Planning for Safety: How to Develop a Data-Driven Action Plan

NACTO Designing Cities Conference
Denver 2023

Lindsay Gips
Lindsay.Gips@denvergov.org
(914) 844-1889 | in/lindsaygips

Agenda

Introduction (10 minutes)

Albuquerque (10 minutes)

Detroit (10 minutes)

San Francisco (10 minutes)

Q&A (35 minutes)

Panelists

Valerie Hermanson (she/her/hers)
Public Works Strategic Program Manager
Department of Municipal Development
Albuquerque, NM

James Hannig, AICP (he/him/his)
Deputy Director, Complete Streets
Department of Public Works
Detroit, MI

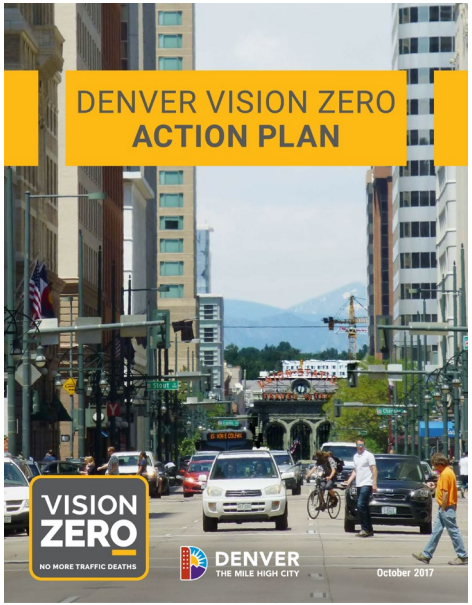
Jennifer Wong (she/her/hers)
Quick Build Program Manager, Streets Division
San Francisco Municipal Transportation Agency
San Francisco, CA

Moderator

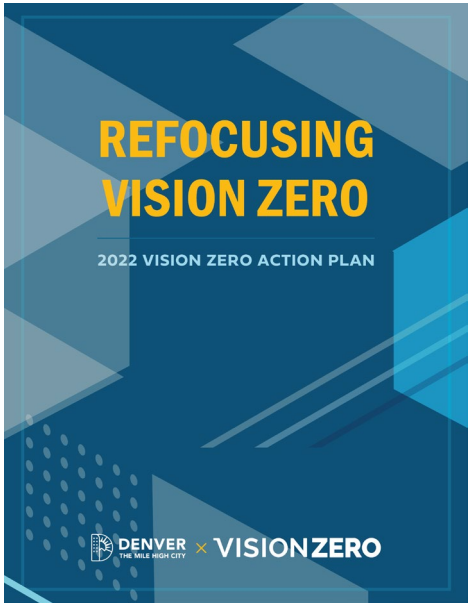
Lindsay Gips (she/her/hers)
Transportation & Mobility Intern
Department of Transportation and Infrastructure
City and County of Denver

Denver VZ Action Plans

2017



2022



What Does it Mean to be Data-Driven?

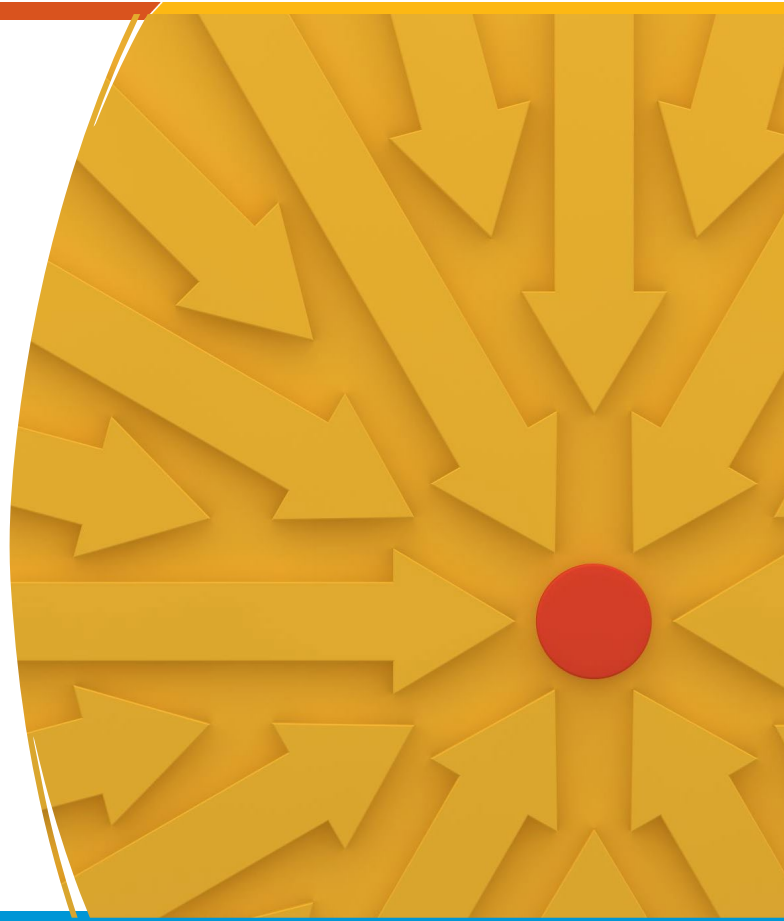
Why Use a Data-Driven Decision Making Approach?

Helps **define** our goals and make them **actionable**

What are we trying to solve?

What questions are we trying to answer?

What data do we collect and analyze that indicates this?

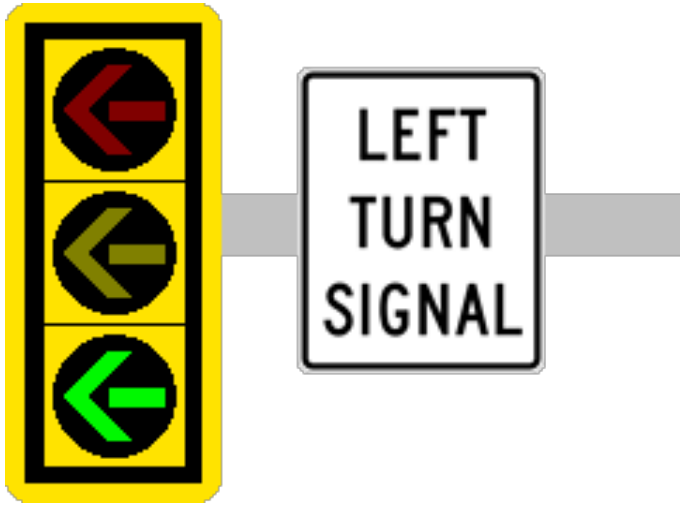


Removes **intuition** and **bias** from influencing our actions

Use intuition to generate hypotheses but use data to support or refute the ideas

Allows for **proactive** vs. reactive action

As we learn how to interpret data, we can take proactive measures to reach our goals

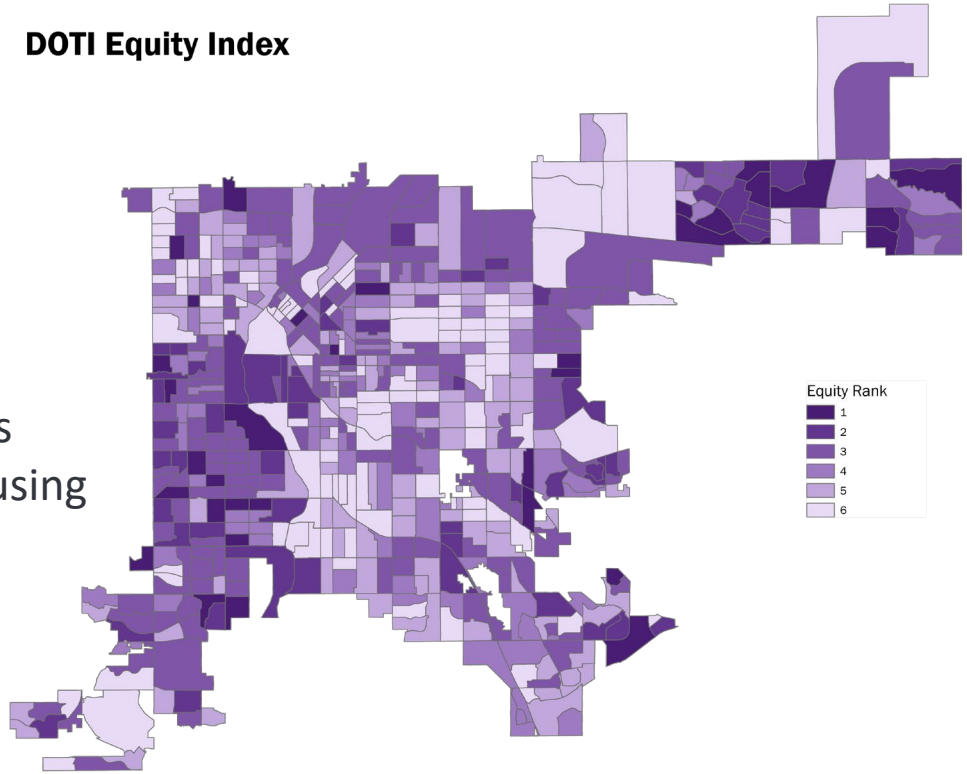


Denver Left Turn Signal Warrant Policy

Signalized Intersection Characteristics	Before	After
Crash Rate Threshold	13-26 over 3 years	3 over 3 years
85th Percentile Speed	45mph	40mph
Opposing Lane Threshold	4	3

Creates consistency

Consistency in approach across all groups and departments to ensure everyone is using the same language, metrics, and data



Beware of **analysis paralysis**

Don’t let data overwhelm you!

**“Of course we’ll make a decision …
once we have considered the 5243 factors.”**

Source: cartoonresource / Adobe Stock

In Summary...

A data-driven action plan creates defined, actionable, and measurable goals through a consistent approach. It removes intuition and bias from our decisions and allows us to take proactive measures to achieve safety goals.

How?

CITY OF ALBUQUERQUE VISION ZERO ACTION PLAN UPDATE

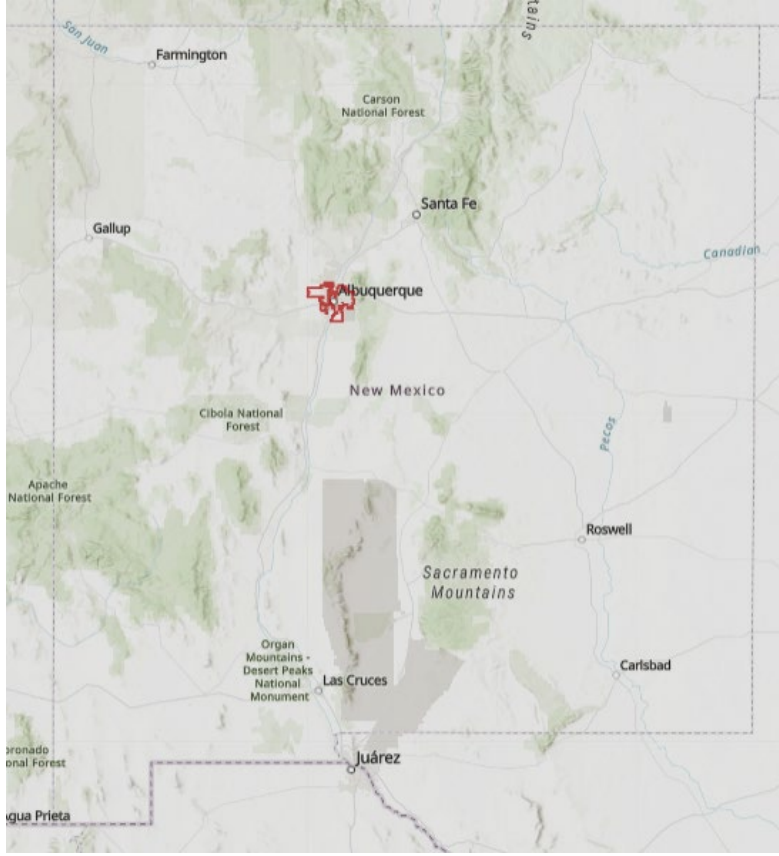
NACTO Designing Cities Conference
Planning for Safety: How to Develop a Data-Driven Action Plan
May 17, 2023

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

ONE ALBUQUERQUE municipal development

About ABQ

- Population: 562,599
- 189 square miles
- 4,668 total surface lane miles
- 652 traffic signals
- 570 miles of on-street bike facilities and multi-use trails



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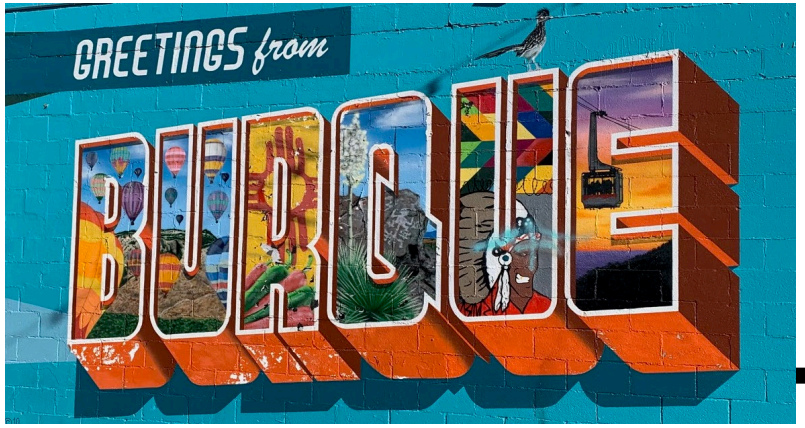

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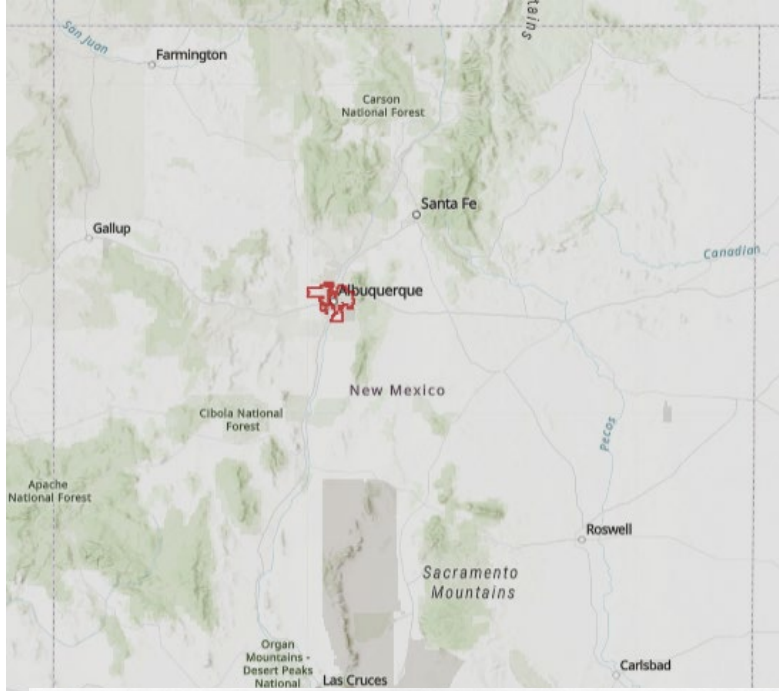

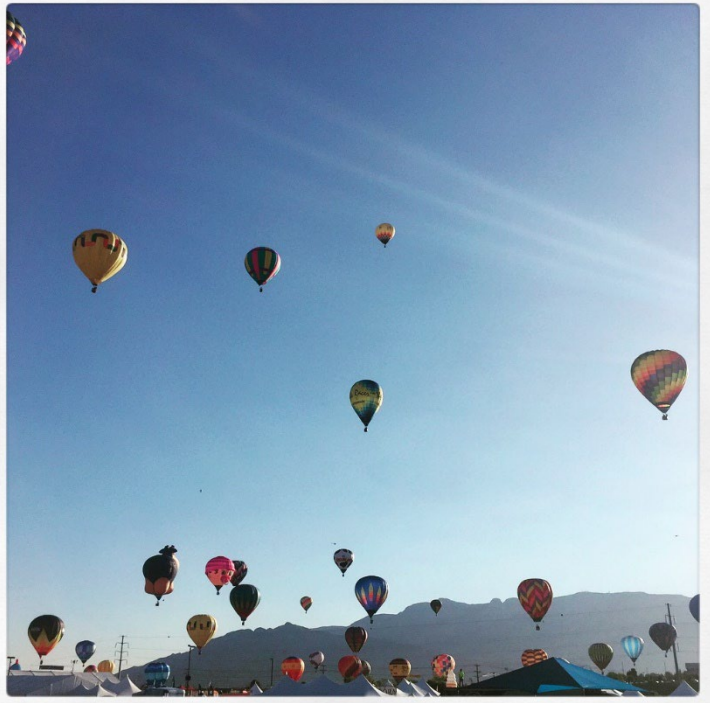

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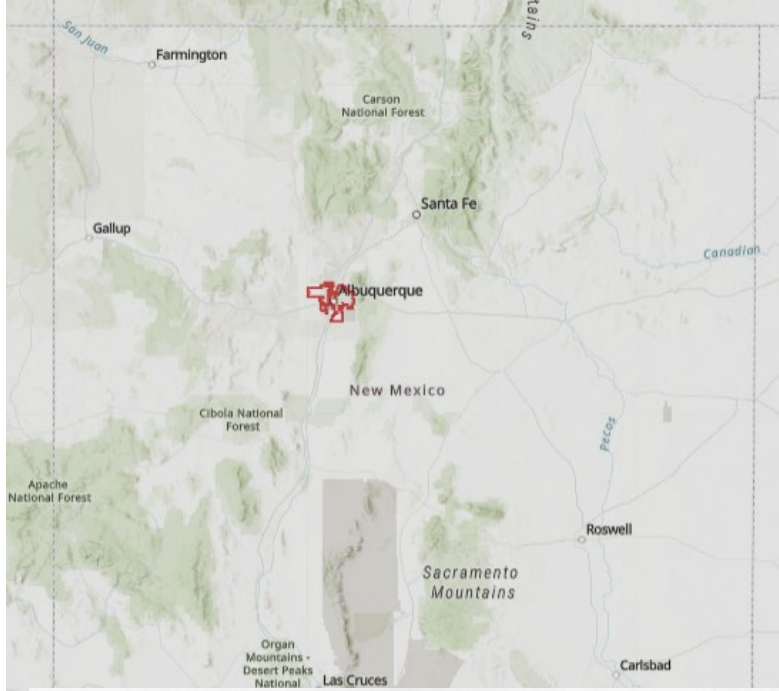
Photo: AMC



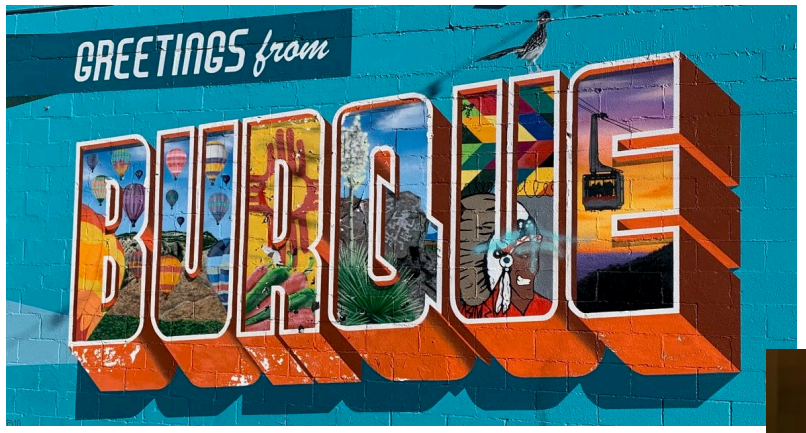


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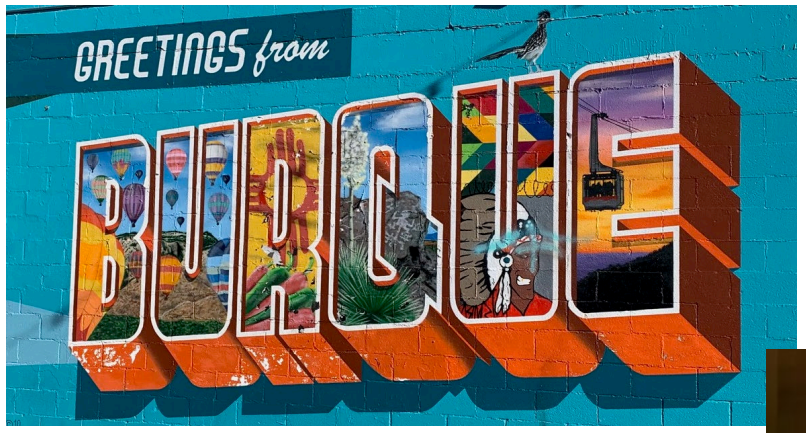
Photo: AMC


Photo: M. Peeples



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Albuquerque metro ranked second most dangerous for pedestrians

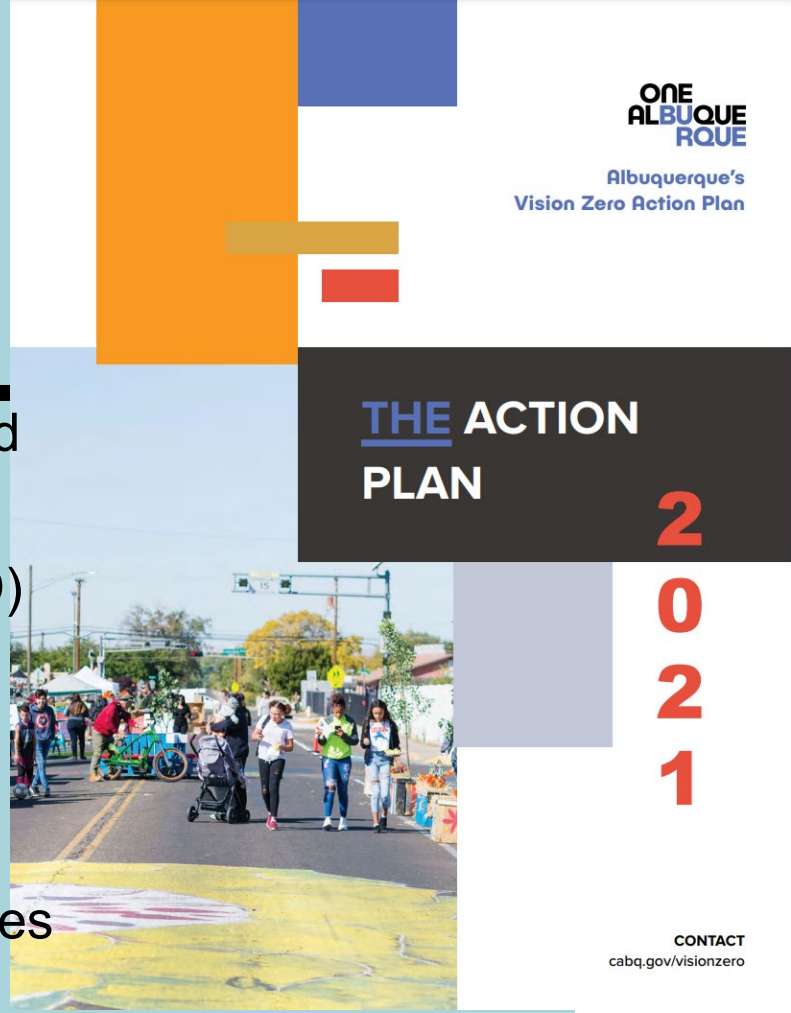
New Mexico ranks #1 for pedestrian deaths

NM has highest pedestrian fatality rate in US

Photo: M. Peeples

Vision Zero Action Plan Overview

- 2019 Mayor Keller committed to working toward zero traffic deaths and serious injuries by 2040
- Completed Spring 2021. Department of Municipal Development (DMD) led Plan Creation with:
  - 13 City Departments
  - 5 local agencies
  - 14 community partners
- Identified High Fatal & Injury Network (HFIN) & Vulnerable Communities Index
- 6 Themes with 63 total actions
  - Engineering + Roadway Design
  - Safe Speeds
  - Policy, Regulation + Practice
  - Education + Encouragement
  - Walking + Rolling
  - Data + Transparency



Action Plan Summary

Includes

- ✓ **High Fatal & Injury Network**
- ✓ **Five core Vision Zero principles:**
  - ✓ Supporting mode shift
  - ✓ Designing safe streets
  - ✓ Slowing speeds
  - ✓ Promoting safety culture
  - ✓ Centering equity
- ✓ Action items on safe design, safe speeds, and shift to active modes

Missing

- Prioritization of action items and High Fatal and Injury Network (HFIN)
- Distinct themes / action items overlap
- Clear lead agencies/organizations responsible for implementing actions
- Focus on a targeted set of action items that will have the most impact at reducing/eliminating traffic fatalities and serious injuries

Year-in-Review/Prioritization Strategy

- Working group (City, local agencies, community partners)
- 20 Staff interviews (DMD, Planning, Parks, Transit, Mayor's Office, Council, Police, NMDOT, MRMPO, Public Schools)
- What's working well?
- What's not working well?
- What are national best practices?
- How should we prioritize the plan?

Priority Focus Areas

Thematic Goals

- Prioritize
- Reframe

Actions: What to focus on?

- Low cost
- High impact

Spatial: Where to focus?

- High Fatal & Injury Network (HFIN)
- Vulnerable Communities

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Goals/Actions Prioritization

Reclassification Thematic Goals

Original Categories

higher priority

lower priority

- Engineering + Design
- Safe Speeds
- Walking + Rolling
- Policy, Regulation + Practice
- Education + Encouragement
- Data + Transparency

63 actions

New Categories

Safe Multimodal Street Design	Prioritize the safety of all road users by designing for safe speeds and using Complete Streets design principles
Shift to Active Modes	Promote opportunities for people to safely walk, ride a bicycle, use mobility devices, and take transit
Culture of Safety	City leaders, planners and engineers, and road users set priorities and make decisions that improve roadway safety
Data and Transparency	Improve the timeliness and quality of data for better decision-making and allocation of resources

32 actions

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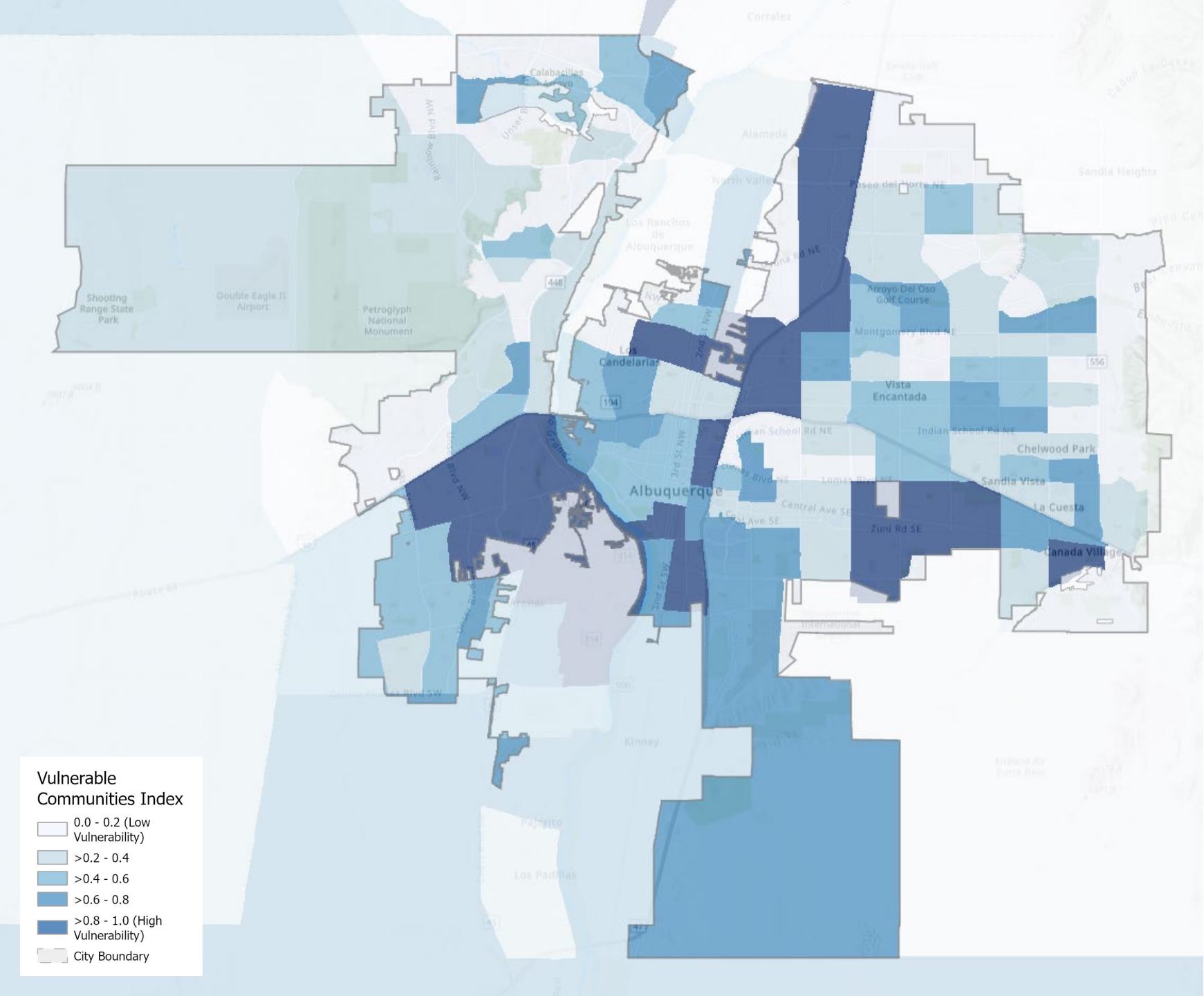
Sample Prioritization

Example Actions	Feasibility of Implementation	Required Resources	Level of Benefit
Retrofit HFIN principal arterials using low-cost/high-impact safety measures	**High**	**Medium**	**High**
Incorporate Vision Zero principles and traffic safety best practices into the Comp Plan Update	**High**	**Low**	**Medium**

Spatial Prioritization



Vulnerable Communities Index

- Developed by the Centers for Disease Control and Prevention (CDC) (2018)

Vulnerability Indicators

- Per capita income
- Population 65+
- Population 17 and under
- People with a disability
- Non-white population
- Limited English proficiency
- Multi-family (10+ units)
- Households with no vehicle

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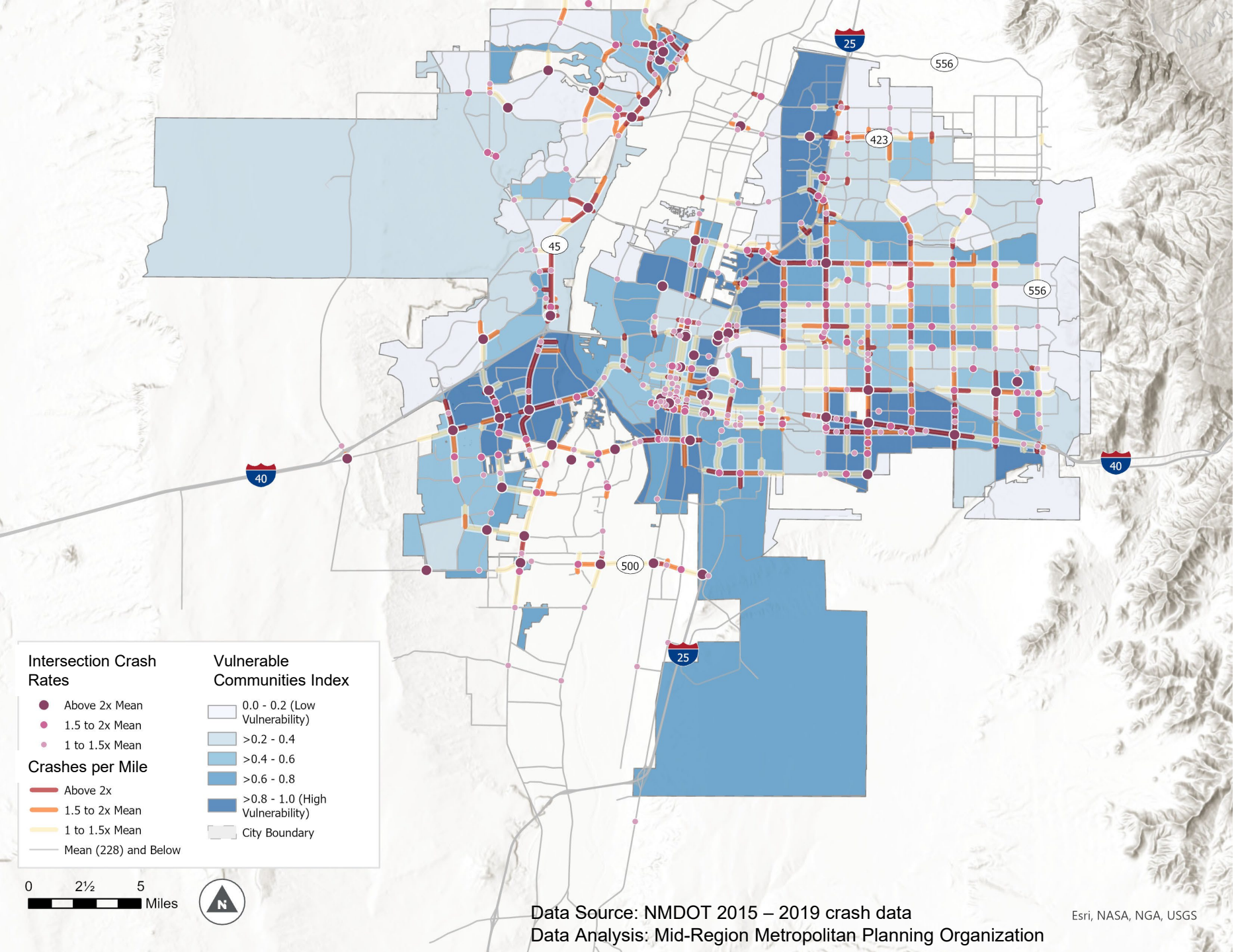
High-Fatal + Injury Network (HFIN)



Data Source: NMDOT 2015 – 2019 crash data
Data Analysis: Mid-Region Metropolitan Planning Organization

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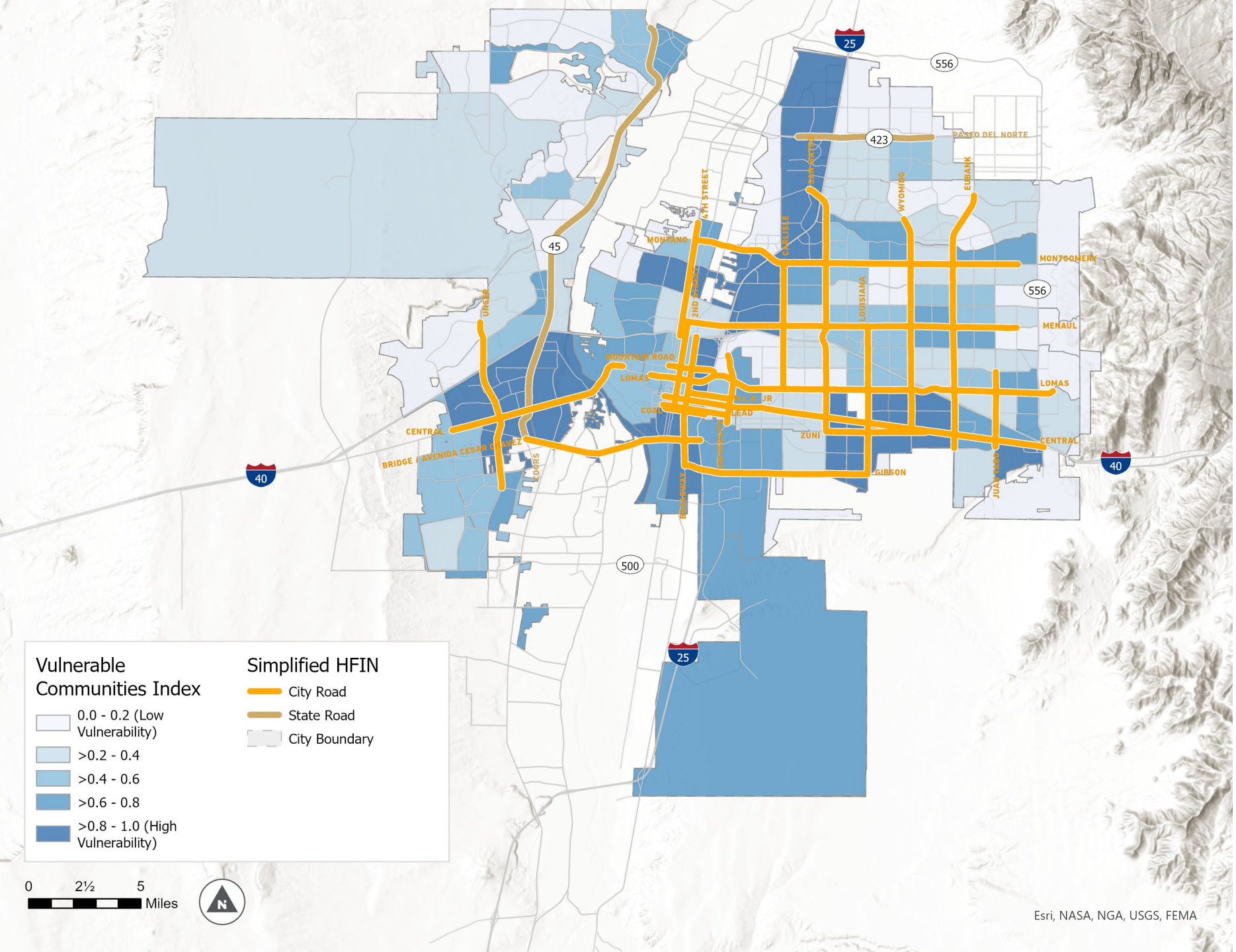
Simplified HFIN



41%

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

16%

of road miles in Albuquerque

90%

are Principal Arterials

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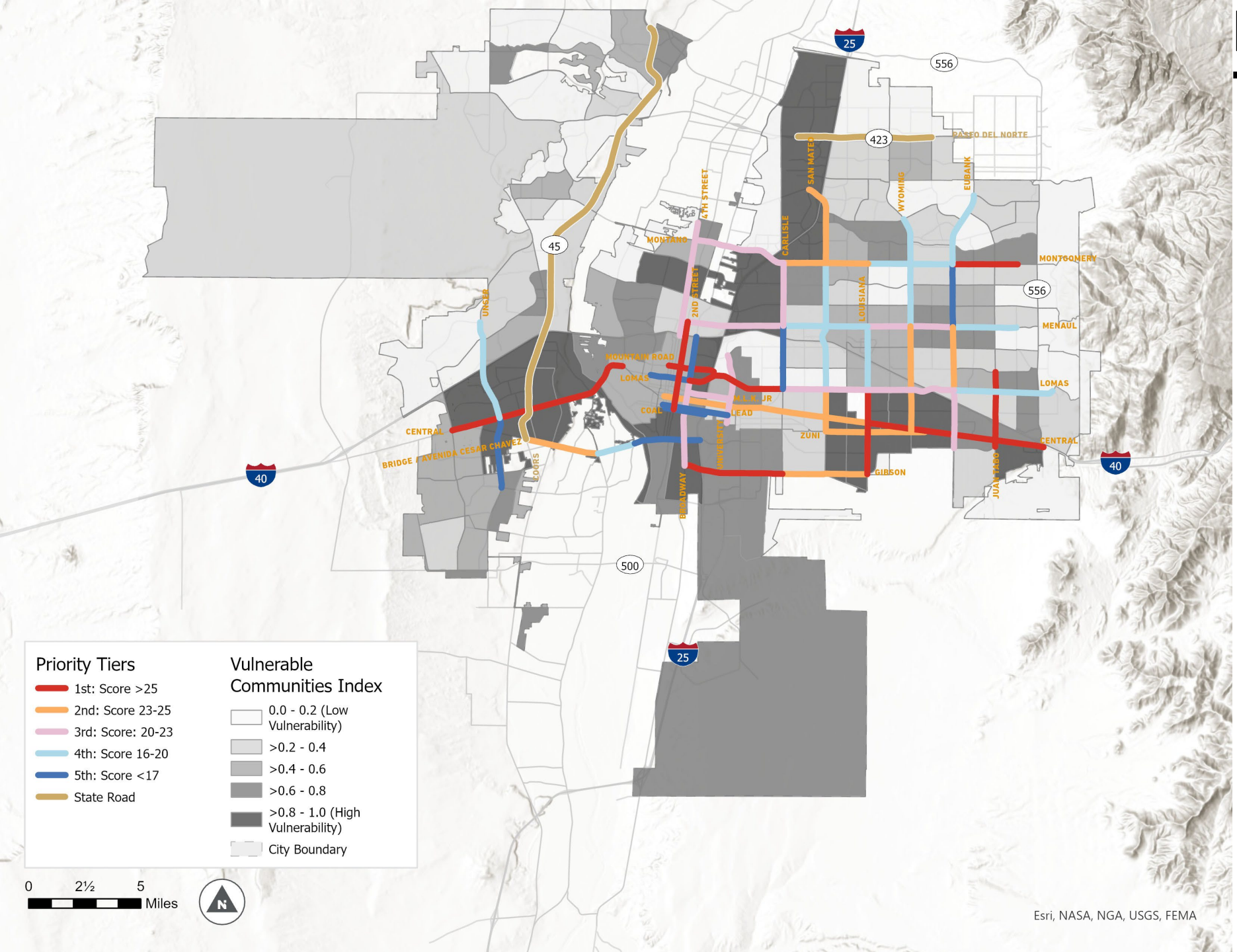
HFIN Prioritization Criteria

Criterion	Summary	Scoring Metrics
Safety	As all corridors are already on the HFIN, corridors are further prioritized based on vulnerable road user fatalities	• Presence of bicycle/pedestrian fatalities
Transportation Equity	Corridors located near or within communities more vulnerable to traffic violence	• Vulnerable Communities Index scores
Access to Destinations	Corridors that provide access to important destinations	• Proximity to major or minor destinations
Facility Needs	Prioritizes corridors that do not have adequate facilities for multiple modes of transportation	• Presence or absence of appropriate bike facility • Presence or absence of sidewalks, sidewalk gaps, and landscape buffers • Spacing of pedestrian crossings • Posted speed and presence/absence of medians • Density of streetlights
Current Level of Use	Prioritizes corridors that see the most auto, transit, and pedestrian use	• Average daily traffic • Transit boardings
Land Use / Employment	Prioritizes corridors that provide access to employment opportunities and Comprehensive Plan Centers	• Proximity to Comprehensive Plan Center • Employment density within 0.5 mi of corridor

HFIN Priority Tiers

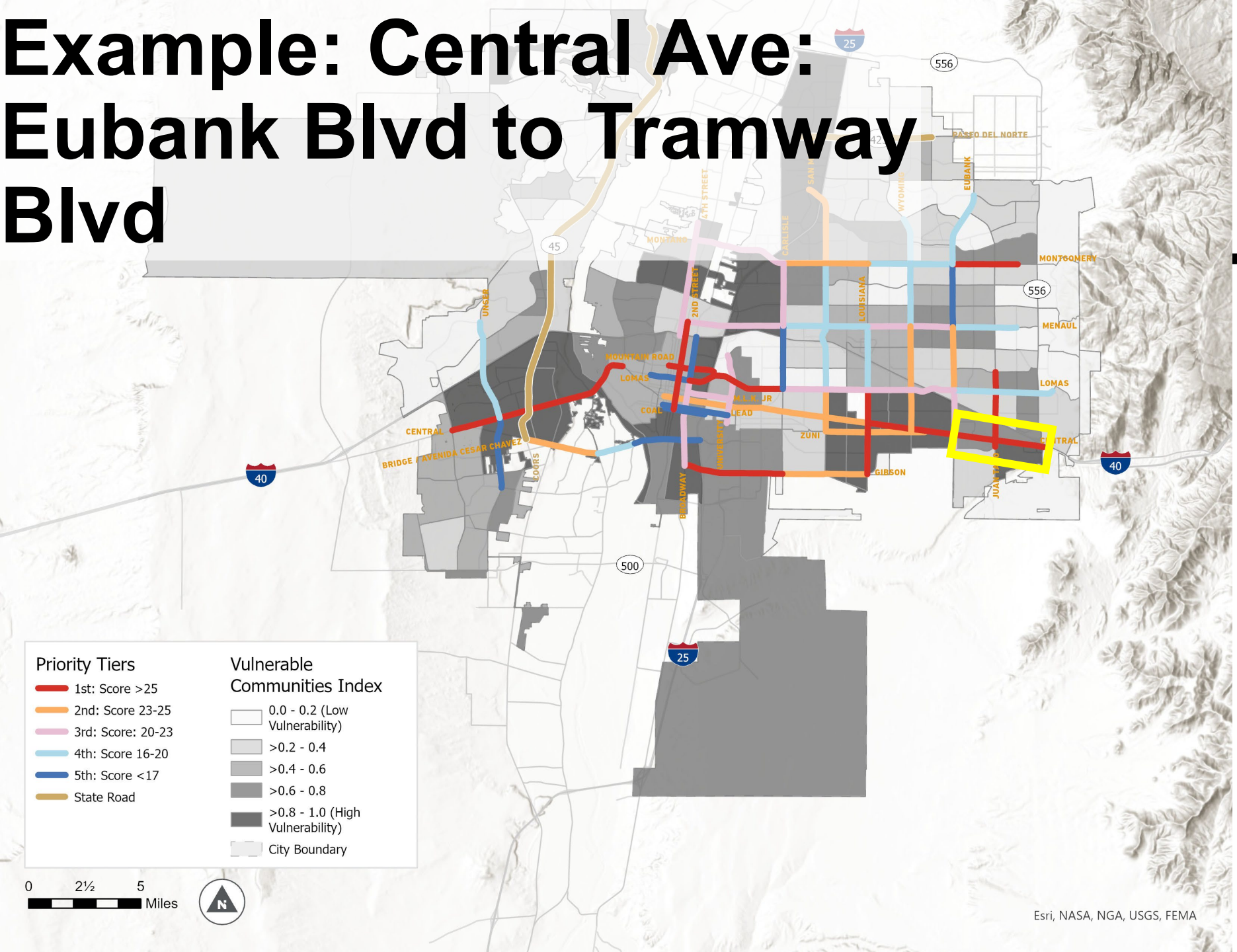


municipal development

HFIN Workshops/Tool Kit

- Review conditions along 10 HFIN segments
- Differentiate between low-cost high-impact strategies and major road improvements
- Compile tool kit of strategies

Example: Central Ave: Eubank Blvd to Tramway Blvd



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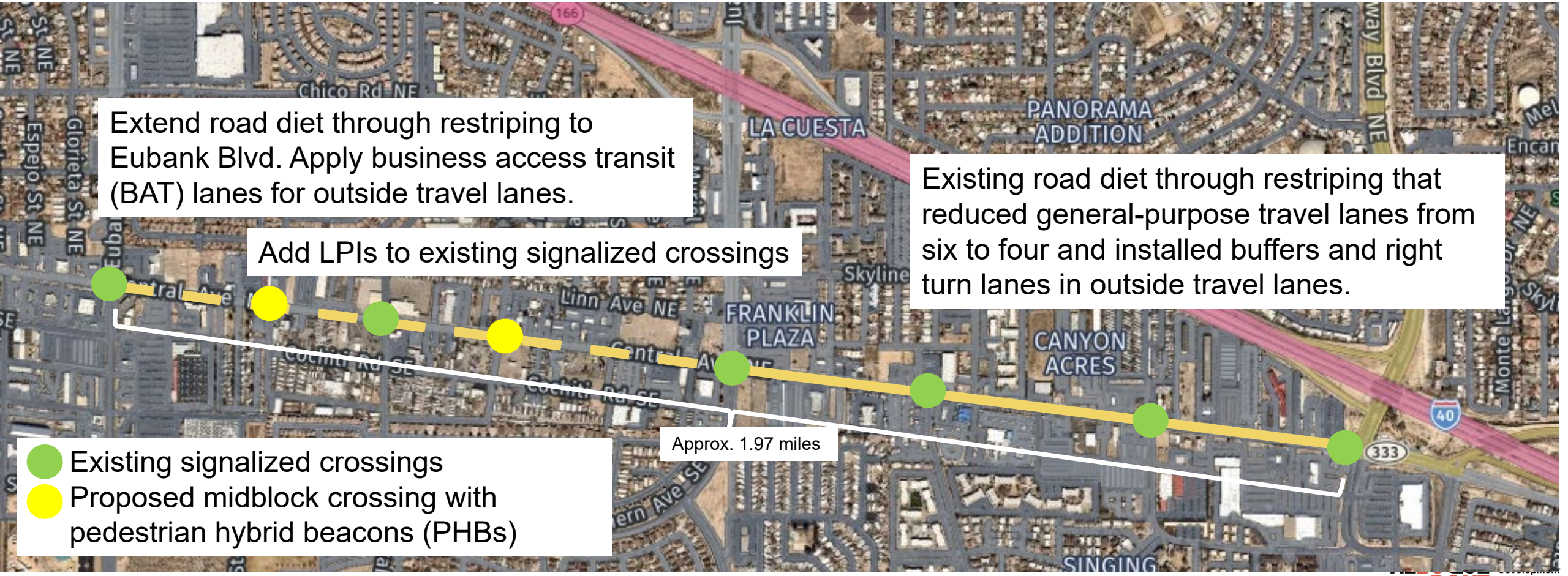
Example: Central Ave: Eubank Blvd to Tramway Blvd



Lessons Learned

- Using data to prioritize and focus on strategies that will have the greatest impact in eliminating traffic deaths and serious injuries.
- Create clear actions, identify who is responsible, and performance metrics to track progress
- Identify short to mid-term strategies and longer-term strategies
- Prioritization creates transparency and it's easier to communicate with the public and local elected officials.
- HFIN Workshops: Opportunity to influence existing/planned projects

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Crash Course: Developing Detroit's Comprehensive Safety Action Plan

Wednesday, May 17, 2023

City of Detroit Department of Public Works

James Hannig, Deputy Director, Complete Streets


TAKIN
DETROIT'S EAST SIDE
SPEED & RECKLESS DRIVING CAUSE OF TRIPLE FATAL CRASH


OPEN
8 GRATIOT
ACTION NEWS THIS MORNING
DETROIT'S EAST SIDE
HIT AND RUN CRASH INVOLVING DDOT BUS

Crash Trends in Detroit

Detroit has one of the highest traffic fatality rates in the country.

Among large cities, we rank second in overall fatality rate and third in pedestrian fatality rate, when adjusted for population.

Total Fatalities

Rank	City	Fatality Rate*
1	Memphis, TN	34.32
2	**Detroit, MI**	**28.71**
3	Tuscon, AZ	22.58
4	Jacksonville, FL	19.34
5	Albuquerque, NM	18.67
6	Louisville, KY	18.27
7	Dallas, TX	16.53
8	Atlanta, GA	15.8
9	Nashville, TN	15.49
37	Boston, MA	2.6 (lowest)

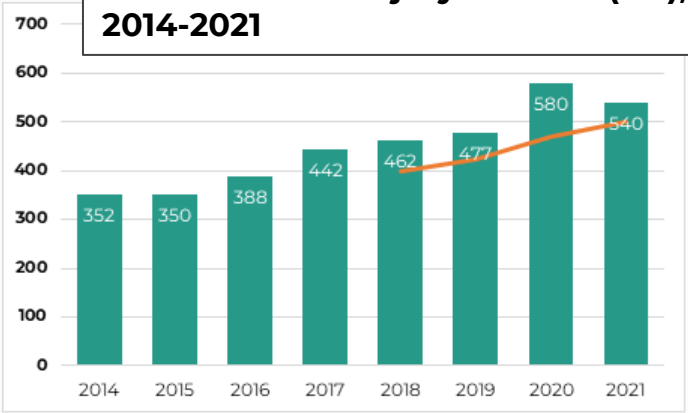
Pedestrian Fatalities

Rank	City	Fatality Rate*
1	Memphis, TN	9.7
2	Tucson, AZ	6.68
3	**Detroit, MI**	**6.16**
4	Nashville, TN	5.51
5	Fresno, CA	5.47
6	Albuquerque, NM	5.33
7	Louisville, KY	5.01
8	Dallas, TX	4.91
9	Jacksonville, FL	4.89
37	Boston, MA	0.58 (lowest)

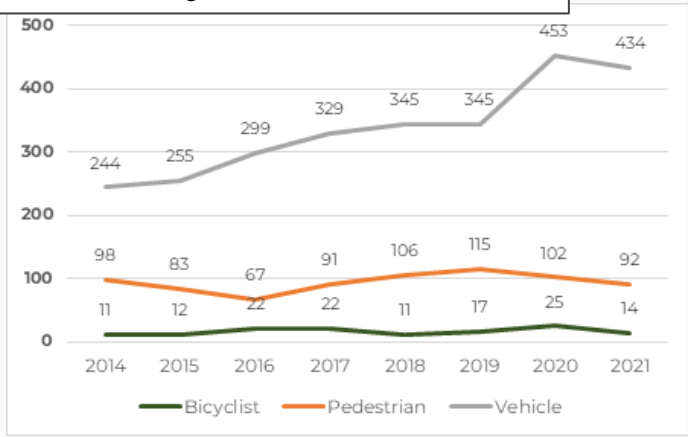
*for Every 100,000 People. Source: NHTSA Pedestrians Traffic Safety Fact Sheet, 2020

Detroit's per capita traffic death rate grew 88% between 2017 and 2020 while the median increase among major cities was 19%.

Fatal & Serious Injury Crashes (KA), 2014-2021



KA Crashes by User, 2014-2021



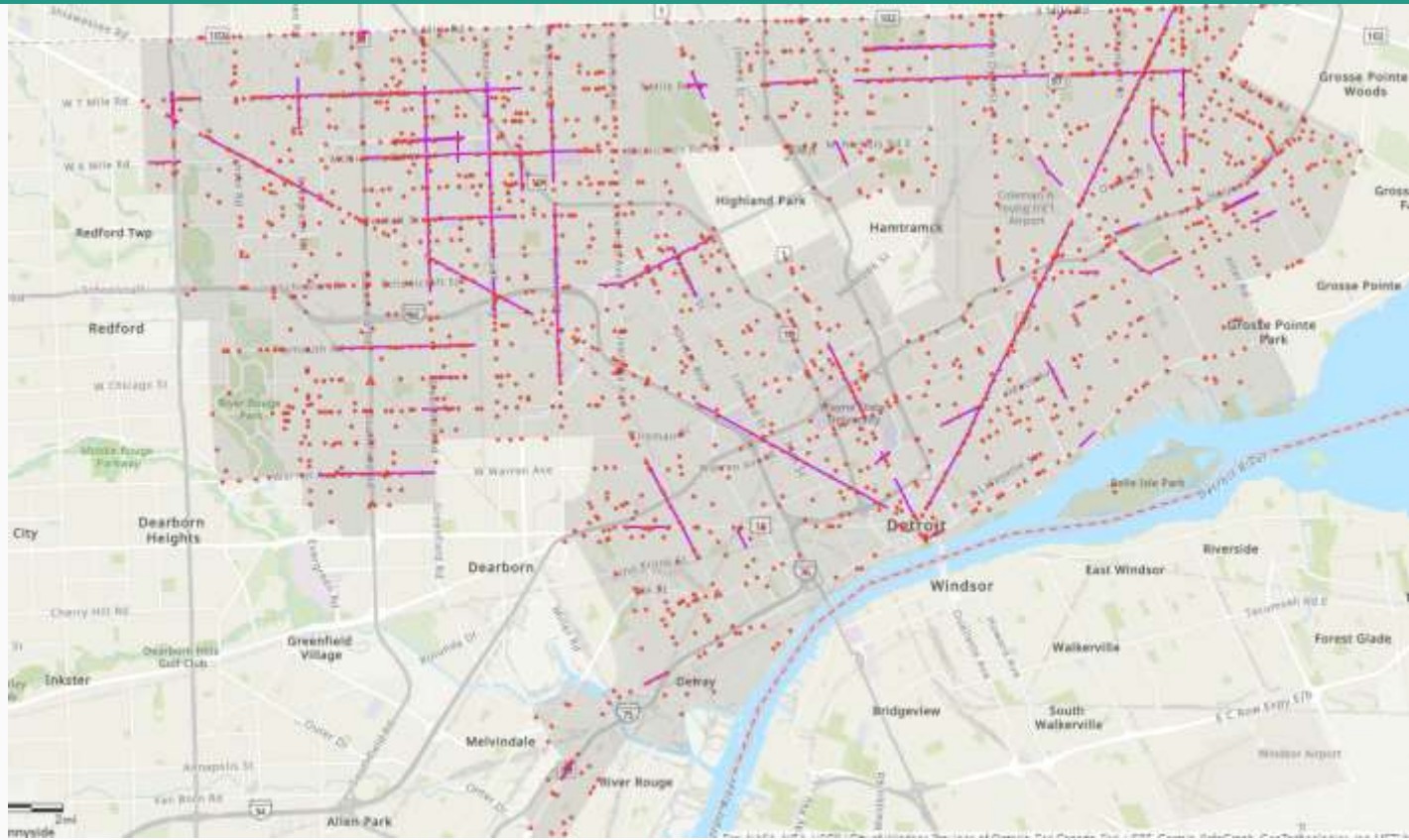
Source: MCTF

High Injury Network / KA Injury Crashes (5-year period)

Between 2017 and 2021, 539 people were killed in traffic crashes in Detroit. Another 2,473 were seriously injured.

Fixed Object, Angle, and crashes involving Vulnerable Users (people walking and biking) make up 61% of severe crashes 2017-21

The HIN accounts for 3% of surface streets, but 34% of severe crashes



TAKE PART
Opportunity Rising

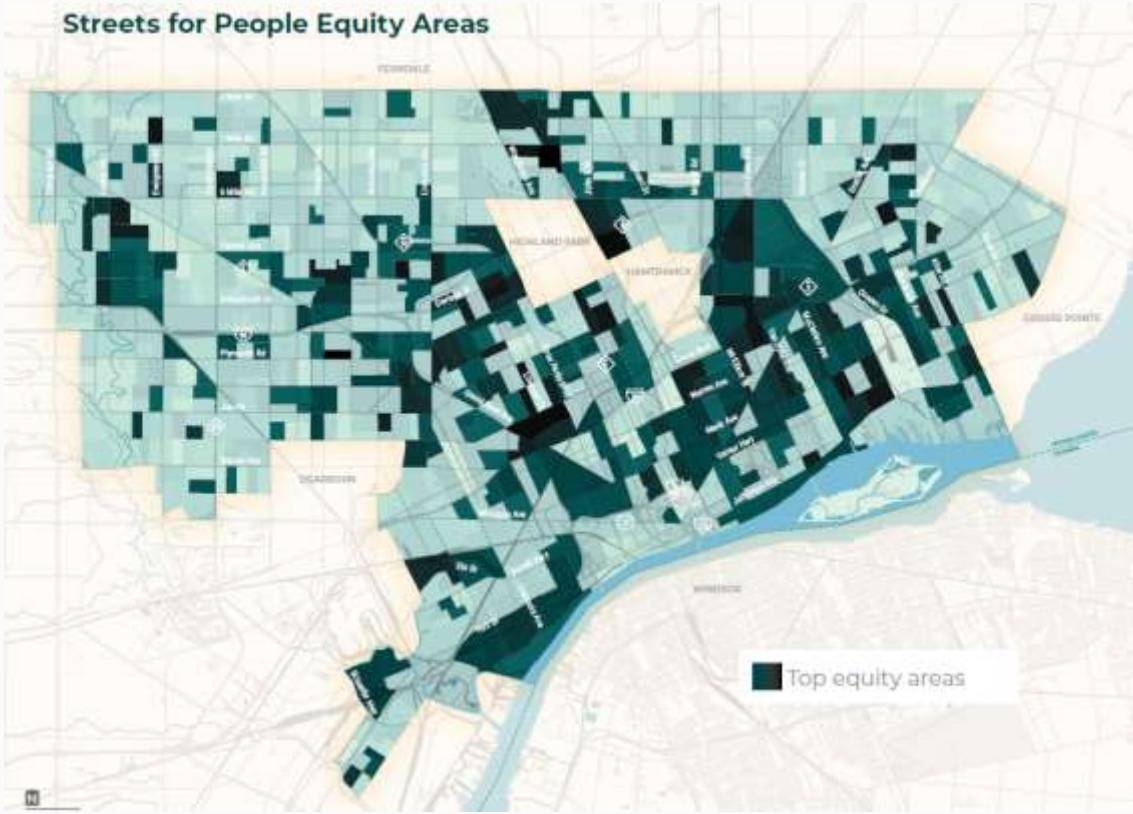
Equity Analysis

Disparities in Traffic Crashes, 2017-2021

	Detroit	SEMCOG Region	State of Michigan
Traffic Deaths per 10,000 Residents (2019 estimates)	1.61	0.66	0.88
KA Crashes per 10,000 Residents (2019 estimates)	8.99	4.39	5.78
Share Population Non-White, 2020	89%	36%	27%
Median Household Income (in 2020 dollars), 2016-2020	$32,498	$64,068	$59,234

	% of Detroit by Population (2019)	% of Detroit Crashes
Not an HDC	**43%**	**44%**
HDC	**57%**	**56%**

Source: MTCF; US DOT



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Detroit's Traffic Safety Strategy

- Builds upon existing traffic safety programs
- Incorporates the Safe System Approach
- Endorses regional Vision Zero target to eliminate fatal and serious injury crashes by 2050
- Incorporates Comprehensive Safety Action Plan (CSAP) into overall transportation master plan, Streets for People (SFP)
- Leverages federal grant funding, especially Safe Streets and Roads for All (SS4A)

Source: USDOT FHWA, Office of Safety Programs

SFP and CSAP are based on the Safe System approach to traffic safety

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Timeline

Fall 2019
- Began SFP

2020
- Community Engagement
- Existing conditions
- COVID-19

2021
- Planning continues (slowly)

Spring 2022
- SFP substantially complete
- SS4A NOFO

Summer 2022
- Developed CSAP
- Prepared SS4A grant application

September 2022
- Adopted SFP & CSAP
- Submitted SS4A grant

Community Priorities

"What concerns, if any, do you have moving about Detroit safely"	Total Responses	Percent of Total	Self ID as Black	Percent
Speeding or Other Forms of Dangerous Driving	1,005	84%	554	86%
Damaged or Missing Sidewalks	560	47%	242	37%
People Walking in the Street	365	31%	194	30%
Inability to See Bicyclists	209	18%	86	13%
Vehicles Parked or Driving in Bike Lanes	365	31%	132	20%
Poor Road Quality	715	60%	366	57%
Wide Roads	161	13%	41	6%
Poor Lighting	607	51%	350	54%
Crime	642	54%	412	64%
Encounters with Police	200	17%	112	17%
None	9	1%	6	1%

"What improvements would you like to see?"	Total Responses	Percent of Total	Self ID as Black	Percent
Street improvements that balance the needs of all users	735	62%	362	56%
Reduced speeding and increased safety	939	79%	515	80%
Safer Connections to Schools	519	43%	241	37%
Safer Bike Routes	419	35%	153	24%
Better and More Convenient Public Transit	515	43%	224	35%
Increased Vibrancy	658	55%	314	49%
Improved Connections to Retail	516	43%	236	36%

Source: Streets for People

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Detroit CSAP Strategies

Strategy	Safe Users	Safe Vehicles	Safe Speeds	Safe Streets	Post-Crash Care
Launch a citywide traffic safety campaign	X		X		
Reduce speeding throughout Detroit	X		X	X	
Build a culture of shared responsibility within City government	X		X	X	
Improve the High Injury Network			X	X	
Establish the Slow Streets Network			X	X	
Create commercial streetscapes that promote safe speeds and safe crossings			X	X	
Proactively target the streets and places where severe crashes may occur	X		X	X	
Create safe, complete networks for people walking and using assistive devices	X			X	
Promote safe fleets through City procurement and other mechanisms	X	X			
Ensure that nobody is left behind in a safe vehicles future.	X	X			
Respond to fatal crashes with all due urgency	X				X
Evaluate progress toward safety goals	X		X	X	

Project Prioritization Criteria

- **For prioritizing all projects, specific emphasis on safety projects**
- Aligns with Streets for People Values
  - **Safety First**
  - Economic Opportunity
  - Equity, Dignity, Transparency
  - Access for All
  - Public Health and Environment

Category	Criteria	Detail	Points
Safety Impact [25 total]	**Project Located on the HIN**	**Intersection project on HIN or corridor project on HIN**	**12**
	Uses Detroit CSAP severe crash reduction countermeasures, including at least 1 speed reduction countermeasure	**3 or more countermeasures**	**5**
		2 countermeasures	**3**
	Project improves safety around a school or a park	**Within 1/8 mile (660')**	**5**
	Increases safety and comfort for people walking, using assistive devices, or biking	**Scope includes safer crossings, Slow Streets, bicycle facilities, and/or filling gaps in the sidewalk network**	**3**
Equity [15 total]	**Project is located in an Equity Area**	**SFP Tier 1 and HDC**	**10**
		SFP Tier 2 and HDC	**8**
		SFP Tier 1 only	**7**
		SFP Tier 2 only	**5**
	Project has prior community support	**Documented through a neighborhood plan or community-identified high-risk location**	**5**
Sustainability, Climate Change, & Economic Competitiveness [10 total]	**Improvements support transit or transit access through safer crossings, enhanced transit amenities, or enhanced transit operations**	**Project located on a ConnectTen route, at a transfer intersection, or documented in a DDOT, SMART, or RTA plan**	**6**
	Improvements increase tree canopy and/or decrease impermeable surfaces	**Scope includes new trees or tree replacements, rain gardens, permeable pavements, or infiltration**	**4**

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Project Prioritization Criteria

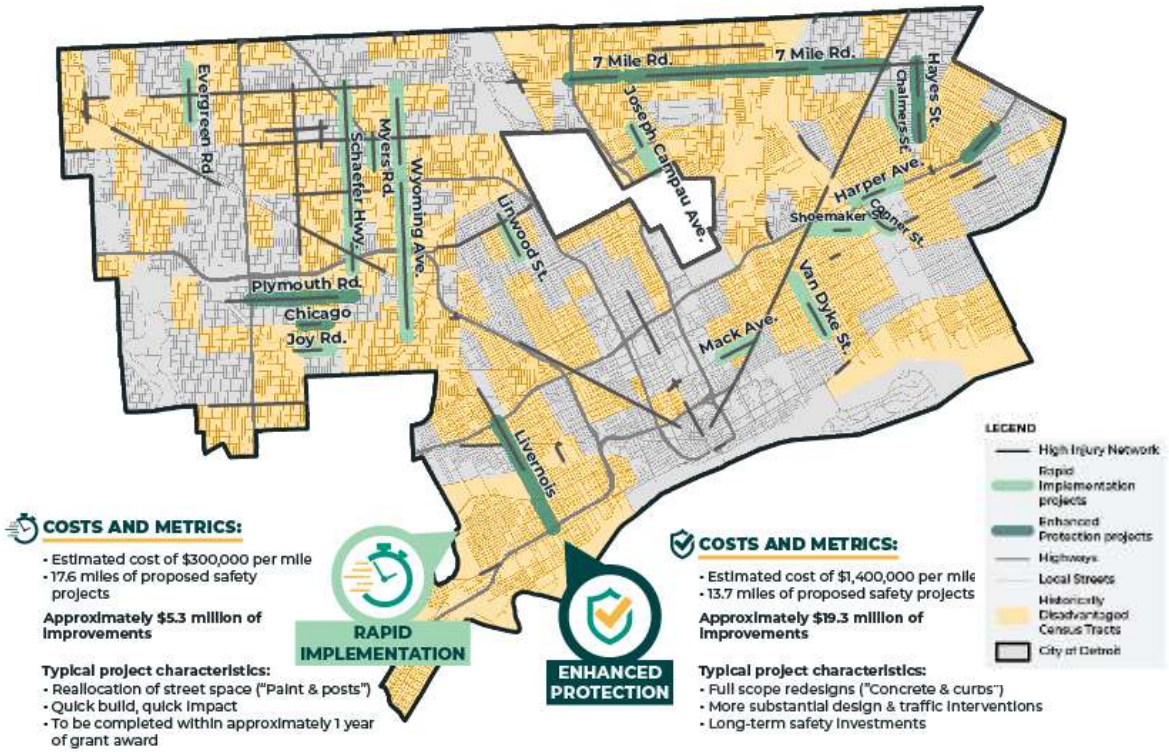
- **Identified potential scope of safety countermeasures for range of project types**
- **Currently developing guidance for designers to use in various project development phases**

Project Type	Potential Scope
Enhanced Protection Projects	Streetscape, curb extensions, separated bike lanes, one-two way conversion, lighting
Rapid Intervention Projects	Striping, crosswalk markings, paint and post treatments, signal retiming
Traffic Signals	Modernization, APS, updates, retiming, interconnects
School and Park Safety Upgrades	Crosswalk markings, raised crosswalks, curb extensions
Enhanced Pedestrian Crossings	RRFBs, PHBs, refuge islands, crosswalk markings
Complex Intersections	Geometric changes, signal upgrades
High Speed Streets	Road diet, speed limit reduction, speed feedback signs
Slow Streets Network	Bicycle boulevards, raised crosswalks, traffic calming
Separated Bikeways	At-grade or sidewalk level, protected intersections
Safety Treatment Maintenance	Markings, signage, replacement costs
Fatality Spot Improvements	As determined by investigation team

Safe Streets for All (SS4A) Grant | Safe Streets for Detroit (SS4D)

$31M Project Budget
$24.8M Grant Award

- **Enhanced Protection Projects**
  $19.3M or $1.4M/mile
- **Rapid Implementation Projects**
  $5.3M or $300K/mile
- **Vulnerable User Safety Improvements**
  $1.9M
- **Technology Improvements & Data Collection**
  $2.9M
- **Evaluation & Maintenance**
  $2M



<u>Goal</u>: Reduce fatal & serious injury crashes on High Injury Network (HIN) corridors under <u>City's jurisdiction</u>

SS4D Sample Proven Safety Countermeasures by Sub-Project

PROGRAM CATEGORY	SUB-PROJECT	TYPICAL COUNTERMEASURES	CRASH REDUCTION FACTOR (CRASH TYPE)	SAFE USERS	SAFE SPEEDS	SAFE STREETS
High Injury Network Interventions	Rapid Implementation Projects	Road Diet	39% (all)	X	X	X
		High visibility crosswalks	40% (pedestrians)	X		X
		Leading Pedestrian Intervals (LPI)	19% (pedestrians)	X		X
		Add pedestrian crossing time	50% (ped)	X		X
	Enhanced Protection Projects	Curb Extensions/Bus Bulbs	32% (all)	X		X
		Bike Lanes	35% (all)	X		X
		Pedestrian Refuge Islands	31% (pedestrians)	X		X
		Road Diet	39% (all)	X	X	X
Systemic Safety Interventions	Neighborhood Corridor Improvements	Curb Extensions/Bus Bulbs	32% (all)	X		X
		Pedestrian Refuge Islands	31% (pedestrians)	X		X
		High visibility crosswalks	40% (pedestrians)	X		X
	Safety Improvements for Vulnerable Users	RRFBs	47% (pedestrians)	X		X
		Raised Crosswalks		X		X
		Intersection lighting	44% (pedestrians)	X		X
		High visibility crosswalks	40% (pedestrians)	X		X
	Signal Equipment Upgrades	Pedestrian Countdown Timers	9% (all), 70% (pedestrians)	X		X
		LED signal heads	28% (all)	X		X
		Protected Left Turn Phases	55% (all)	X		X

Source: CMF Clearinghouse

Let’s connect!

James Hannig, AICP

DPW Deputy Director, Complete Streets

james.hannig@detroitmi.gov

313.542.2158

TAKE PART

Opportunity Rising

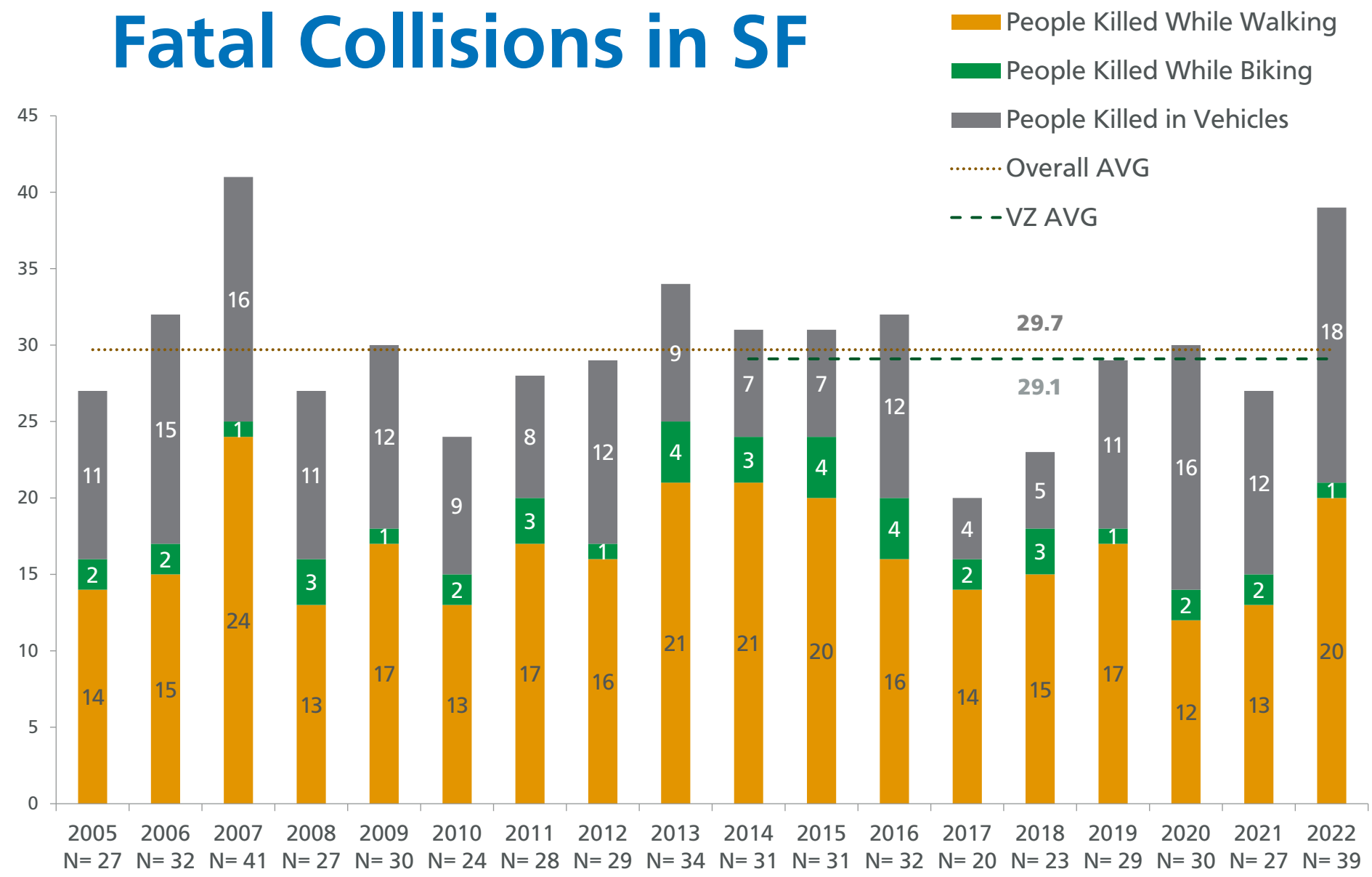
SFMTA

Vision Zero Quick-Build Program

NACTO Designing Cities

May 17, 2023

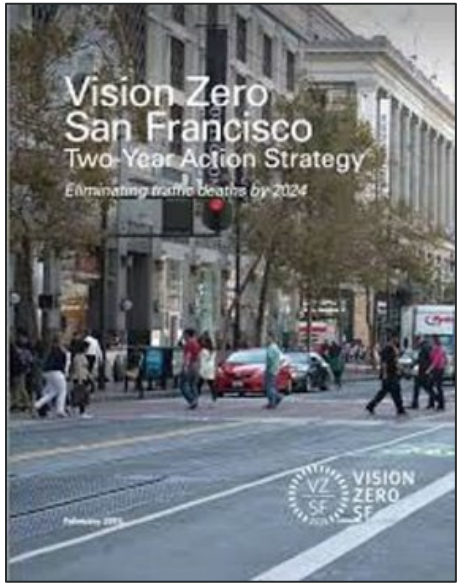
Fatal Collisions in SF



San Francisco's Transit First Policy

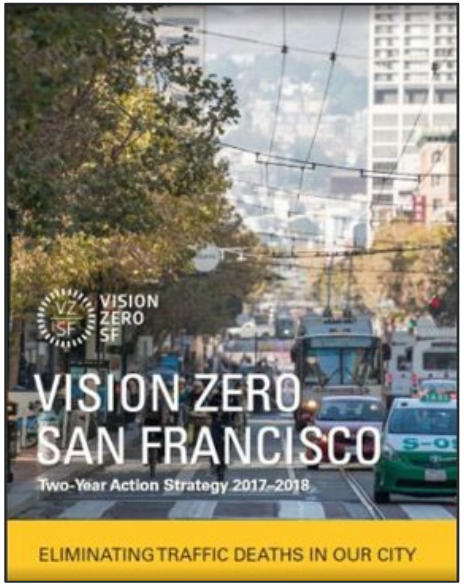
- Voter approved in 1973
- Decisions regarding the use of limited public street and sidewalk space shall encourage the use of public rights of way by pedestrians, bicyclists, and public transit, and shall strive to reduce traffic and improve public health and safety.

Vision Zero Action Strategy



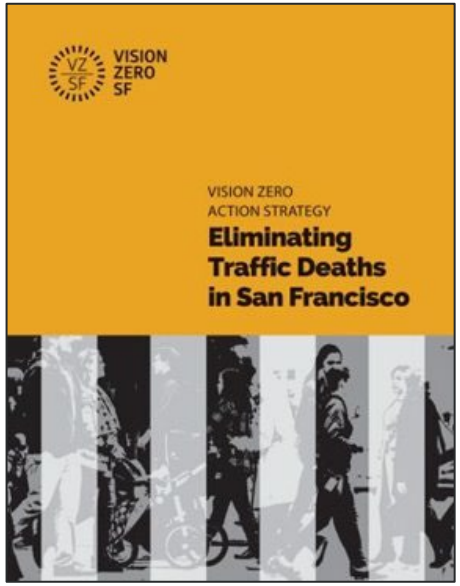
2015

What is Vision Zero?



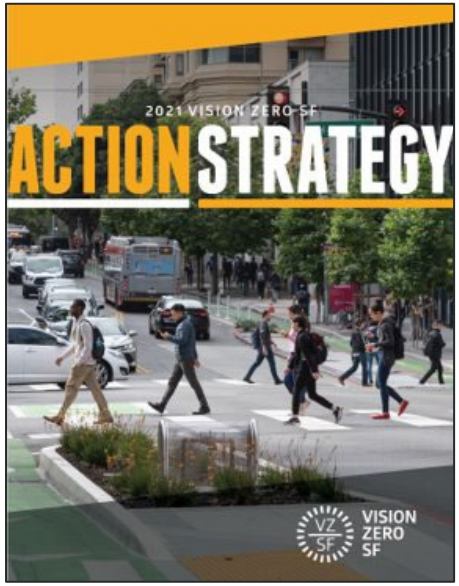
2017

Defining a Safe System Approach



2019

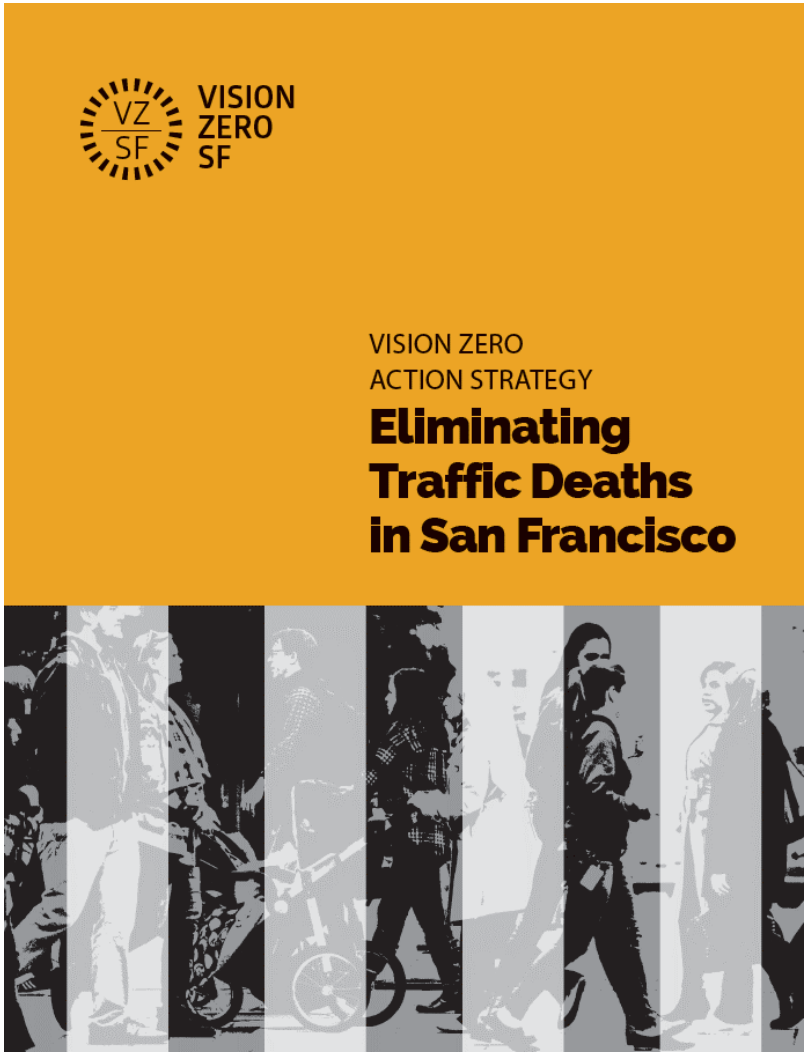
Advancing Transformative Policies



2021

Vision Zero Action Strategy Update

2019 Vision Zero Action Strategy



> *Increase the total miles of high-impact sustainable travel lanes - transit-only lanes, protected bicycle facilities, and wider sidewalks…*

> *Reduce delivery timelines through quick-build projects - work done entirely by city crews- …*

visionzerosf.org/about/action-strategy/

Mayoral Direction & Support

> "the SFMTA will **develop a policy that requires SFMTA staff to move forward with quick, near-term safety enhancements on high injury corridors**, including paint, safety posts, and temporary sidewalk extensions"
>
> March 6, 2019

> "We need to make bicycling a safer, more viable choice for our residents, and this starts with expanding our network of protected bike lanes and keeping our current bike lanes clear. That's why I am **directing the SFMTA to double our production of protected bike lanes over the next two years** and increase enforcement of violations related to blocking bike lanes."
>
> May 9, 2019 (Bike to Work Day)

Quick-Build Program

- Traffic safety improvements that are
  - Easy to implement
  - Lower cost
  - Adjustable/reversible
- Design, construct, and evaluate more nimbly and iteratively

Quick-Build Projects

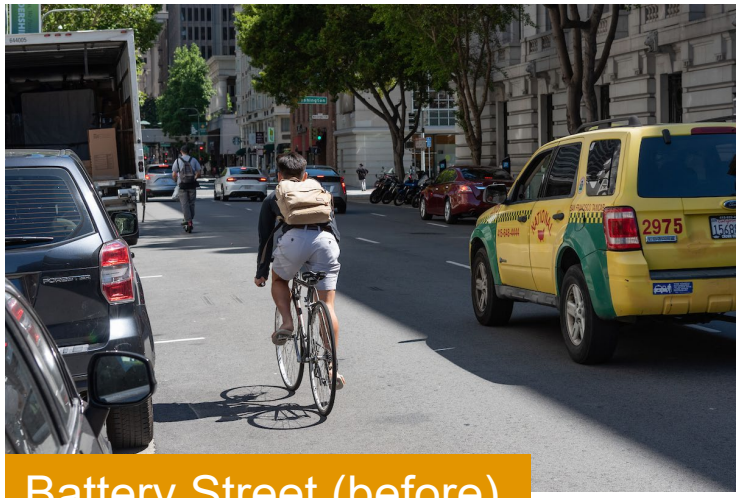
Project Results

20% improvement of bus on-time performance along 7th and 8th Streets

Bicycle use increased by 29% along Golden Gate

Volume of vehicles traveling on Jones and Hyde decreased by 24%

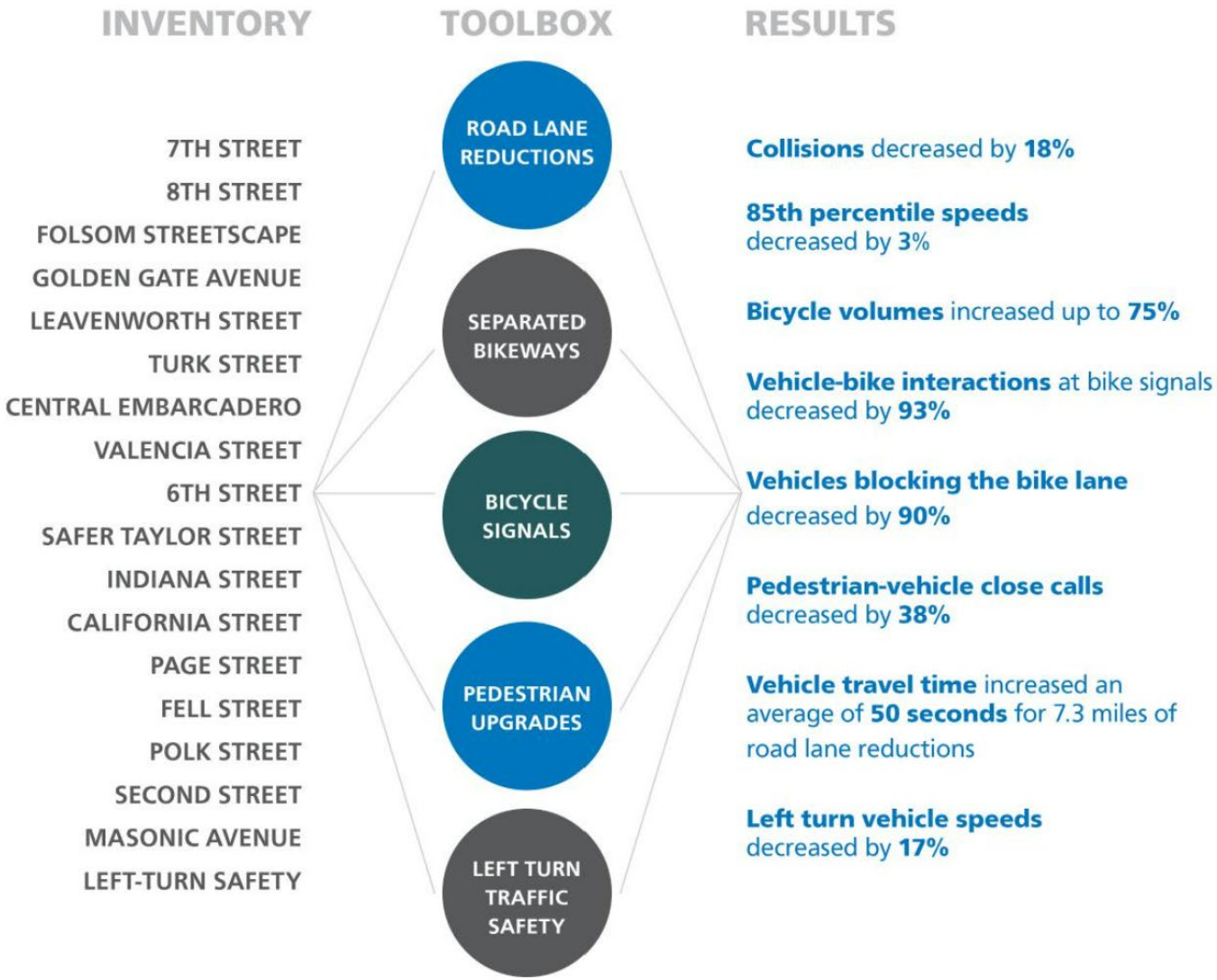
SFMTA.com/SafeStreetsEvaluation



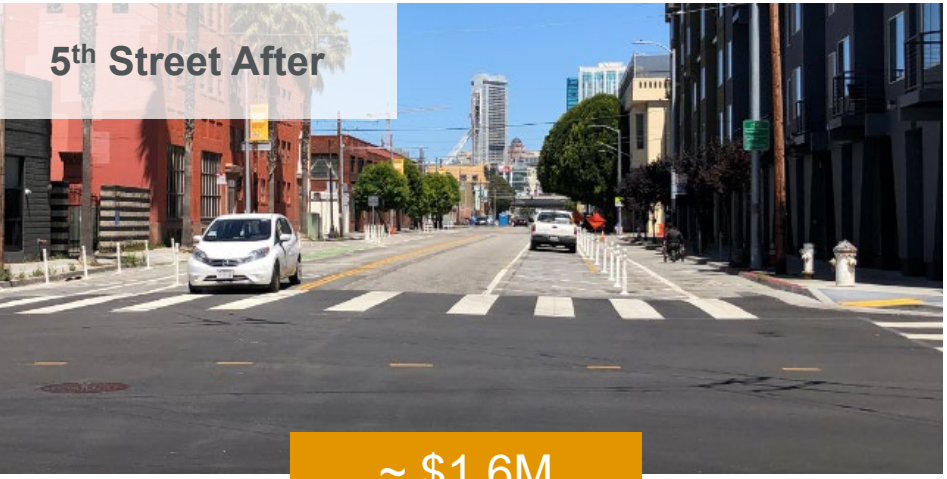
Battery Street (before)

Battery Street (after)

Project Results



QUICK-BUILDS VS STREETSCAPE PROJECTS



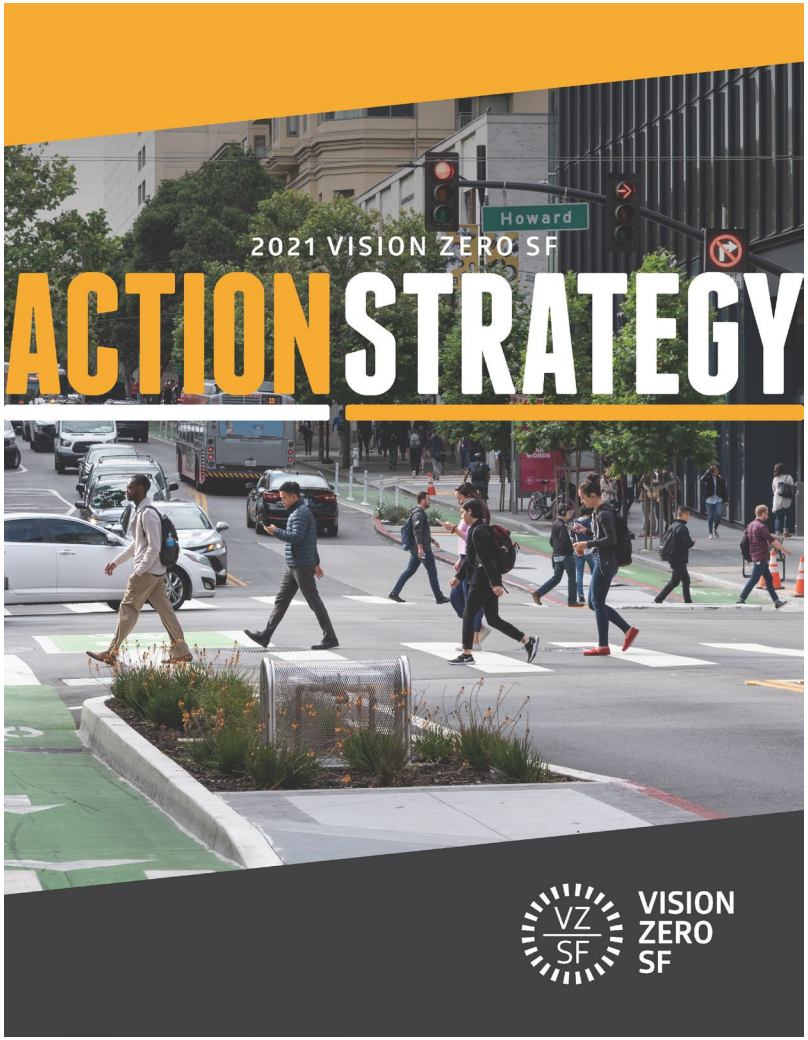
~ $1.6M
Quick-Build

~ $20M
Streetscape

Program Successes

- Iterative design process using streamlined delivery and thorough evaluation
- Flexibly respond to community-identified traffic safety needs and construction coordination opportunities
- Maximize use of local funding for traffic safety improvements

2021 Vision Zero Action Strategy



More than 80 miles of safety improvements have already been completed or are in planning or construction on the High Injury Network. This Action Strategy commits the City to applying the Quick-Build toolkit on the remaining 80 miles of the High Injury Network

visionzerosf.org/about/action-strategy/

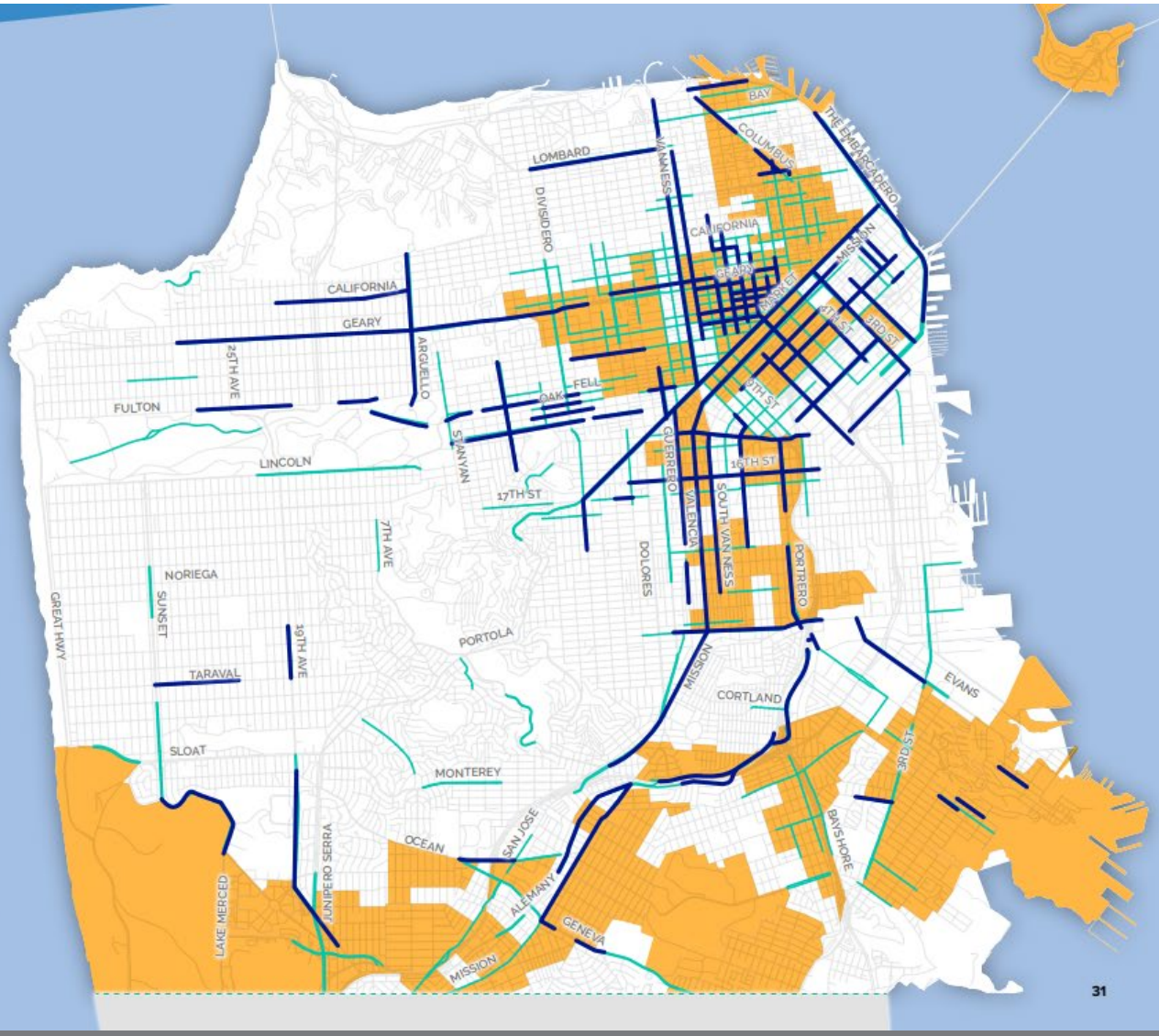
What's Next

Applying the Quick-Build Toolkit to the High Injury Network

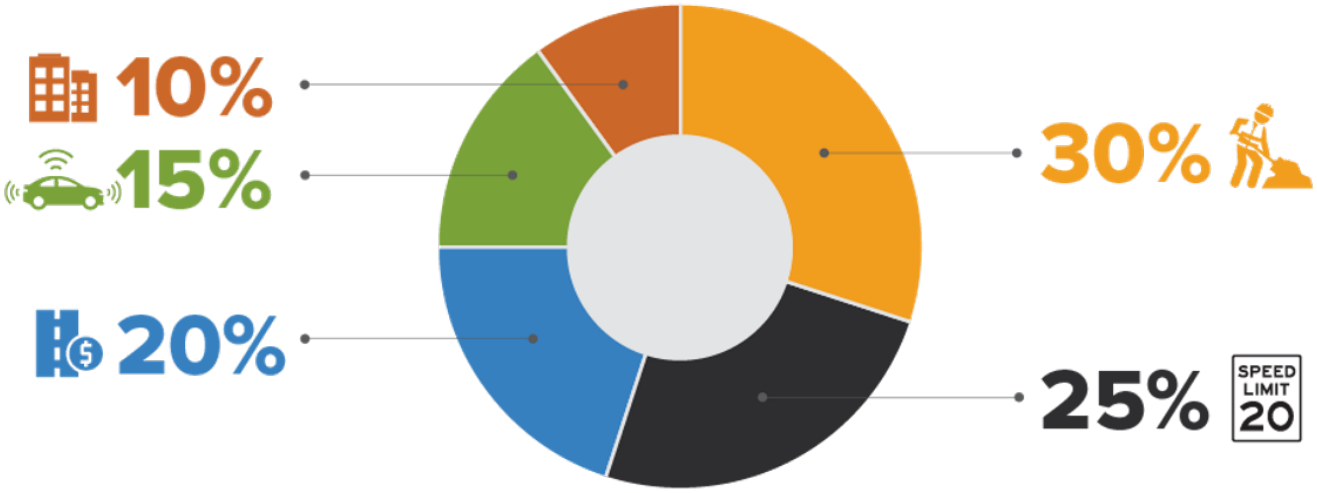
Since 2014, approximately 80 miles of corridor-level improvements have been completed or are in planning or construction. The City has approximately 80 miles remaining on the High Injury Network that need to be updated with safety improvements. This strategy commits the City to making these core safety improvements using the Quick-Build toolkit—which can include tools such as continental crosswalks, painted safety zones, daylighting, traffic signal retiming, and protected bike lanes.

SF is committed to applying the Quick-Build toolkit to the High Injury Network

- 80 MILES OF CORRIDOR-LEVEL IMPROVEMENTS COMPLETED OR ARE IN PLANNING OR CONSTRUCTION
- 80 MILES OF HIGH INJURY NETWORK REMAINING TO BE UPDATED WITH SAFETY IMPROVEMENTS
- COMMUNITIES OF CONCERN



What's Next



Major Street Redesign: Car free zones, Quick-Build projects, Protected bike lane network, and transit only lanes

Speed Safety Cameras: Using speed cameras to enforce speed limits

Mode Shift and Pricing Tools: Moving to active transportation modes by using tools like pricing

Advanced Vehicle Technologies: Advance driver-assisted systems and smaller vehicles

Increased Housing Density: Housing near jobs/services, especially affordable housing and services for unhoused populations

Contact Information

Jennifer Wong
Vision Zero Program Manager
Jennifer.Wong@SFMTA.com

Website: SFMTA.com/QuickBuild
Email: QuickBuild@SFMTA.com