

Active Transportation Planning & Design Considerations

New Mexico Safety Summit

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Presentation Overview



The Issue

Getting Started

Safe & Accessible Design

Active Transportation
Resources



THE ISSUE

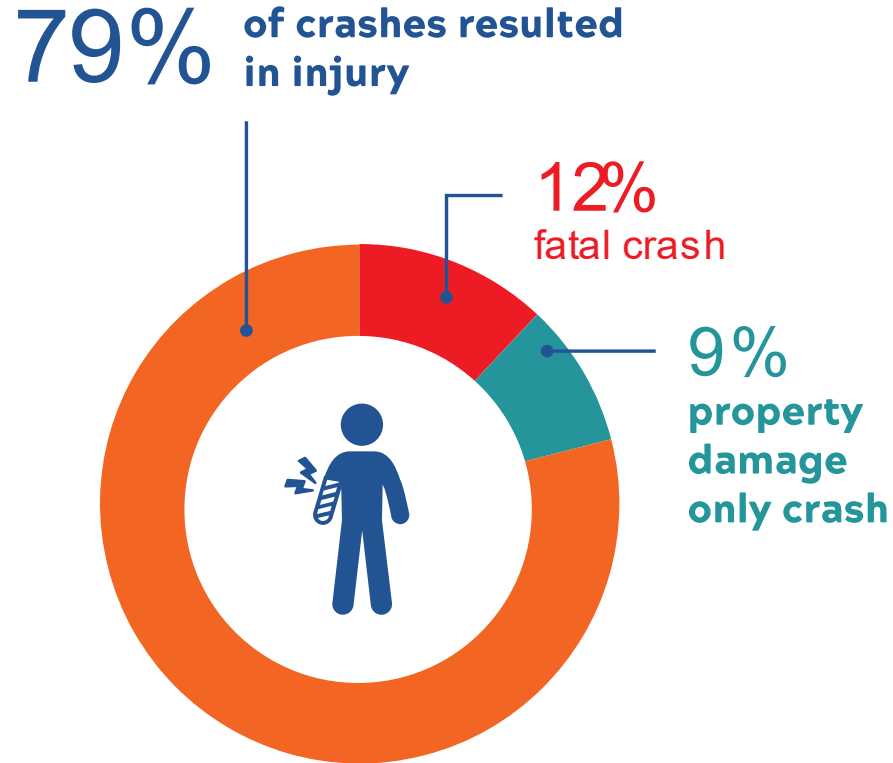
Why the focus on Active Transportation?

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New Mexico's Pedestrian Fatality Rates

Year	Nationwide Ranking
2012	2 nd – 2.92 pedestrian fatality rate per 100,000 population
2013	4 th – 2.34 pedestrian fatality rate per 100,000 population
2014	1 st – 3.59 pedestrian fatality rate per 100,000 population
2015	3 rd – 2.58 pedestrian fatality rate per 100,000 population
2016	1 st – 3.54 pedestrian fatality rate per 100,000 population
2017	1 st – 3.58 pedestrian fatality rate per 100,000 population
2018	1 st – 3.96 pedestrian fatality rate per 100,000 population
2019	1 st - 3.96 pedestrian fatality rate per 100,000 population
2020	1st – 3.83 pedestrian fatality rate per 100,000 population
2021	1st – 4.77 pedestrian fatality rate per 100,000 population
2022	1st – 4.40 pedestrian fatality rate per 100,000

New Mexico's Pedestrian Fatalities



Speed Kills

● If hit by a car travelling: ● Results in fatality ● Person survives



20 MPH: 5%

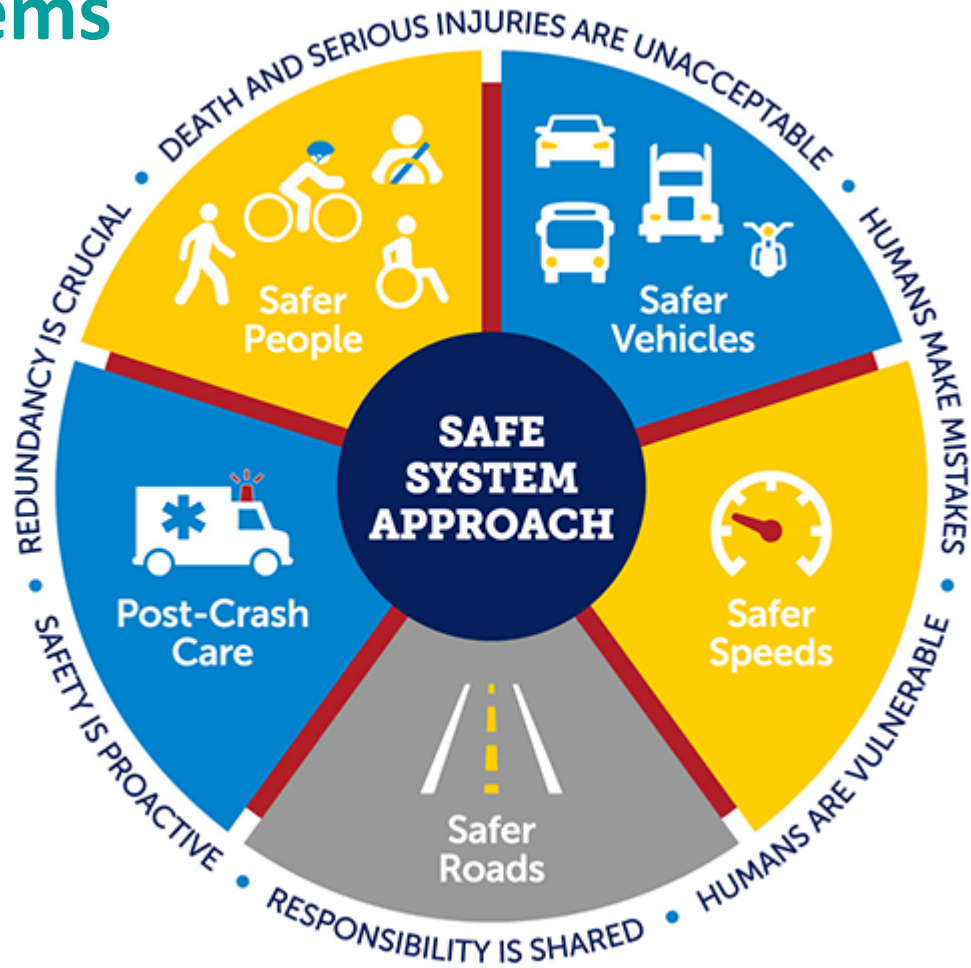


30 MPH: 45%



40 MPH: 85%

Safe Systems





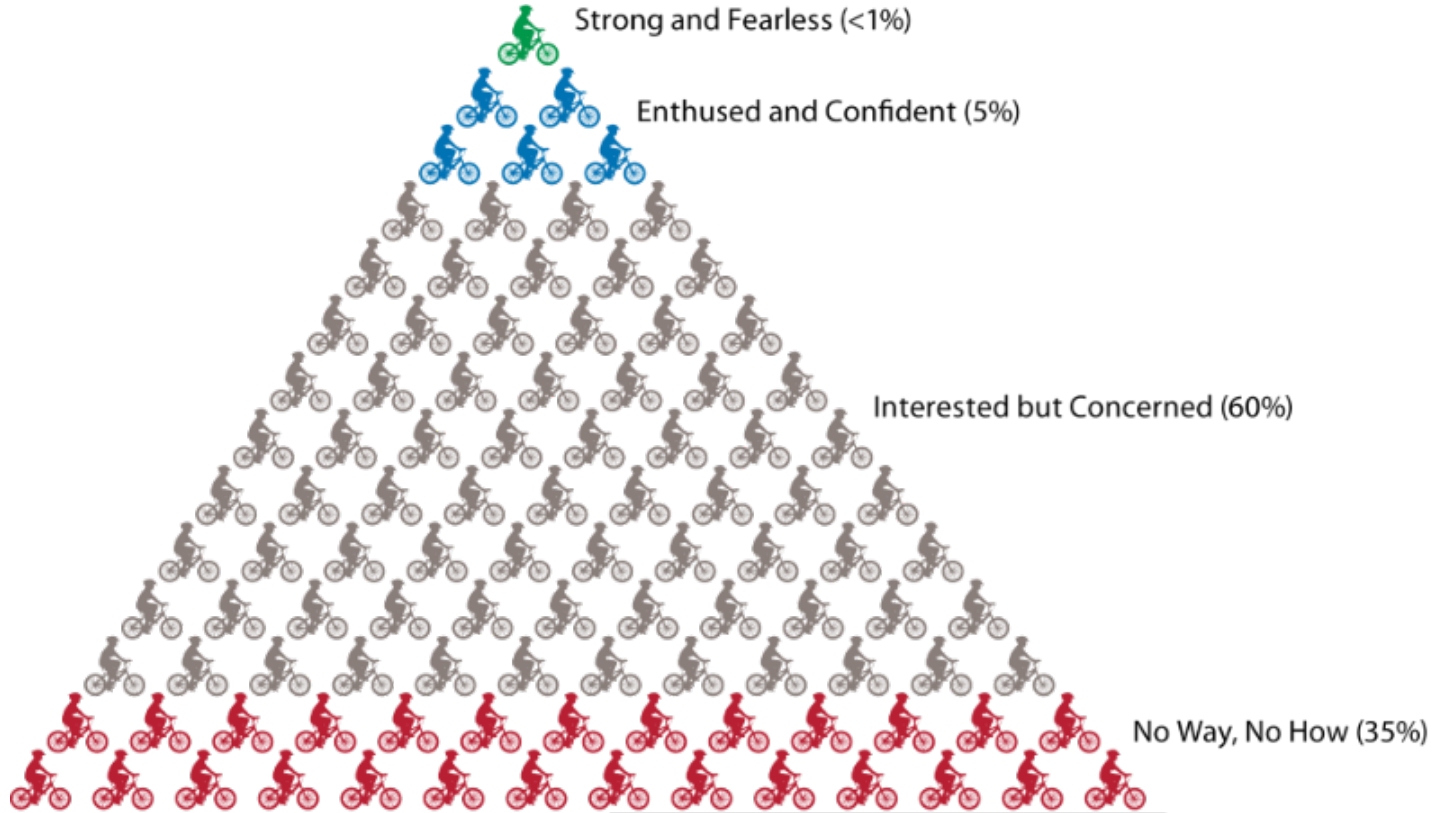
Getting Started

Active Transportation Planning



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Potential Bicyclist Breakdown



All Ages & Abilities

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

Children



Seniors



Women



**People Riding
Bike Share**



**People of
Color**



**Low-Income
Riders**



**People with
Disabilities**



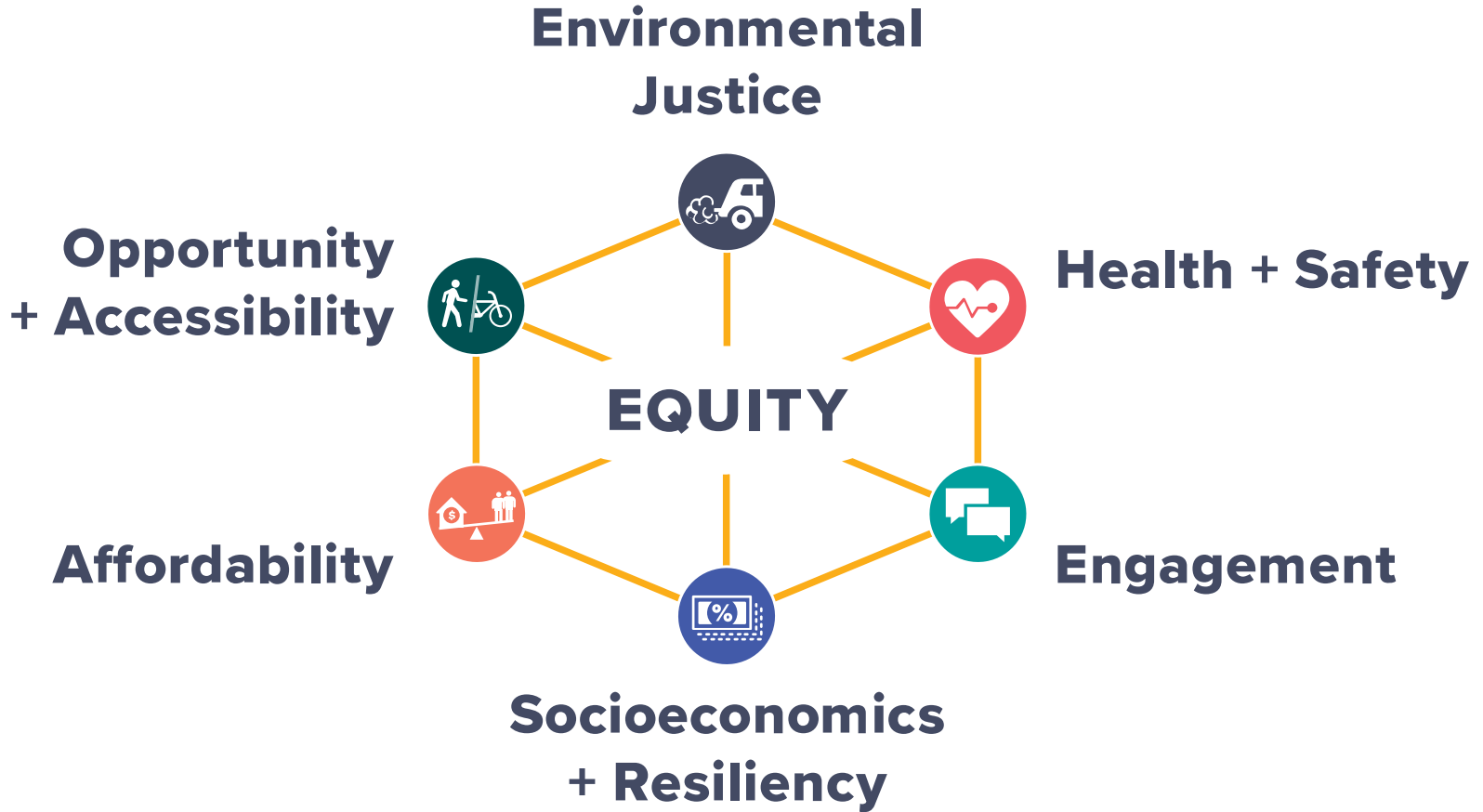
**People Moving
Goods + Cargo**



**Confident
Cyclists**



Dimensions of Equity

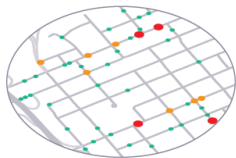


High Injury Networks

Alta Civic Analytics Explainer

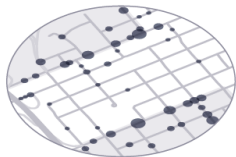
Severity Weighting

- Minor Injury
- Serious Injury
- Fatality



Aggregate Weighting

- Lowest
- Highest



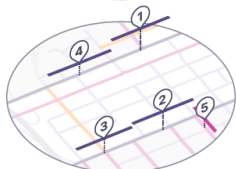
Highly Vulnerable Areas

Severity Index

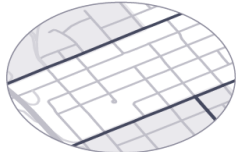
- Lowest
- Highest



- ① Order Segment is Added to High Injury Network



High Injury Network



Determining the High Injury Network

Severity Weighting

One goal of a High Injury Network (HIN) is to identify an improvable subset of a community's streets that address the majority of collisions where a victim is Killed or Severely Injured (KSI). To achieve this, KSI collisions are assigned higher scores so they have more "weight" relative to collisions with less tragic outcomes.

Other Considerations

These scores can also be modified to include other considerations such as whether collisions involve vulnerable road users (bicyclists and pedestrians) or occur in socially vulnerable communities. These factors can be directly incorporated into the weights associated with each collision.

Severity Index

After weights are developed, they are associated to the network, aggregated, and normalized so that we can understand the relative intensities of collisions of concern.*

Accumulated Collisions by Severity Index

Once an index is created, we progressively add segments to the HIN in the order indicated by the Severity index. As more segments are added to the network, we look at KSI (or other collisions of interest) directly on the network, and track the percentage of collisions on the network relative to the percentage of its length.

High Injury Network

At some point, a final High Injury Network determination is found based on stakeholder feedback and a qualitative review of when each additional mile added to the HIN starts to see a decreasing rate of severe collisions being added.

*There are many methods available to develop a final HIN including kernel density estimation (euclidean or network based), rolling window analysis, or aggregations to a segment normalized by network miles.



6%
OF STREETS
account for

59% of all
**FATAL AND
SERIOUS INJURIES**
for all modes



HIGH INJURY NETWORK - ALL MODES

- PRIORITY HIGH INJURY STREETS
- HIGH INJURY STREETS

STREETS IN THE HIGH INJURY NETWORK INCLUDE:

- West Trinity Lane
- Gallatin Pike
- Murfreesboro Pike
- Nolensville Pike
- Harding Place
- Lafayette Street
- Charlotte Ave
- Old Hickory Blvd
- Dickerson Pike



0 4 8 MILES

Bicycle and Pedestrian HIN

MAP 4

Bicycle and Pedestrian HIN

— Bicycle/Pedestrian High Injury Network

68% of all fatal and serious injury crashes involving someone **walking or biking** occur on



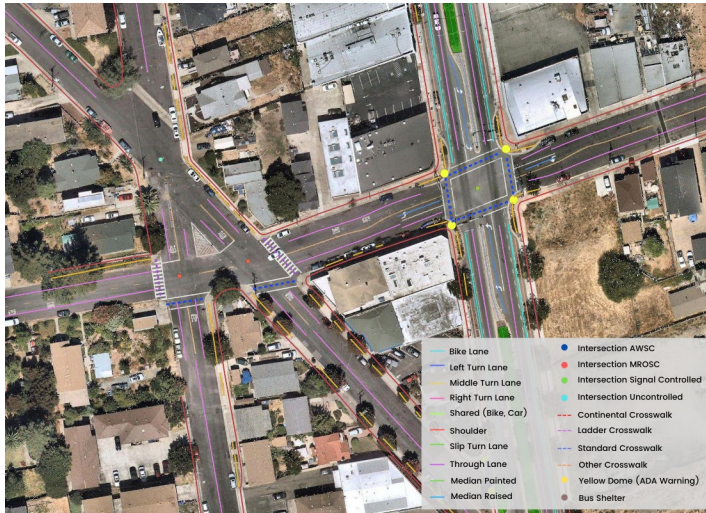
5% of El Paso's **local streets**



Assessment & Countermeasures

Collisions + Context + Exposure

- Do midblock crossing distances have any relationship with midblock collision frequencies?
- What is the intersection of bicycle and pedestrian exposure and crossing distances between crosswalks?

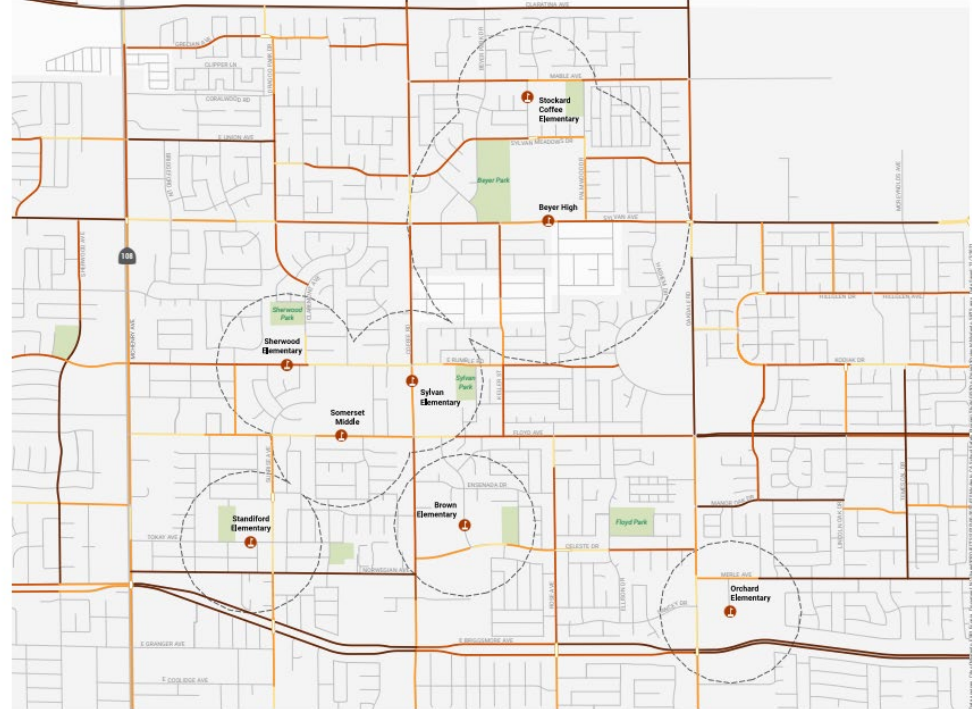
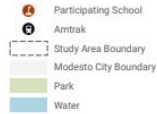


MODESTO, CA
SCHOOL SAFETY
STUDY
MARKED CROSSING
SPACING
Beyer High Catchment Area

DISTANCE BETWEEN MARKED CROSSINGS



OTHER FEATURES



[Blog Post](#)

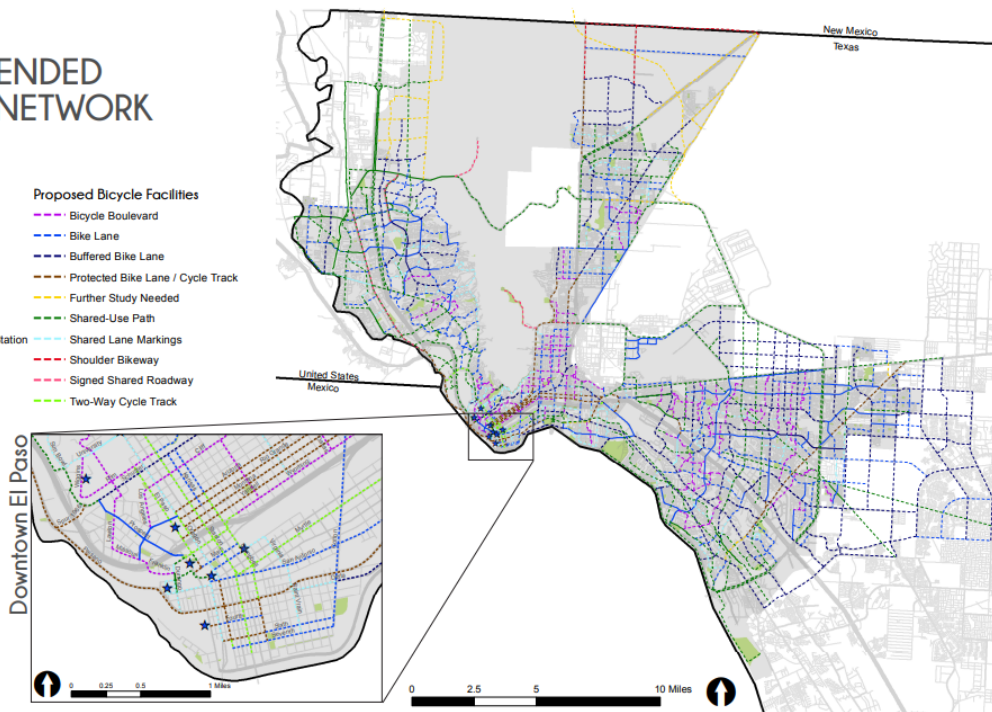
Active Transportation Plan

- Community Visioning & Engagement
- Goal Setting
- Existing Conditions Analysis
- Bicycle & Pedestrian Network Development
- Prioritization
- Implementation & Funding
- Design Guidance

Map 14
**RECOMMENDED
BIKEWAY NETWORK**

Legend

- | | |
|------------------------------------|-------------------------------------|
| Existing Bicycle Facilities | Proposed Bicycle Facilities |
| — Bike Lane | — Bicycle Boulevard |
| — Buffered Bike Lane | — Bike Lane |
| — Shared-Use Path | — Buffered Bike Lane |
| — Shared Lane Markings | — Protected Bike Lane / Cycle Track |
| — Shoulder Bikeway | — Further Study Needed |
| Other Features | — Shared-Use Path |
| ★ SunCycle Bike Share Station | — Shared Lane Markings |
| ■ Parks | — Shoulder Bikeway |
| ■ City of El Paso | — Signed Shared Roadway |
| | — Two-Way Cycle Track |





Safe & Accessible Design

Thoughtful Design Saves Lives



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Pedestrian Safety Improvements



Countermeasure	Reduction in Pedestrian Crashes
Raised Crosswalks/Crosswalk Visibility Enhancements	45%
Pedestrian Refuge Islands	56%
Rectangular Rapid Flashing Beacon	47%
Pedestrian Hybrid Beacon	69%
Leading Pedestrian Interval	60%
Road Diet	19 to 47%

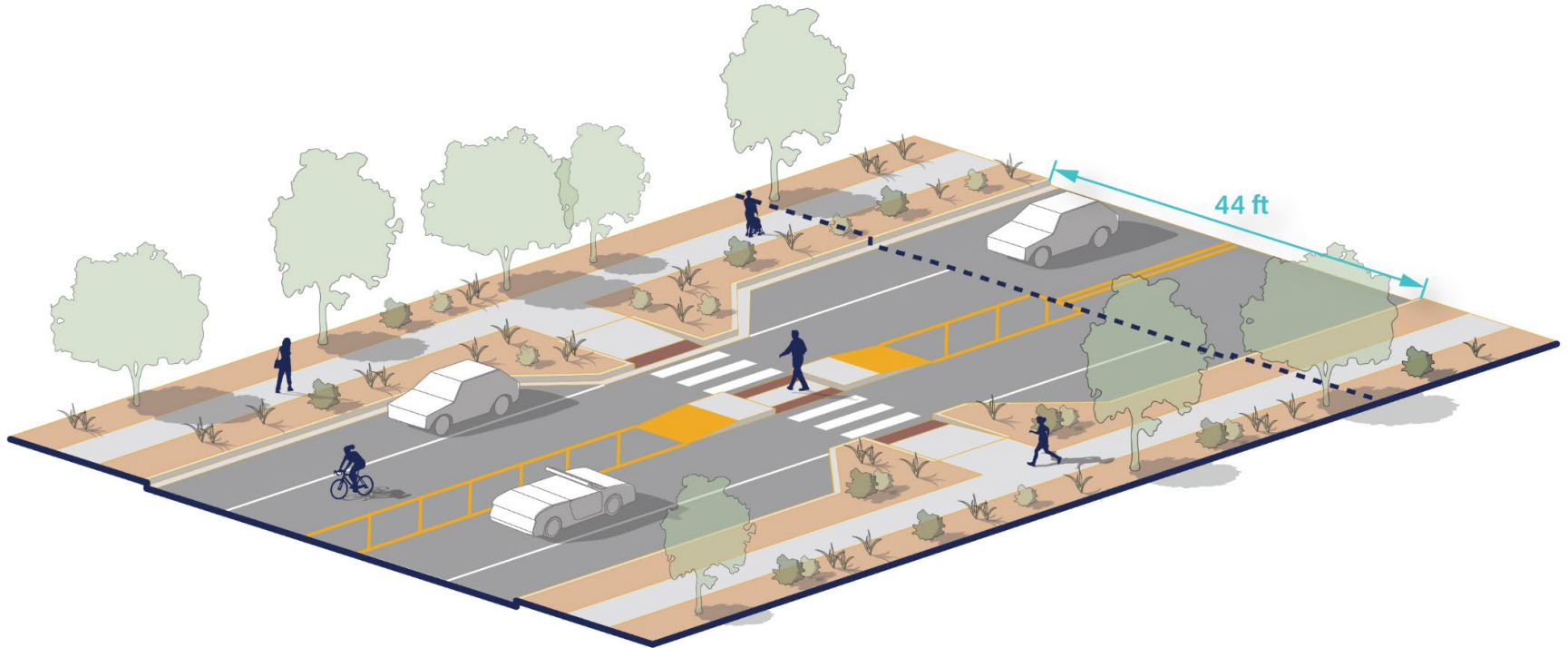
Leading Pedestrian Interval (LPI)



Pedestrian Hybrid Beacon (PHB)



Pedestrian Refuge Islands / Shortened Crossing






Pedestrian Refuge Island

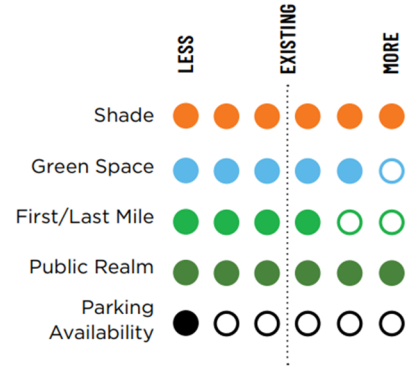


Thermal Comfort & Adaptation



DESIGN BENEFITS

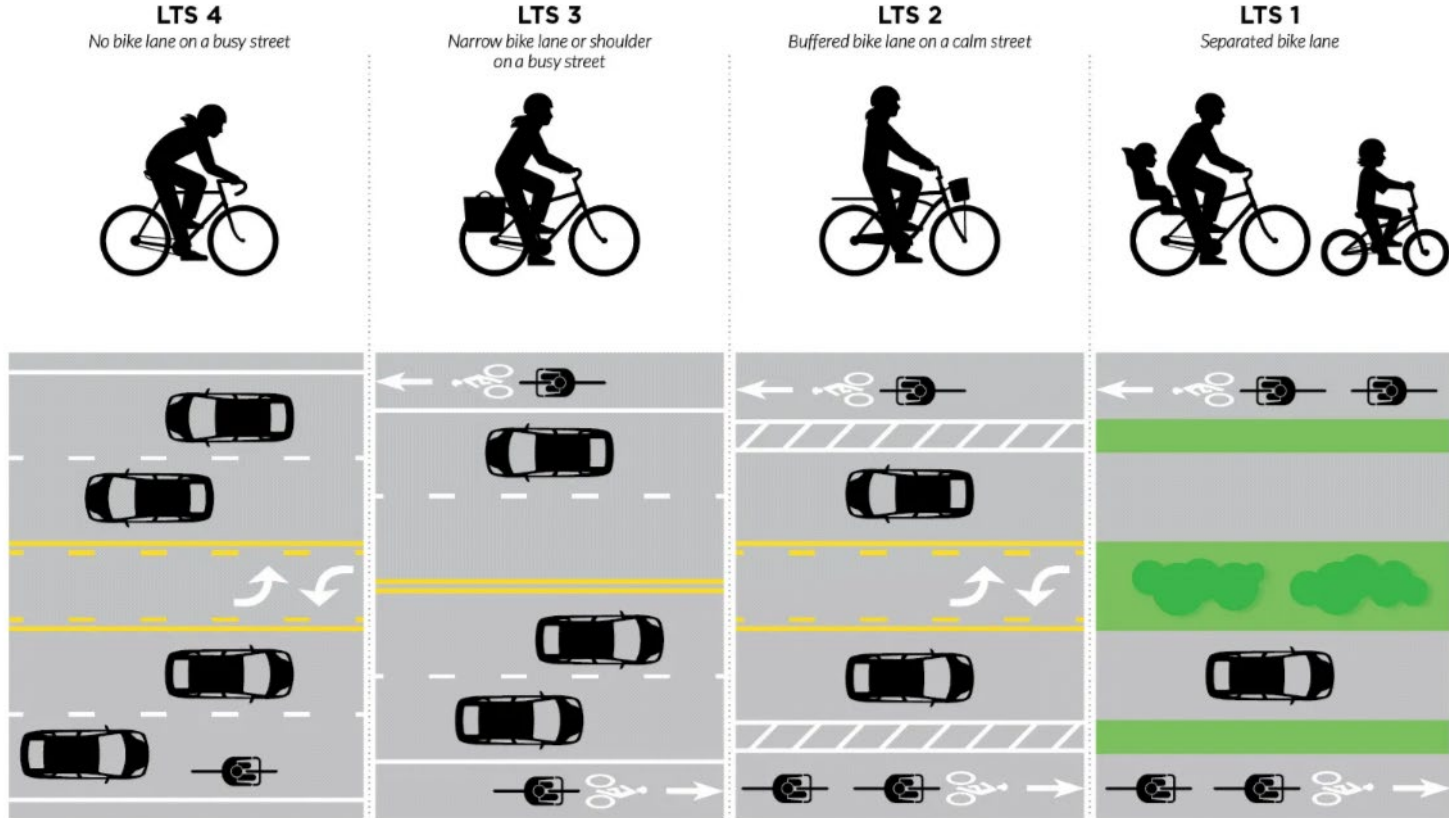
-  Manage Heat & Water
-  Connections & Safety
-  Livability



The analysis we provide informs prioritization, recommendations, and evaluation of strategies.

Bicycle Facility Design

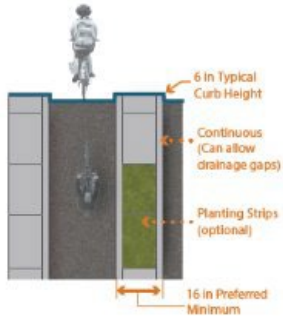
INCREASING LEVEL OF COMFORT, SAFETY, AND INTEREST IN BICYCLING FOR TRANSPORTATION



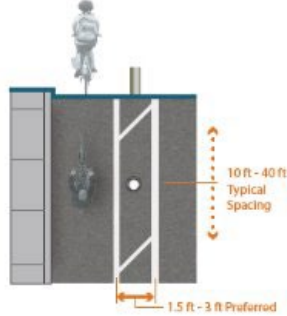
Bicycle Facility Design: Protected Bike Lane



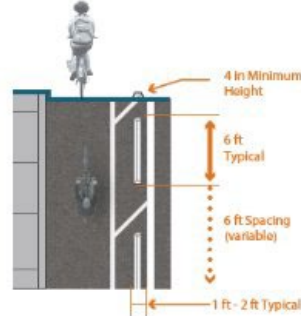
RAISED MEDIAN



BOLLARDS



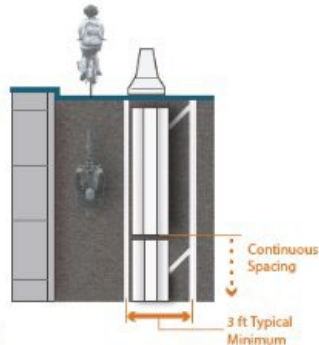
PARKING STOPS



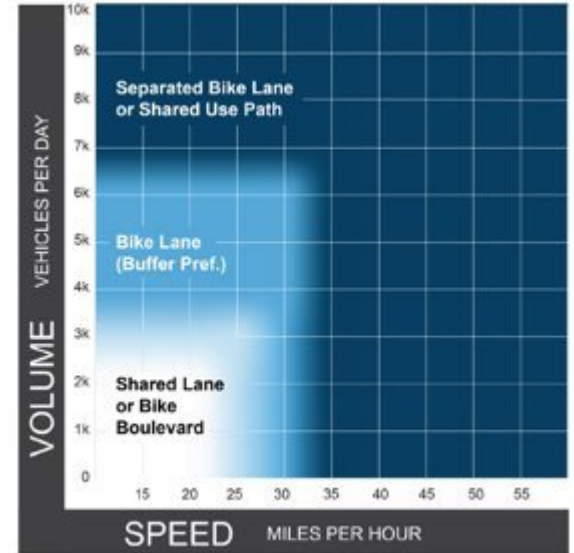
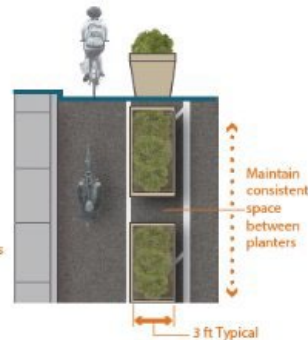
RAISED LANE



CONCRETE BARRIER



PLANTERS



FHWA Bikeway Selection Guide

Bicycle Facility Design: Protected Bike Lane



Bicycle Facility Design: Protected Bike Lane



Bicycle Facility Design: Protected Intersection

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Bicycle Facility Design: Bike Boulevard

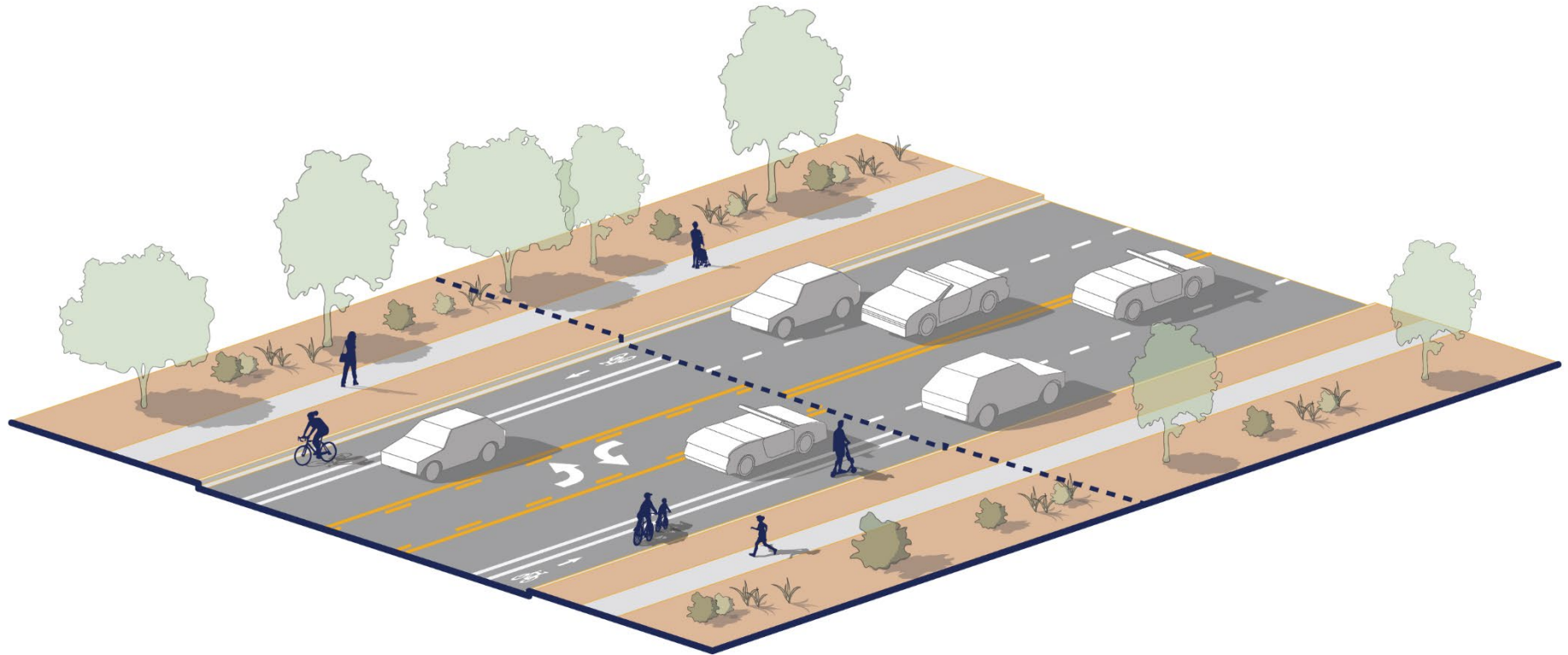


Bicycle Facility Design: Bike Boulevard

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Quick Build: Reconfiguration



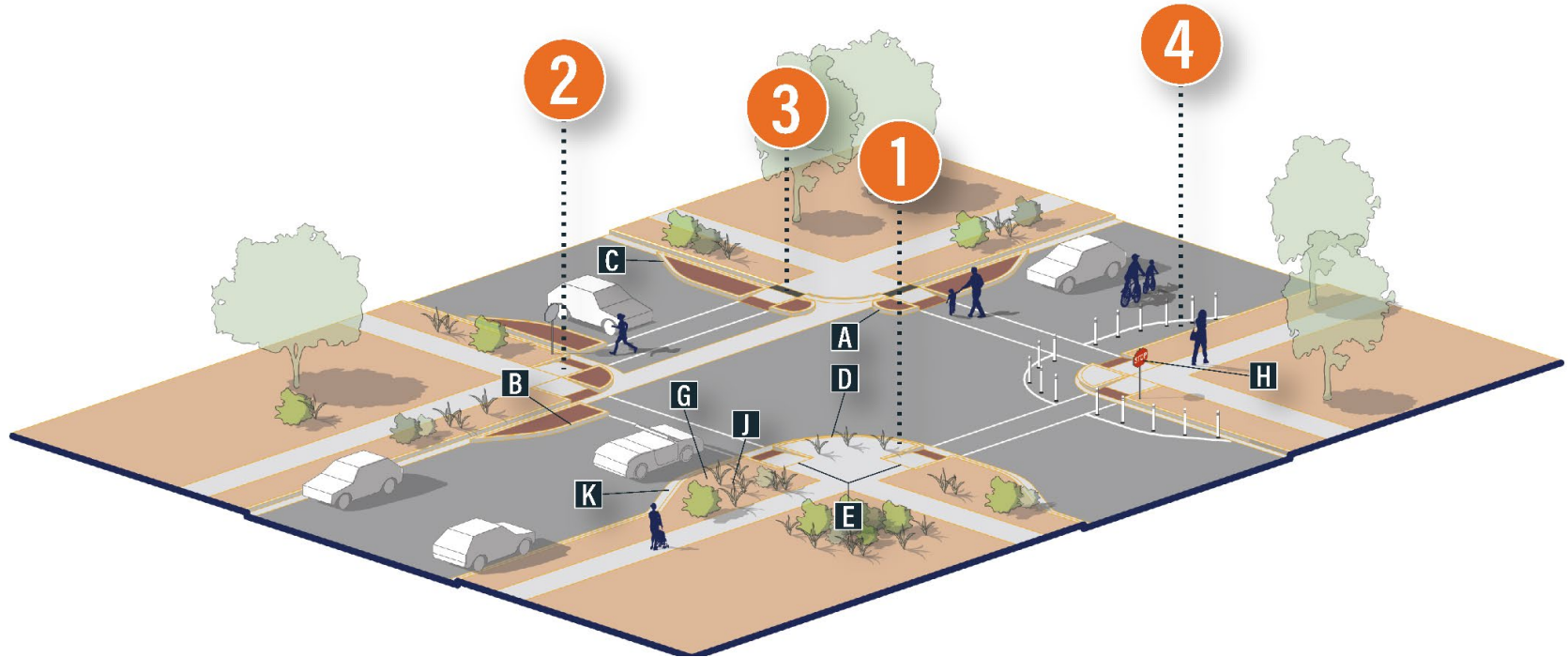
Quick Build: Traffic Circles



Quick Build: Traffic Circles



Quick Build: Curb Extensions (#4)





Active Transportation Resources

Helpful Resources

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Alignment with Active Travel Needs



U.S. Department of Transportation
**Federal Highway
Administration**

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FHWA Releases New Traffic Control Device Manual with Updates to Improve Safety for Pedestrians, Bicyclists, and All Road Users

Tuesday, December 19, 2023

Updated MUTCD also encourages new innovations to improve travel and looks toward transportation infrastructure of the future

FHWA 44-23

Contact: FHWA.PressOffice@dot.gov

Tel.: (202) 366-0660

WASHINGTON – The Federal Highway Administration (FHWA) today announced the 11th edition of the “Manual on Uniform Traffic Control Devices for Streets and Highways,” known as the MUTCD. The manual, last updated edition in 2009, is the national standard for traffic signs, signals, and pavement markings to ensure a uniform and predictable environment for people who walk, bike, and drive. It is an important guide used every day by transportation professionals for roadway safety, and the 11th edition incorporates extensive input from members of the public.

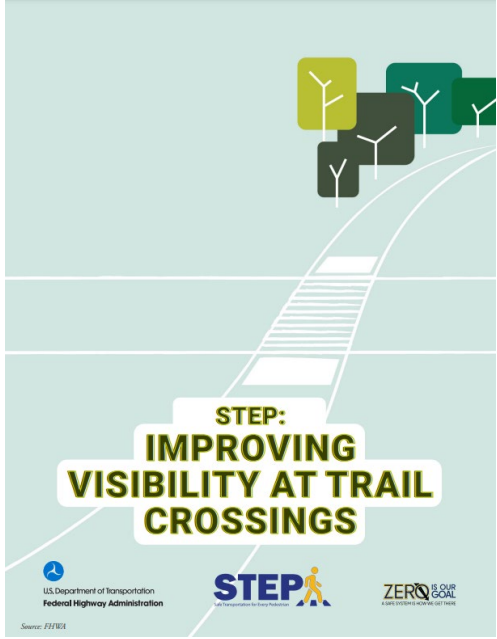
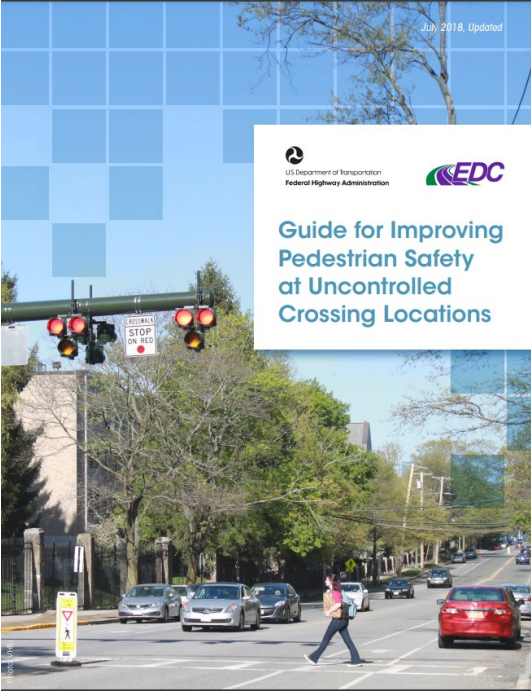
“The Manual on Uniform Traffic Control Devices is a vitally important guidebook that affects safety on countless roads around the country,” said **U.S. Transportation Secretary Pete Buttigieg**. “With this long-awaited update to the MUTCD, we are helping our state and local partners make it safer to walk, bike, and drive, and embracing new technologies with the potential to make our transportation system safer and more efficient.”

Public Right-of-Way Accessibility Guidelines



www.access-board.gov/prowag/

Safe Transportation for Every Pedestrian (STEP)



Pedestrian & Bicycle Countermeasures



PEDSAFE

Pedestrian Safety Guide and Countermeasure Selection System



Guide: Background | Statistics | Analysis | Implementation | Countermeasures: List | Tool | Matrices | Case Studies | Resources

The **Pedestrian Safety Guide and Countermeasure Selection System** is intended to provide practitioners with the latest information available for improving the safety and mobility of those who walk. The online tools provide the user with a list of possible engineering, education, or enforcement treatments to improve pedestrian safety and/or mobility based on user input about a specific location.

GUIDE

Background

Understand what is needed to create a viable pedestrian system.

Statistics

Learn about the factors related to the pedestrian crash problem.

Analysis

How crash typing can lead to the most appropriate countermeasures.

Implementation

Needed components for treatments.

COUNTERMEASURES

Selection Tool

Find countermeasures based on desired objectives.

Selection Matrices

Find countermeasures based on crash types and performance objectives.

Countermeasure List

A comprehensive list of all countermeasures.

CASE STUDIES



RESOURCES & GUIDELINES



Authors and Acknowledgements



BIKESAFE

Bicycle Safety Guide and Countermeasure Selection System



Guide: Background | Statistics | Analysis | Implementation | Countermeasures: List | Tool | Matrices | Case Studies | Resources

The **Bicycle Safety Guide and Countermeasure Selection System** is intended to provide practitioners with the latest information available for improving the safety and mobility of those who bike. The online tools provide the user with a list of possible engineering, education, or enforcement treatments to improve bicycle safety and/or mobility based on user input about a specific location.

GUIDE

Background

Understand what is needed to create a viable bicycle network.

Statistics

Learn about the factors related to the bicycle crash problem.

Analysis

How crash typing can lead to the most appropriate countermeasures.

Implementation

Needed components for treatments.

COUNTERMEASURES

Selection Tool

Find countermeasures based on desired objectives.

Selection Matrices

Find countermeasures based on crash types and performance objectives.

Countermeasure List

A comprehensive list of all countermeasures.

CASE STUDIES



RESOURCES & GUIDELINES



Authors and Acknowledgements



NACTO Urban Bikeway Design Guide



National Association of City Transportation Officials



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Urban Bikeway Design Guide



Bike Lanes



Cycle Tracks



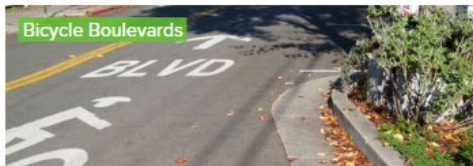
Intersection Treatments



Bicycle Signals



Bikeway Signing & Marking



Bicycle Boulevards

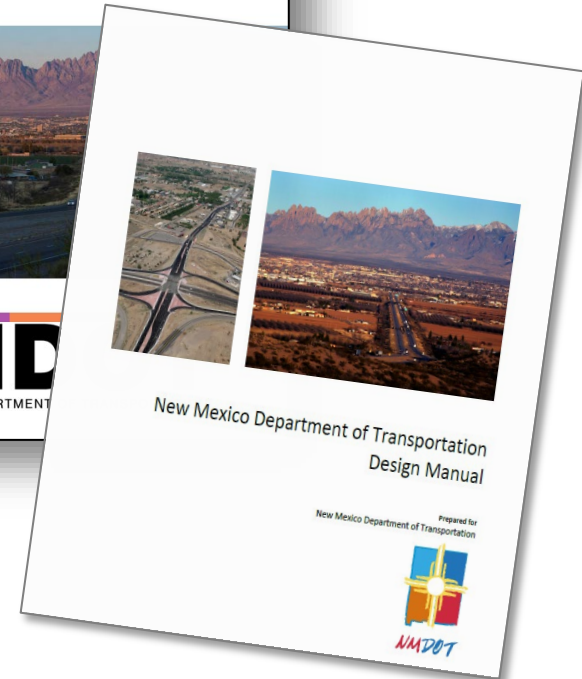
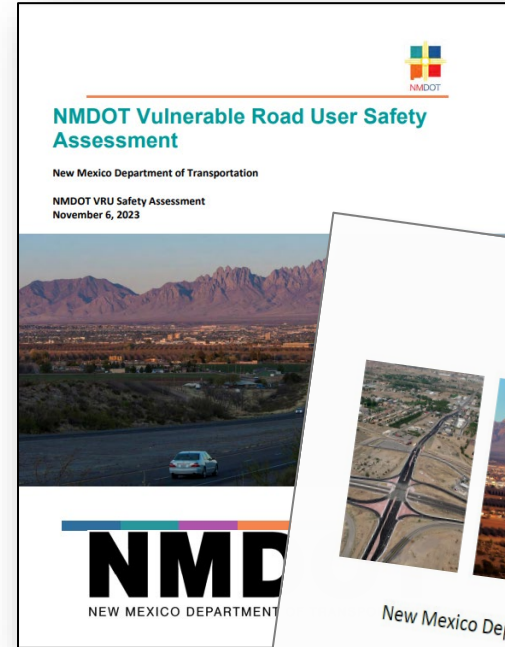
FHWA Small Town & Rural Multimodal Networks Guide



NMDOT Resources



- NMDOT Vulnerable Road User Assessment
- NMDOT Pedestrian Safety Action Plan
- NMDOT Bicycle Master Plan
- NMDOT Design Guide:
 - 1150: Pedestrian and Bicycle Safety Guide and Countermeasure Selection System
 - 1200: Pedestrian Facilities
 - 1250: Road Diet Guide



Questions?

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