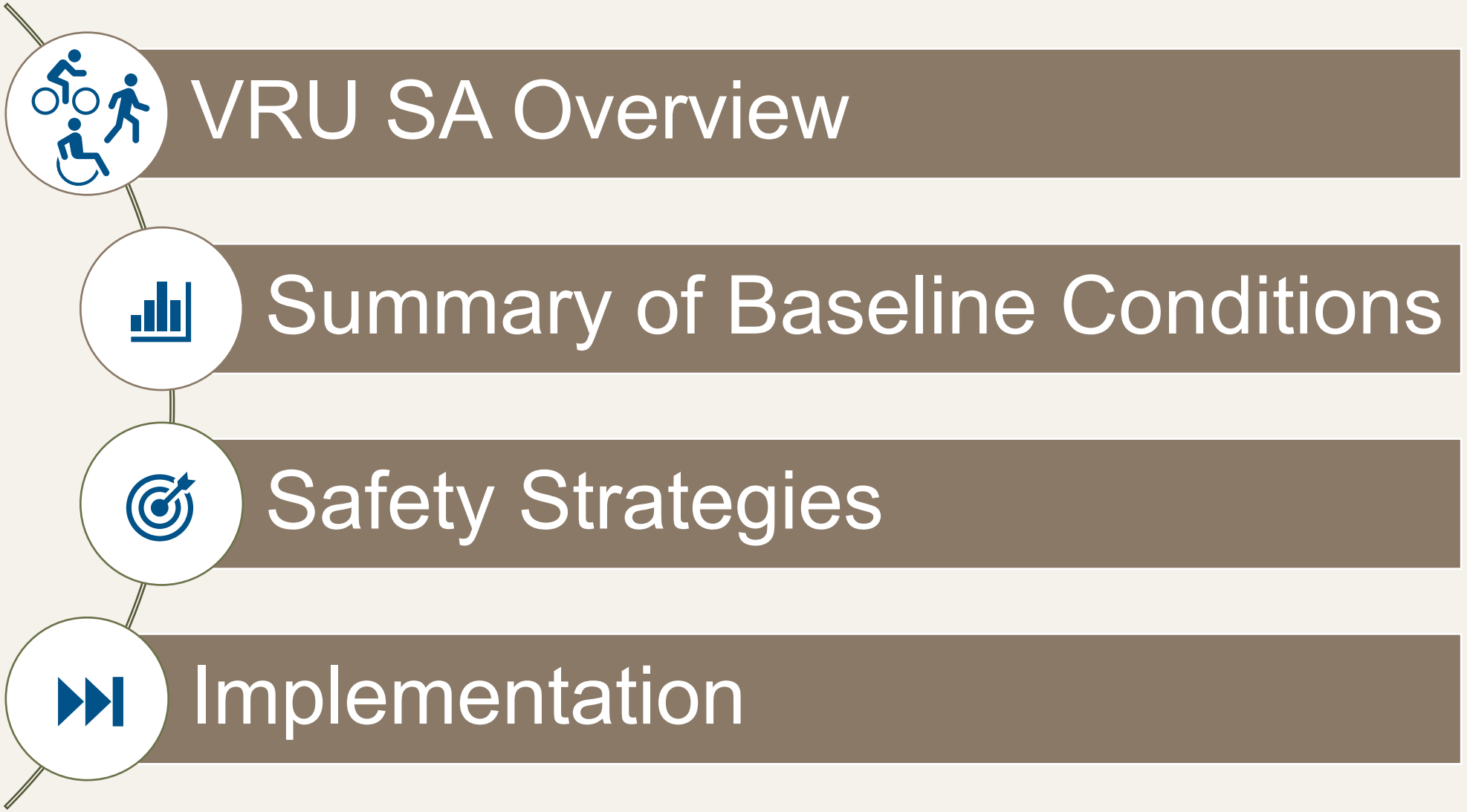
MDT Vulnerable Road User Safety Assessment

2023 Annual Transportation Safety Meeting

October 4, 2023

AGENDA


VRU SA Overview
Summary of Baseline Conditions
Safety Strategies
Implementation

VRU SA Overview

What is a Vulnerable Road User?

Non-motorist

- Fatality Analysis Reporting System (FARS) person attribute code:
  - (5) Pedestrian
  - (6) Bicyclist
  - (7) Other Cyclist
  - (8) Person on Personal Conveyance
  - Or equivalent

Federal Requirements for VRU SA

- **Required under IIJA**
  - **Quantitative analysis** of VRU fatalities and serious injuries

Must include:

- Crash characteristics
- Demographics of location
- High-risk areas

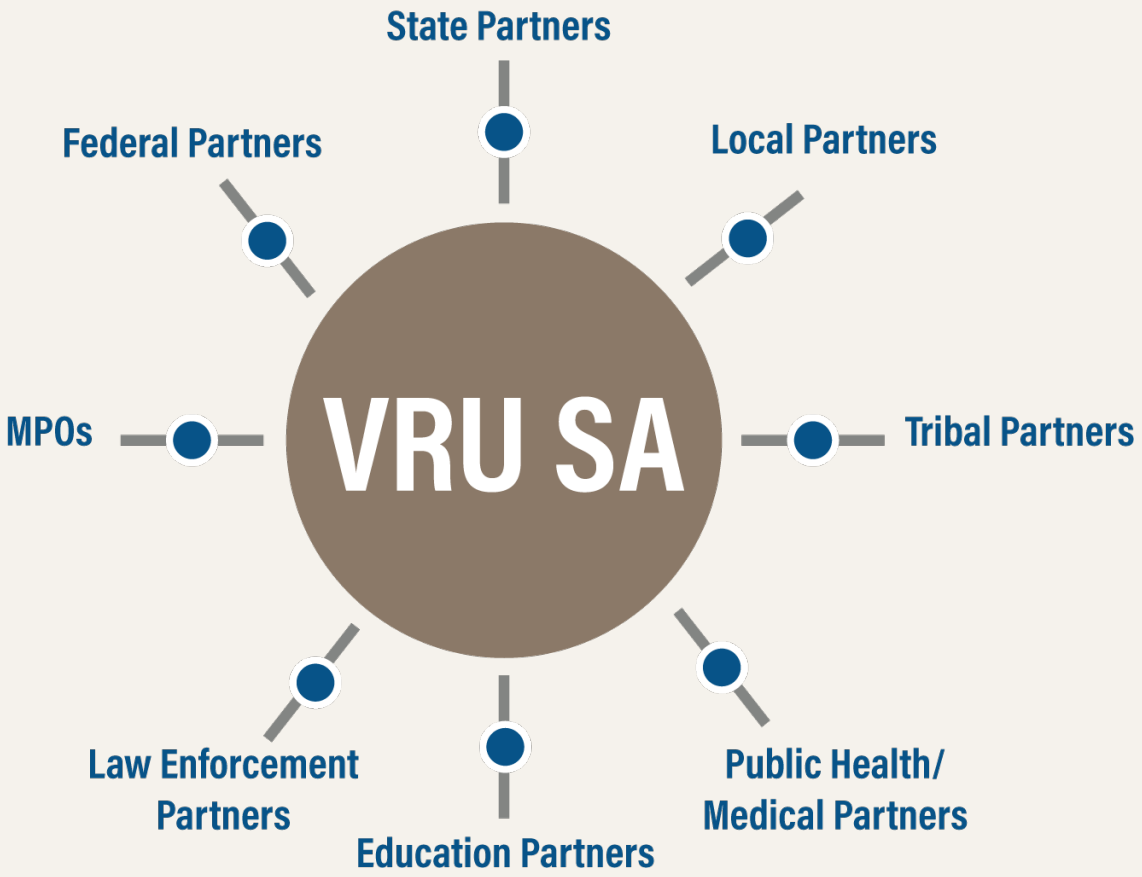
May include:

- Indicators: volumes, land use, infrastructure
- Demographics of individuals involved
- Tribal areas

  - Program of **projects or strategies** to reduce safety risks to VRUs

Federal Requirements for VRU SA

- Consider **Safe System Approach**
- **Consult** with local governments & MPOs
- **Incorporate/update regularly** in Comprehensive Highway Safety Plan (CHSP)



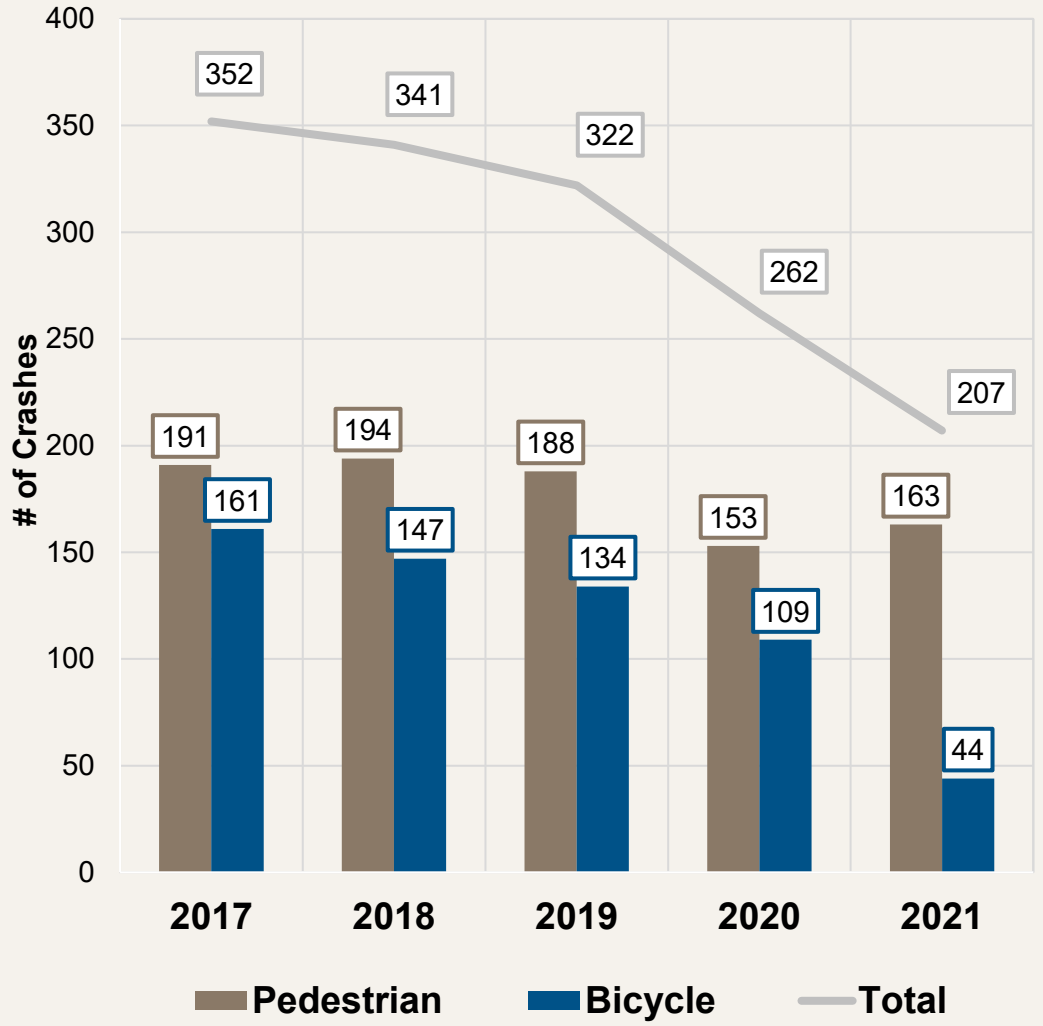
Summary of Baseline Trends

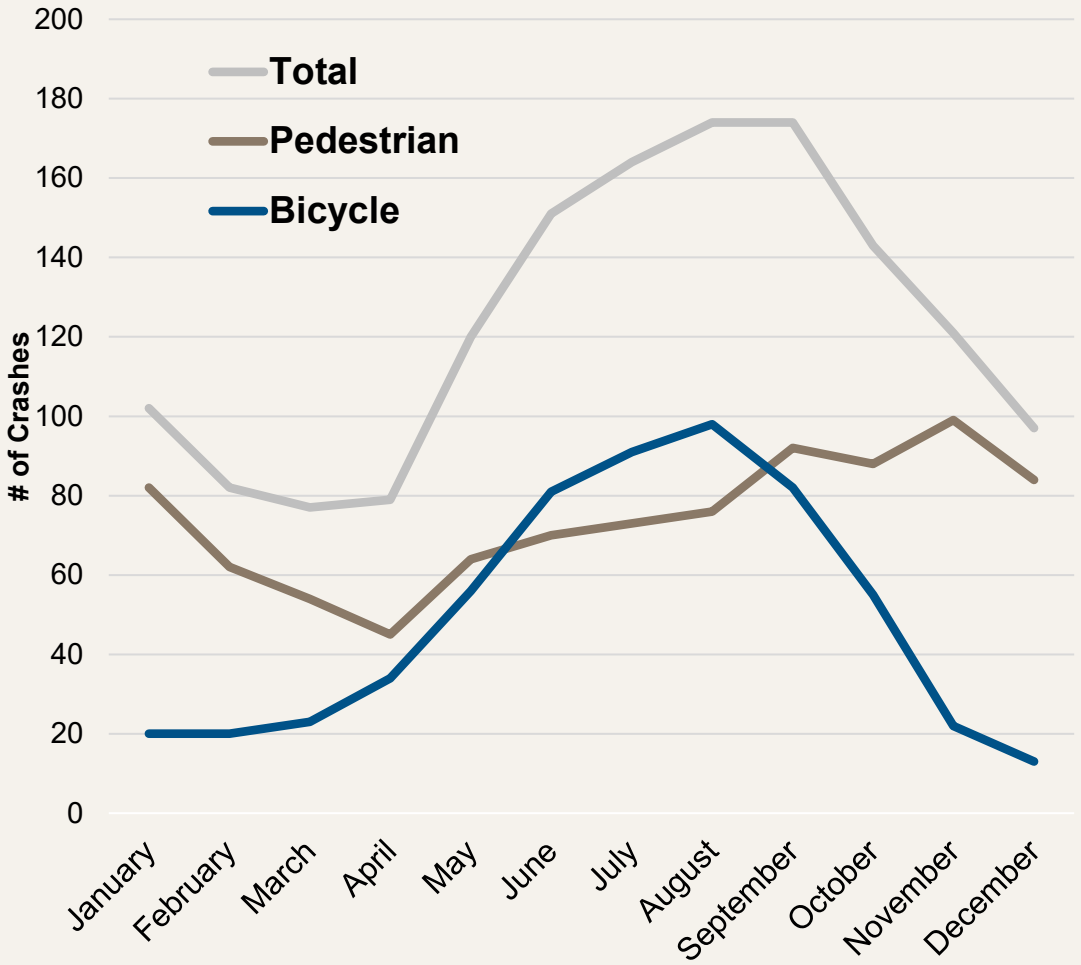
Crash Record Characteristics

- **Review Period:** 2017-2021 (5 years)
- **Data Source:** MDT crash records database
- **Non-motorist involved crashes only:** 1,484 total crashes
- **Data reflect officer observations**

Crash Record Characteristics

NON-MOTORIST CRASHES





Crash Record Characteristics

Of the 1,384 Non-Motorists Involved in Crashes…

Fatalities

77 Pedestrian

7 Bicycle

Minor/Possible Injuries

439 Pedestrian

334 Bicycle

4 Other

Suspected Serious Injuries

154 Pedestrian

64 Bicycle

2 Unknown

PDO/Unknown

188 Pedestrian

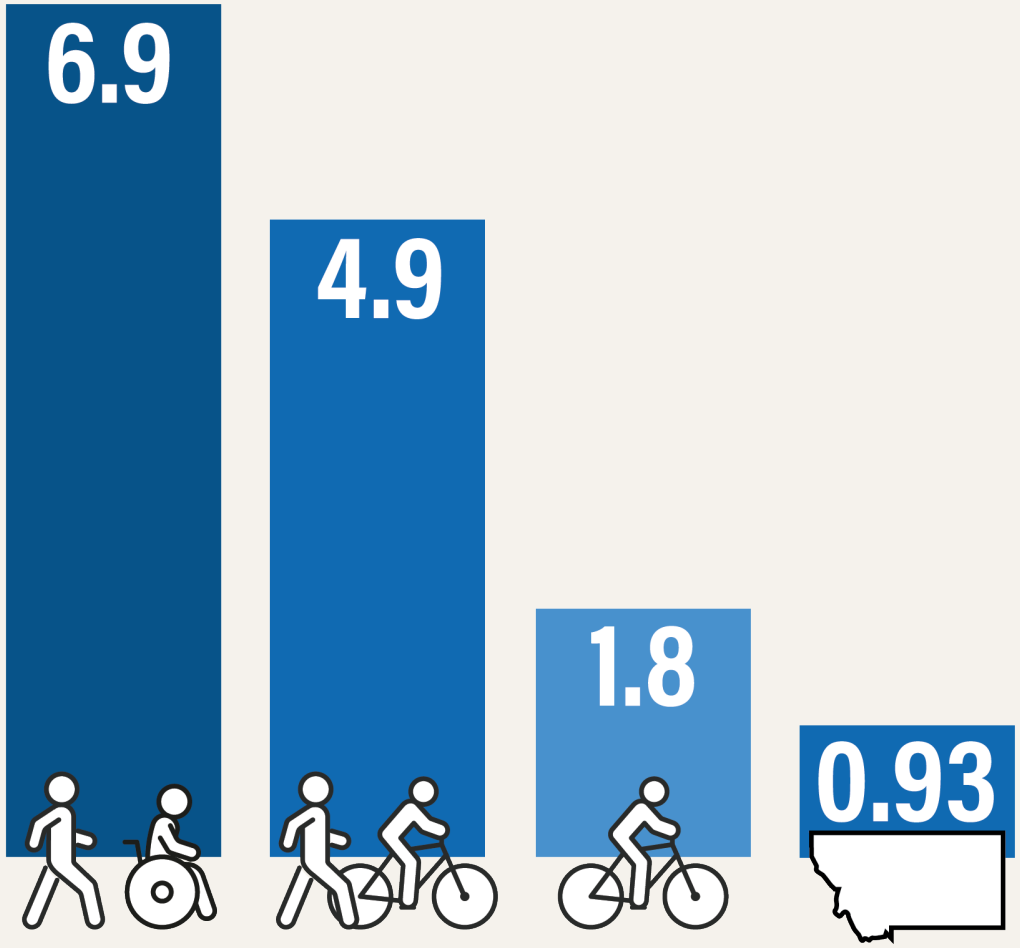
112 Bicycle

3 Unknown/Other

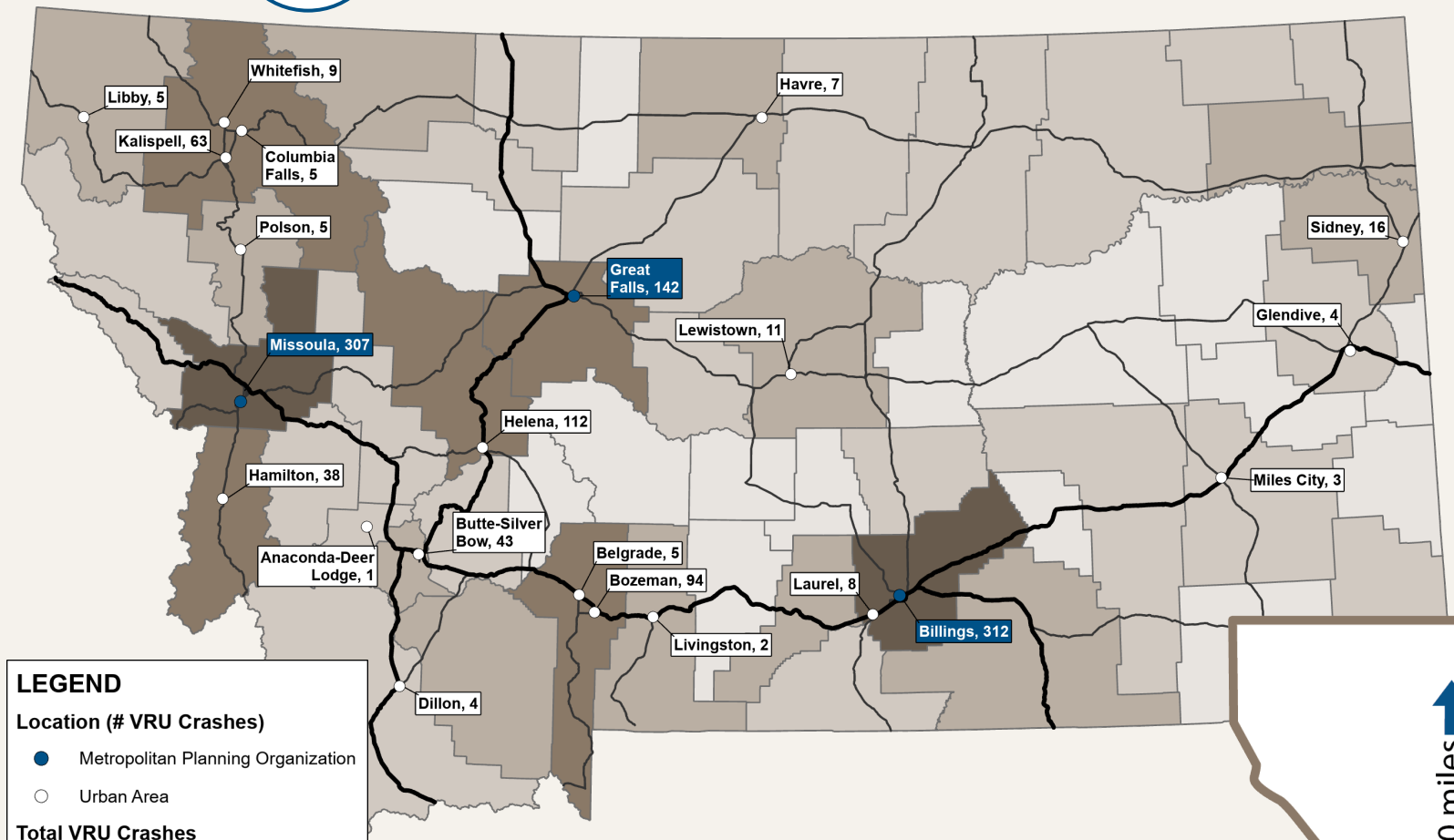
Crash Record Characteristics

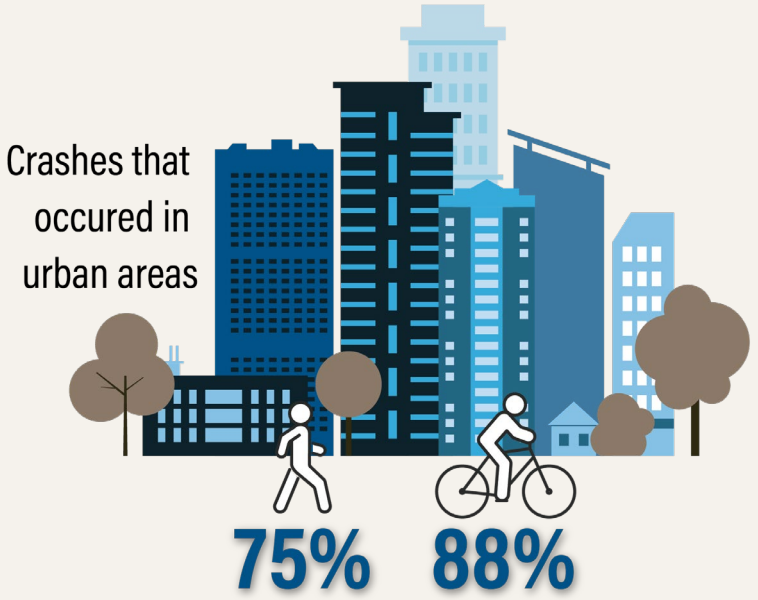
Q: What is a Severity Index?

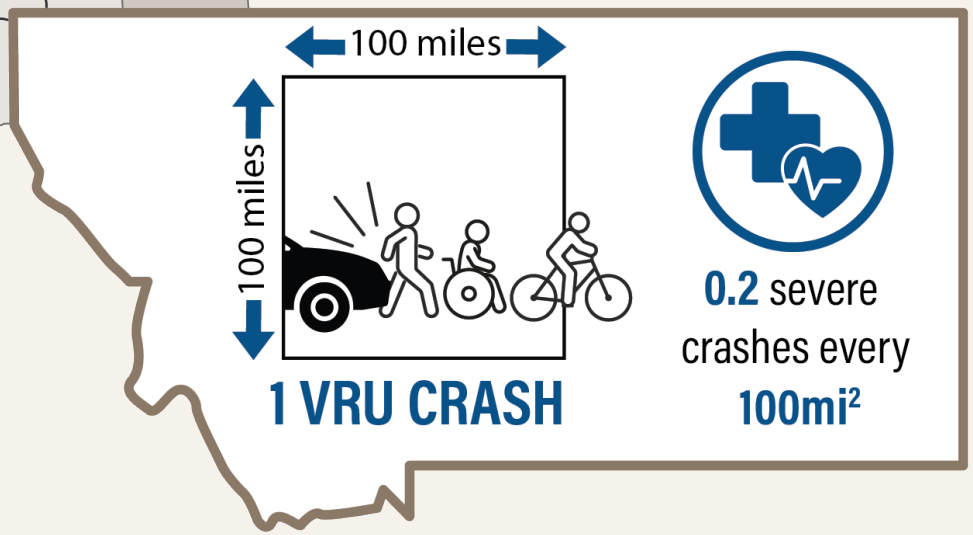
A: Numerical **comparison** with **severe crashes weighted more heavily** compared to property damage only crashes.



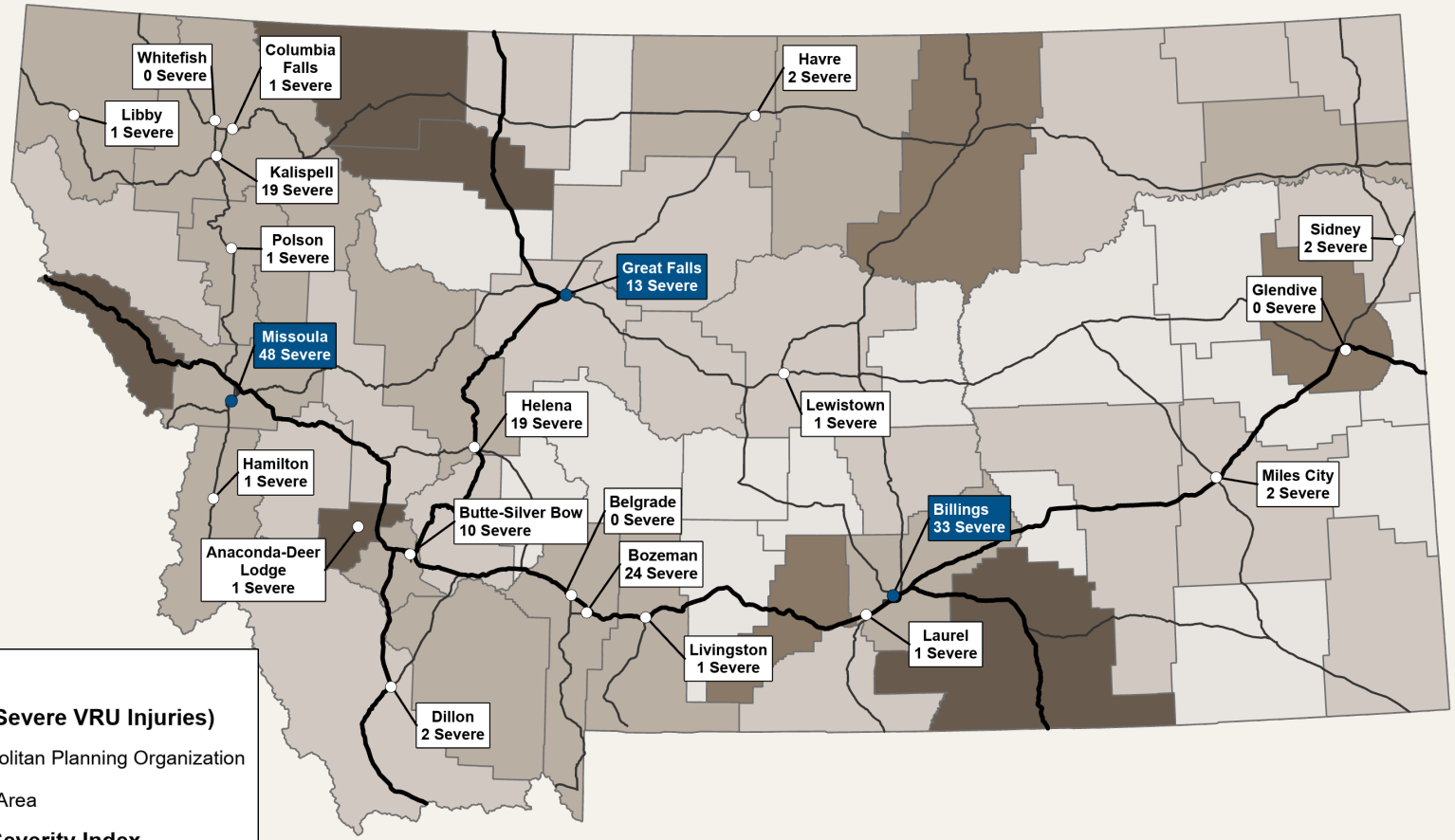
Crash Record Characteristics







Crash Record Characteristics



LEGEND

Location (# Severe VRU Injuries)

- Metropolitan Planning Organization
- Urban Area

VRU Injury Severity Index

- 0
- 1.0 - 3.0
- 3.0 - 6.0
- 6.0 - 12.0
- 12.0 - 24.0
- 24.0+

Crashes that occurred in urban areas

61%

were severe

Crash Record Characteristics

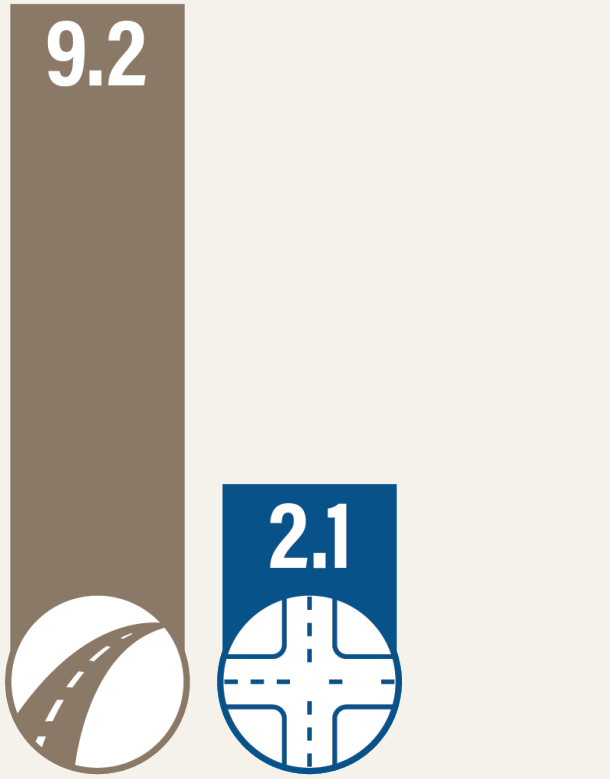
46% of crashes

67% of crashes occurred at intersections

63% of **urban** crashes

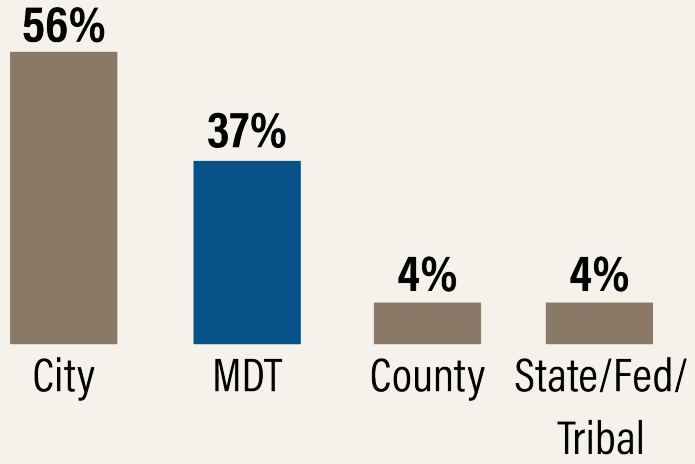
18% of **rural** crashes occurred at intersections

Crash Severity Index

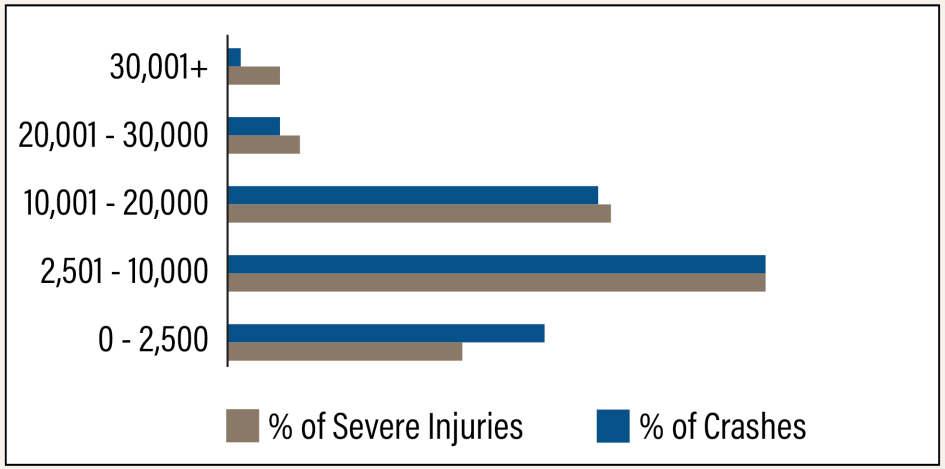


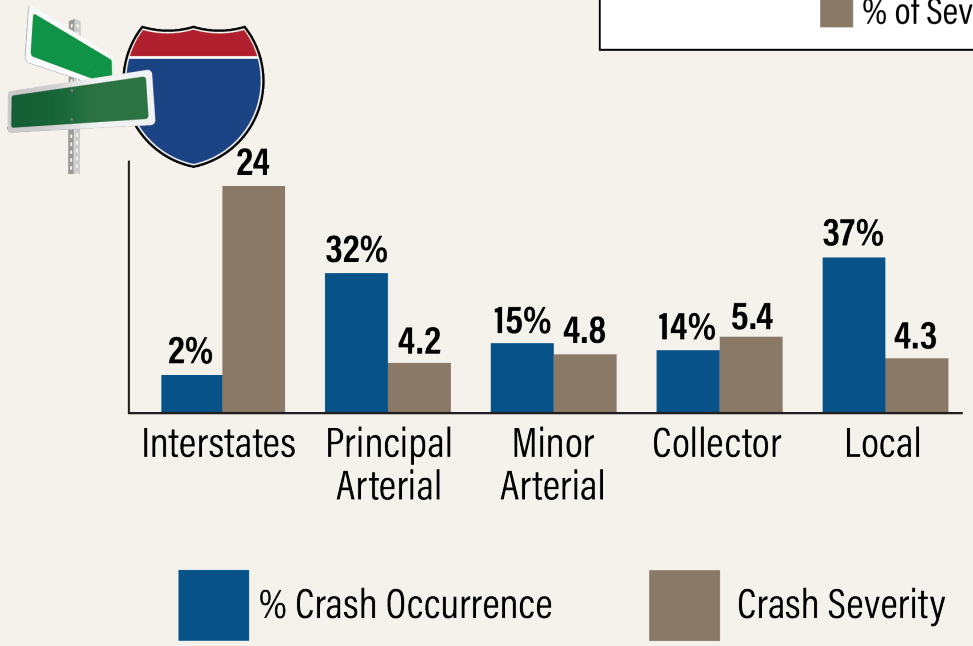
Crash Record Characteristics

Non-Motorist Crashes Occurred on Routes Owned By:



Roadway AADT (2021)

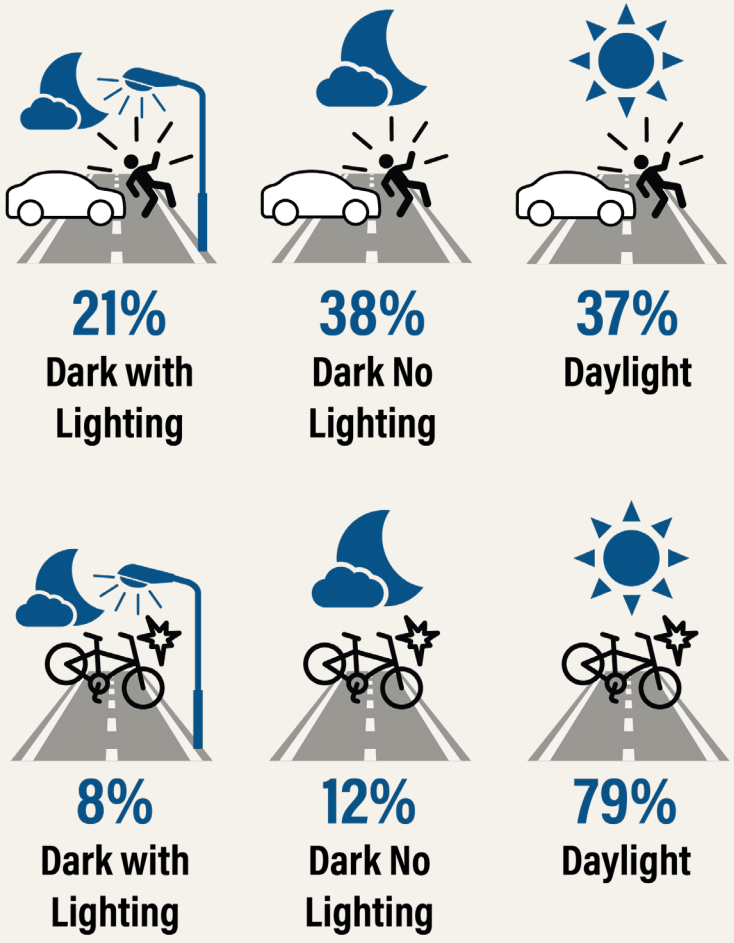


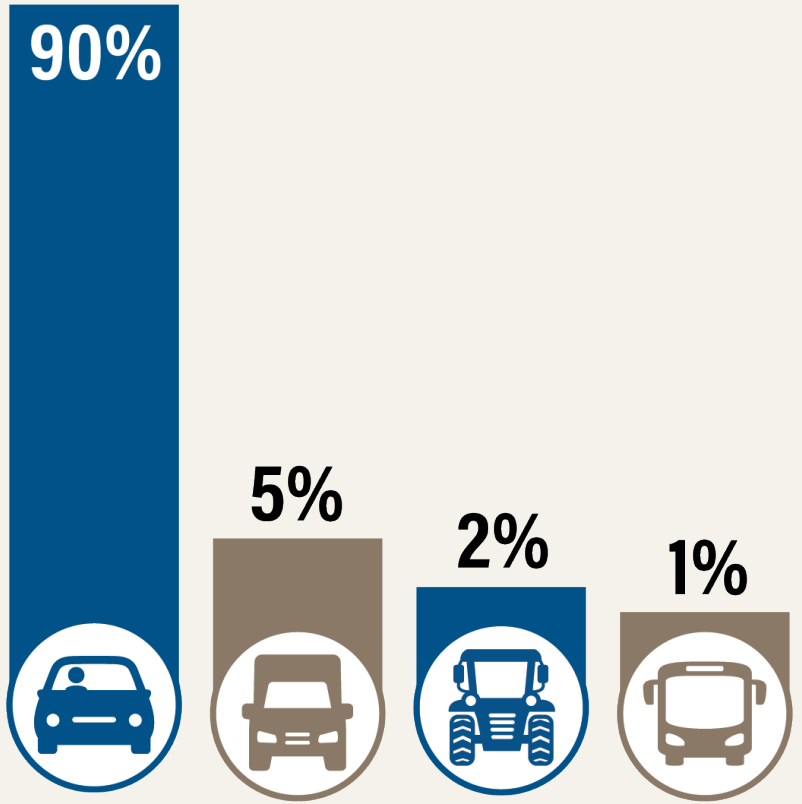


Crash Record Characteristics

Lighting Conditions

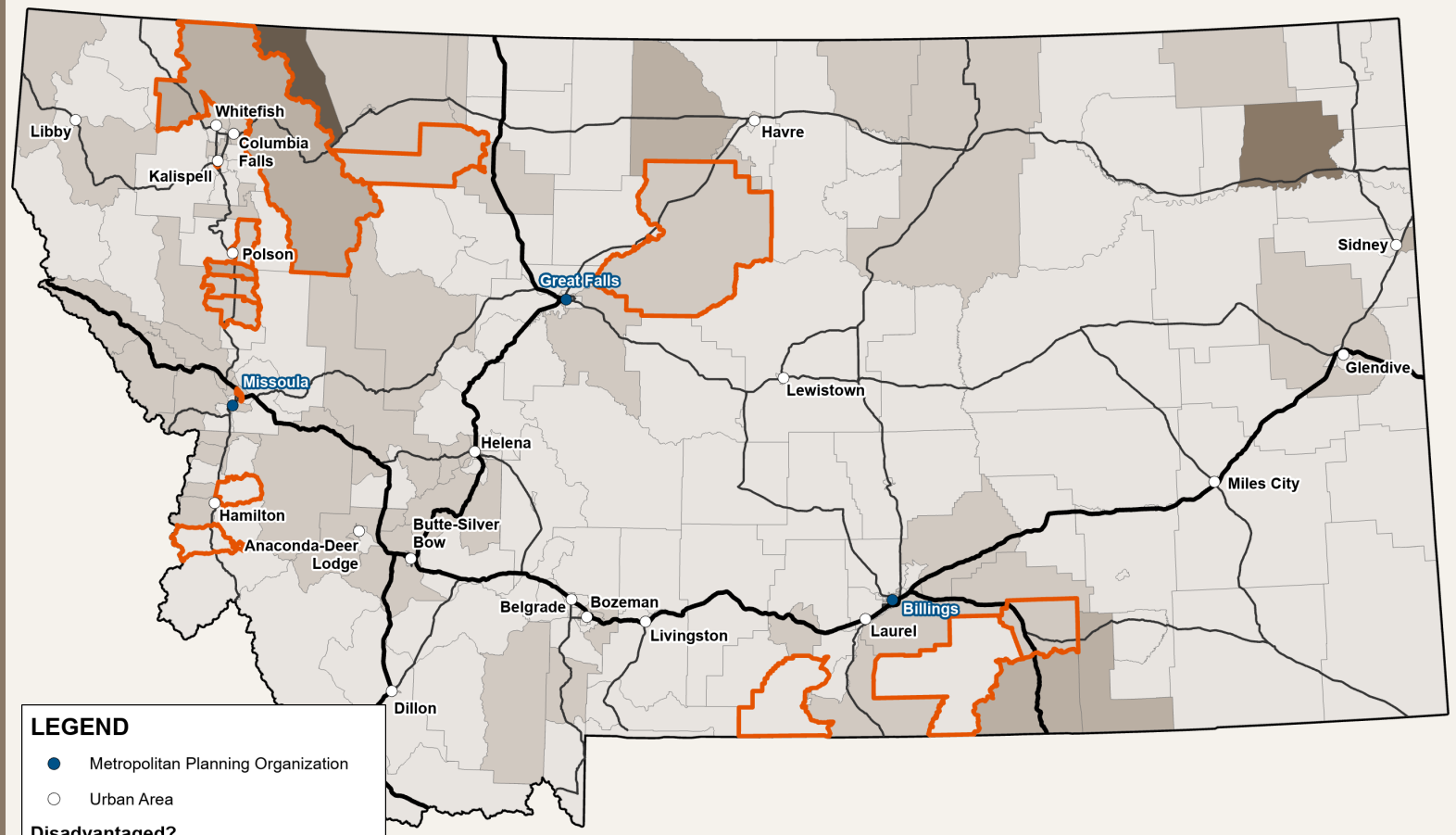
in Fatal and Suspected Serious Injury Crashes





Vehicles Involved in Severe Non-Motorist Crashes

Demographics of Location



Number of Disadvantaged Census Tracts in Each Category

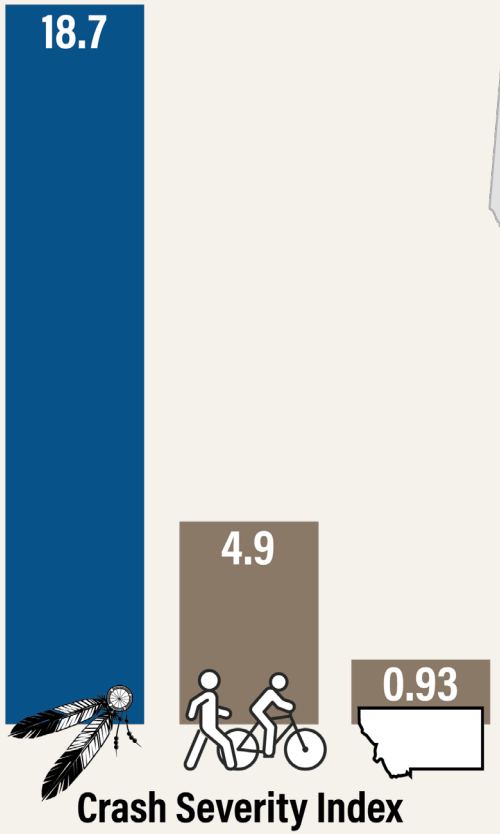
Transportation: communities that spend more, and take longer, to get where they need to go	98
Health: communities with adverse health outcomes, disabilities, and low access to health care services	192
Environmental: communities experiencing disproportionately high levels of pollutants & toxins	10
Economic: communities with high levels of poverty, and low access to jobs and education	86
Resilience: communities vulnerable to hazards caused by climate change	70
Equity: communities with a shared history of discrimination or other forms of disadvantage	19

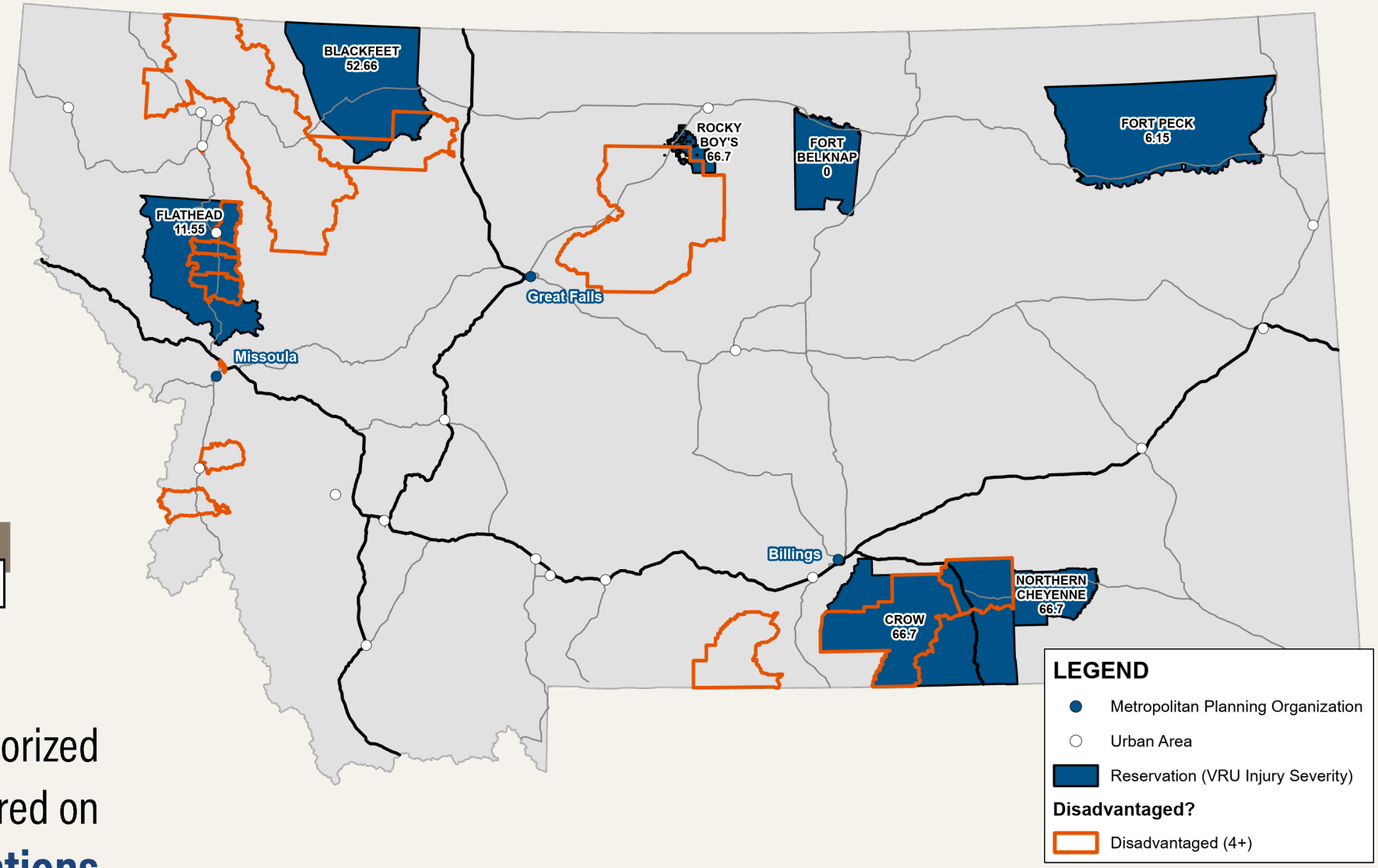
Source: USDOT Justice40 Initiative

TOP 10 TRACTS (Severity/Capita):

- 1 transportation disadvantaged
- 9 health disadvantaged
- 8 economic disadvantaged
- 0 equity disadvantaged
- 2 overall considered disadvantaged

Tribal Areas



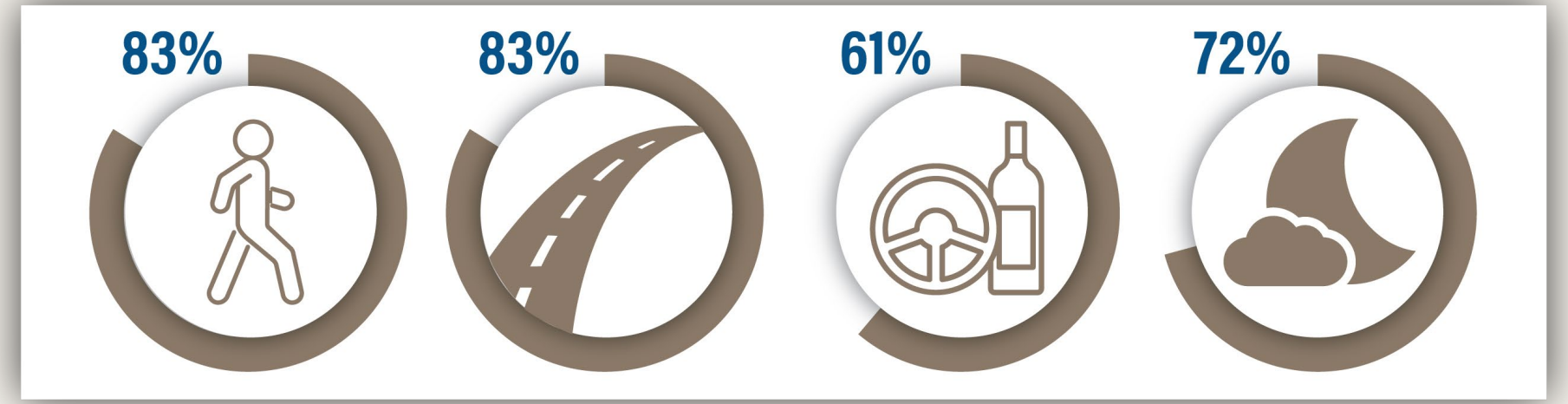


21.4% of fatal non-motorized crashes occurred on **Tribal Reservations**

Tribal Areas

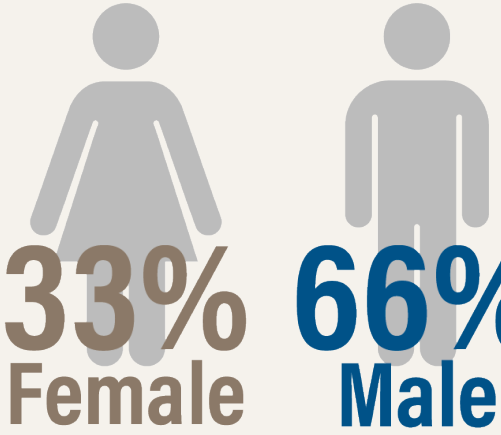
Of the **70** VRU-involved crashes that were reported* on Montana Reservations, **18** were fatal.

Of the **18** fatal crashes reported* on Montana Reservations...



*Non-fatal crashes are chronically underreported on Montana Reservations. The fatal crash data is the most reliable data for Montana's Reservations.

Demographics of Individuals



33% Female **66%** Male

Non-motorists involved in crashes

Of the 1,384 non-motorists involved in crashes, **9%** were **66 years or older**.

Of the 84 non-motorists who died in crashes, **36%** were **Native American**.

Crash Narrative Review

Narrative Review

- 2017-2021 (5 years)
- **Fatal** & **Suspected Serious Injury** Crashes Only (**304**)
- MHP and Local Reports, aerials/street view imagery

Crash Narrative Review

Trends and Key Findings

- Severe Crash with Non-Motorist in Transport: **257 (85%)**
- Severe Crash with Non-Motorist **Not** in Transport: **47 (15%)**
  - Emergency Service/Tow Truck Workers
  - Former Occupant of Disabled/Crashed/Other Vehicle
  - Building Occupant

Crash Narrative Review

Common Circumstances & Contributing Factors

Non-Motorists Only

- Mid-Block Crossings *("Jaywalking")*
- Dark Clothing/No Reflective Gear
- Walking in Roadway/Improperly Riding
- Lack of Dedicated Facility/Maintenance Issue
- Dart/Dash/Jumped From Vehicle
- Medical Condition

Motor Vehicle Occupants Only

- Vehicle Backing
- Speeding

Crash Narrative Review

Common Circumstances & Contributing Factors

Non-Motorists & Motor Vehicle Occupants

- Impairment
- Dark/Not Lighted Conditions/Weather/Other Visibility Issues
- Unattended Minor
- Faulty Vehicle/Equipment
- Distraction/Recklessness/Failure to Yield
- Intentional/Argument/Aggression

VRU Strategies

VRU Strategies

- Organized by the **Safe System Approach**
- Includes countermeasures targeting the "**E's of Safety**"

EDUCATION

ENFORCEMENT

ENGINEERING

EMS

SAFE ROAD USERS

VRU Strategies

Strategy	Example Actions
Reduce **IMPAIRMENT**	• Substance avoidance **education** • Targeted **communication campaigns** • **Partnerships** with addiction specialists/ other social services • **Penalties** for impaired driving and biking
Reduce **DISTRACTION**	• **Education campaigns** focused on safety awareness • Distracted driving/biking/rolling/walking **laws** • **Penalties** for distracted driving/biking/rolling/walking

Increase **VISIBILITY & PROTECTION**	• **Education campaigns & incentives**
	  • Light/white/bright clothing
	  • Reflective gear/headlamps
	  • Safety awareness (e.g., texting, headphones, ear buds)
	  • Rules of the road
	• **Walking buses, crossing guards**

Partners

- Behavioral Health, Substance Abuse, Public Health/Injury Prevention Specialists
- Bicycle Clubs, Bike Shops
- EMS Responders
- Homeless Shelters, Pre-Release Centers
- Law Enforcement
- Local Governments
- MDT
- Medical Providers
- School Districts
- Walking and Disability Groups

SAFE VEHICLES

VRU Strategies

SAFE VEHICLES

Strategy	Example Actions

Enhance bicycle **VISIBILITY & FUNCTION**	• **Education campaigns & incentives**
	  • Bicycle lamps/reflectors
	  • Reflective strips/clothing
	  • Functioning brakes
	• **Tool kits**

Partners

- Bicycle Clubs
- City/County Public Health/Injury Prevention Specialists
- Individuals
- Local Businesses and Community Groups
- Local Governments
- MDT
- School Districts

SAFE ROADS

SAFE ROADS

VRU Strategies

Strategy	Example Actions
Reduce **CROSSING DISTANCES**	• **Roadway** reconfiguration • **Curb** bulbouts • Pedestrian **refuge islands** • **Roundabouts**
Increase **CROSSING VISIBILITY & ACCESSIBILITY**	• Accessible **curb ramps** • High-visibility **pavement markings** • Rapid Rectangular **Flashing Beacons** (RRFBs) • Pedestrian **Hybrid Beacon** (PHB)/High-intensity Activated crossWalKs (HAWKs) • **Intelligent Transportation Systems** (ITS)
Enhance **SIGNALIZED CROSSINGS**	• Accessible **curb ramps** • High-visibility **pavement markings** • Pedestrian **push buttons**, audible/visual **cues** • **Leading Pedestrian Intervals** (LPIs) • Increased **pedestrian phase**

Partners

- Local Governments
- MDT

VRU Strategies

SAFE ROADS

Strategy	Example Actions	
Increase **ROADWAY VISIBILITY**	• Street **lighting** • High-visibility **pavement markings** • **Signage**	• **Vegetation** management • **Daylighting** intersections • **Snow removal** management
Enhance **ON-ROAD BICYCLE FACILITIES**	• **Bike lanes** • Sharrows, bike route **signage** • Widened **shoulders**	• Appropriately placed shoulder **rumble strips** • **Maintenance** of facilities
Enhance **OFF-ROAD VRU FACILITIES**	• Separated **bike lanes** • **Shared use paths** • **Separated facilities** (boulevards, raised curbs, planters, or concrete barriers)	• **Sidewalks** with curb ramps • **Grade separation** (overpasses, underpasses, pedestrian bridges) • **Maintenance** of facilities
Designate **NONMOTORIZED CORRIDORS**	• Low-volume/low-speed walking & bicycle **routes** • **Connected** facilities	• **Signage, striping** • **Educational** materials

Partners

- Local Governments
- MDT

SAFE SPEEDS

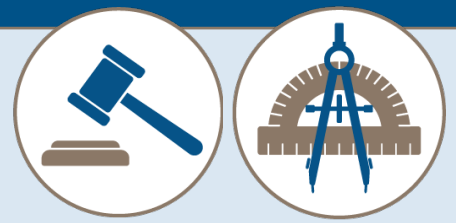
VRU Strategies

SAFE SPEEDS

Strategy	Example Actions
Review **POSTED SPEED LIMITS**	• **Speed studies** • **Special speed zones** (schools, high-use areas, work zones)

Reduce **VEHICULAR TRAVEL SPEEDS**	• **Traffic calming**
	  • Speed bumps/humps/speed tables/raised crosswalks
	  • Visual friction (paint, art, vegetation, objects)
	  • Narrowed roadways/curb extensions
	  • Roundabouts/traffic circles
	  • Horizontal shifts
	  • ITS/dynamic speed feedback signage
	• **Enforcement**

Partners



- Law Enforcement
- Local Governments
- MDT
- School Districts

POST-CRASH CARE

VRU Strategies

SAFE SPEEDS

Strategy	Example Actions
Improve **POST-CRASH CARE for INJURED VRUs**	• **Bystander** training and education • **Dispatch** training • Post-crash **arrival/transport** and continued **EMS/trauma** care • **On-scene** and **hospital/clinic** care • **Database** enhancements • **Policy** development and **Legislative** action
Enhance **EMERGENCY REPONDER SAFETY**	• ITS – portable, dynamic **signage** • **Construction cones, reflective striping, signage** • Reflective **strips/clothing/PPE** • Traffic Incident Management (TIM) **training** • **Educational** campaigns • **Enforcement**

Partners

- City/County Public Health/Injury Prevention Specialists
- DPHHS
- Emergency Responders
- Individuals
- Law Enforcement
- Local Governments
- MDT

Implementation

Photo source: Alta

Implementation

Funding

- Combination of **federal, state, local, Tribal, and private** funding sources

Coordination

- Support from **E's of Safety** and other **partners**
- **Shared responsibility** (funding, resources, expertise, and personnel)

Future Updates

- Included as addendum to **Comprehensive Highway Safety Plan**
- Updated every **5 years**
- Continue to gather **data**, refine **analysis**, identify **high-risk areas**, document **progress**