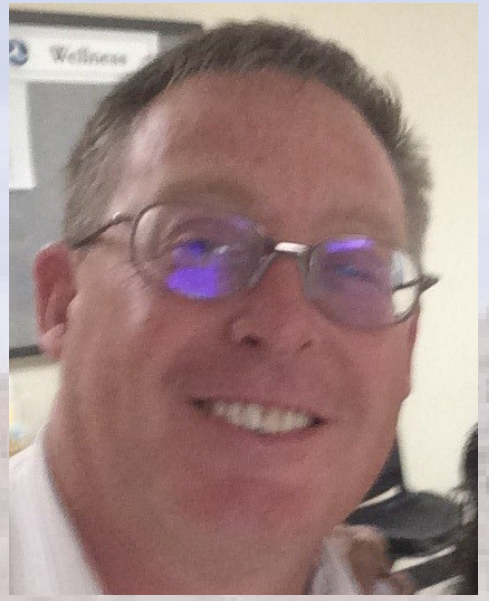
New Mexico DEPARTMENT OF TRANSPORTATION
MOBILITY FOR EVERYONE

target zeroNM

PANEL: Safe System Tools



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New Mexico Department of Transportation (NMDOT)

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UNM Earth Data Analysis Center

2024 New Mexico Transportation Safety Summit

AASHTOWare Safety

Brad Julian NMDOT

NMDOT

New Mexico Crash Data

.

Applicable State Statutes & NMDOT Process

NMSA 66-7-207 – Written Report of Accidents Involving Bodily Injury, Death or Property Damage over $500. Additional requirements for CMV

NMSA 66-7-214 – NMDOT shall tabulate and shall publish statistical information at least annually for New Mexico traffic crashes

NMDOT Traffic Records – Final Repository

- UNM compiles records
- UNM Publishes Annual Report
- Dashboards
- DWI Reports
- Fatality Reports

Public records – Available through NMDOT Traffic Records

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Roadway Highway Safety Management Process (HSM)

6 Steps

- Network Screening
- Diagnosis
- Countermeasure Selection
- Economic Appraisal
- Project Prioritization
- Safety Effectiveness Evaluation

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AASHTOWare Safety

State Partners

Ohio Department of Transportation

SCDOT

Oklahoma Transportation

North Dakota | Transportation
Be Legendary.

NMDOT

LDOT
Keeping Utah Moving

GDOT
Georgia Department of Transportation

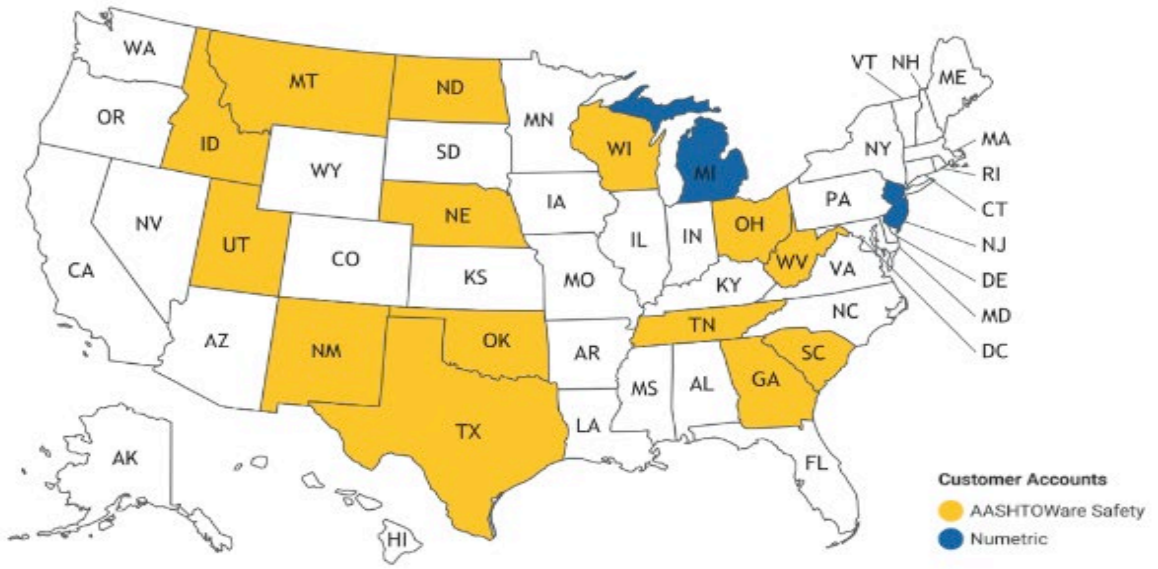
TN TDOT Department of Transportation

NEBRASKA
DEPARTMENT OF TRANSPORTATION

MONTANA MDT
DEPARTMENT OF TRANSPORTATION

Texas Department of Transportation

MICHIGAN STATE POLICE



Current Partner States

- 17 Partner Accounts
- Over 3.2 million roadway miles
- 36.5% of all roads within the nation

AASHTOWare Safety

Capabilities

Software as a Service (SaaS) – Cloud Based

Utilizes Data Set from NMDOT Traffic Records

Provides Enhanced Features

Statewide Access

Increased Reporting & Analysis

Segments & Trends Modules – Other modules available

NMDOT

AASHTOWare Safety – Segments Module

- Crash Query
  - Multiple methods (Circle, Rectangle, Polygon, Filters
  - Reporting Capabilities (pdf, excel)
  - Chart Capabilities
- Safety Analysis
  - Benefit/Cost Ratios
  - Crash Modification Factors
  - Safety Reports
- Network Screening
  - Analyze Historical, Predicted, Expected Scenarios
  - Segment Screening
  - Sliding Window Analysis
  - Allows adherence to Highway Safety Manual Best Practices
  - Shareable Reports
- Predictive Analysis
  - Analyze Predicted and Expected Roadway Performance
  - Create and Utilize New Mexico Specific Safety Performance Functions

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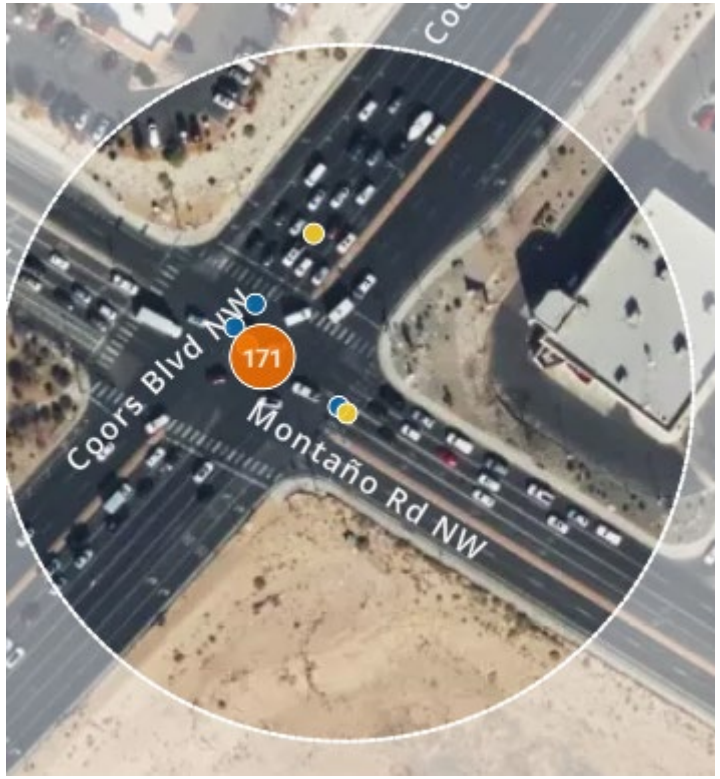
AASHTOWare Safety – Segments
Crash Query Example



Metrics | Chart Builder | Raw Table

New Mexico Summary		Crash
Total Crashes	177	100.00%
Intersection Involved	69	38.98%
Alcohol Involved	3	1.69%
Pedestrian Involved	1	0.56%
Work Zone Involved	1	0.56%
Show all (2 more)	0	0%

KABCO Crash Severity		Crash
(O) Property-Damage Only	128	72.32%
(C) Possible Injury	38	21.47%
(B) Suspected Minor Injury	10	5.65%
(A) Suspected Serious Injury	1	0.56%
(K) Fatal Injury	0	0.00%

Crash Date (Year)		Crash
2022	61	34.46%
2021	62	35.03%
2020	54	30.51%
Show all (7 more)	0	0%

Crash Classification		Crash
Other Vehicle	61	34.46%
Fixed Object	3	1.69%
Other (Object)	1	0.56%
Overturn/Rollover	1	0.56%
Parked Vehicle	1	0.56%
Show all (8 more)	0	0%

First Harmful Event - Analysis		Crash

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AASHTOWare Safety – Trends Module

- Dashboards
  - Ability to Eliminate Querying Needs for Some Users
  - Display Specific Areas or Topics
  - Generate Reports
  - Generate Graphics for Reports/Presentations
- Public Portals
  - Opportunity for Data Sharing
- Collaboration
  - Useful for Vision Zero Missions
  - Grant Writing
  - HSIP Applications

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AASHTOWare Safety – Implementation Status

- Crash Data from 2012-2022
- Statewide Roadway Database
- Boundaries
  - Cities
  - Urban Areas
  - NMDOT Districts
- Onboarding and User Testing Complete
  - New Mexico Crash Costs
  - New Mexico Safety Performance Functions
- Transition to Ongoing Support
- First Round of Training September 25-26 (Crash Query)
  - NMDOT Personnel and Consultants

NMDOT

Thanks

Jason Coffey – NMDOT Highway Safety Improvement Program Technical Unit Supervisor

John Baker – NMDOT Roadway Inventory & LRS Manager

Jayson Grover – NMDOT District 6 Traffic Engineer

Nancy Perea – NMDOT District 3 Traffic Engineer

Margaret Haynes – NMDOT District 3 Assistant Traffic Engineer

Chris Ortiz – NMDOT District 5 Traffic

Jeff Woodman – NMDOT CIO

NMDOT

Road Safety Audits

Michael Kuzel, P.E., CHFP, $RSP2_{BI}$

August 27, 2024

The SAFE SYSTEM Approach

Aims to eliminate fatal and serious injuries for all road users by:

Accommodating mistakes

Keeping impacts on human body at tolerable levels

The SAFE SYSTEM Approach

SSA versus Traditional Road Safety Practices

Traditional		Safe System
Prevent crashes	→	Prevent deaths and serious injuries
Improve human behavior	→	Design for human mistakes/limitations
Control speeding	→	Reduce system kinetic energy
Individuals are responsible	→	Share responsibility
React based on crash history	→	Proactively identify and address risks

https://highways.dot.gov/sites/fhwa.dot.gov/files/2022-06/FHWA_SafeSystem_Brochure_V9_508_200717.pdf

Road Safety Assessments

What is a Road Safety Assessment (RSA)?

- ❑ formal safety performance examination of existing or future road or intersection
- ❑ conducted by an independent, multidisciplinary team
- ❑ only considers issues that have an adverse bearing on road safety
- ❑ considers safety during all operating conditions
- ❑ identifies opportunities for improvements in safety for all road users
- ❑ not a check of compliance with design standards

https://highways.dot.gov/safety/data-analysis-tools/rsa/road-safety-audits-rsa

Transport Infrastructure Ireland, Road Safety Audit **GE-STY-01024 (2017)**

Traditional Safety Review versus Road Safety Assessment

Traditional Safety Review	Road Safety Assessment
Review team not independent	Conducted by independent review team
Typically performed by safety or design team	Review team is multi-disciplinary
Concentrated on vehicular traffic	Considers all road users
Human factor issues not typically considered	Accounts capabilities and limitations of all road users
Often does not result in formal report	Always generates a formal report
Often does not generate a formal response report	Formal response report is an essential element

https://highways.dot.gov/safety/data-analysis-tools/rsa/road-safety-audits-rsa

RSA Purpose

The goal of an RSA is to answer the following questions:

- What elements of the road may present a safety concern?
  - to what extent?,
  - to which road users?, and
  - under what circumstances?
- What opportunities exist to eliminate or mitigate identified safety concerns?

https://highways.dot.gov/safety/data-analysis-tools/rsa/road-safety-audits-rsa

When is an RSA conducted?

During any phase of project development

Cost of improvements

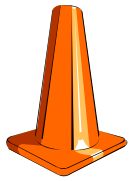
Pre-construction:

- Scoping and Planning
- Preliminary through Detailed design

Least

Construction:

- Work zones
- Pre-opening



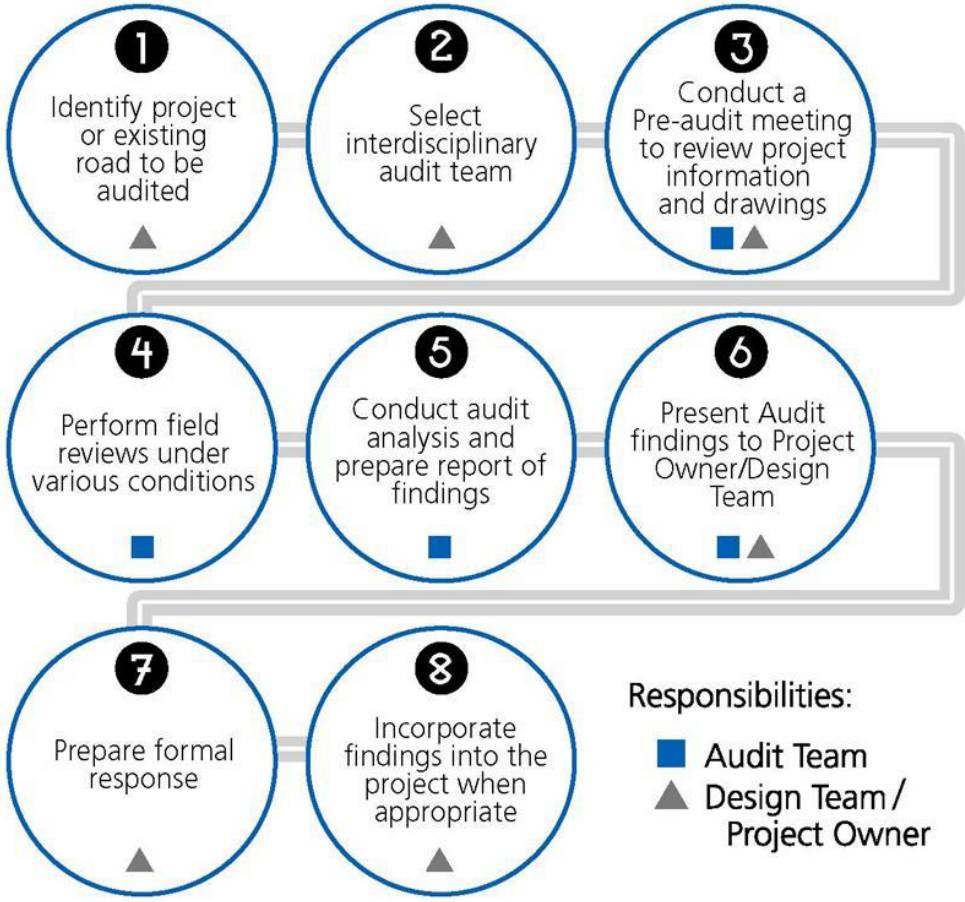
Existing Roadways:

- Post-construction
- Proactive safety
- Reactive safety

Most

https://highways.dot.gov/safety/data-analysis-tools/rsa/road-safety-audits-rsa

RSA Process


1
Identify project or existing road to be audited
2
Select interdisciplinary audit team
3
Conduct a Pre-audit meeting to review project information and drawings
4
Perform field reviews under various conditions
5
Conduct audit analysis and prepare report of findings
6
Present Audit findings to Project Owner/Design Team
7
Prepare formal response
8
Incorporate findings into the project when appropriate
Responsibilities:
Audit Team
Design Team / Project Owner

Risk Matrix

FREQUENCY RATING	SEVERITY RATING			
	Low	*Moderate*	*High*	*Extreme*
Frequent	C	D	E	F
Occasional	B	C	D	E
Infrequent	A	B	C	D
Rare	A	A	B	C

Crash Risk Ratings:

A: lowest risk level
B: low risk level
C: moderate-low risk level
D: moderate-high risk level
E: high risk level
F: highest risk level

HIGH FATAL AND INJURY NETWORK (HFIN)

JULIAN PADILLA
TRANSPORTATION PLANNER
AUGUST 27, 2024

CRITERIA AND METHODOLOGY

How Roadways are included in the HFIN

- Funding: arterials and collectors
- Traffic counts
- Growing streets get counts with increased traffic

Intersection

- Severe Crash Rate = Crashes / Approach Volume

Corridors

- HFIN Total = are based on length (crashes per mile)
- Fatal crashes weighted 2x heavier for corridors

Prioritization

- Below Mean
- 1 to 1.5x Mean
- 1.5 to 2x Mean
- Above 2x Mean

HIGH FATAL AND INJURY NETWORK

HFIN helps target locations to improve roadway safety

- Further study needed before developing a project

HFIN links above the mean

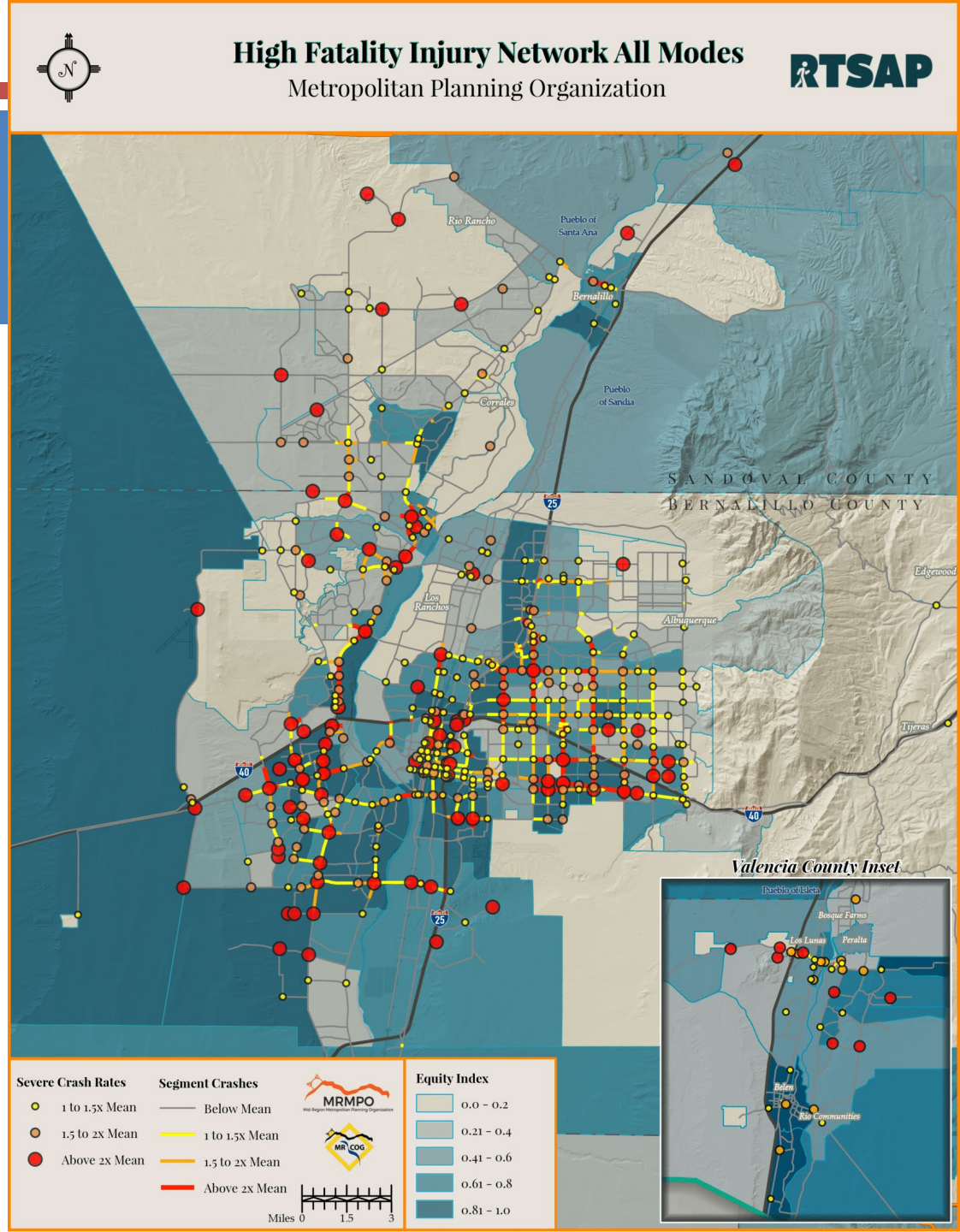
- 8% of major roadways contain 47% of the fatal crashes + 64% of injury crashes.

HFIN links 2x the mean or higher

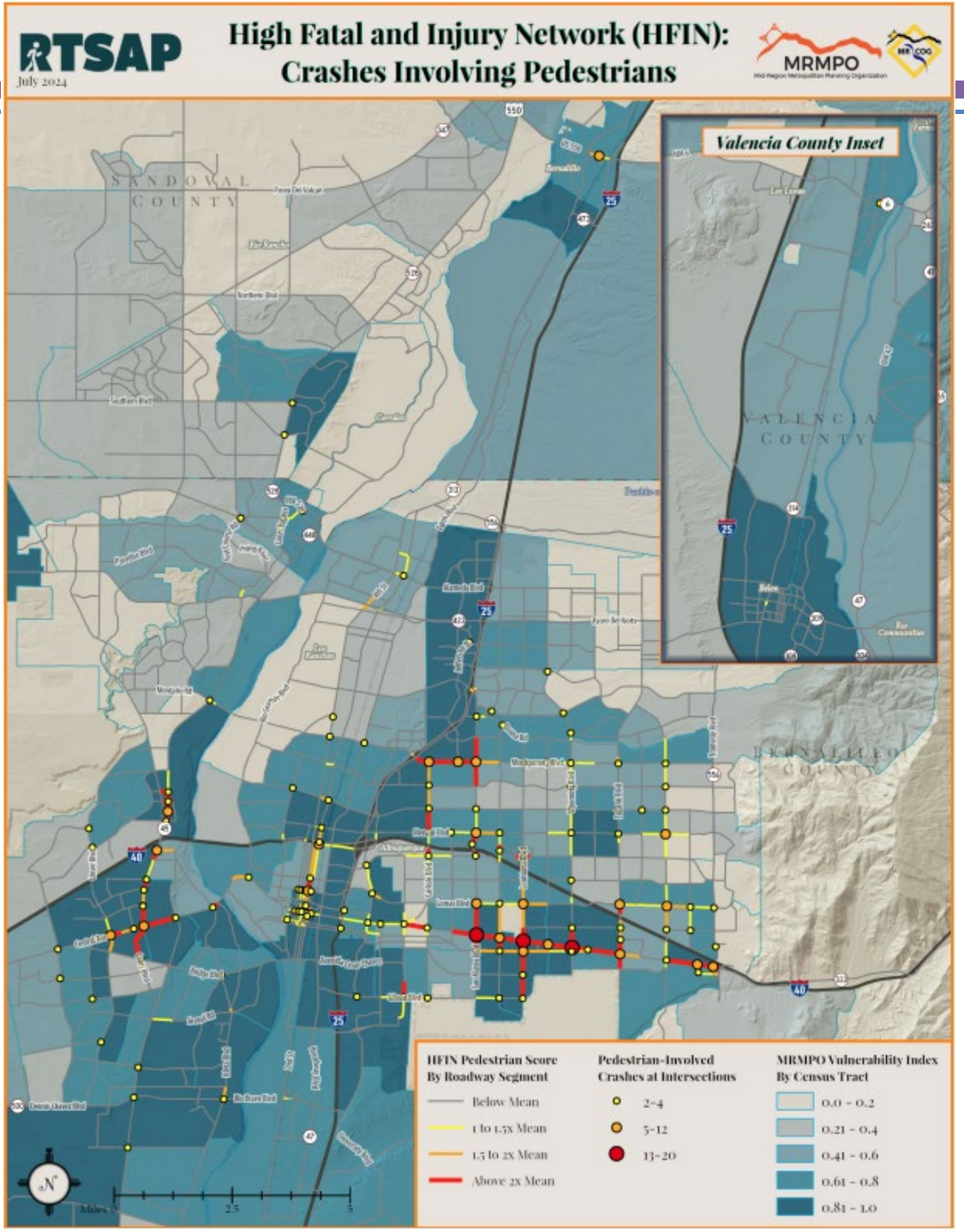
- 2.5% of major roadways = 26% of fatalities + 40% of injury crashes.

Pedestrian HFIN and Bicyclist HFIN

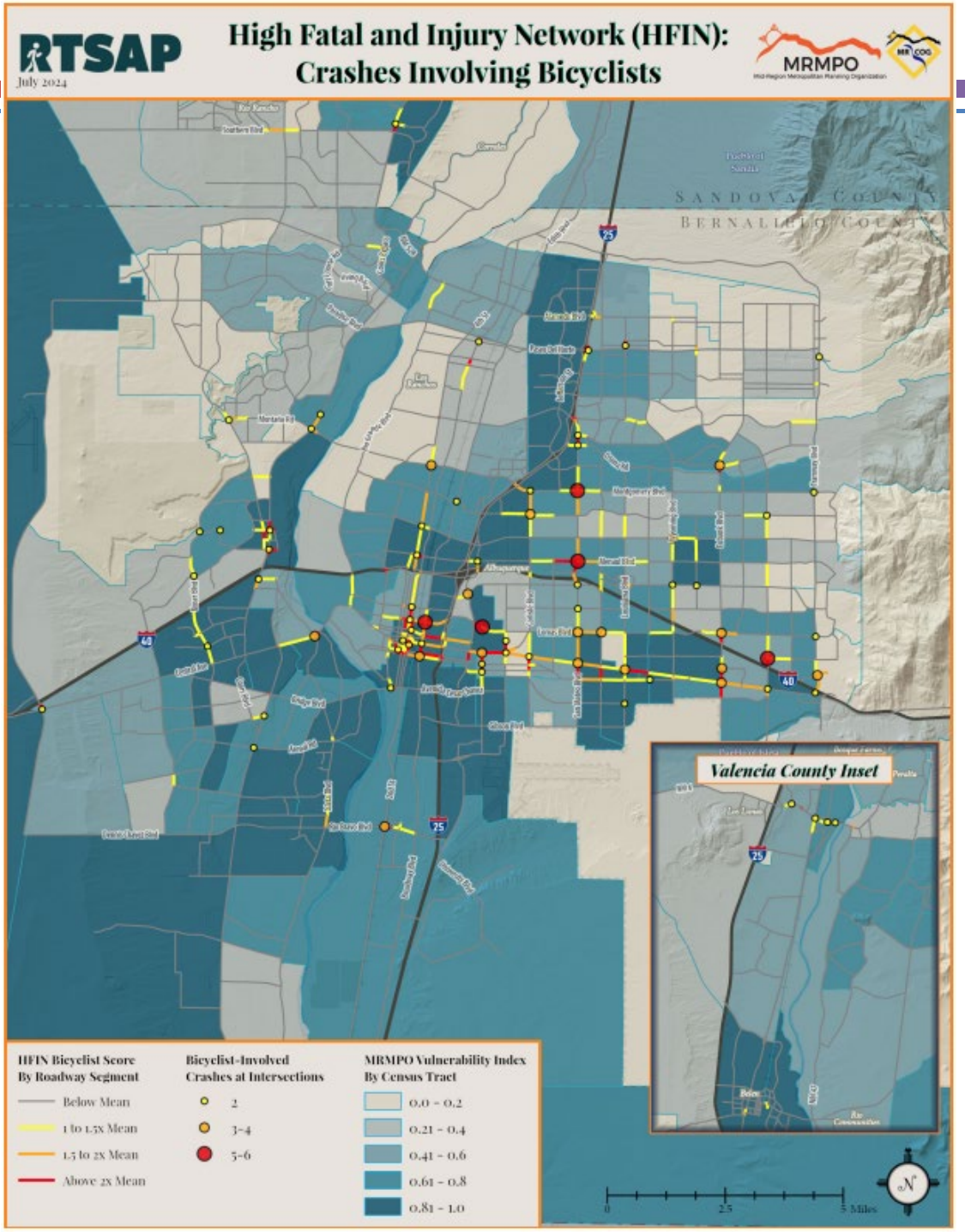
- Intersections are purely totals



PEDESTRIAN HFIN



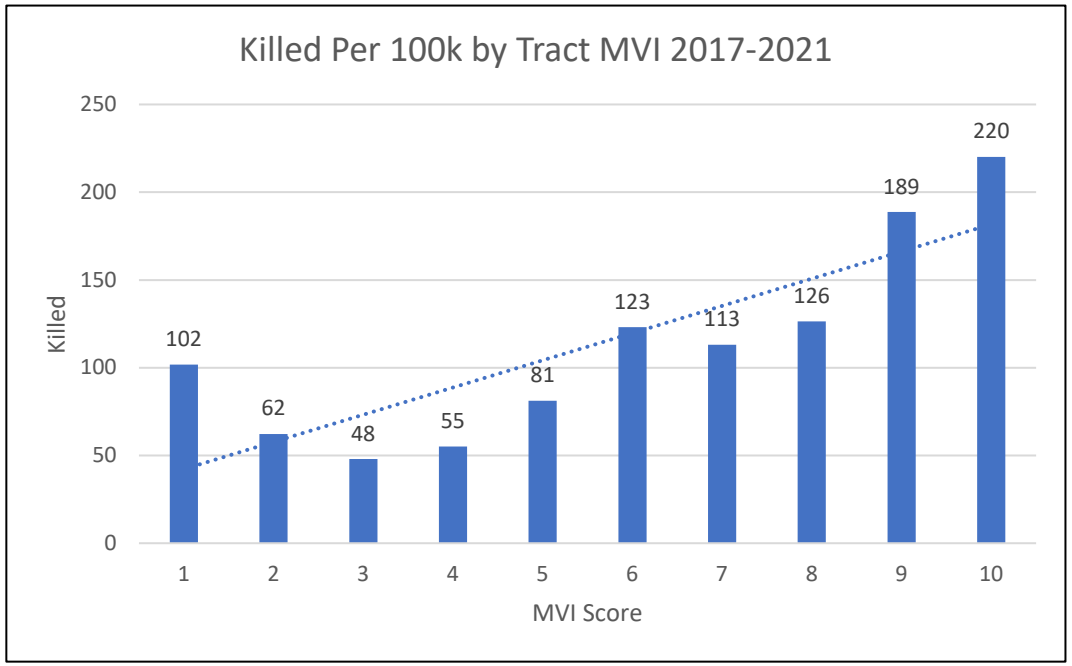
BICYCLIST HFIN

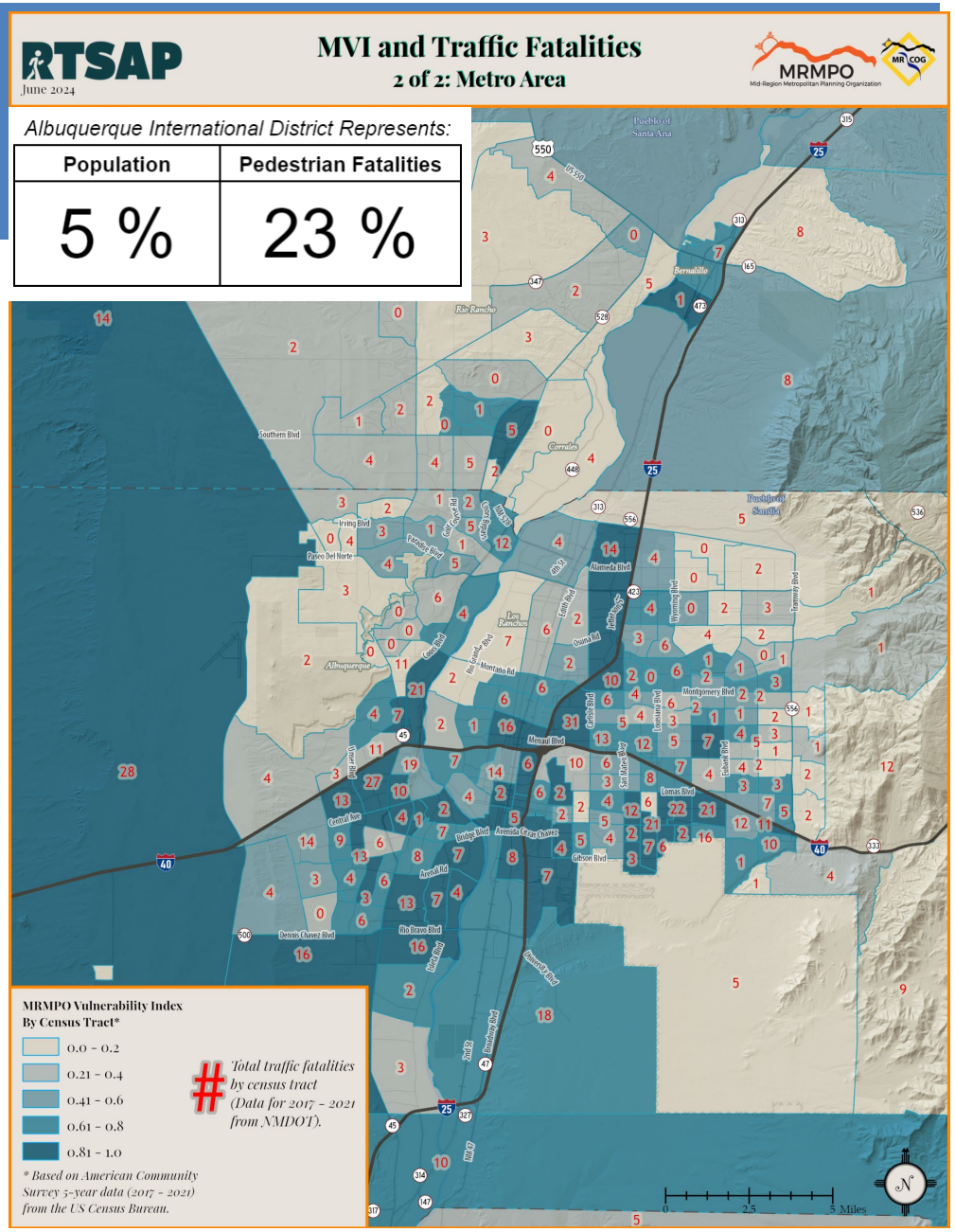


EQUITY AND MRMPO VULNERABILITY INDEX

Fatalities and injuries rise as the MVI tract score (1-10) increases.

- MVI developed using Socioeconomic characteristics including Income and Race





THANK YOU

JPADILLA@MRCOG-NM.GOV

Courtesy Patrol Program

NMDOT District Three

August 2024

NMDOT Safety Summit 2024

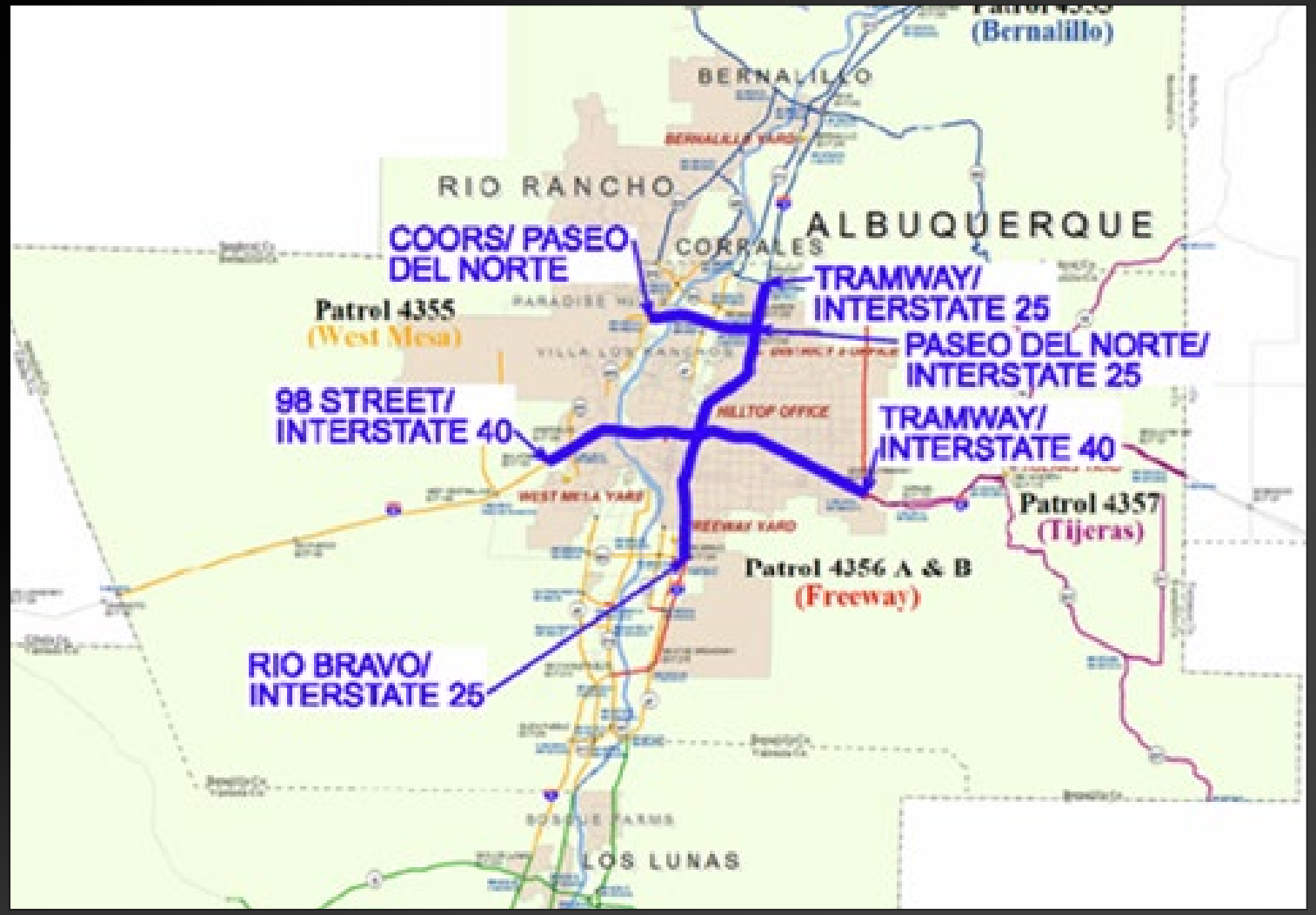
Courtesy Patrol Program

- Roadside Assistance to stranded motorist on interstate system
- Albuquerque Metro Area
- Partnership with state, county, and local emergency response agencies
- Supports Law Enforcement for incident management
- FHWA Supports
- Started in 2000
- All NMDOT Team

Courtesy Patrol Program

- Incident Clearance, Assist First Responders
- Time of Operation
  - ✓ Monday thru Friday 6:00 am to 6:00 pm
  - ✓ Drivers: 3 in AM / 7 Mid Day / 3 in PM
  - ✓ Service Boundary
- Special Events

Courtesy Patrol Service Boundary



- I-25 From NM 500 north to NM 556 (Tramway Blvd)
- I-40 From 98th St to NM 556 (Tramway Blvd)
- NM 423 (Paseo del Norte) From NM 45 (Coors Blvd) east to I-25

Courtesy Patrol Program Statistics

- Average Annual Daily Traffic on I-40: 160,000 vehicles*
- Average Annual Daily Traffic on I-25: 165,000 vehicles*
- Average Number of Calls: 9,000/year
- Response Time: 95% within 10 min
- Call Types: *Crash support, back up of emergency responders, motorist assist, fuel, abandoned vehicles, pedestrians and debris removal*

*MRCOG, 2022 Traffic Flow Map

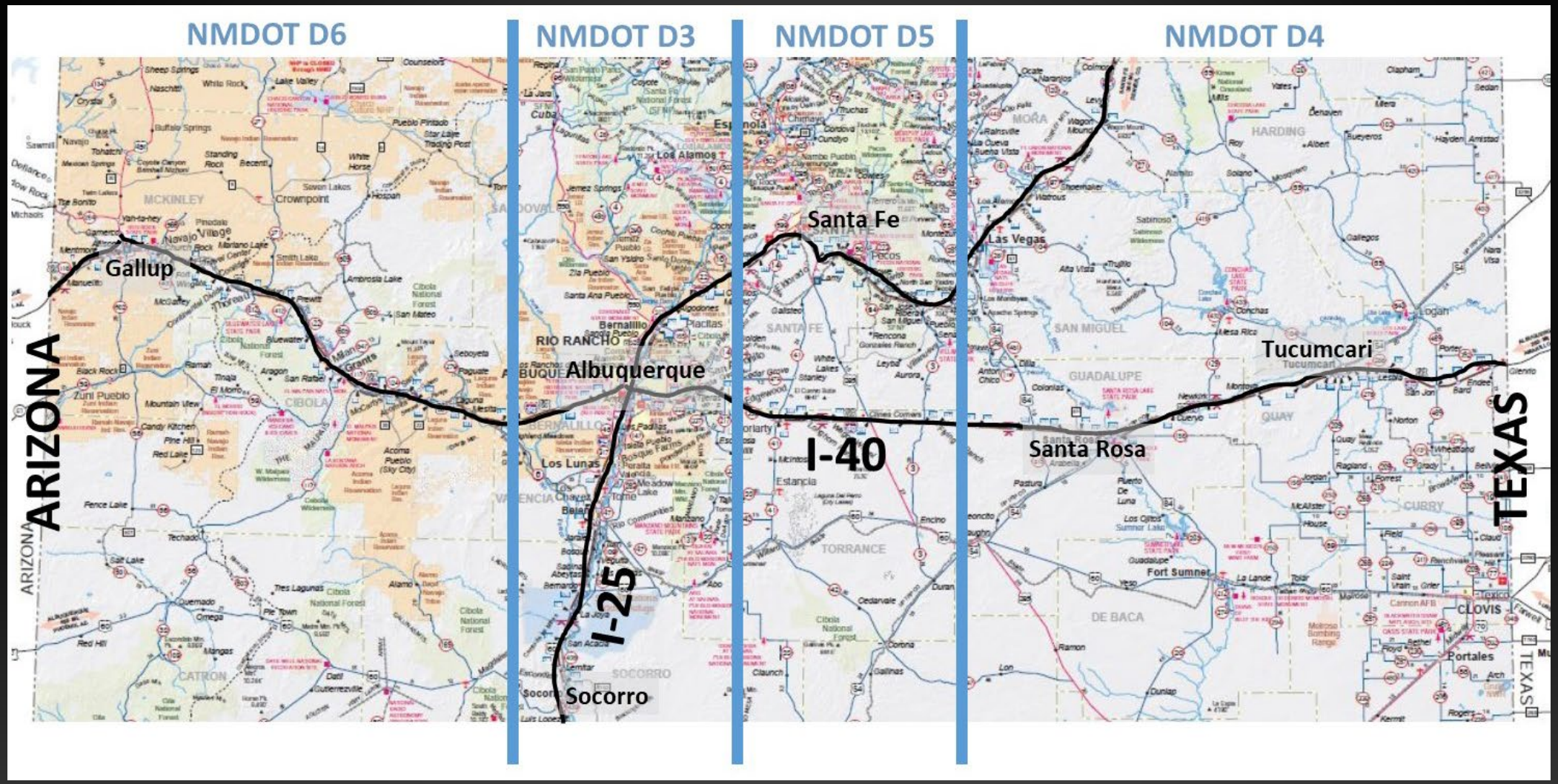
Courtesy Patrol Program

- Works with Transportation Management Center (TMC)
- Statewide realtime cameras and DMS (digital message boards)
- NMRoads.com
- Program Receives kudos from the public
- Highway Heroes

REGIONAL TRANSPORTATION MANAGEMENT CENTER (TMC)

- Current Hours of Operation
  - Monday thru Friday 6:00 am to 8:00 pm (on-site)
  - 24/7 On-call (remotely)
- TMC Work Hours (Winter Months)
  - 24 hour Availability During Storm Events
- NM Roads / 511 (NMROADS.com)
- Additional Weather Info Stations (RWIS), DMS, Cameras

NMDOT DISTRICT BOUNDARY – INTERSTATE 40



Courtesy Patrol Program
NMDOT District Three

Questions?

NMDOT Safety Summit 2024

ONLINE CRASH MAPPING PLATFORM

Dr. Su Zhang

THE UNIVERSITY OF NEW MEXICO

Traffic Safety

- Road safety is a significant public health issue
- New Mexico has
  - The fifth highest motor-vehicle fatality rate
  - The highest pedestrian fatality rate
  - The fifth highest bicyclist fatality rate
- To prevent traffic crashes and ultimately reduce injuries and fatalities
  - It is imperative to perform a comprehensive analysis of recorded data to identify patterns, trends, and key risk factors to contribute to crashes
  - One of the conventional tools to analyze traffic crash data is static maps

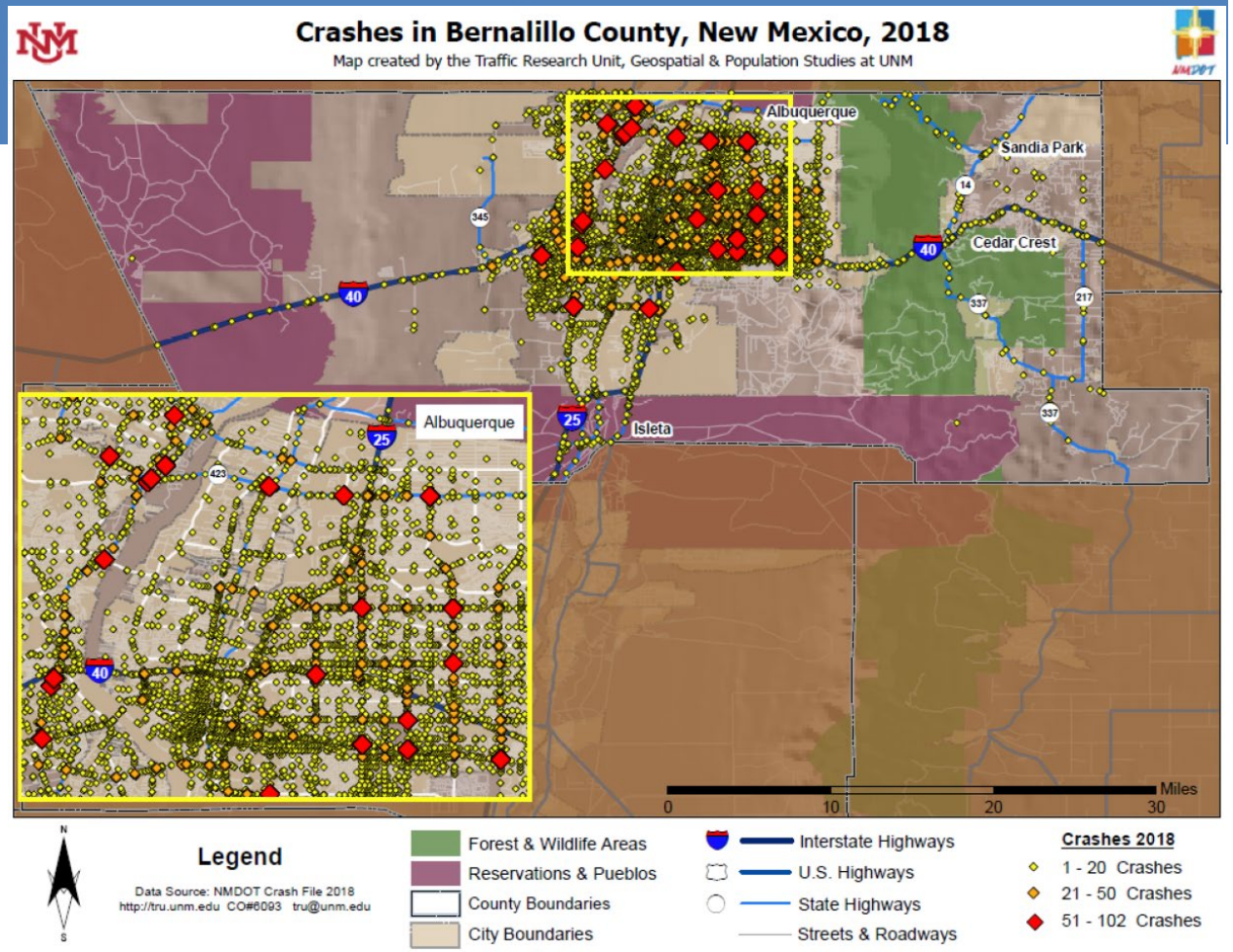
Static Maps

Benefits

- Primarily in PDF format
- Easy to create
- Producer can control how users view the data

Limitations

- Users cannot customize these maps to meet their special needs
- New maps need to be created for any update or modification
- Cannot communicate crash density at varying scales or in terms of the pertinent variables such as mode, severity, and contributing factors
- Cannot be used to identify spatial and/or temporal patterns in terms of the pertinent contributing factors



Web Maps

Benefits
- Dynamic
- Interactive
- Address all limitations of static maps

Limitations
- High initial development costs
- Need routine maintenance
- Need basic geospatial knowledge