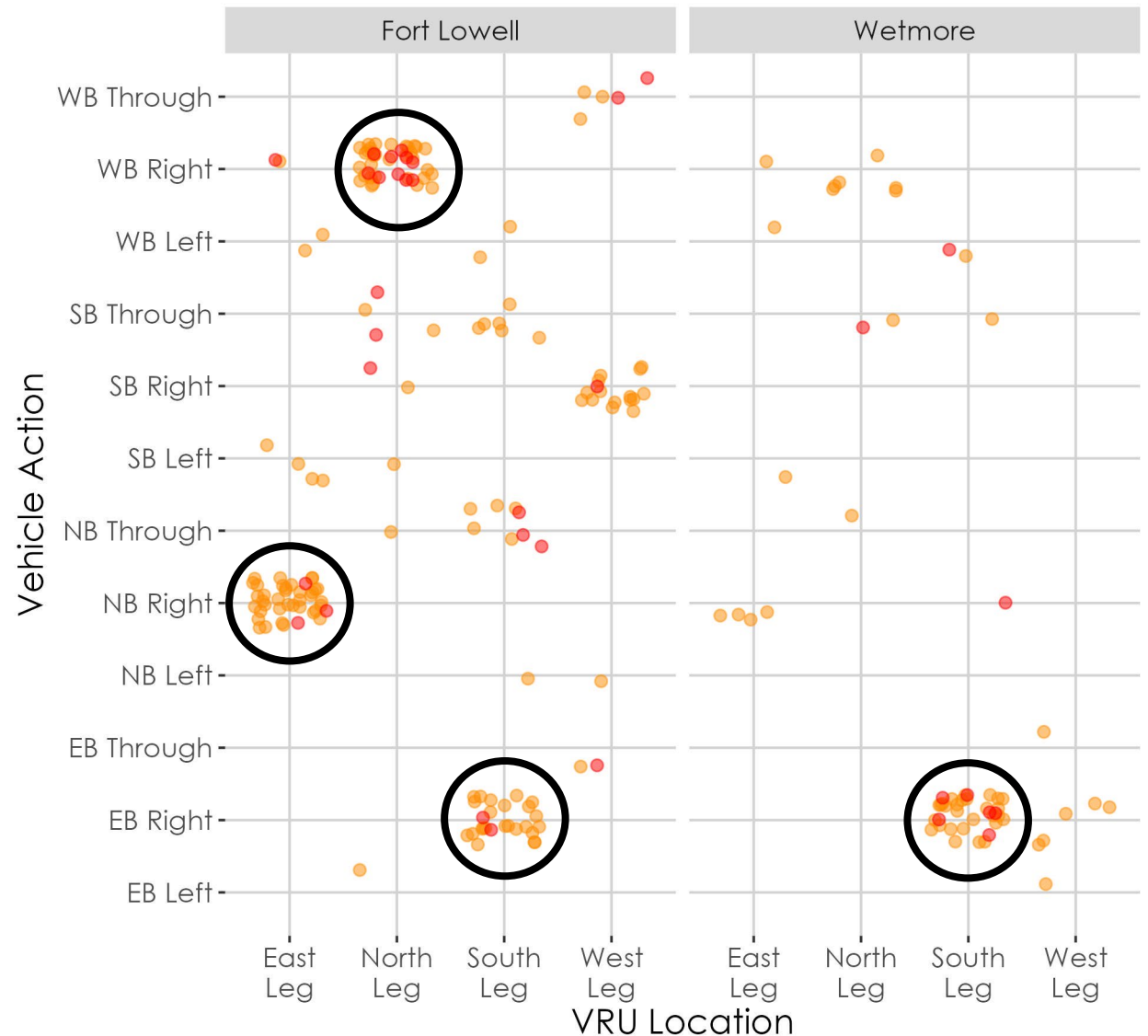


Road User Movements

VRU Near Misses

Takeaway: Right-turning vehicles are involved in several near misses with VRUs.

- The crosswalks with the most critical near misses are...
 - North leg at Fort Lowell Road
 - South leg at Wetmore Road

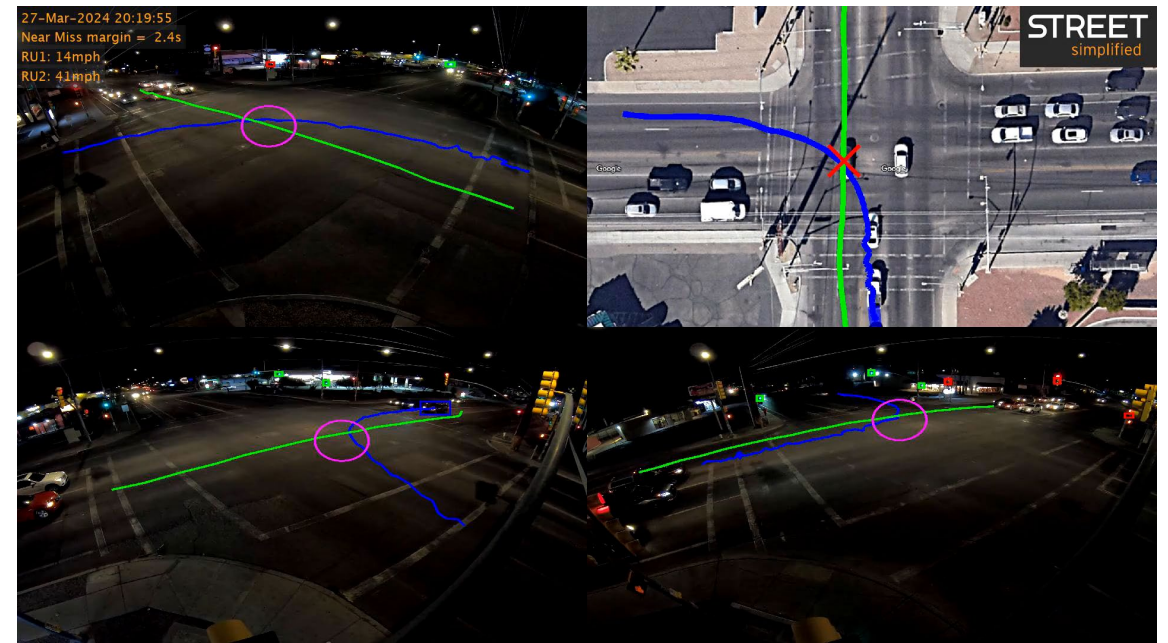


Left Turn Near Miss Videos

Fort Lowell Road



Wetmore Road



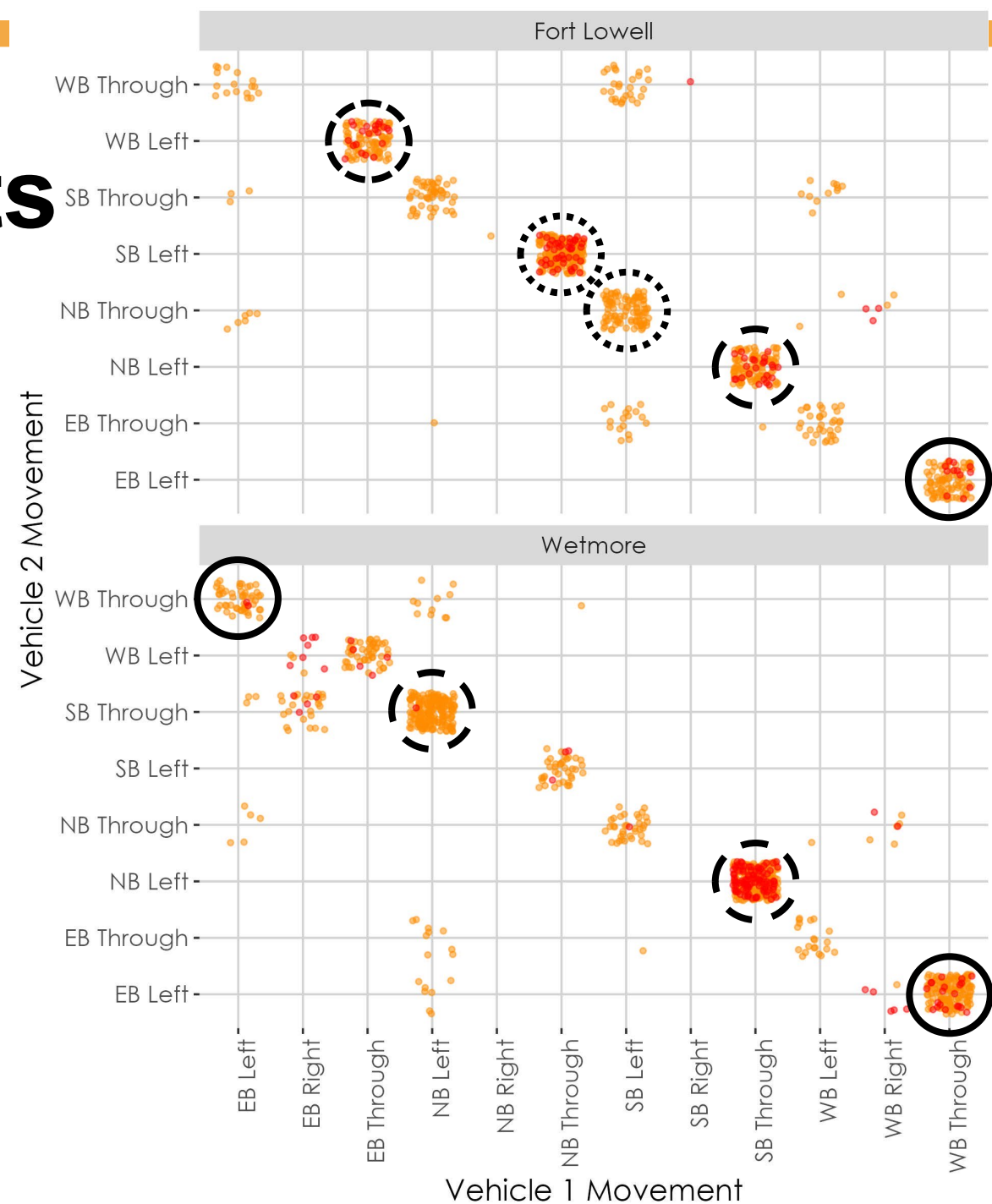
Road User Movements

Vehicle-Only Near Misses

Takeaway: Most of the near misses involve a through vehicle and a left-turning vehicle.

Several critical near misses involve...

- NB through – SB left (Fort Lowell Road)
- SB through – NB left (Wetmore Road)



Road User Movements

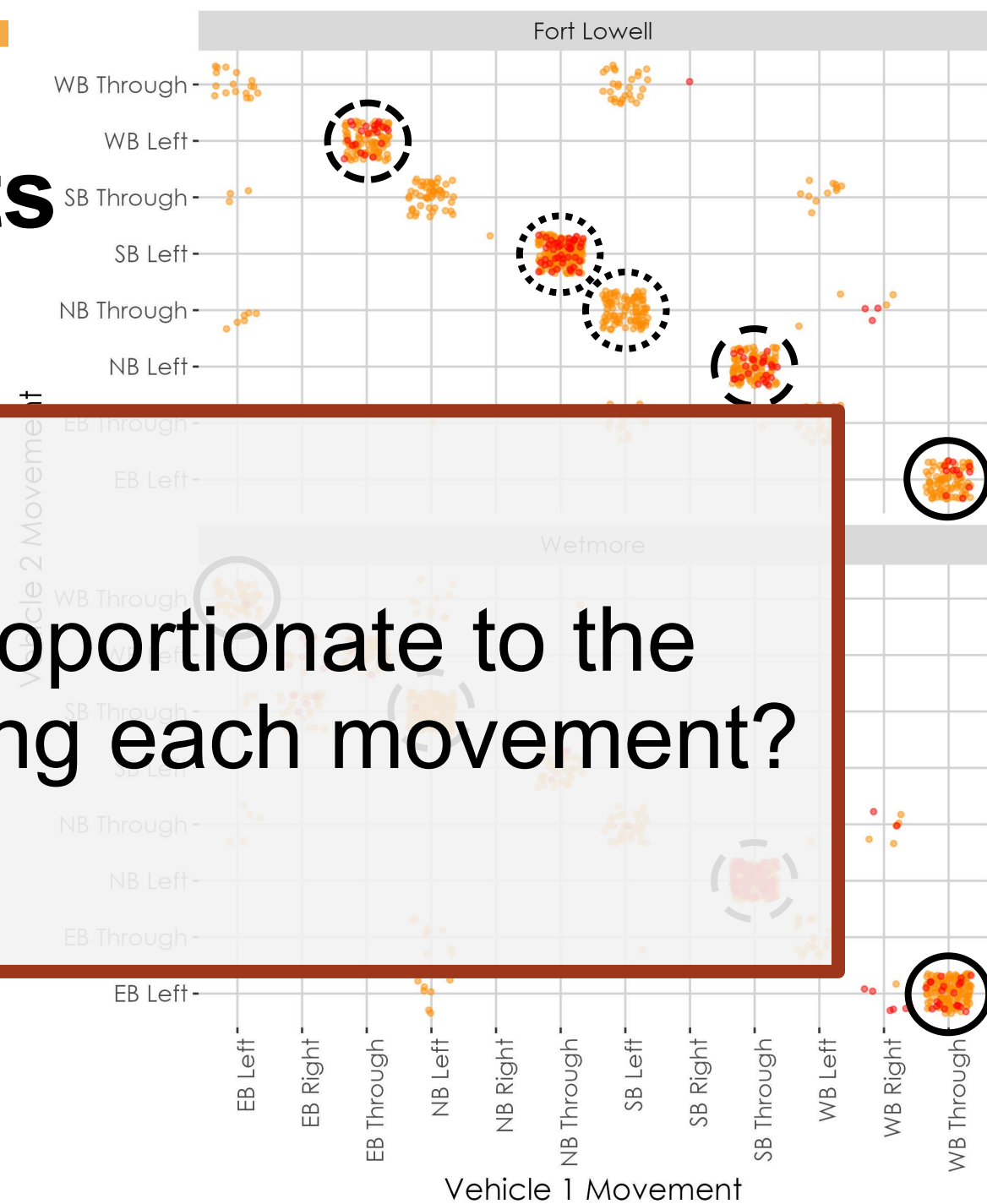
Vehicle-Only Near Misses

Takeaway: Most of the near misses involve a through vehicle and a left turning vehicle.

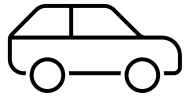
Are these trends disproportionate to the number of vehicles making each movement?

Several critical near misses involve...

- NB through – SB left (Fort Lowell Road)
- SB through – NB left (Wetmore Road)



Example Scenario

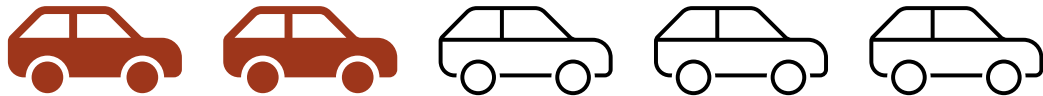


Vehicle not involved in a near miss

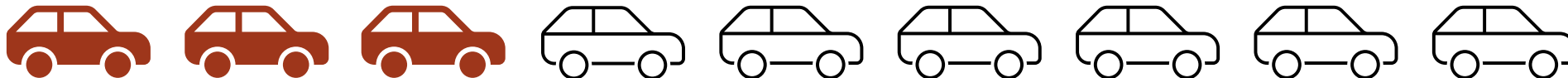


Vehicle involved in a near miss

Northbound left vehicles



Northbound right vehicles – more near miss vehicles but a **smaller proportion of all vehicles**



In this scenario, the NB left movement is posing a higher risk.

The NB left movement is more likely to result in a near miss than the NB right movement.

Critical Near Miss Rate

In 365 days...

over 9,000 vehicles driving
WB through at Wetmore Road

over 64,000 vehicles making a
NB left at Wetmore Road

over 35,000 vehicles making a
NB left at Fort Lowell Road

will be involved in a critical near miss event.



Critical Near Miss Rate

In 365 days...

over 2,000 **EB right**
vehicles at Wetmore
Road

over 350 **NB right**
vehicles at Wetmore
Road

over 700 **EB right**
vehicles at Fort
Lowell Road

over 11,000 **WB**
right vehicles at
Fort Lowell Road

will be involved in a critical near miss event with a pedestrian or bicyclist.



Key Findings

Near misses...

- increase during daytime at **off-peak periods**.

Pedestrian and bicyclist near misses...

- vary in severity depending on **order of arrival**.
- must be addressed through a **variety of countermeasures**.
- often occur at the **Fort Lowell Road north crosswalk** and the **Wetmore Road south crosswalk**.
- often involve a **right-turning vehicle**.

Vehicle-only near misses...

- involve **higher speeds**.
- often involve a **through vehicle and a left-turning vehicle**.
- often involve a **NB left-turning vehicle**.



5. Behavioral Video Data

Behavioral Video Data

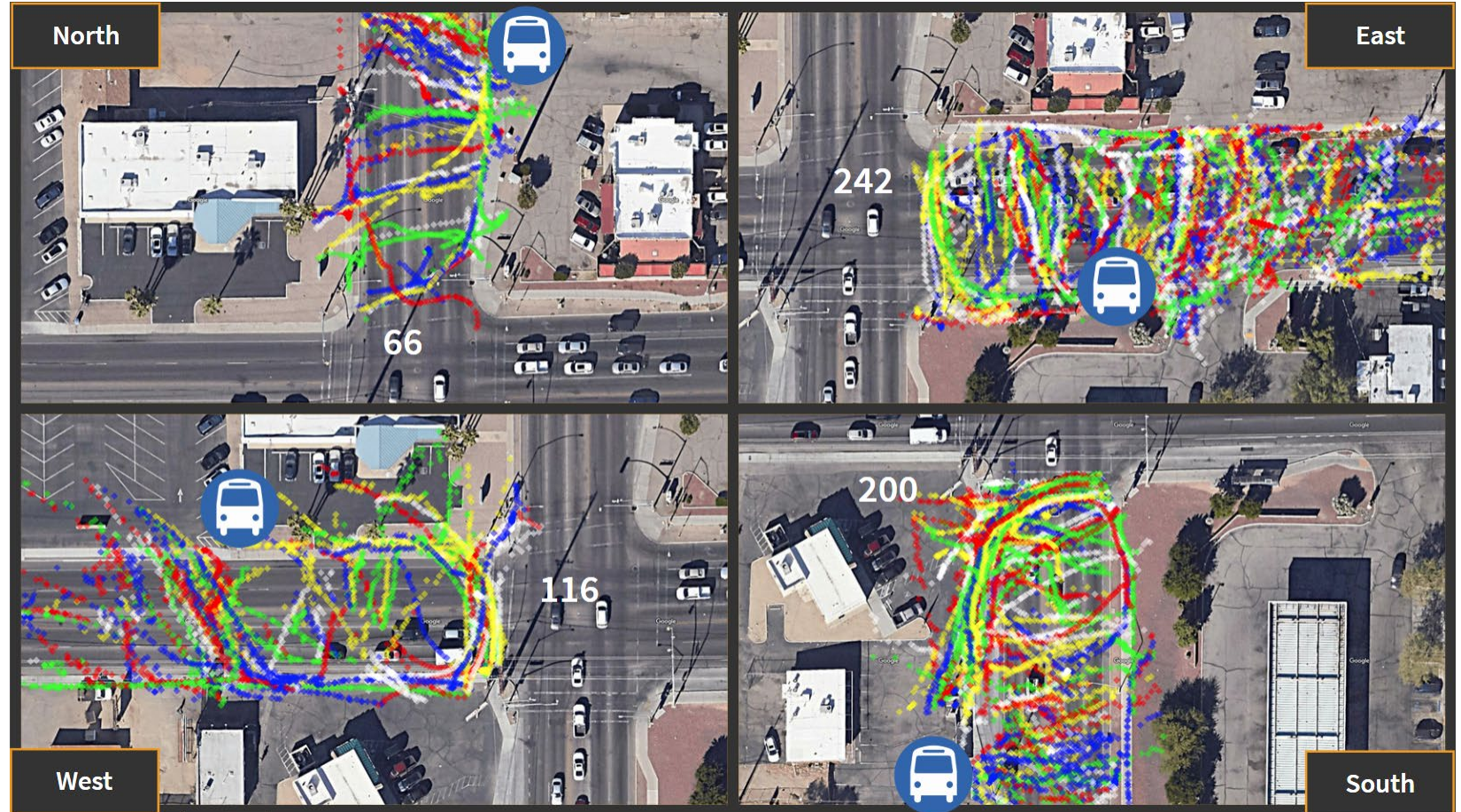
Still acquiring and processing additional data.

Higher-Risk Behavior	Fort Lowell	Wetmore
Red Light Running	40	29
Speeding (10+ MPH over)	86	86
Pedestrian Crossing on Red	171	23
Pedestrian Off Crosswalk	TBD	3

Work in Progress

Approach leg
pedestrian crossing
trajectories.

Near miss, time of
day, distance from
crosswalk, etc.



Countermeasure Summary



Source: FHWA



Source: FHWA



Source: Google Maps; 1st Ave & Wetmore Rd



Source: Google Maps; Broadway Blvd



Source: Google Maps; 1st Ave

Countermeasure Summary



Raised median
& refuge island

Source: City of Tucson



Speed Management

Source: FHWA



HAWK / BikeHAWK

Source: Google Maps; E Grant Road & N
Sahuara Avenue



Protected
Only
Phasing

Source: MUTCD

What Other Concerns Do You Have?



- Do your experiences align with what we've shown you?
- What areas of the 1st Avenue corridor concern you most?
- Which countermeasures would you like to see?

1ST AVENUE PUBLIC OUTREACH



Upcoming Events & Activities

In-person open house:

Wednesday, October 9, 2024 | 6:00-7:30 p.m. | Donna Liggins Recreation Center



Virtual open house:

Thursday, October 10, 2024 | 6:00-7:00 p.m. | https://bit.ly/1stAve_TUS



Pop-up events:

Heirloom Farmer's Market |
Sunday, October 20, 2024

Woods Memorial Library |
Wednesday, October 23, 2024

Presta Coffee | TBD

Literacy Connects | TBD

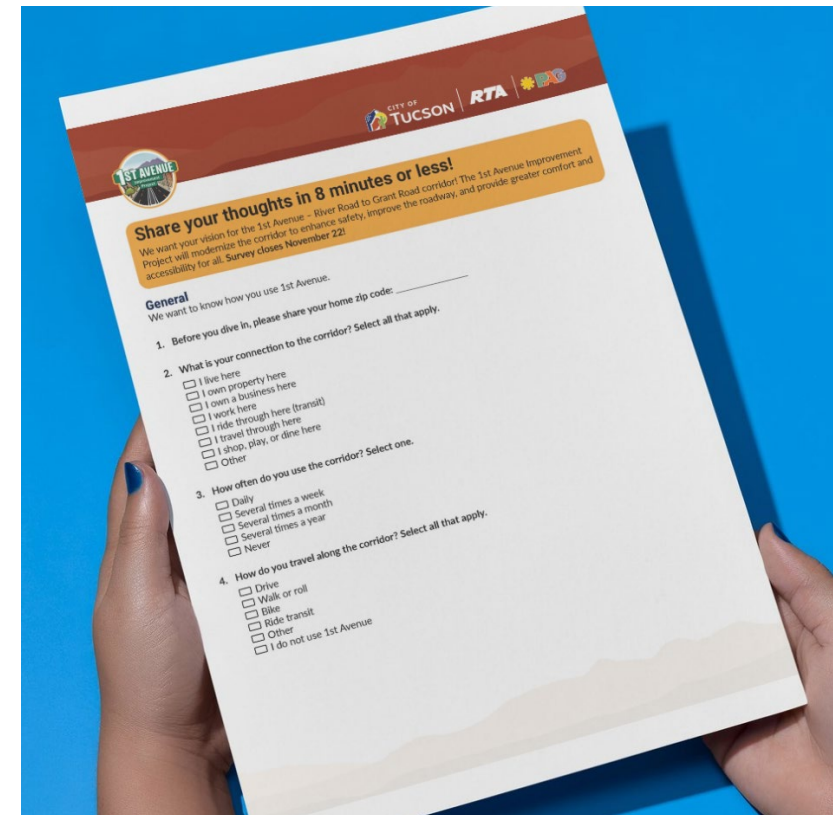
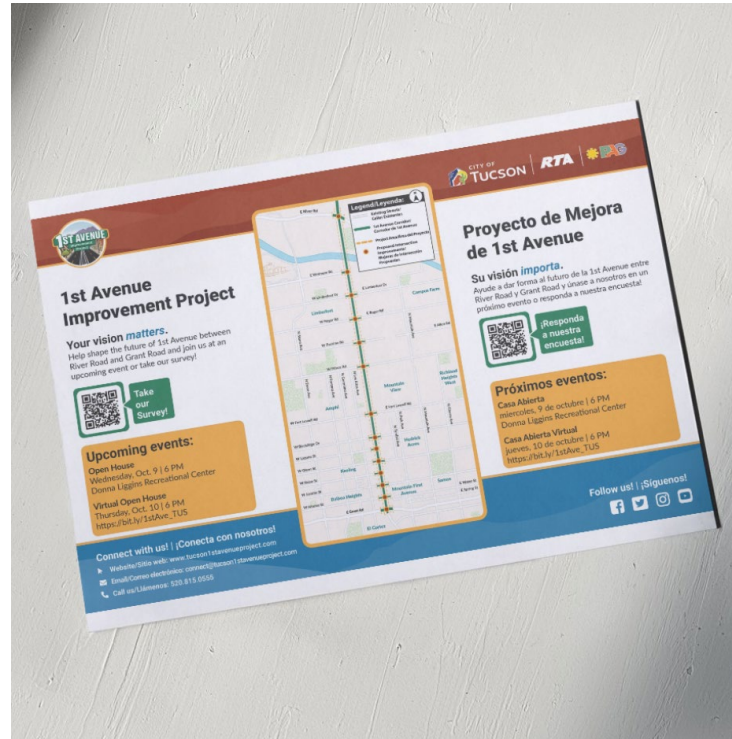


Partnerships:

Sun Tran on board surveying

Pima County Health Department

Project Materials and Notices



How Can You Help?

- Attend an upcoming event
- Take our survey
- Share information



1ST AVENUE Roll Plot Overview



1st Ave Corridor Map



Future Agenda Items

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

