



**New Mexico**

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## ABOUT ULI NEW MEXICO



WHERE THE FUTURE IS BUILT



# Streets For All: Pedestrian & Bike Safety

**Tuesday, October 1 • 5:00pm – 7:00m**

**Central Cabana | 7915 Central Ave NE • Albuquerque, NM**

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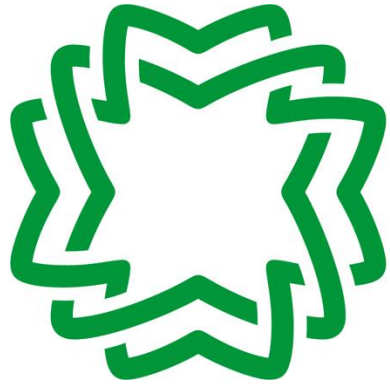


WHERE THE FUTURE IS BUILT



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# Streets For All: Pedestrian & Bike Safety

**Tuesday, October 1**  
**5:00am – 7:00pm**

**Central Cabana**  
7915 Central Ave NE

Sponsored by  **WaFd Bank**

# SPEAKERS

**Valerie Hermanson,**  
**AICP**

Vision Zero Coordinator,  
City of Albuquerque

**Nick Ferenchak**

Associate Professor - Civil,  
Construction and Environmental  
Engineering

**University of New Mexico**

# Streets for All: Pedestrian & Bicyclist Safety

Nick Ferenczak, PhD, PE

University of New Mexico

Department of Civil, Construction & Environmental Engineering



1. Introduction
2. Central Avenue
3. Multimodal Safety in Context

# Introduction



- Traffic Safety
- Plangineer
- PhD University of Colorado  
Denver
- UNM for 6 years



# Center for Pedestrian and Bicyclist Safety



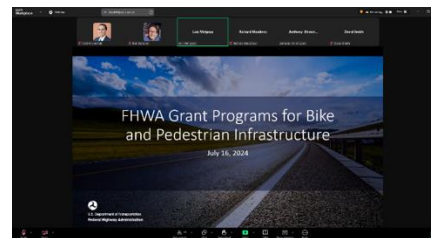
# Education




# Workforce Development



# Technology Transfer



 **CPBS**  
Center for Pedestrian  
and Bicyclist Safety

Newsletter  
July 2024

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**ONLINE  
WEBINAR**

CPBS is excited to announce our second free webinar: [Demystifying Federal Grants for Street Safety Improvements](#) on Tuesday July 16, 2024 from 2-3pm MDT (4-5pm EDT).



**Central Avenue**



**Table 4.** Fatal and Serious Injury Collisions for All Modes (Collisions per Mile/Month)

Segment	Count before	Count during	Count after	Before to after change	% Change
98th to Coors*	3.2	3.1	1.8	-1.5	-45.6
Coors to Atrisco	4.9	3.3	2.2	-2.7	-55.1
Atrisco to Lomas	3.3	0.7	2.6	-0.7	-20.5
Lomas to 10th	1.2	0.6	0.0	-1.2	-100.0
10th to 1st*	2.6	3.6	4.4	1.8	72.2
1st to University	4.0	1.5	1.8	-2.1	-54.1
University to Girard	3.3	1.8	0.7	-2.6	-78.5
Girard to Carlisle	5.1	0.9	1.1	-4.0	-78.5
Carlisle to San Mateo	3.1	1.7	0.0	-3.1	-100.0
San Mateo to Louisiana	4.5	5.0	2.2	-2.3	-50.8
Louisiana to Tramway*	4.6	4.0	4.0	-0.6	-13.9
ART average	3.7	1.9	1.3	-2.4	-64.9
Control average	3.5	3.6	3.4	-0.2	-5.7
Alternatives	1.7	1.5	1.6	-0.1	-5.9
All of Albuquerque	36.7	31.4	29.9	-6.8	-18.4

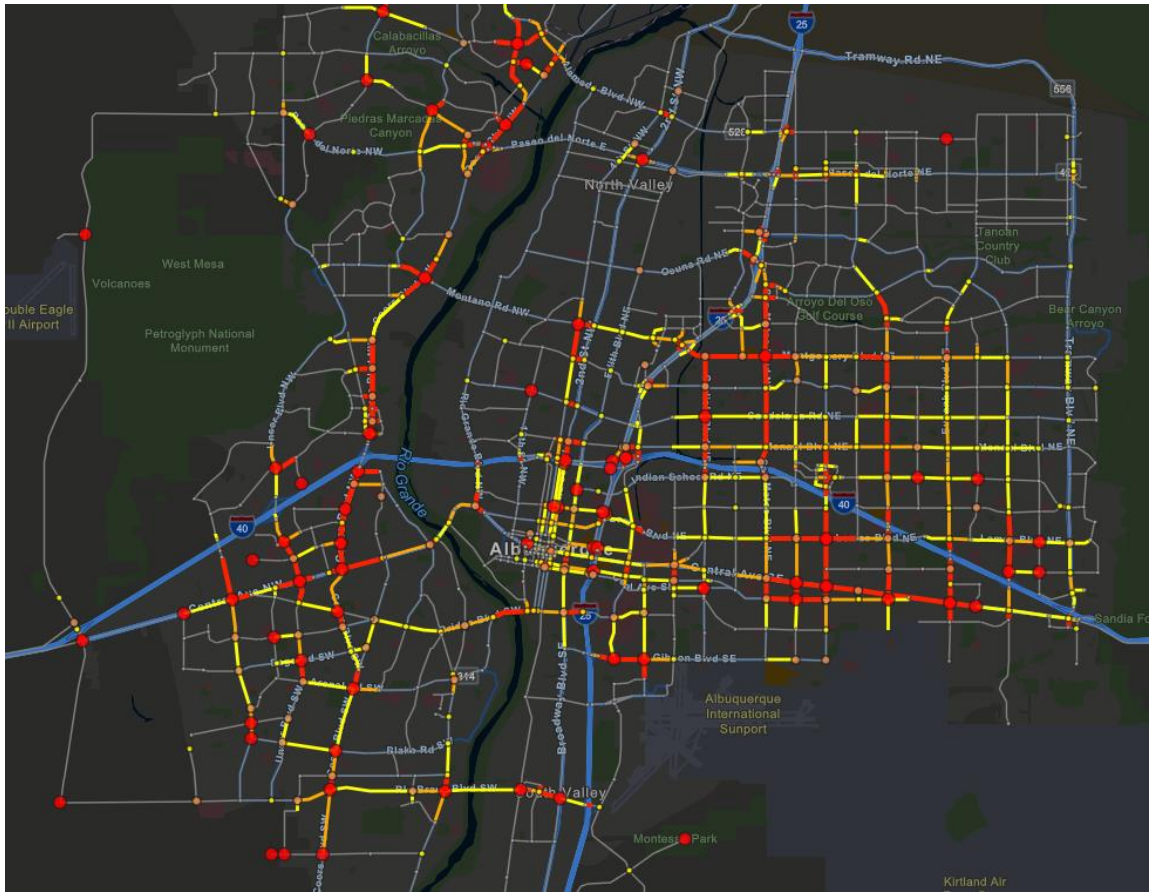
**Table 3.** Changes in motor vehicle operating speeds on Central Avenue corridor relative to BRT installation (all before/after changes were statistically significant at 95% confidence with single-tailed t-tests).

		n	Average Speed (mph)				85 <sup>th</sup> Percentile Speed (mph)			
			Before	After	Change	% Change	Before	After	Change	% Change
ART	All	94	23.5	20.3	-3.2	-13.6%	32.3	28.6	-3.7	-11.5%
	Intersections	38	23.1	19.9	-3.2	-13.9%	31.7	27.6	-4.1	-12.9%
	Mid-block	56	23.8	20.6	-3.2	-13.4%	32.6	29.3	-3.3	-10.1%
Control	All	70	27.3	24.4	-2.9	-10.6%	38.0	35.8	-2.2	-5.8%
	Intersections	22	28.6	24.9	-3.7	-12.9%	39.8	36.8	-3.0	-7.5%
	Mid-block	48	26.8	24.2	-2.6	-9.7%	37.3	35.4	-1.9	-5.1%

**Table 8.** Motor vehicle speeds on Central Avenue corridor by neighborhood relative to BRT (control segments highlighted in yellow).

	n	Average Speed (mph)				85 <sup>th</sup> -Percentile Speed (mph)				Change in KA Crashes
		Before	After	Change	% Change	Before	After	Change	% Change	
Westside (Control)	20	32.1	27.9	-4.2	-13.1%	44.3	40.4	-3.9	-8.8%	-40.0%
Westside	20	25.7	23.1	-2.6	-10.1%	34.7	33.1	-1.6	-4.6%	-69.6%
Old Town	10	29.0	24.7	-4.3	-14.8%	39.6	34.9	-4.7	-11.9%	-40.0%
West Downtown	8	20.5	18.3	-2.2	-10.7%	27.3	25.2	-2.1	-7.7%	n/a
Downtown (Control)	4	14.5	12.5	-2.0	-13.8%	20.3	18.5	-1.8	-8.9%	66.7%
East Downtown	16	20.5	17.6	-2.9	-14.1%	27.3	24.6	-2.7	-9.8%	-45.0%
UNM	10	21.3	18.6	-2.7	-12.7%	29.5	24.5	-5.0	-16.9%	-50.0%
Nob Hill	12	22.5	18.4	-4.1	-18.2%	31.8	25.8	-6.0	-18.9%	-83.3%
Fairground	18	23.7	20.2	-3.5	-14.8%	33.6	29.2	-4.4	-13.1%	-75.0%
Eastside (Control)	46	26.5	24.0	-2.5	-9.4%	37.0	35.4	-1.6	-4.3%	-17.3%

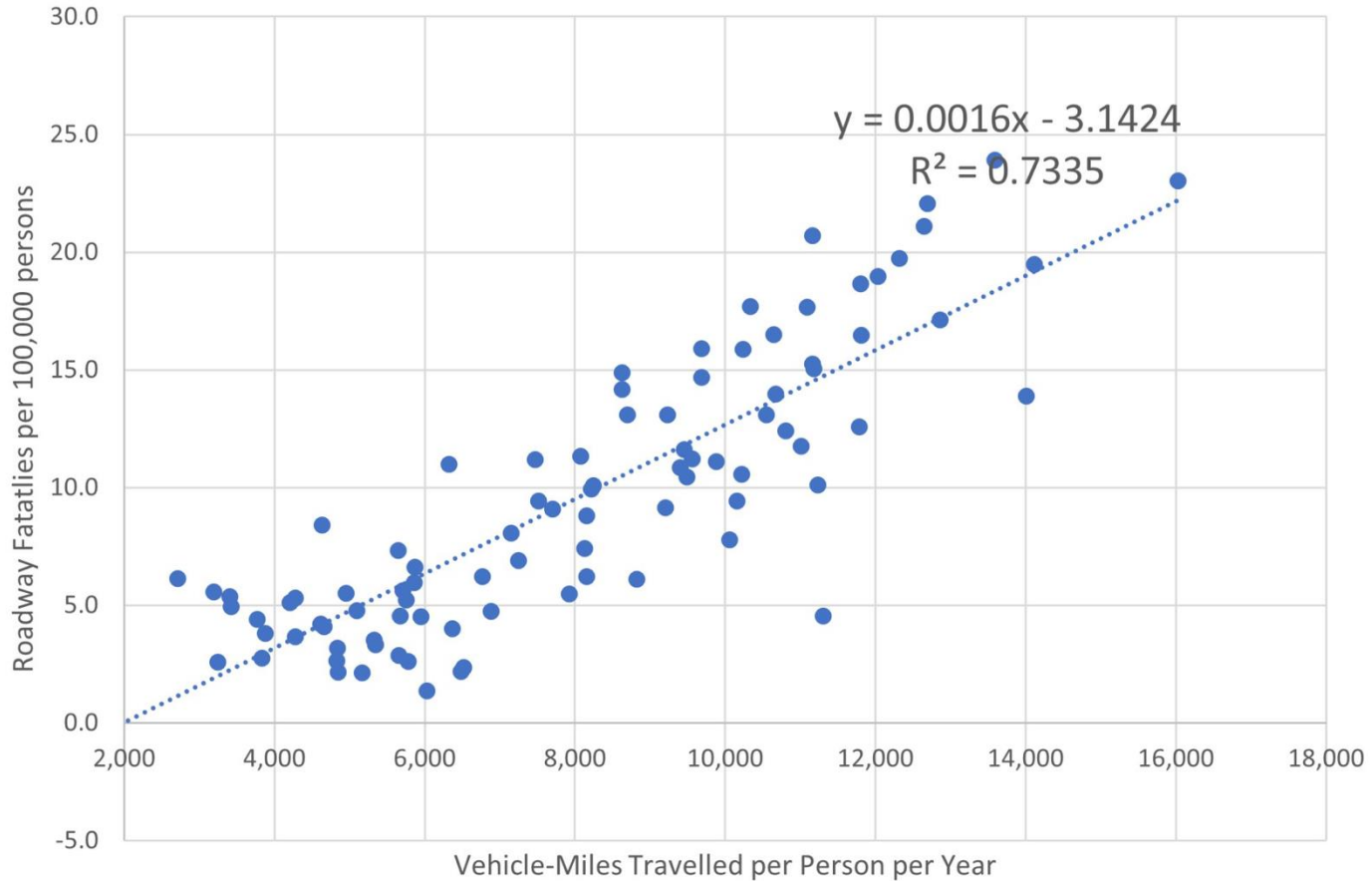
# Multimodal Safety in Context

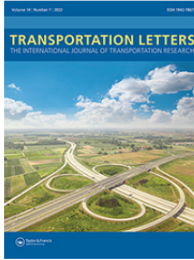






## 2022 Fatality rate by VMT/person





## Transportation Letters

The International Journal of Transportation Research

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/ytrl20>

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# U.S. Vision Zero Cities: modal fatality trends and strategy effectiveness

Nicholas N. Ferenchak



ELSEVIER

Contents lists available at ScienceDirect

## Journal of Cycling and Micromobility Research

journal homepage: [www.sciencedirect.com/journal/journal-of-cycling-and-micromobility-research](http://www.sciencedirect.com/journal/journal-of-cycling-and-micromobility-research)

## Traffic safety for all road users: A paired comparison study of small & mid-sized U.S. cities with high/low bicycling rates

Nicholas N. Ferenczak<sup>a,\*</sup>, Wesley E. Marshall<sup>b,2</sup>

Table 3

Category 1 Mode Choice Negative Binomial Models (95% confidence in bold).

Variable	All Fatalities Model			Pedestrian Fatalities Model		
	Coefficient	p-value	S.E.	Coefficient	p-value	S.E.
Constant	-8.509	< 0.001	0.265	-9.698	< 0.001	0.396
<i>City Level Variables</i>						
Bike Mode Share	-0.108	0.265	0.097	-0.217	0.206	0.172
Pedestrian Mode Share	-0.189	0.106	0.117	-1.472	< 0.001	0.269
SOV Mode Share	-0.065	0.680	0.157	0.515	0.046	0.300
Transit Mode Share	-0.018	0.889	0.132	0.242	0.290	0.229
<i>Block Group Level Variables</i>						
Bike Mode Share	-0.304	0.002	0.101	-0.419	0.013	0.168
Pedestrian Mode Share	-0.257	0.042	0.126	-1.670	< 0.001	0.282
SOV Mode Share	-0.139	0.400	0.165	0.258	0.394	0.303
Transit Mode Share	-0.279	0.021	0.120	-0.040	0.845	0.206



# Research

## Road Design



# Research Road Design

Research Article

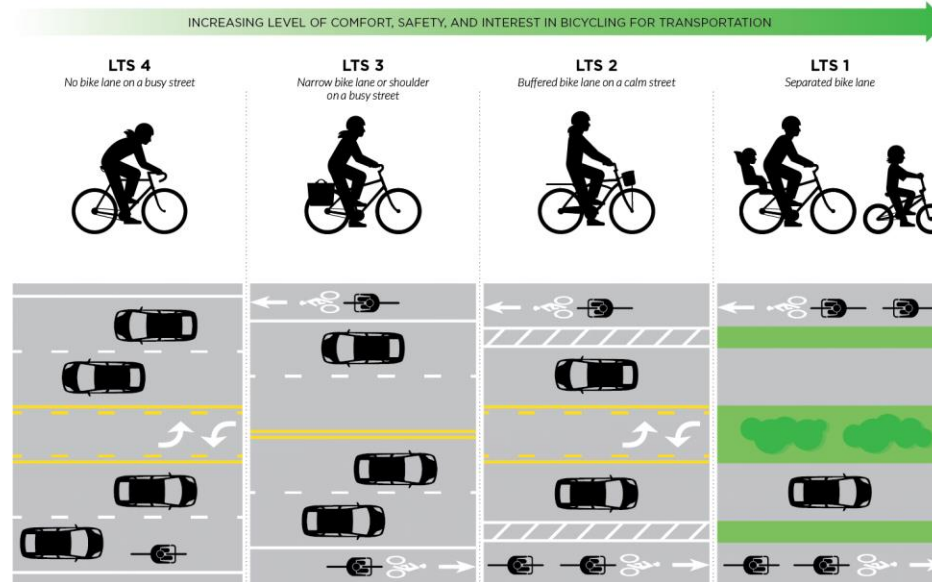
## Validation of Bicycle Level of Traffic Stress and Perceived Safety for Children

Nicholas N. Ferenchak<sup>1</sup> and Wesley E. Marshall<sup>2</sup>

**TRR**  
TRANSPORTATION RESEARCH RECORD

Transportation Research Record  
2020, Vol. 2674(4) 397–406  
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### LEVEL OF TRAFFIC STRESS









# Research Road Design

 International Journal of Transportation Science  
and Technology  
Volume 8, Issue 2, June 2019, Pages 136-145



Advancing healthy cities through safer cycling: An examination of shared lane markings

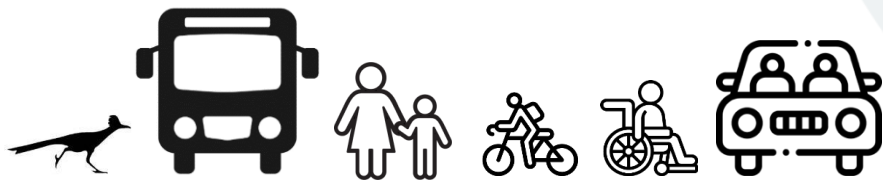
Nicholas N. Ferenchak <sup>a</sup>, <sup>b</sup>, Wesley E. Marshall <sup>b</sup>





Thank you! Questions?

Nick Ferenchak  
ferenchak@unm.edu  
505.220.9630



# STREETS FOR ALL: PEDESTRIAN & BICYCLIST SAFETY

## URBAN LAND INSTITUTE SIP & SOCIAL

OCTOBER 1, 2024

Valerie Hermanson, AICP  
Strategic Program Manager  
Department of Municipal Development  
City of Albuquerque

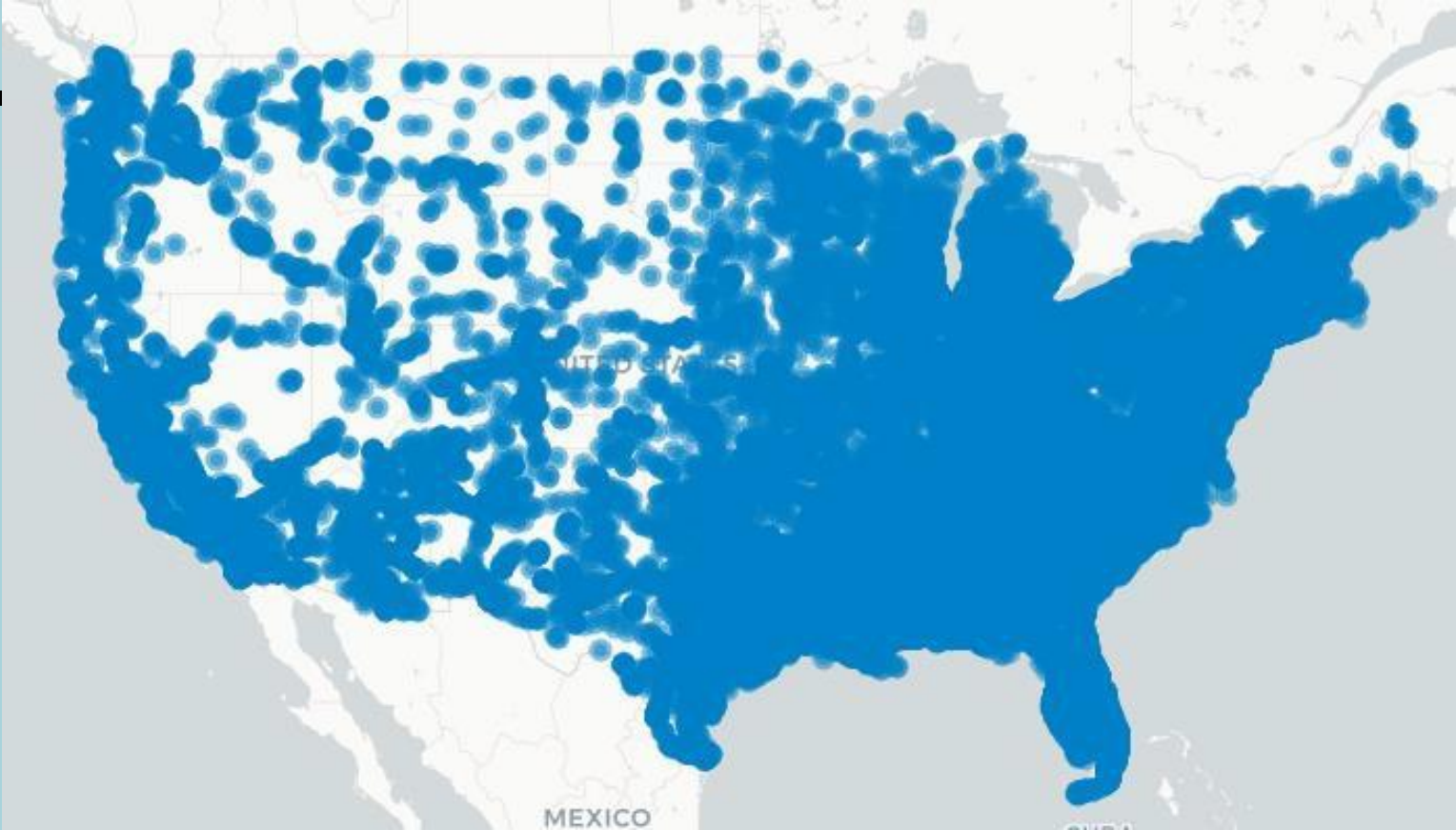


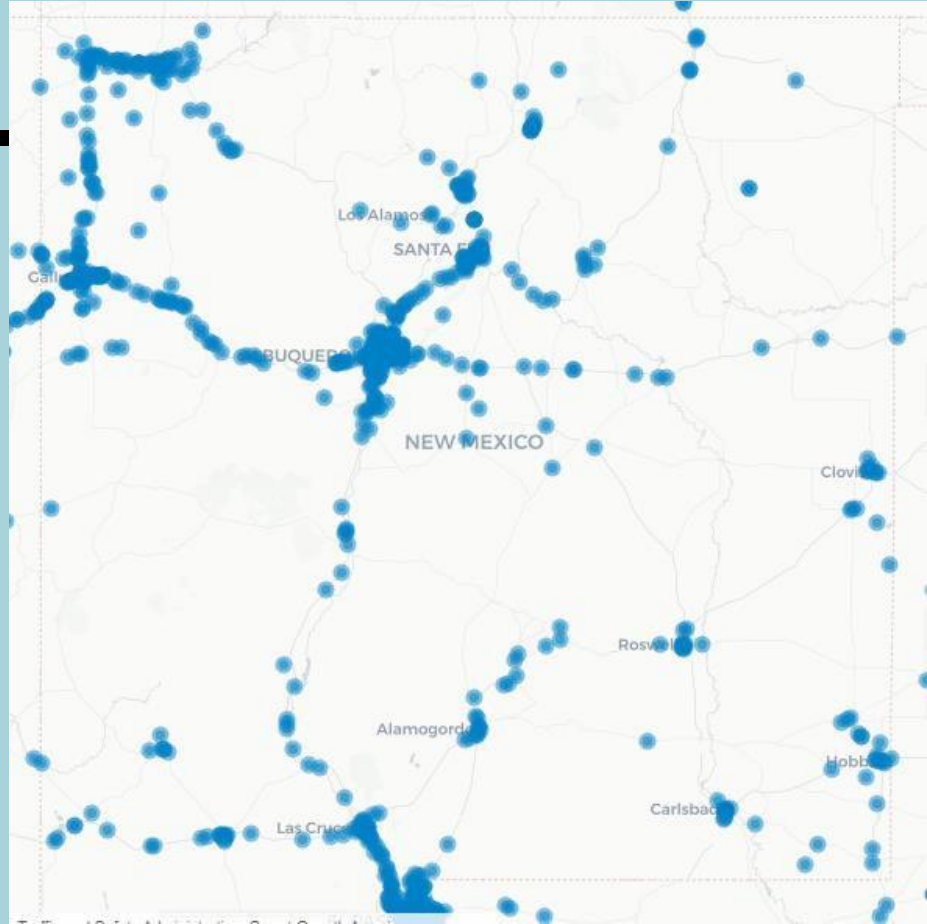
# Overview

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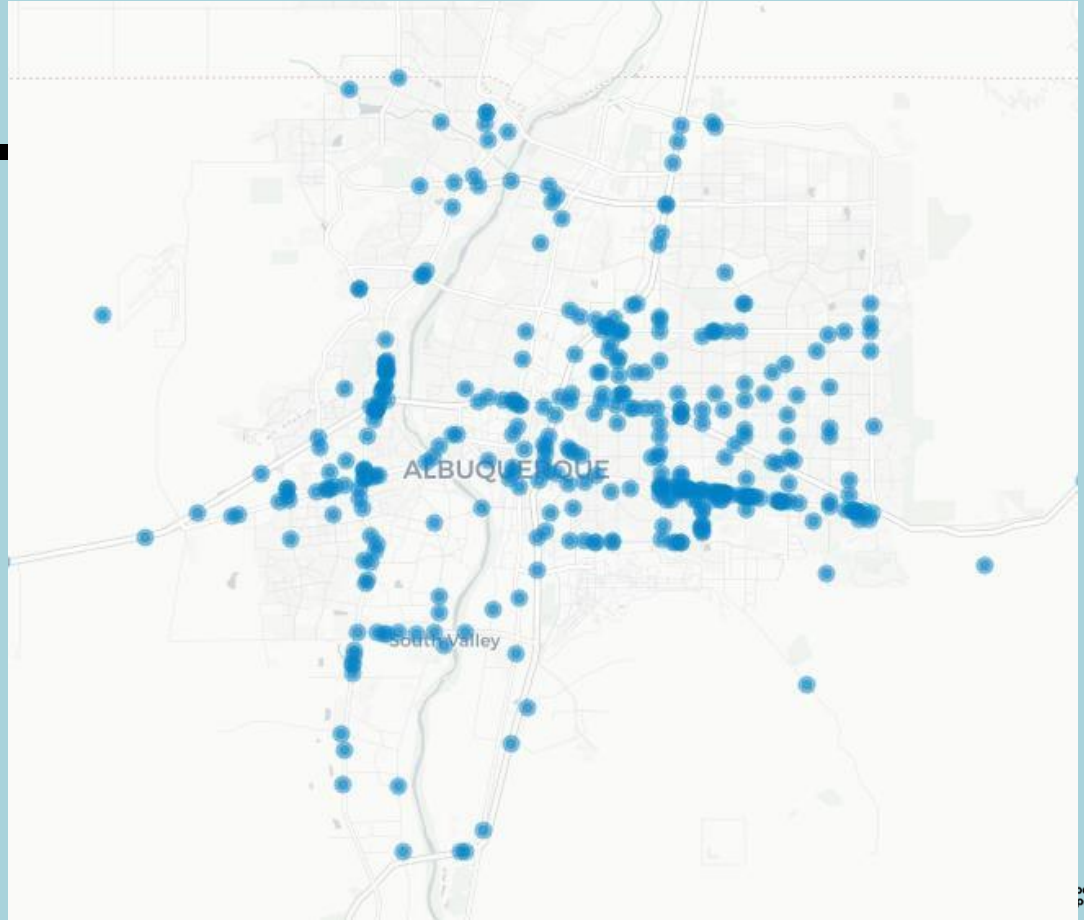
- What are the issues?
- Where do we begin to address the issues?
  - Vision Zero/Safe system approach
  - Best practices
- Implementation examples
  - Lower cost/high-impact safety measures
  - Louisiana Blvd.
  - East Central road diet/BAT lanes
- What can you do?

# What do you think this is?





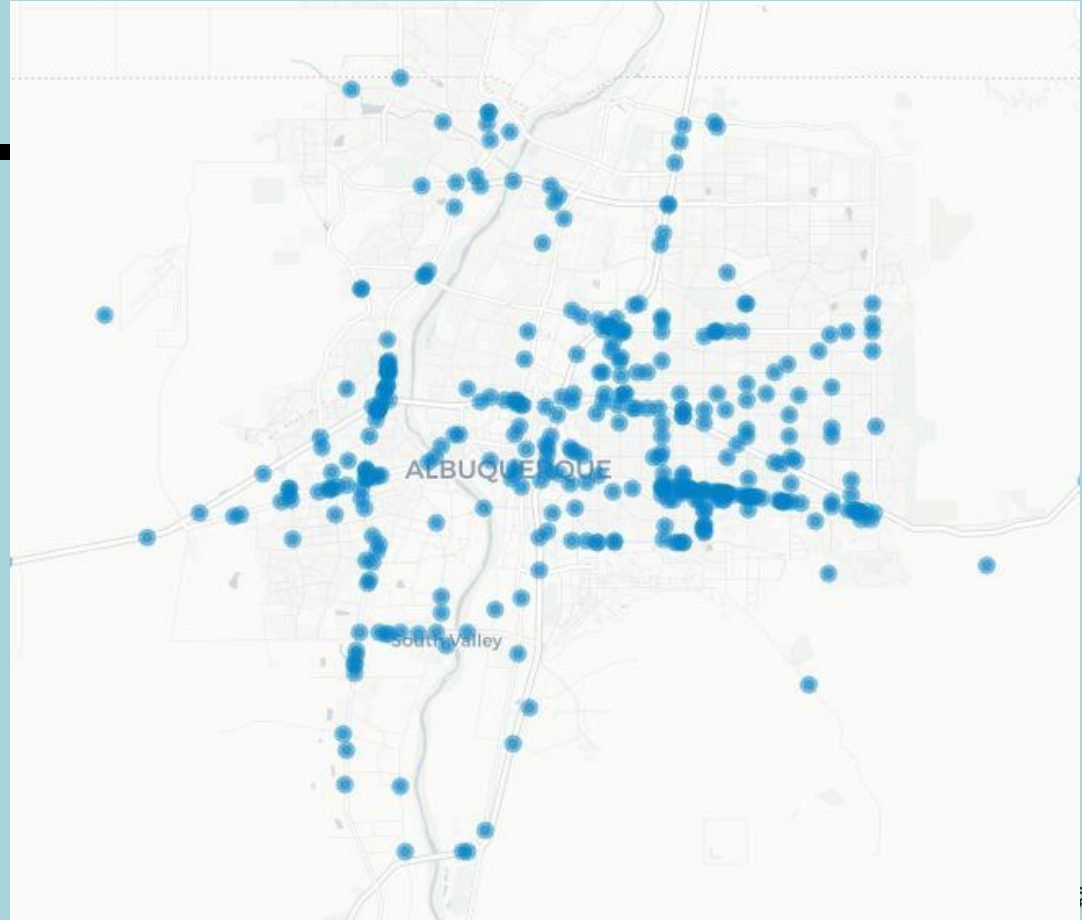




# Pedestrian fatalities 2008 - 2022

Data between 2016-2022:

- New Mexico **highest** state for pedestrian deaths per 100,000 people in population
- Albuquerque **second-highest** metro area for pedestrian deaths per 100,000 people in population



NATIONAL

# U.S. pedestrian deaths reach a 40-year high

JUNE 26, 2023 · 5:00 AM ET

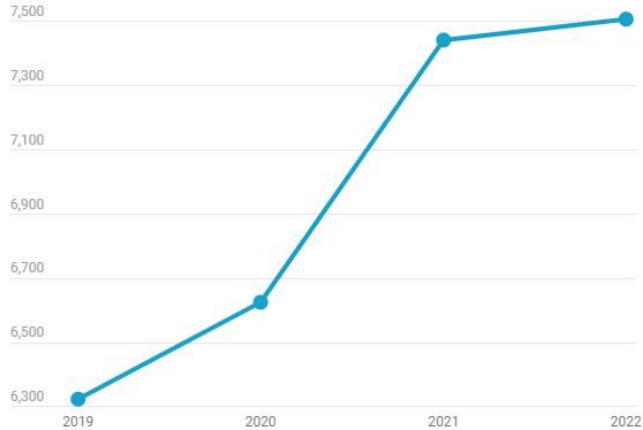


Juliana Kim



## U.S. Pedestrian Fatalities, 2019-2022

Deaths of people walking surged 19% in just three years



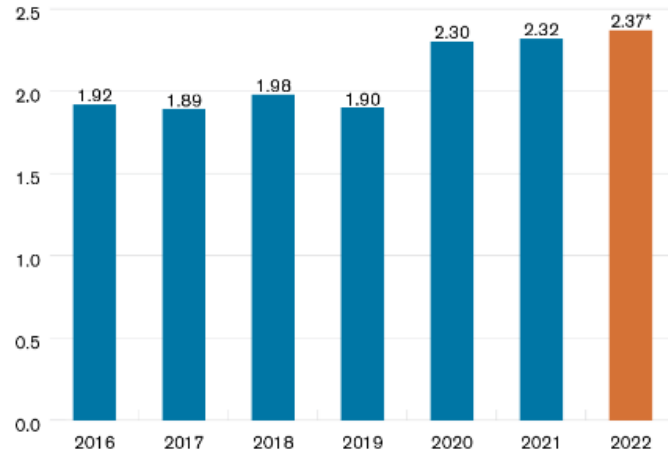
\*Oklahoma excluded because complete data was not available

Source: Governors Highway Safety Association (GHSA) • Embed • Created with Datawrapper

## Pedestrian Fatality Rate Increased Yet Again in 2022

U.S. Pedestrian Fatality Rate per One Billion VMT

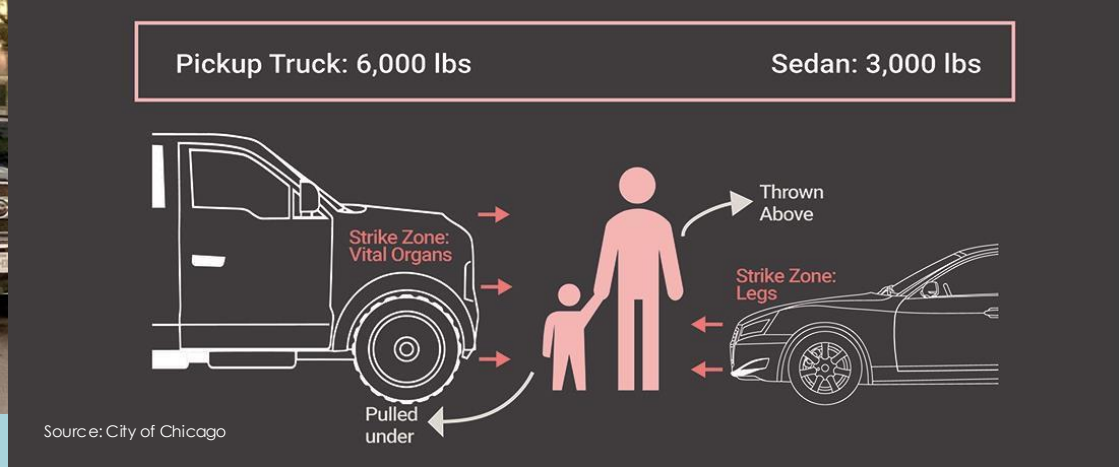
\* Projected



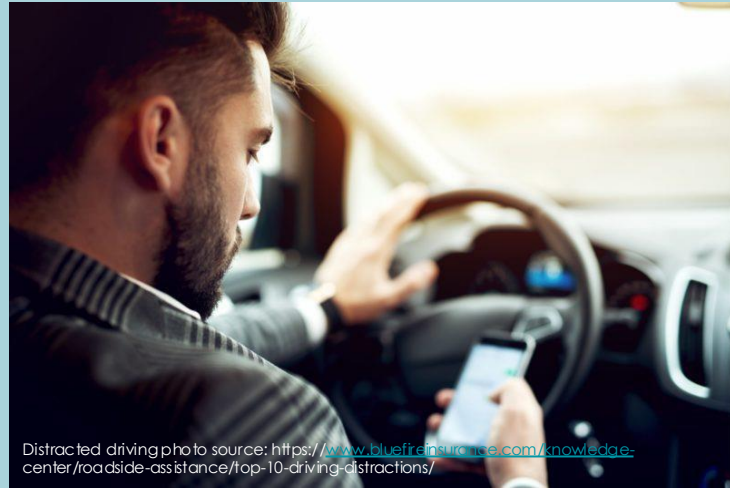
# How did we get here?

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# How did we get here?



# How did we get here?

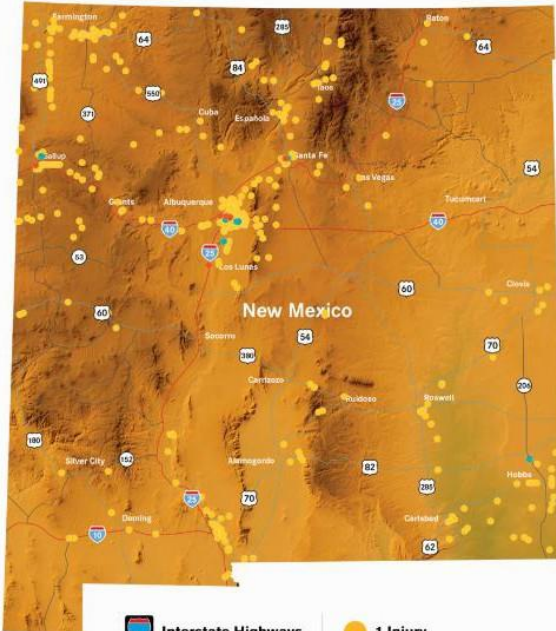


Distracted driving photo source: <https://www.bluefireinsurance.com/knowledge-center/roadside-assistance/top-10-driving-distractions/>



# Fatalities in Alcohol-Involved Crashes

2017-2019



-  Interstate Highways
-  U.S. Highways
-  State Highways

-  See All
-  1 Fatality
-  2 Fatalities
-  3-5 Fatalities

-  1 Injury
-  2 Injuries
-  3+ Injuries

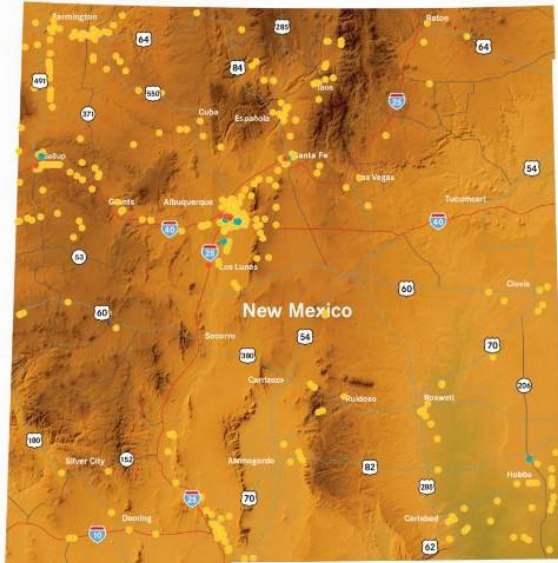
## get here?



Distracted driving photo source: <https://www.bluefranchise.com/knowledge-center/roadside-assistance/top-10-driving-distractions/>

# Fatalities in Alcohol-Involved Crashes

2017-2019



- Interstate Highways
- U.S. Highways
- State Highways
- 1 Injury
- 2 Injuries
- 3+ Injuries
- See All
- 1 Fatality
- 2 Fatalities
- 3-5 Fatalities

# get here?



Dist  
cer

The faster a vehicle is traveling, the more damage is done to a struck pedestrian.

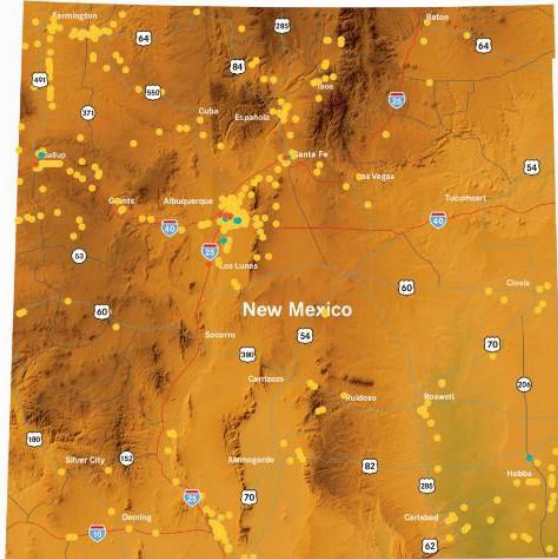


Source: City of Chicago



# Fatalities in Alcohol-Involved Crashes

## 2017-2019



# get here?





Source: Jacob Riis/Detroit Publishing Co/Library of Congress

COPYRIGHT 1971  
BY DETROIT PHOTOGRAPH



Source: Google maps/Google street view

**Vision Zero** is an approach to transportation safety that accepts **no loss of life or serious injury** on our transportation system.

**Vision Zero** is an approach to transportation safety that accepts **no loss of life or serious injury** on our transportation system.

**CRASH**  
~~ACCIDENT~~



# A Paradigm Shift: Zero is our goal

The Safe System Approach aims to eliminate fatal and serious injuries for all road users. It's a road map to get to zero.



Source: Federal Highway Administration (FHWA)

# A Paradigm Shift: Zero is our goal

The Safe System Approach aims to eliminate fatal and serious injuries for all road users. It's a road map to get to zero.



Source: Federal Highway Administration (FHWA)

# Prioritized High Fatal and Injury Network (HFIN)

41%

of fatalities occurred on these 24 corridors (2015-2019)

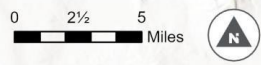
16%

of road miles in Albuquerque

90%

are Principal Arterials

Priority Tiers	Vulnerable Communities Index
1st: Score >25	0.0 - 0.2 (Low Vulnerability)
2nd: Score 23-25	>0.2 - 0.4
3rd: Score: 20-23	>0.4 - 0.6
4th: Score 16-20	>0.6 - 0.8
5th: Score <17	>0.8 - 1.0 (High Vulnerability)
State Road	City Boundary



# Safe Roads: Best Practices

## Best practices

- Separate different roadway users in **space**
  - Examples: Bike lanes, buffered bike lanes, separated bike lanes





# Safe Roads: Best Practices

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  - Examples: Bike lanes, buffered bike lanes, separated bike lanes
- Separate different roadway users in **time**
  - Examples: Leading pedestrian intervals, bike signals, pedestrian hybrid beacons



# Safe Roads: Best Practices

## Best practices

- Separate different roadway users in **space**
  - Examples: Bike lanes, buffered bike lanes, separated bike lanes
- Separate different roadway users in **time**
  - Examples: Leading pedestrian intervals, bike signals, pedestrian hybrid beacons
- Increase **attentiveness & awareness**
  - Examples: Daylighting, street lighting, flashing beacons

Implementing proven safety countermeasures



# Safe Roads: Implementation

\*Proven Safety Countermeasure

Since 2021, the City of Albuquerque has completed...



Source: Aaron Sussman



## Mid-block crossings

- **15** pedestrian hybrid beacons (PHBs)\* or rectangular rapid flashing beacons (RRFBs)\*
  - Several locations include median refuge islands

# Safe Roads: Implementation

Since 2021, the City of Albuquerque has completed...

\*Proven Safety Countermeasure



Source: Aaron Sussman



## Mid-block crossings

- **15** pedestrian hybrid beacons (PHBs)\* or rectangular rapid flashing beacons (RRFBs)\*
  - Several locations include median refuge islands

## Signal improvements

- **15 locations** with Leading Pedestrian Intervals (LPIs)\*
- Rest in red
- Pedestrian Activated Warning Signal (PAWs) – in design for Louisiana Blvd. and Central Ave.



# Safe Roads: Implementation

Since 2021, the City of Albuquerque has completed...

**\*Proven Safety Countermeasure**



Source: Aaron Sussman



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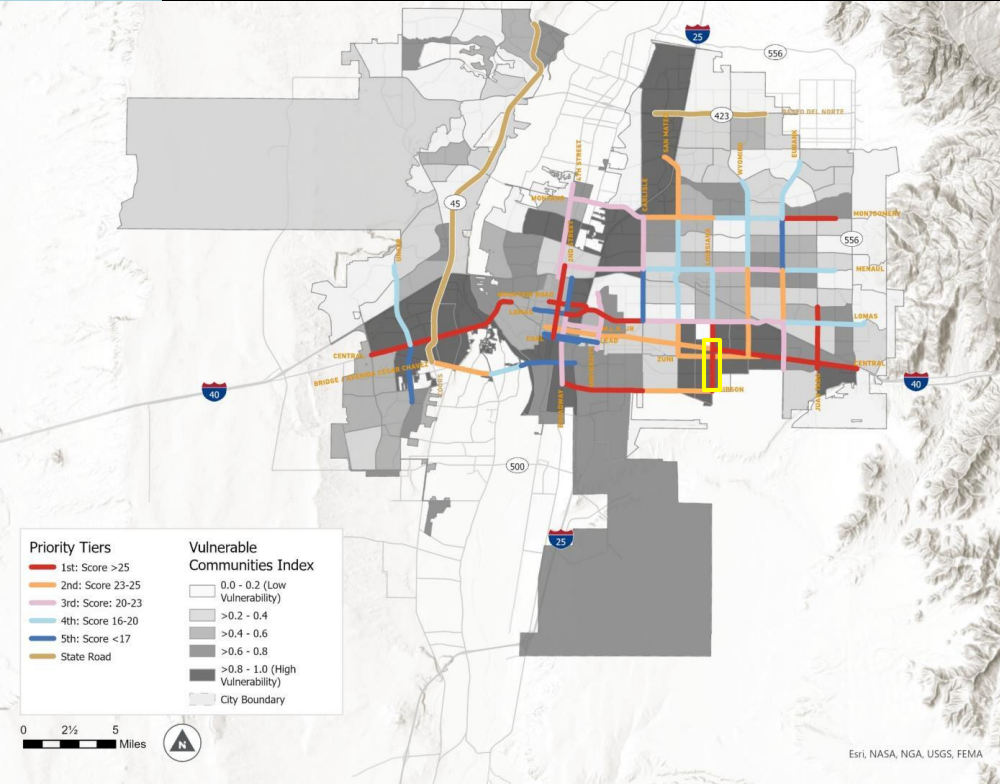
## Signal improvements

- **15 locations** with Leading Pedestrian Intervals (LPIs)\*
- Rest in red
- Pedestrian Activated Warning Signal (PAWs) – in design for Louisiana Blvd. and Central Ave.

## Striping

- **6.6 miles+** road diets\*
- **35.2 miles+** of bike lanes\* (**25.8 are buffered**)
- **122+** daylighting intersections
- **158+** new or refreshed high-visibility crosswalks\*
- **41.9 miles+** narrowing driver lanes

# Example: Louisiana Blvd Vision Zero Improvement Project



# Louisiana Blvd Vision Zero Improvements - CONSTRUCTION

## ROAD DIET\*

- Kathryn Ave to Central Ave
  - 5-lane to 4-lane reduction
  - Two-way left turn lane
  - Buffered bike lanes
- Kathryn Ave to Gibson Blvd
  - 5-lane to 2-lane reduction
  - Two-way left turn lane
  - Separated bike lanes (SBL)



**Crash Modification Factor (CMF)** - using flexible posts in converting a traditional bicycle lane to a SBL can **reduce crashes by 50 percent.**



# Louisiana Blvd Vision Zero Improvement Project

## ROAD DIET

- Kathryn Ave to Central Ave
  - 5-lane to 4-lane reduction
  - Two-way left turn lane
  - Buffered bike lanes
- Kathryn Ave to Gibson Blvd
  - 5-lane to 2-lane reduction
  - Two-way left turn lane
  - Buffered bike lanes with vertical separation

## PAINT/POSTS



## Leading Pedestrian Intervals (LPIs)

- Trumbull
- Southern
- Kathryn
- Give people walking 5-7 second head start to cross the street

## FIBER

- Intelligent transportation systems (ITS)

# Central Ave. – Louisiana Blvd. to Juan Tabo Blvd.

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Road diet with Business Access Transit (BAT) Lanes: Curbside lanes used only by right-turning vehicles and buses. **Provide better access to businesses and help buses move more efficiently through traffic.**



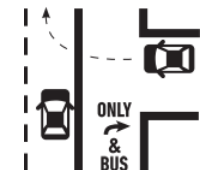
# Central Ave. – Louisiana Blvd. to Juan Tabo Blvd.



Road diet with Business Access Transit (BAT) Lanes: Curbside lanes used only by right-turning vehicles and buses. **Provide better access to businesses and help buses move more efficiently through traffic.**

## BENEFITS

- Drivers don't get stuck behind buses
- Turning right at intersections & into driveways is easier because BAT lanes provide better visibility & opportunities to turn
- Travel is faster for vehicles using the general-purpose lanes, as they are no longer delayed by turning vehicles
- Buses can move more freely, leading to a greater opportunity for on-time arrivals



# Central Ave. – Louisiana Blvd. to Juan Tabo Blvd.

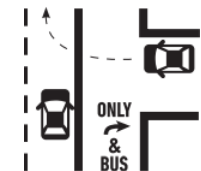
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- + **TWO NEW MIDBLOCK CROSSINGS** with median refuge islands and pedestrian hybrid beacons
  - Central Ave. and Britt
  - Central Ave and Dorothy



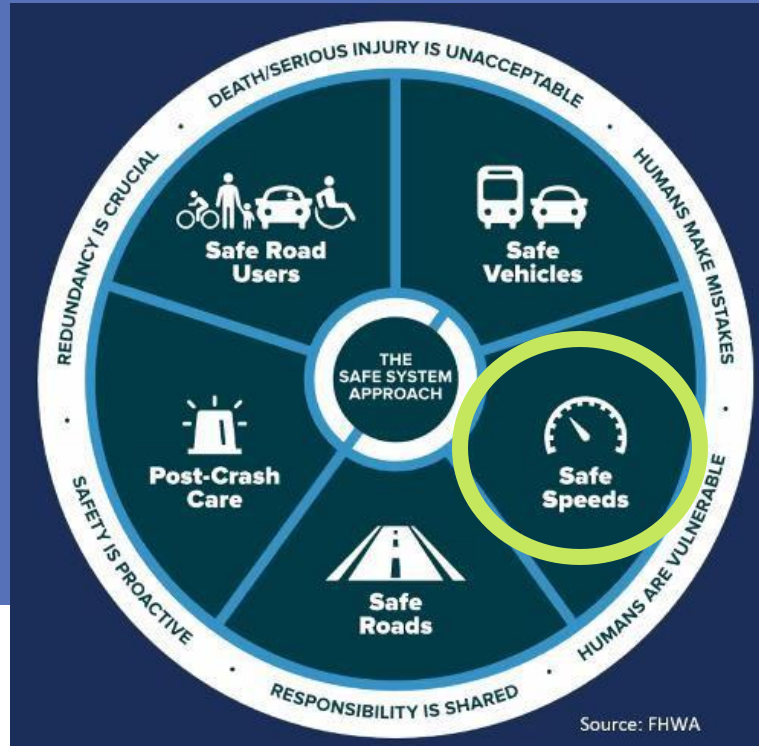
# What can you do?

**THANK YOU!**

**ONE**  
**ALBUQUE**  
**RQUE** municipal  
development



# Safe speeds: Automated Speed Enforcement (ASE)





# Safe Speeds: Automated Speed Enforcement

---

- 20 total cameras
- Changes in driver behavior
  - **Between April 25, 2022 – May 26, 2024, 20 cameras saw between a 42% to 89.2% decrease in drivers exceeding the posted speed limit by 10+ miles per hour (mph)**
  - 20 cameras saw between a **0.3 mph to 8.3 mph decrease in average driver speed**
- Remaining funds go toward Vision Zero traffic safety projects like the Central Ave. road diet/midblock crossings



# Safe Speeds: Automated Speed Enforcement

- **20 total cameras**
- **Changes in driver behavior**
  - **Between April 25, 2022 – May 26, 2024**, 20 cameras saw between a **42% to 89.2% decrease in drivers exceeding the posted speed** limit by 10+ miles per hour (mph)
  - 20 cameras saw between a **0.3 mph to 8.3 mph decrease in average driver speed**
- Remaining funds go toward Vision Zero traffic safety projects like the Central Ave. road diet/midblock crossings



Reducing speeds even by one mph can result in a **17% decrease in fatal crashes\***

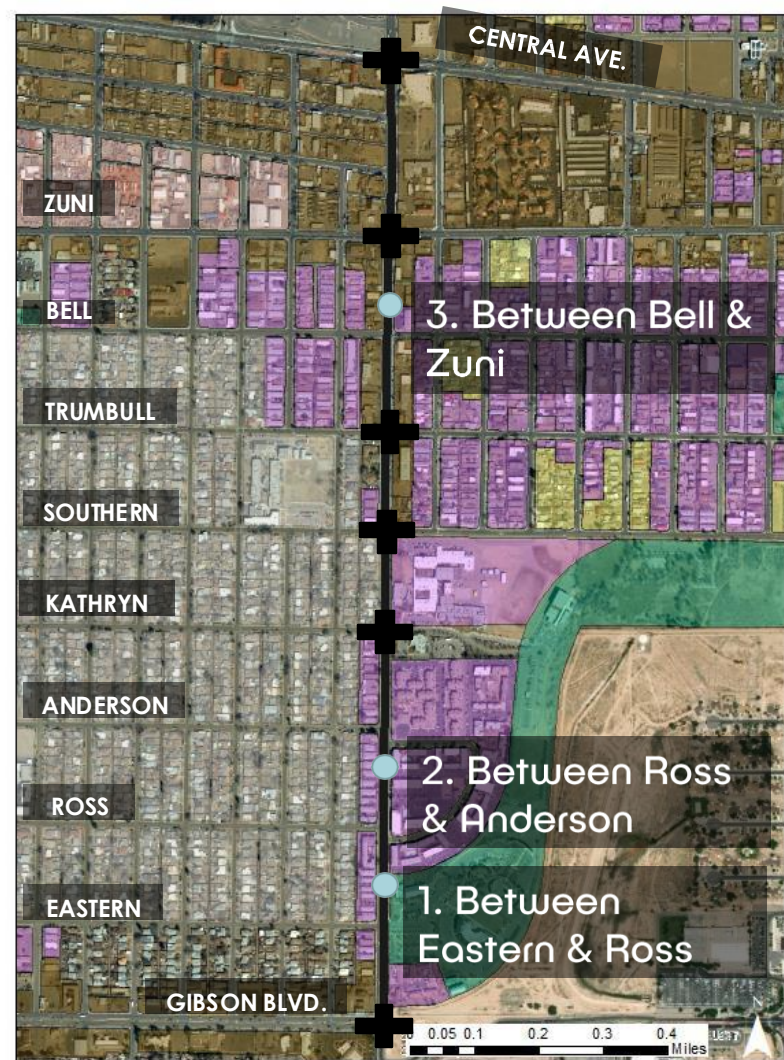
\*National Association of City Transportation Officials (NACTO). City Limits. American Association of State Highway and Transportation Officials (2010). Highway Safety Manual.

# Louisiana Blvd. Mid-block Crossings – IN DESIGN

- Mid-block crossings: pedestrian refuge islands and pedestrian hybrid beacons (PHBs):
  1. Between Eastern & Ross
  2. Between Ross & Anderson
  3. Between Bell & Zuni

## Legend

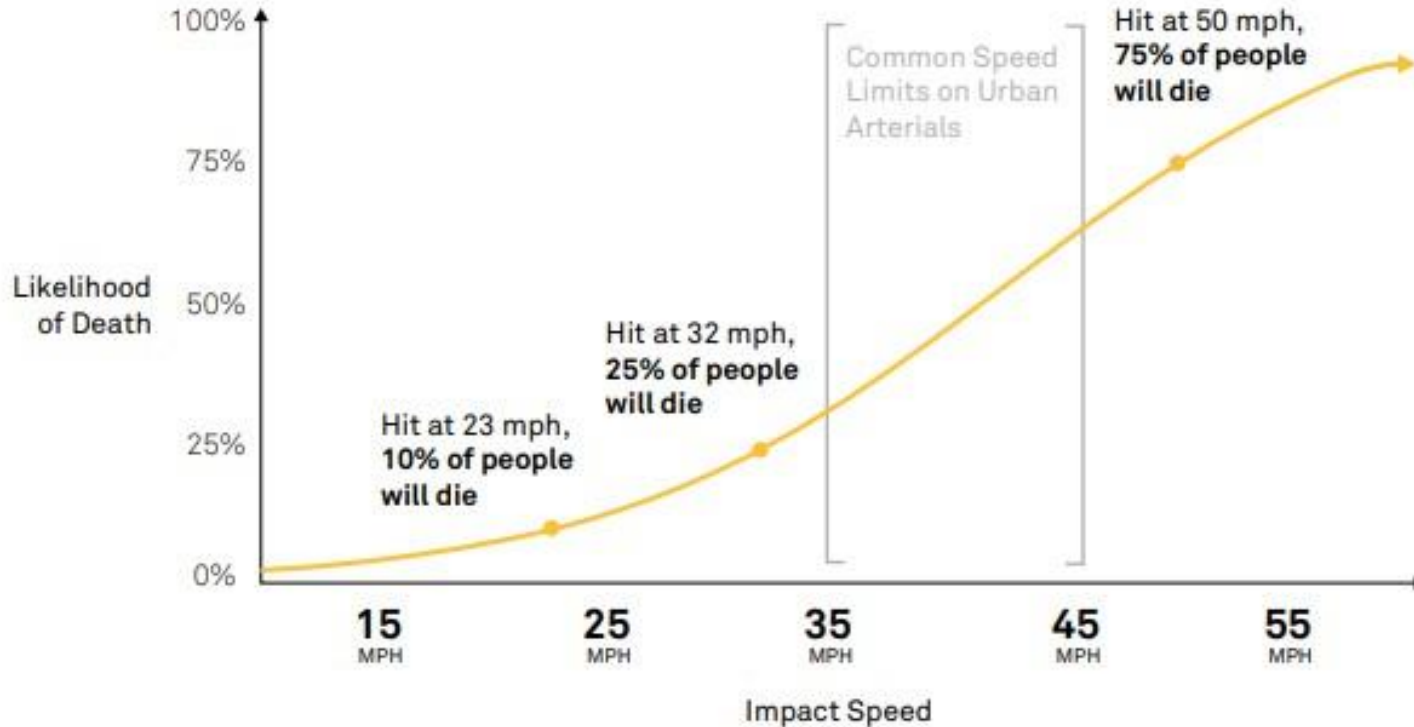
- Louisiana Blvd
- ⊕ Existing pedestrian crossing
- Proposed pedestrian crossing (PHB)
- Mixed-Use
- Multi-family Residential
- Townhouse Residential
- Public Park
- Commercial





# Importance of Speed Management

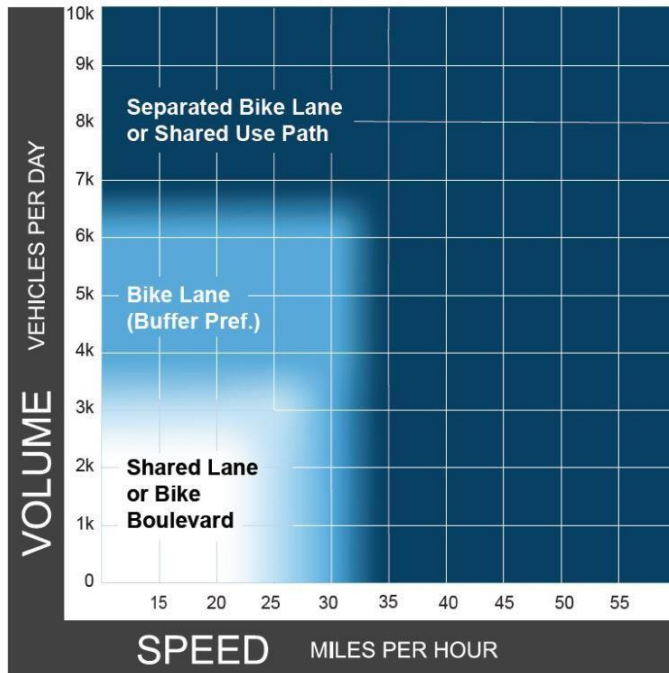
THE LIKELIHOOD OF FATALITY INCREASES EXPONENTIALLY WITH VEHICLE SPEED<sup>32</sup>



# 2024 Bikeway and Trail Facilities Plan – Council for final approval soon



## FHWA Bikeway Selection Guide



To achieve growth in bicycling, bikeway design needs to meet the needs of a broader set of potential bicyclists.



Source: NACTO

- Total new or enhanced miles of bikeways: 360
- Total number of proposed enhanced crossings: 256

### Mileage of New or Enhanced Bikeways by Facility Type

Facility	2024 City Limits
Bike Boulevard	96.3
Enhanced Bike Route	24.5
Bike Lane	33.7
Buffered Bike Lane	56.6
Separated Bike Lane	52.3
Paved Multi-Use Trail	21.4
Sidepath	74.6
<b>Total</b>	<b>359.6</b>