

0-7180: Select High Risk Pedestrian Midblock Crossings and Perform Safety Evaluations for Developing Pedestrian Crossings Countermeasures

**University of Texas at San Antonio - Department of
Civil and Environmental Engineering**

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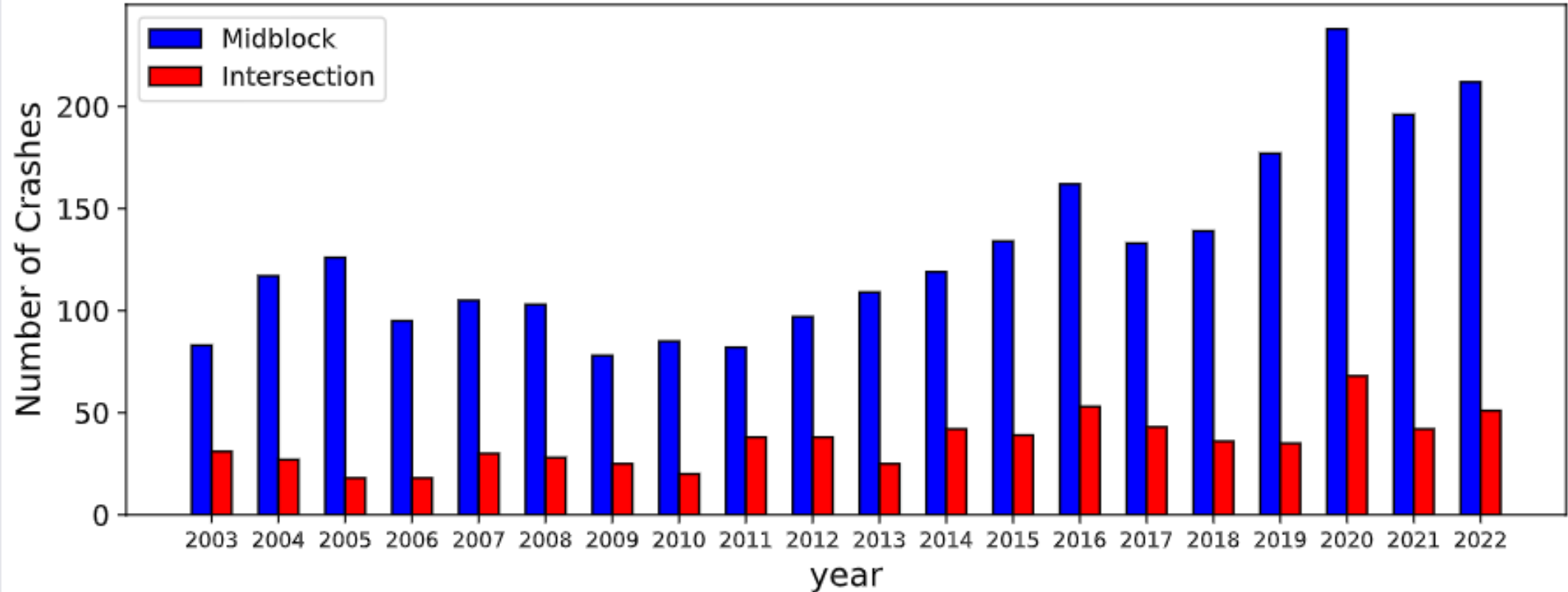
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Introduction

- Pedestrian crashes are a growing concern in Texas. Between 2009 and 2017, total walk-miles traveled (WMT) increased by an estimated 16% (BTS, 2019), while reported pedestrian fatalities rose by 46% (GHSA, 2020), highlighting a disproportionate rise in deaths relative to pedestrian activity.
- In 2019, Texas recorded an average of 1.14 pedestrian deaths per 100,000 residents—26% higher than the national average of 0.90.
- Nationwide, nearly 75% of pedestrian fatalities occur at midblock locations, where crashes tend to be more severe than those at intersections.
- San Antonio, Houston, and Dallas consistently report the highest number of pedestrian crashes in the state each year.



Annual Midblock and Intersection Pedestrian-Involved Fatalities

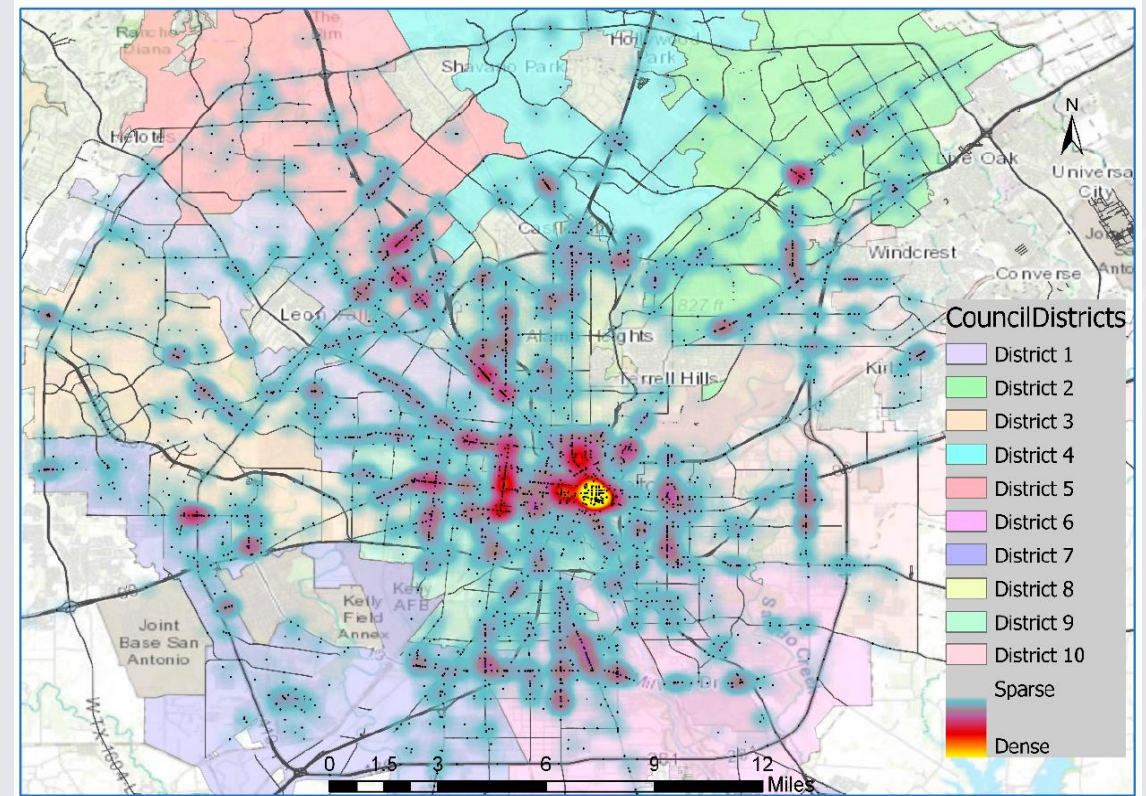


Overview

- **There is a need to identify the high-risk locations in San Antonio, Houston, and Dallas to inform targeted interventions.**
- **There is also a need to Improve understanding of the the safety impacts of promising pedestrian crash mitigation treatments in Texas.**
- **High-risk midblock crossing sites in the three cities have to be evaluated based on detailed crossing characteristics.**
- **Texas-specific Crash Modification Factors (CMFs) for key treatment types can guide countermeasure selection.**

Overall Research Goal

Develop a system for Texas Department of Transportation districts to help identify high-risk pedestrian midblock crossings and select the most effective treatments for each location.



Crash Hotspot Assessment Methodology

Data Collection

Pedestrian crash data (2003–2023) from CRIS for Dallas, Houston, and San Antonio



Crash Classification

GIS-based filtering of midblock crashes



Study Area Definition

5 km buffer around crash points



Roadway Selection

Filtered relevant roadways using TxDOT roadway data map and inventory data set



Data Processing

Snapped crash points to roads and calculated crash rates along 50 m segments



Hot Spot Analysis

identified pedestrian crash hotspots and validated them using a hexagon-based spatial analysis in ArcGIS

Sample ArcGIS Crash Map



Figure 56 Crash map of Main Street x Richmond Ave and Wheeler St

Key **CRIS Data** Insights for Identified Hotspots

Bus Stop Present

Near-side or Far-side

Or both :

86%

Of all Hotspots

Day of the week with highest crashes

Top days of the week:

- 1. Fridays**
- 2. Saturdays**

Common time of most crashes

Hour ranges:

- 1. 12:00 PM – 5:00 PM**
- 2. 8:00 PM – 12:00 AM**

Contributing factors

Top CF:

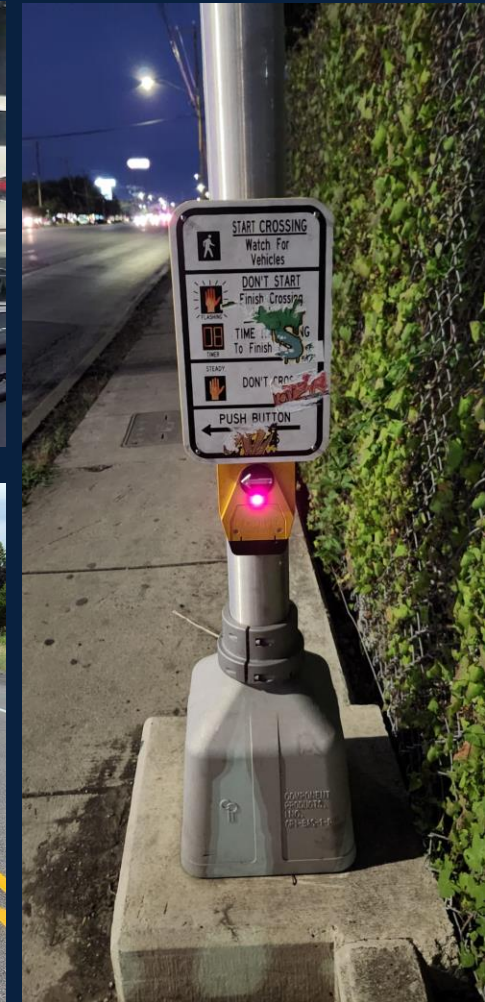
- 1. Pedestrian failed to yield**
- 2. Intoxicated**

Site Assessment Strategy

Road Characteristics

The following road characteristics were assessed:

- **Two-Way Street?**
- **Marked or Unmarked Crosswalk?**
- **Crosswalk Sign at the Intersection (Type)**
- **Crosswalk Sign in Advance of the Intersection?**
- **Bulb-out/Curb Extension?**
- **Number of Travel Lanes Being Crossed?**
- **On-Street Parking?**
- **Nearside Bus Stop Near the Intersection?**
- **Far side Bus Stop Near the Intersection?**
- **Right-Turn Lane in the direction of the Traffic at the Intersection?**
- **Left-Turn Lane in the Intersection of Traffic at the Intersection?**
- **Curb Extension in the Direction of the Pedestrian Crossing?**
- **Pedestrian Buttons Functional?**



Site Assessment Strategy cont.

- Median in the Direction of the Pedestrian Crossing (Y/N)?
- Speed Limit in the Direction of the Traffic Being Studied (miles per hour)
- School Zone or Specific Land Use.
- Quality of Pavement.
- Marking Quality.
- Signals Exist?
- Illumination Exist?
- Road Characteristics.
- Signage Quality.
- Vegetation and Trees Blocking Sign?



Site Assessment Strategy cont.

Pedestrian and Driver Behavior

The Assessment also focused on various aspects of pedestrian and driver behavior, including:

1. Number of Cars That Drove Through Crosswalk Without Yielding (Total)
2. Driver Yielded to the Pedestrian?
3. Group Size
4. Number of Pedestrians at the Curb
5. Physical Disability (wheelchair/walker/other): Record if the Pedestrian Has a Physical Disability
6. Number of Pedestrians Attempting to Cross the Intersection During Observation Period
7. Pedestrian Crossings behavior: Marked Crosswalk vs. Jaywalking
8. Number of Occasions First Car Stopped for Waiting Pedestrian
9. Mean Length of Time Pedestrians Waited to Cross in Seconds
10. Pedestrian Gender
11. Driver Behavior Based on Group Size: Individual vs. Two or More Pedestrians
12. Bus Stop Activity/Usage



Recording method

- Driver/pedestrian behavior on the road was recorded using **REDTIGER 4K** and **ROVE R2-4K** dash cams through a vehicle while posted up on different parts of the hotspot segment.
- Based on **CRIS data** most crashes occurred in the **afternoon** and **night**. The observations focused on the mentioned time ranges, for a period of **1.0 to 2.0** hours.



ROVE R2-4K



REDTIGER 4K

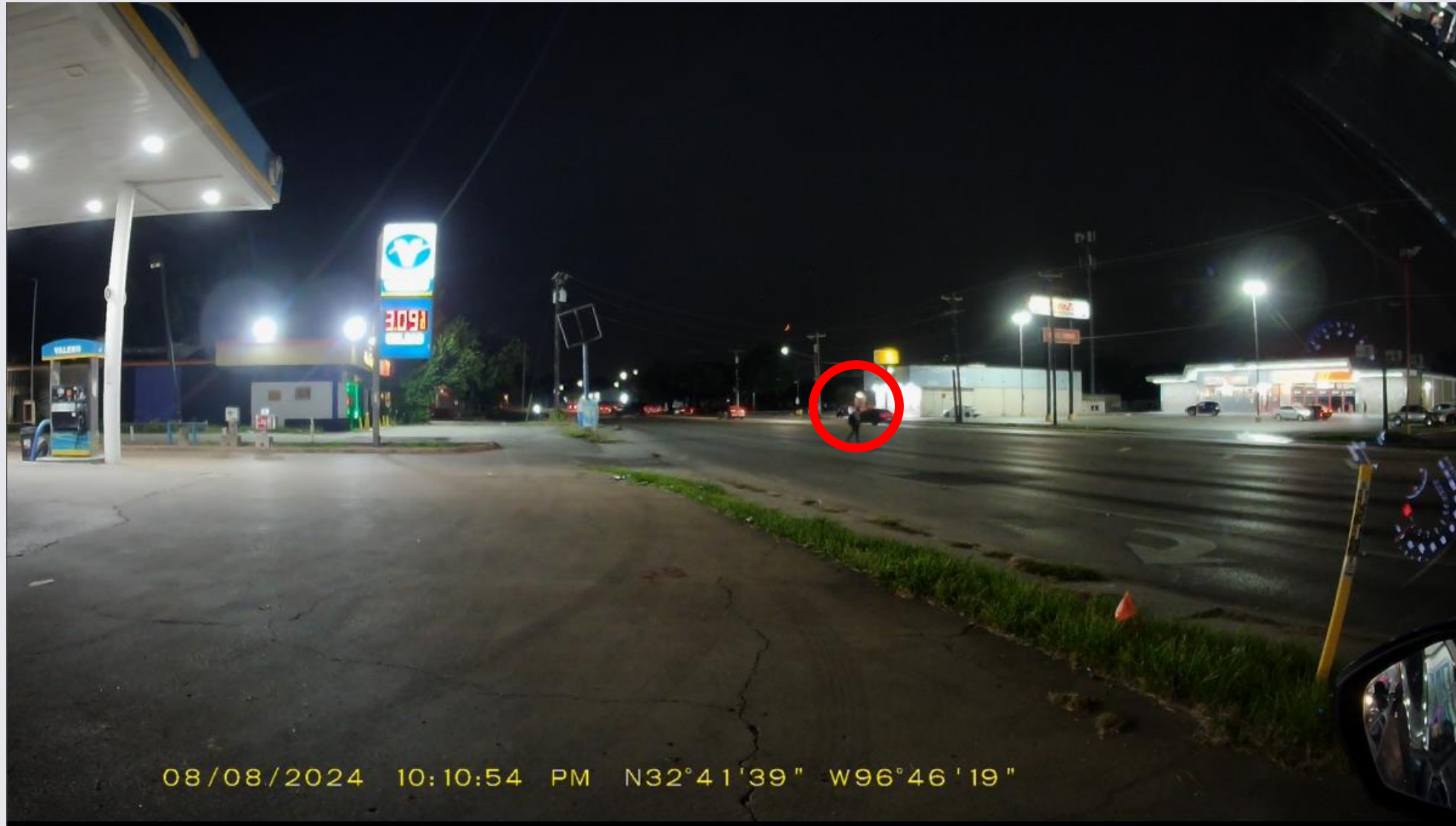
Pedestrian jaywalking recorded at a midblock

San Antonio - Wurzbach Rd x Gardendale Rd



Pedestrian jaywalking recorded at a midblock

Dallas - Ledbetter Dr x Sunnyvale St



Pedestrian jaywalking recorded at a midblock

Houston - Gessner Rd x Town Park Dr



Site Observation Results

Road Characteristics data sheet example:

Road Characteristics	
Two-way street (Y/N)	Y
Marked or un-marked Crosswalk:	Marked (black, white contrast)
Crosswalk sign at the intersection (Type):	Signaled, Press button device all directions
Crosswalk sign in advance of the intersection (Y/N):	N
Bulb-out/Curb extension (Y/N):	N
Number of travel lanes being crossed:	6 (1 left turning lane, 1 right turn lane)
On-street parking (Y/N):	N
Nearside bus stop near the intersection/Midblock (Y/N):	Y
Far side bus stop near the intersection/Midblock (Y/N):	Y
Right-turn Lane in the direction of the traffic at the intersection (Y/N):	Y
Left-turn Lane in the intersection of traffic at the intersection (Y/N):	Y
Curb extension in the direction of the pedestrian crossing (Y/N):	N
The median in the direction of the pedestrian crossing (Y/N):	N
The speed limit in the direction of the traffic being studied (miles per hour):	40 MPH
School zone or specific land use:	N
Quality of pavement	Good
Marking quality	Good
Signals exist	Y
Illumination	Exists and works
Road characteristics	Flat
Signage quality	Good
Vegetation and trees blocking singe (Y/N)	N
Pedestrian Buttons functional (Y/N)	Y

Pedestrian/Driver behavior data sheet example:

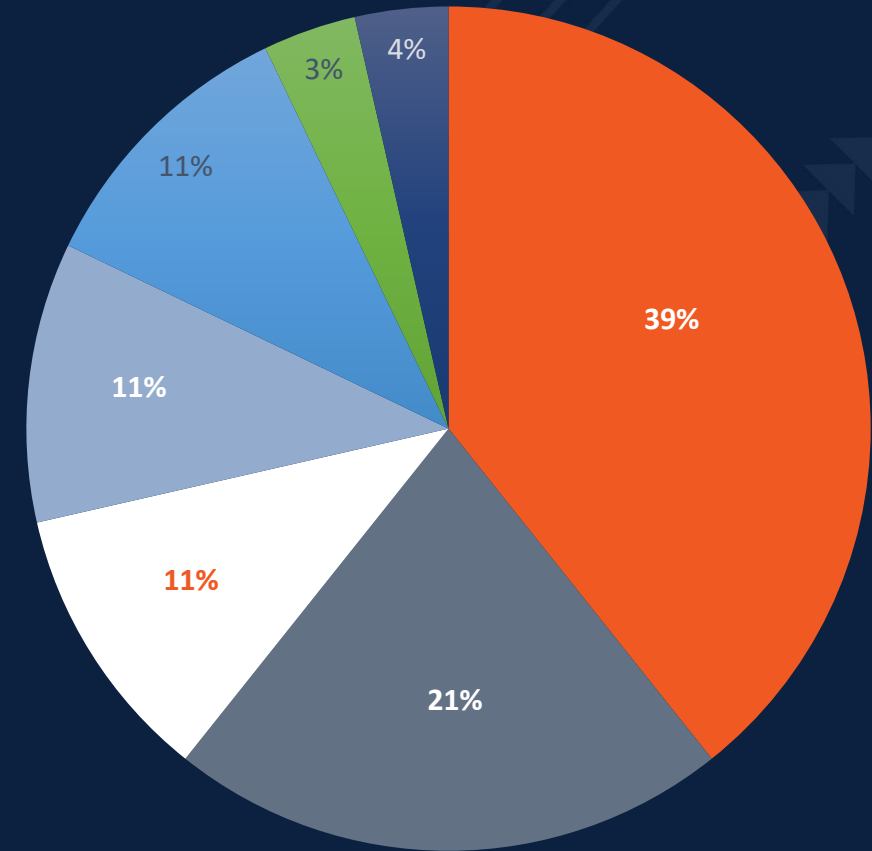
Pedestrian/Driver behavior:	Afternoon	Night
Time Start	1:40 pm	9:05 pm
Time End	3:21 pm	10:30 pm
Temperature	101 F	97 F
<i>The number of cars that drove through a crosswalk without yielding (Total):</i>	0	0
<i>Driver Yielded to the pedestrian? (Y/N):</i>	Y	N/A
<i>Group size</i>	Mostly 1 (Sometimes 2)	Mostly 1
<i>Number of pedestrians at the curb</i>	1 or 2	1
<i>Physical disability (wheelchair/walker/other): Record if the pedestrian has a physical disability.</i>	N/A	N/A
<i>How many pedestrians attempted to cross the midblock/intersection during your observation period?</i>	10 Jaywalking	5 Jaywalking
<i>On how many occasions out of the number of attempted crossings observed did the first car stop for the waiting pedestrian?</i>	1	N/A
<i>What was the mean length of time in seconds that the Pedestrians waited to cross a certain direction?</i>	20-30 sec	20 sec
<i>Pedestrian gender</i>	Mostly male	Mostly male
<i>Were drivers more or less likely to stop for Individuals versus two or more pedestrians?</i>	N/A	N/A
<i>Driver speeding (Y/N):</i>	N	N
<i>Bus stop activity/usage</i>	Moderate bus stop activity around 1- 2 pedestrians at bus stop	Low bus stop activity 0 – 1 pedestrian at bus stop

Example pedestrian jaywalking pattern map:



Observed Pedestrian destinations:

- **Gas stations were the most common pedestrian destination in 11/30 hot spot locations.**
- **Followed by shopping plazas in 6/30 hotspot locations.**
- **Shpping plazas also recorded the highest volume of pedestrians jaywalking.**



Conclusions from Site Observation

Jaywalking Behavior:

- Jaywalking is a widespread behavior in many areas, especially where crosswalks or pedestrian signals are **inconveniently located or too far apart**.
- Pedestrians often use **medians or turning lanes as refuge points** when crossing mid-block, perceiving them as safer alternatives.
- The behavior is especially common near bus stops, commercial establishments, and gas stations, where pedestrians frequently prioritize convenience over safety.

Conclusions Cont.

Homeless Presence and Its Impact:

- Homeless activity is primarily concentrated **near bridges**.
- All hotspots near bridges exhibit homeless concentrations.
- Homeless activity contributes to jaywalking and unpredictable pedestrian movements.
- This activity increases pedestrian risks, particularly in busy intersections and areas with high vehicle traffic.



Conclusions Cont.

Driver Behavior:

- Drivers frequently fail to yield to pedestrians, especially in areas without designated crossings but in hotspots where jaywalking is common, driver yielding tends to be more consistent due to increased pedestrian presence and driver expectations.
- Although most drivers comply with speed limits during the day, speeding is more prevalent at night, further elevating pedestrian safety risks.

Conclusions Cont.

Nighttime Safety Concerns:

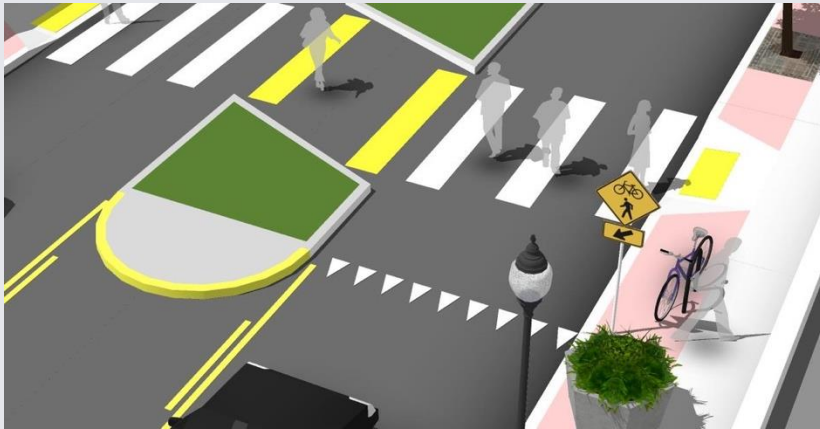
- Poor lighting in many areas, especially at midblock locations, makes it difficult for drivers to see pedestrians at night due to a significant **lack of streetlights**.
- Although **pedestrian activity decrease at night**, locations near convenience stores, gas stations, and bus stops continue to experience notable jaywalking activity, exacerbating safety risks.

Conclusions Cont.

Contributing Factors in Crashes:

- The most reported crash factors include "Pedestrian failed to yield", "Intoxicated", and "Failed to yield to pedestrians".
- "Driver inattention" and "impaired visibility" are also recurring contributors, especially during nighttime.

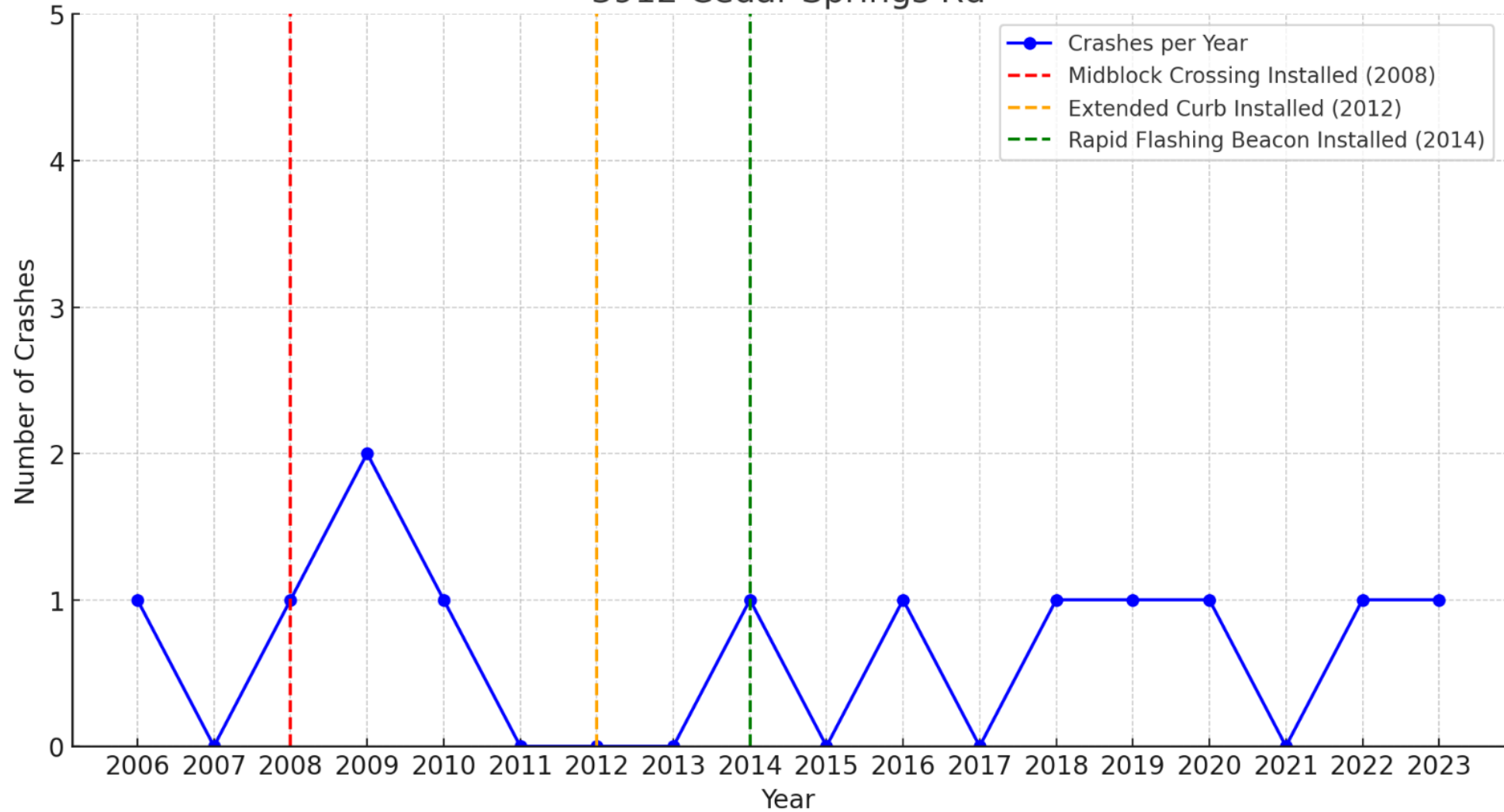
Analysis of current Mitigation Technologies



Cedar Springs and Reagan - Rectangular Rapid Flashing Beacons (RRFB)



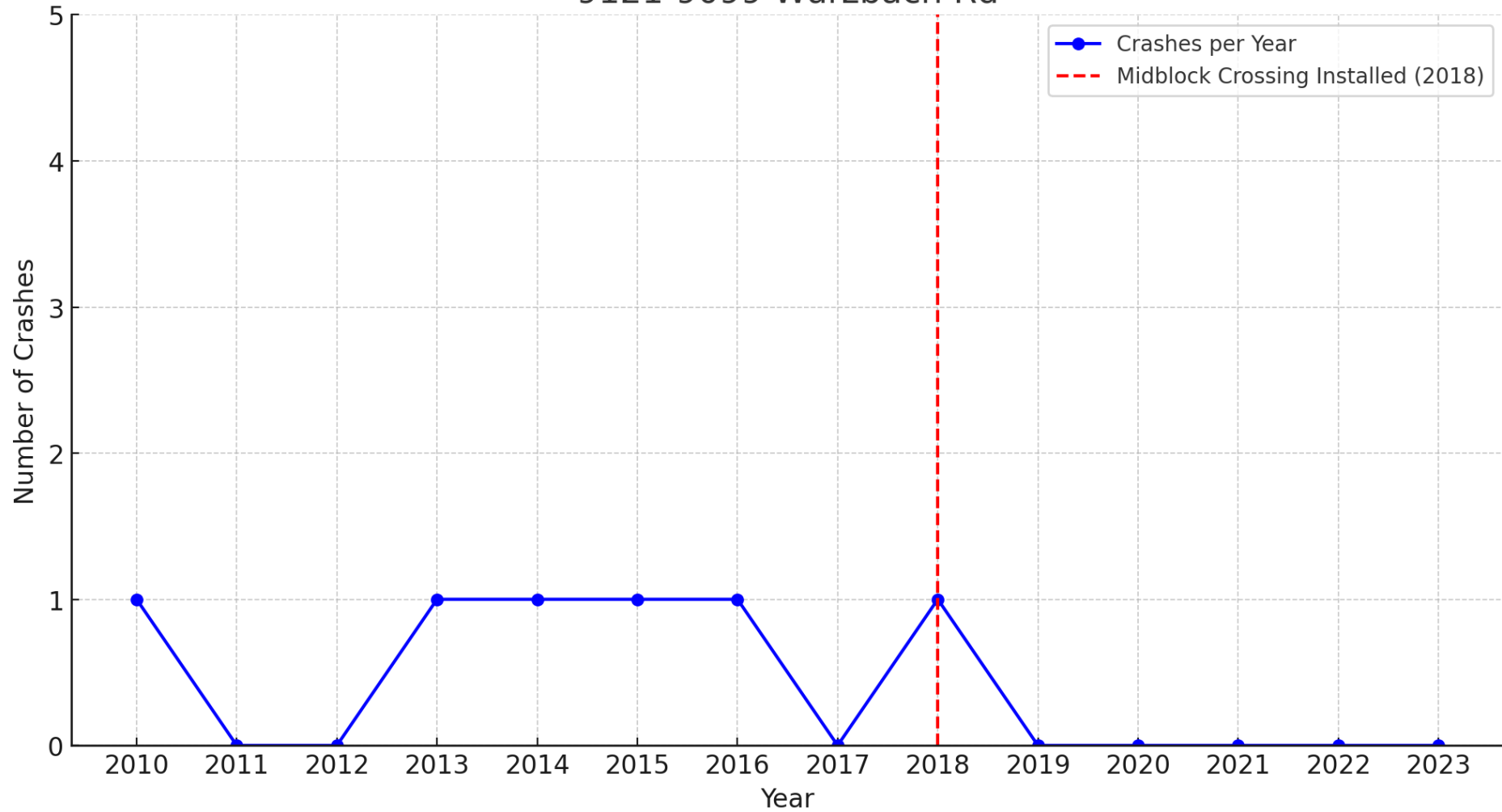
Crash Trend Before and After Installation 3912 Cedar Springs Rd



Wurzbach Road - Flashing Pedestrian Crossing Signs



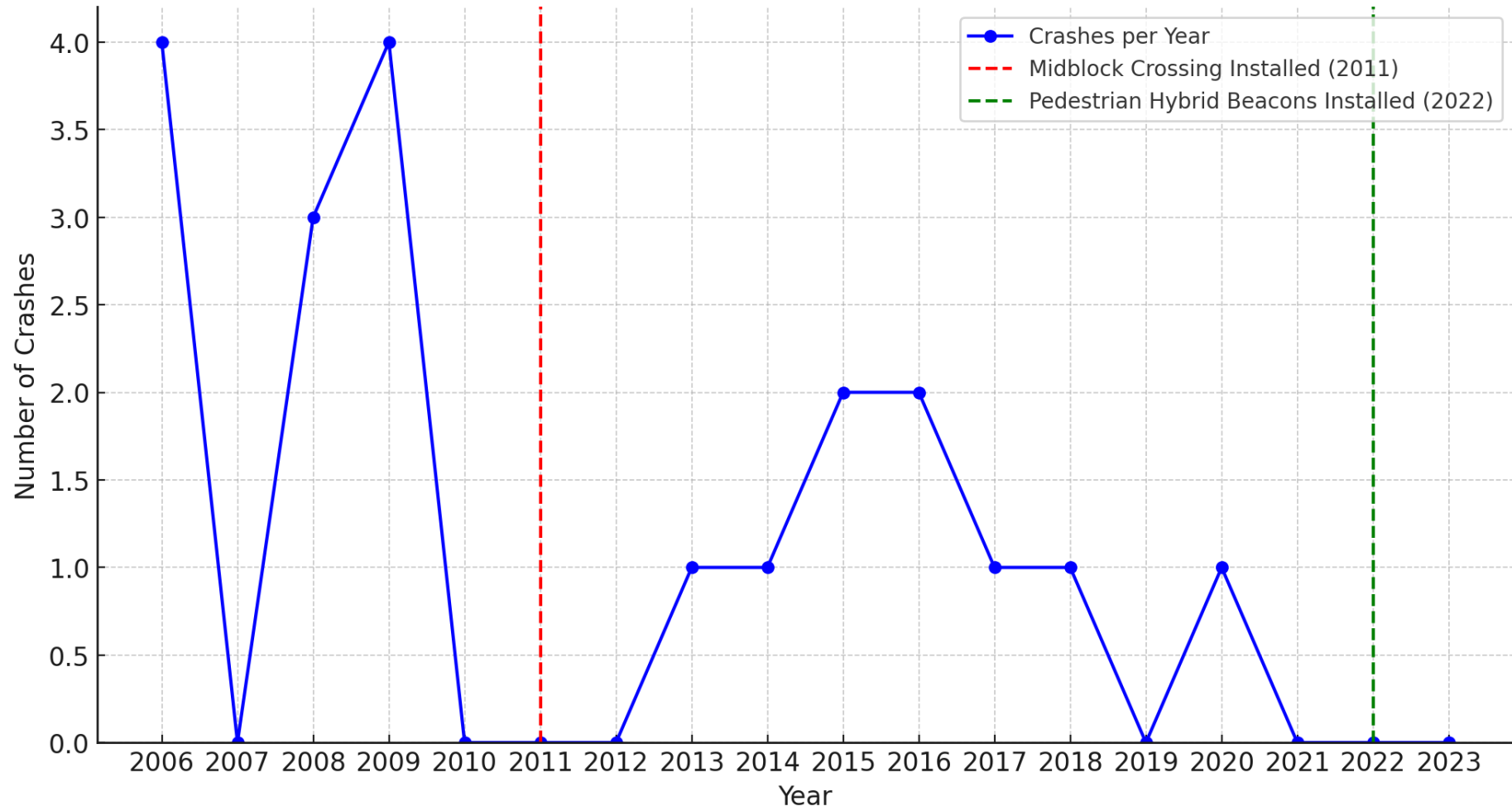
Crash Trend Before and After Installation 9121-9099 Wurzbach Rd



S Zarzamora St x W Mayfield Blvd -Pedestrian Hybrid Beacon (PHB)



Crash Trend Before and After Installation 6783-6847 S Zarzamora St



Your opinion matters!

Short Survey: Improving Pedestrian
Midblock Crossing Safety

Link will be posted in the meeting chat.



Thank you!

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Vision Zero & FY 2024 RAISE Grant Culebra Rd

**David McBeth, P.E. , Assistant City Engineer
Murray Myers, Transportation Administrator**



Vision Zero

TRADITIONAL APPROACH

Traffic deaths are **INEVITABLE**

PERFECT human behaviour

Prevent **COLLISIONS**

INDIVIDUAL responsibility

Saving lives is **EXPENSIVE**

VS

VISION ZERO

Traffic deaths are **PREVENTABLE**

Integrate **HUMAN FAILING** in approach

Prevent **FATAL AND SEVERE CRASHES**

SYSTEMS approach

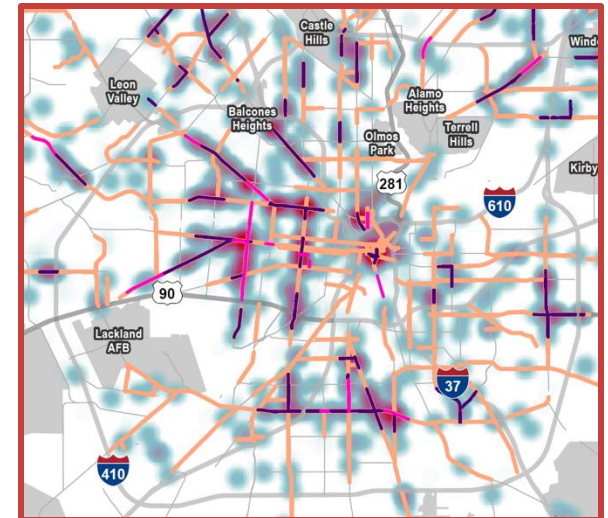
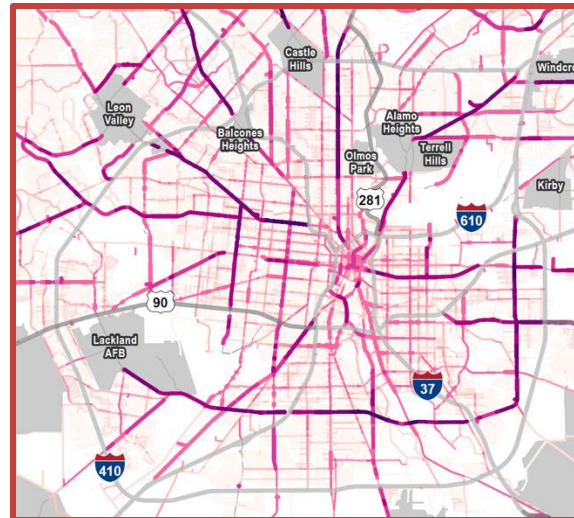
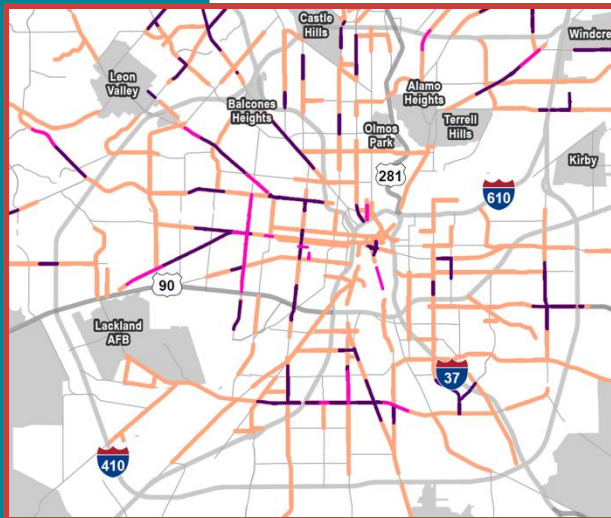
Saving lives is **NOT EXPENSIVE**

Vision Zero Action Plan

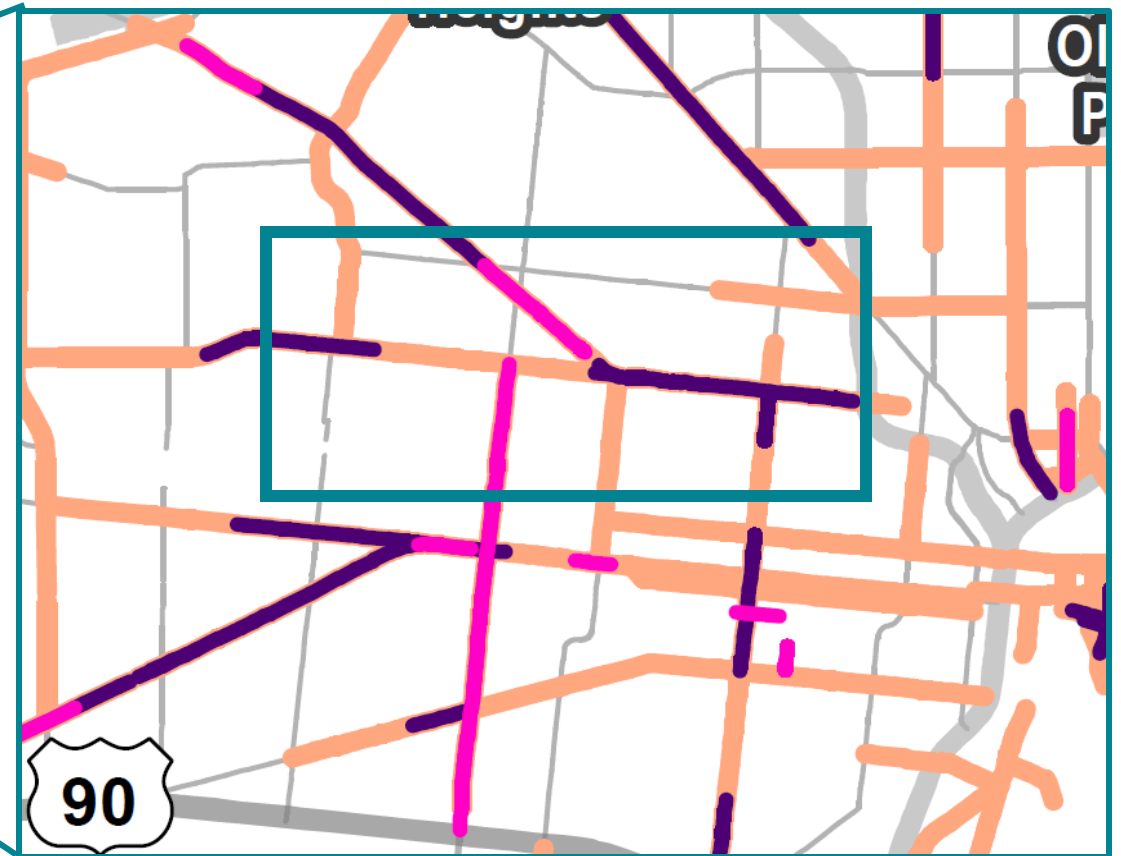
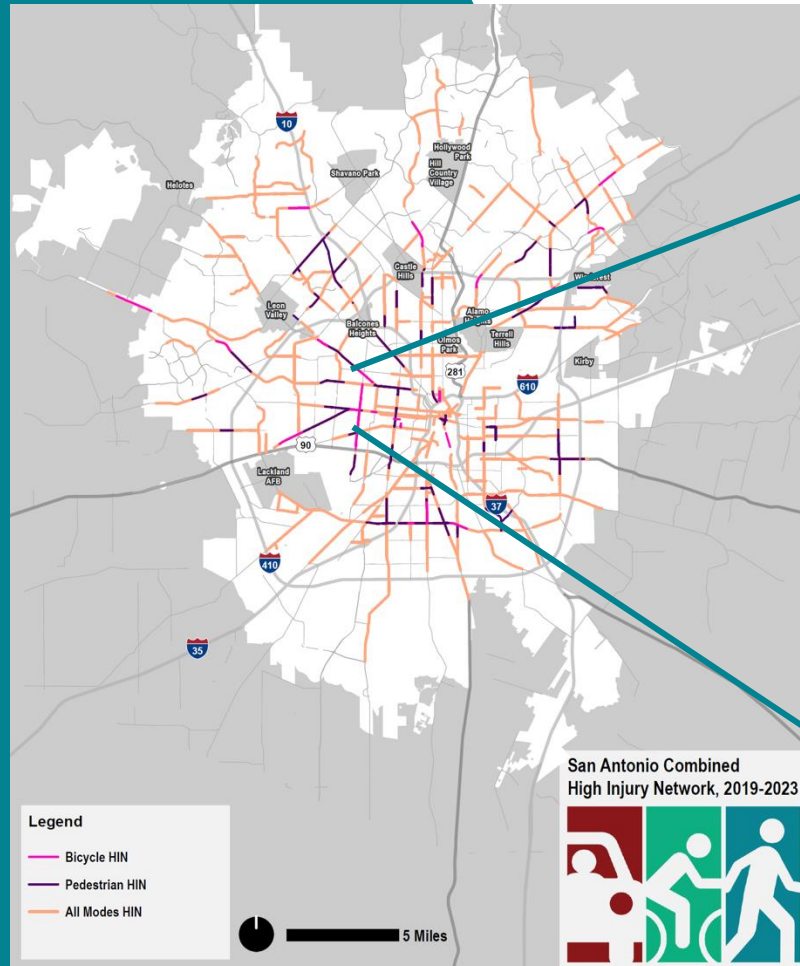
- Key Actions
 - Safer Streets
 - Quick Builds
 - Analyze Corridors & Implement Infrastructure
 - Safer People
 - Education & Outreach
 - Safer Speeds
 - Slower Speeds in Every Neighborhood
 - Safer Vehicles
 - Support Safer Transit

Vision Zero Action Plan

- Analyze Corridors
 - High Injury Network
 - Crashes between 2018-2023
 - Fatalities & Severe Injuries Weighted



Vision Zero Action Plan





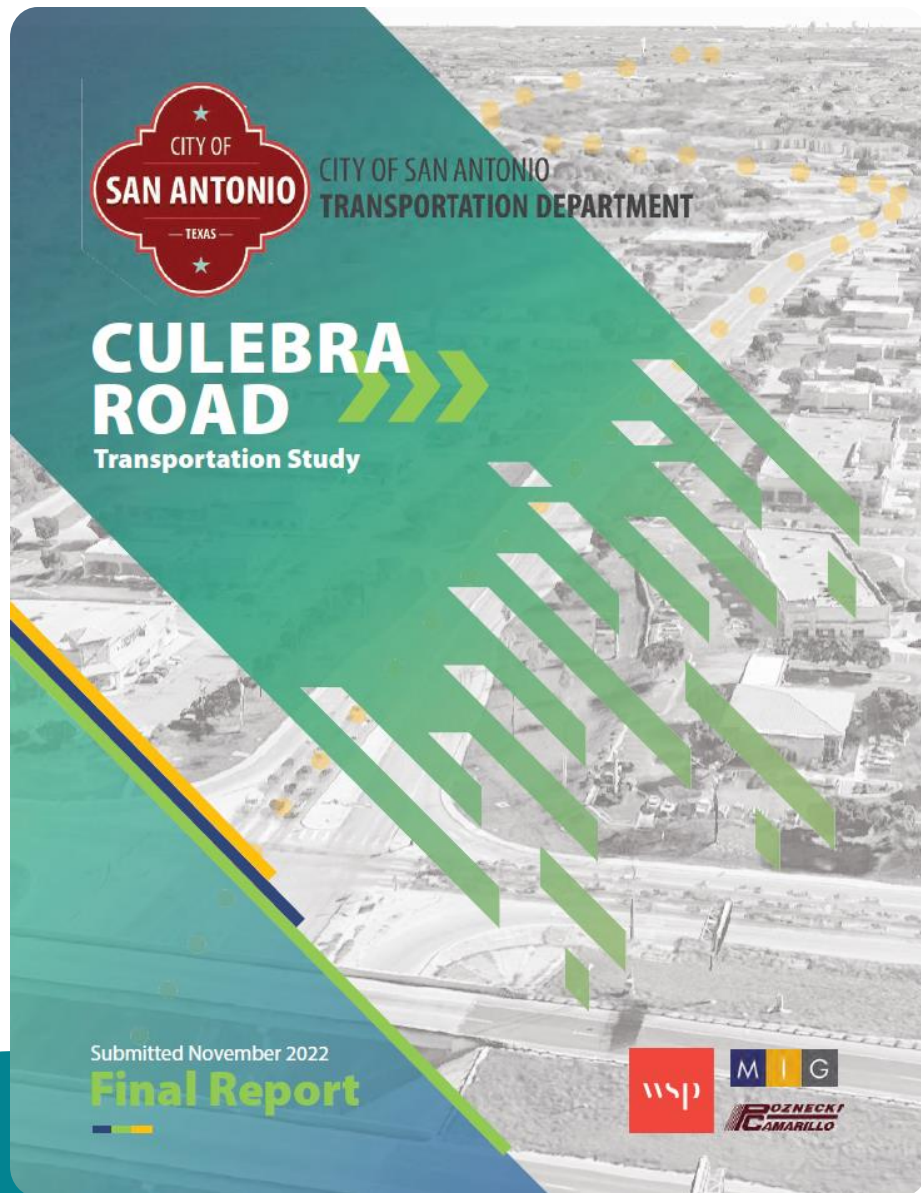
Federal Grant Awards

■ FY 2024

- RAISE Planning Grant
 - Culebra Road Segment B& C
 - *\$8,000,000*
- Safe Streets for All (SS4A)
 - San Antonio Quick Builds Project
 - *\$520,000*

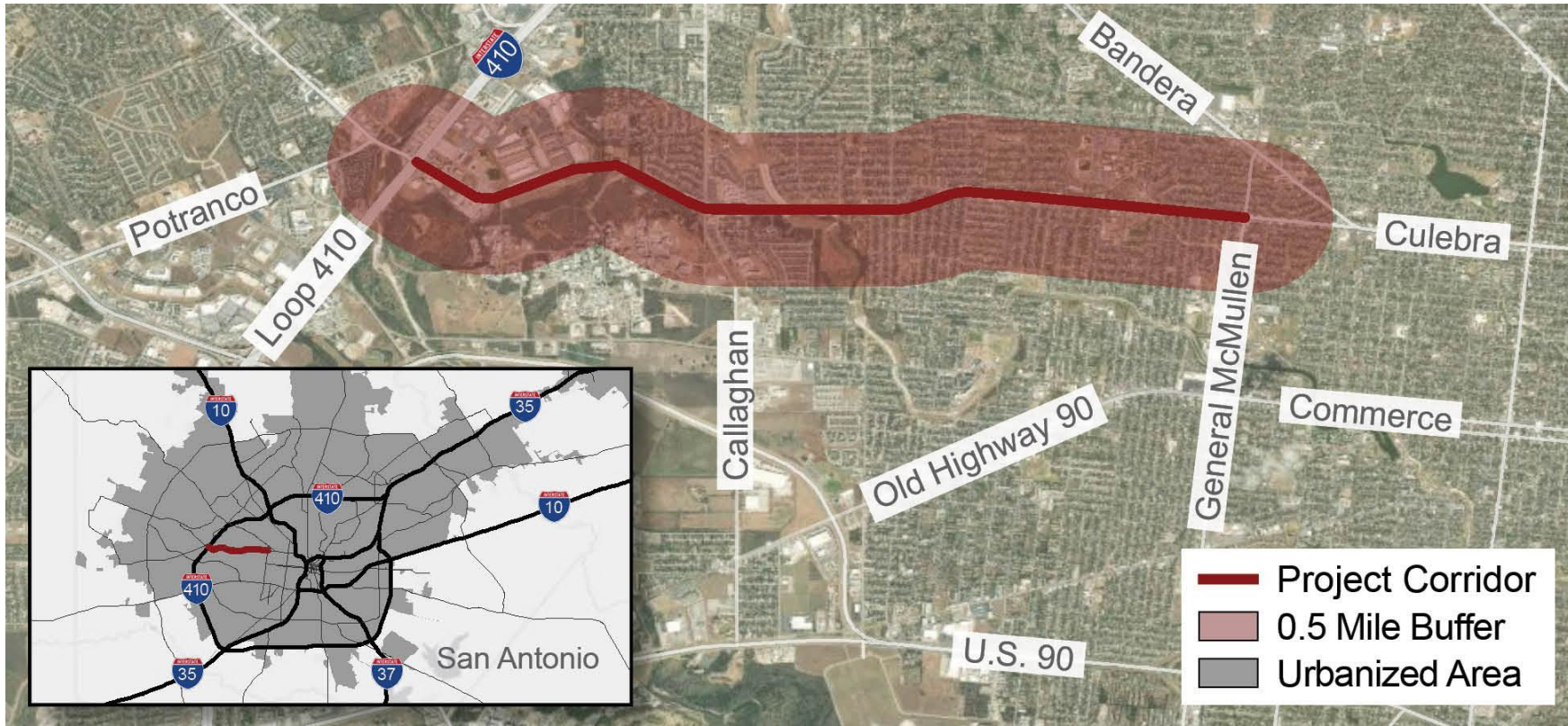
■ FY 2022

- Safe Streets for All (SS4A)
 - Zarzamora Mid-Block Crossings
 - *\$4,400,000*



Culebra Road Transportation Study

- **November 2022**
 - Data Collection
 - Public Engagement
 - Corridor Vision
 - Concept Development
 - Prioritization Plan



Culebra Road RAISE Grant Submission

- February 2023
- 5-Mile Segment from General McMullen to Loop 410
- \$8 M Grant Request
- \$3 M Local Match
- \$11 M Total Funding for Schematic Design and Environmental Permitting

Culebra Road Phase 1: \$15M Street Bond

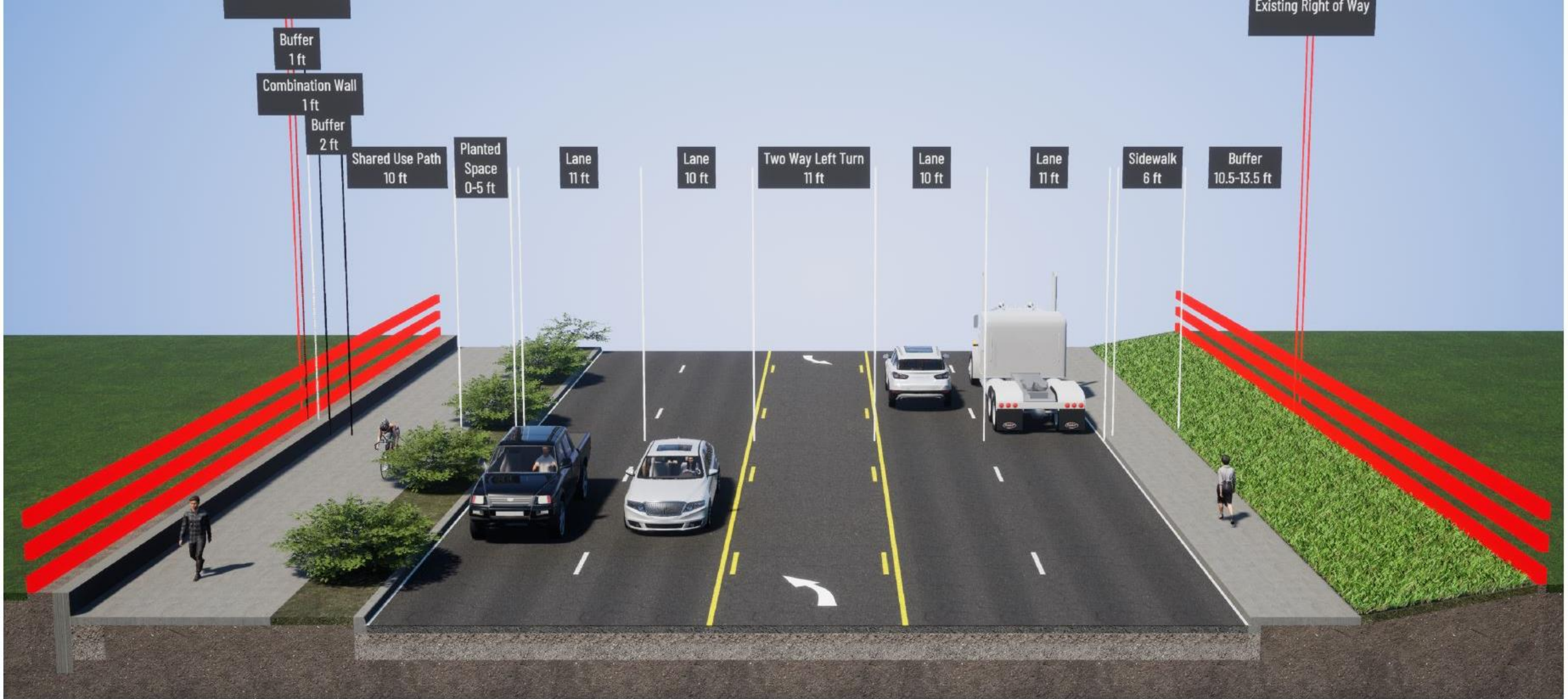


Culebra Road Phase 1 Project Purpose and Need

■ Existing Conditions

- High crash history rate
- Sidewalks in poor condition
- Poor accessibility and safety for pedestrians and cyclists
- Deteriorated drainage system
- Outdated traffic signals and equipment





How Were We Successful?

Previous Transportation Study helped with Project Readiness

Investment in the corridor with \$15M Bond funding and \$3M local match

Project Support from Stakeholders & Partners

High Scores in Merit Criteria:

- Safety (high crash history)
- Sustainability
- Quality of Life
- Economic Opportunity (historically disadvantaged community)
- Mobility & Connectivity
- State of Repair
- Partnership & Collaboration
- Innovation

Collaboration with a proven Transportation & Grant Pursuit Partner

Culebra Road RAISE Grant Project

Current Status

- Award Granted in June 2024
- Working with FHWA as the administrator of the grant
- Development of the Funding Agreement between COSA and FHWA
- Developing a Request for Qualifications (RFQ) for Consultant Services:
 - Schematic Development
 - Environmental Permit Clearance (through TxDOT ENV)
 - Design for Phase 1 Segment of the project for construction
- Commence Design and Environmental upon approval of FHWA agreement and selection of the design consultant this year

THANK YOU
Texas Innovation Alliance!
May 7, 2025





Where Opportunity Docks

May 7, 2025

Port of Port Arthur

Larry Kelley, Port Director/CEO

409-983-2011

larry@portpa.com

www.portpa.com

Gulf of Mexico

Sabine Lake



Sabine Neches
Waterway

Intracoastal



Who we are.



A public port entity located on a collocated section of the deep draft Sabine Neches Waterway and the Gulf Intracoastal Waterway.



Board members with U.S. Secretary of Transportation Pete Buttigieg and U.S. Rep. Randy Weber.

- Created by the Texas Legislature in 1964, an independent governmental entity, operations commenced in 1969
- Serving the maritime industry and local industry as a creator of local jobs and economic development.

Our Publicly Elected Board of Commissioners

John Comeaux
President



Randy T. Martin
Vice President



Linda Turner Spears
Secretary/Treasurer



Raymond Johnson
Commissioner



Mary Wycoff
Commissioner



What we do.



Creating local jobs and economic development

PRODUCTS HANDLED BY LONGSHORE LABOR

Forest Products
Pulp & Kraft Liner Board
Lumber



Aluminum



Military



CARGO TENANTS: Job Creation & Local Investment

JBS Packing
75-150 employees



Woodville Pellets
30 employees

Colonial Terminals
15 employees

OTHER TENANTS

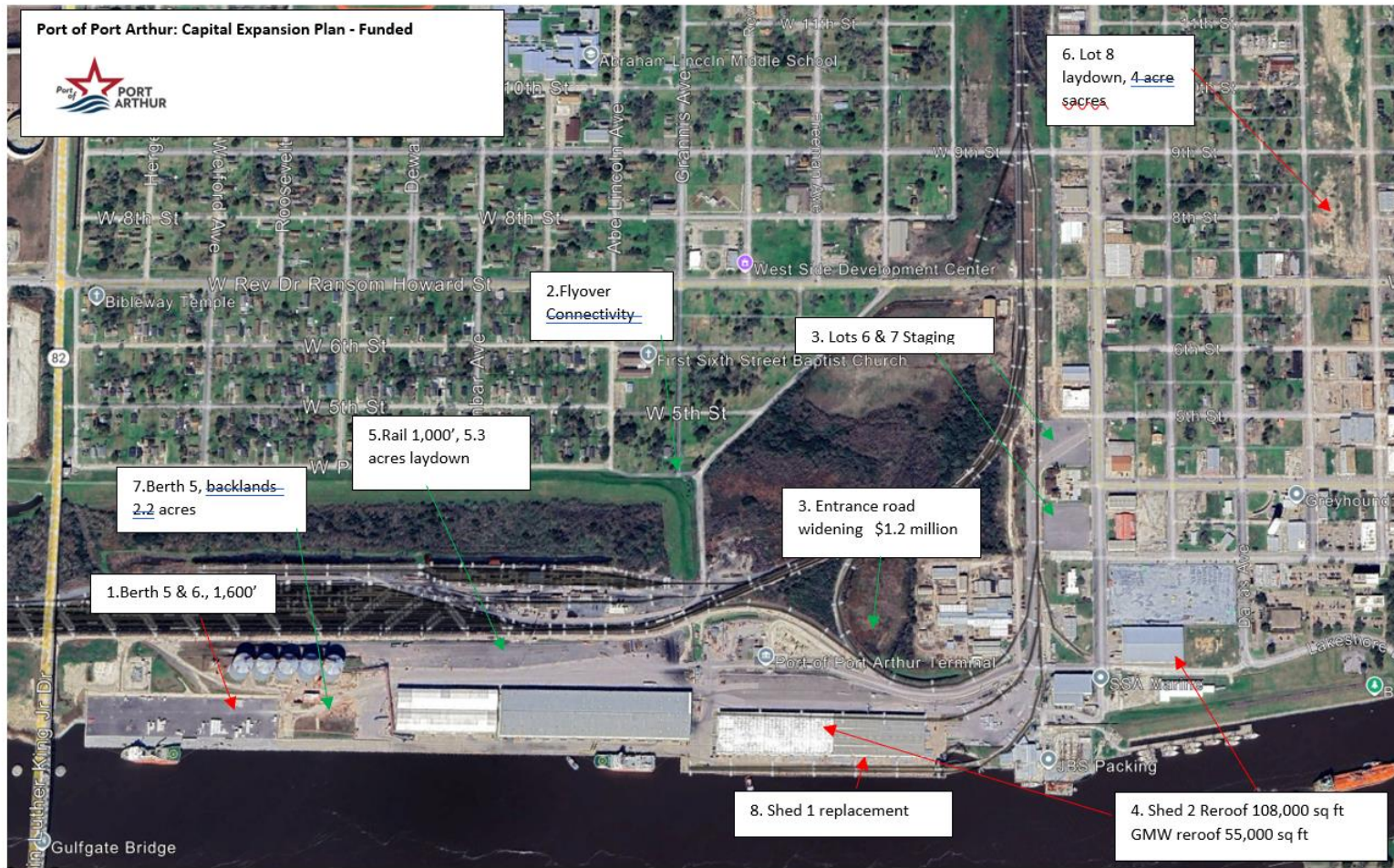
SSA Marine
Allied IT Systems
Clifford Distilling





PICTURE DECK





1. Berth 5 & 6 expansion – 1,600' dock & backlands 6.5 acres
2. Flyover Connectivity
3. Lots 6 & 7 Cargo & Truck Staging
4. Shed 2 & GMW Reroof – 163,000 sq ft
5. Laydown and rail expansion - 5 acres
6. Lot 8 Laydown
7. Berth 5 Backlands development – 2.2 acres
8. Shed 1 Replacement
9. 25 acre laydown & admin bldg.
10. State of good repair

\$40 million
 \$30 million
 \$650K
 \$3.0 million
 \$6.3 million
 \$5 million
 \$5 million
 \$14 million
 \$19 million
 \$5.0 million

Complete
Under design 1Q27 Completion
Complete
Complete
Complete
Under Construction, 4Q25 Completion
Awarded 2Q25, 4Q25 Completion
Out for bid, 1Q26
Awaiting USDOT MARAD NEPA approval
Ongoing

2022 RAISE – Multimodal Laydown, Transportation Infrastructure Fostering Community Based Job Creation

- **Previous Efforts** – EDA, TIGER, RAISE, BUILD, PIDP, RAISE
- **Scope** - \$13.6 million, \$19 million total – Rehabilitate building and stabilize 25 acres
- **Application development** – NOFO, Project Summary, BCA, Preliminary Engineering, Other Support
- **Award and next steps** – Technical Review, NEPA, Legal Review, BA/BA, Permit Review
- **Update** - Fall 2022 award, 2025 status



