



Regional Working Group Meeting #2

February 10, 2023



NWA Regional
**VISION
ZERO**

Introductions



Safety Vocabulary

- ***Crashes*** not accidents
- ***KSI*** – Killed or Serious Injury Crashes
- ***Proven Safety Countermeasure*** - an action designed to reduce KSI crashes
- ***Systemic Safety*** – applying changes to a system based on risk and not just history

Proven Safety Countermeasure

Selection Tool



The Safe System Approach

- Aims to eliminate fatal and serious injuries for all road users by:
 - accommodating human mistakes
 - keeping impacts on the human body at tolerable levels



Principles



Death/serious injury
is unacceptable



Humans make
mistakes



Humans are
vulnerable



Responsibility is
shared



Safety is proactive



Redundancy
is crucial

Elements



Safe road users



Safe vehicles



Safe speeds



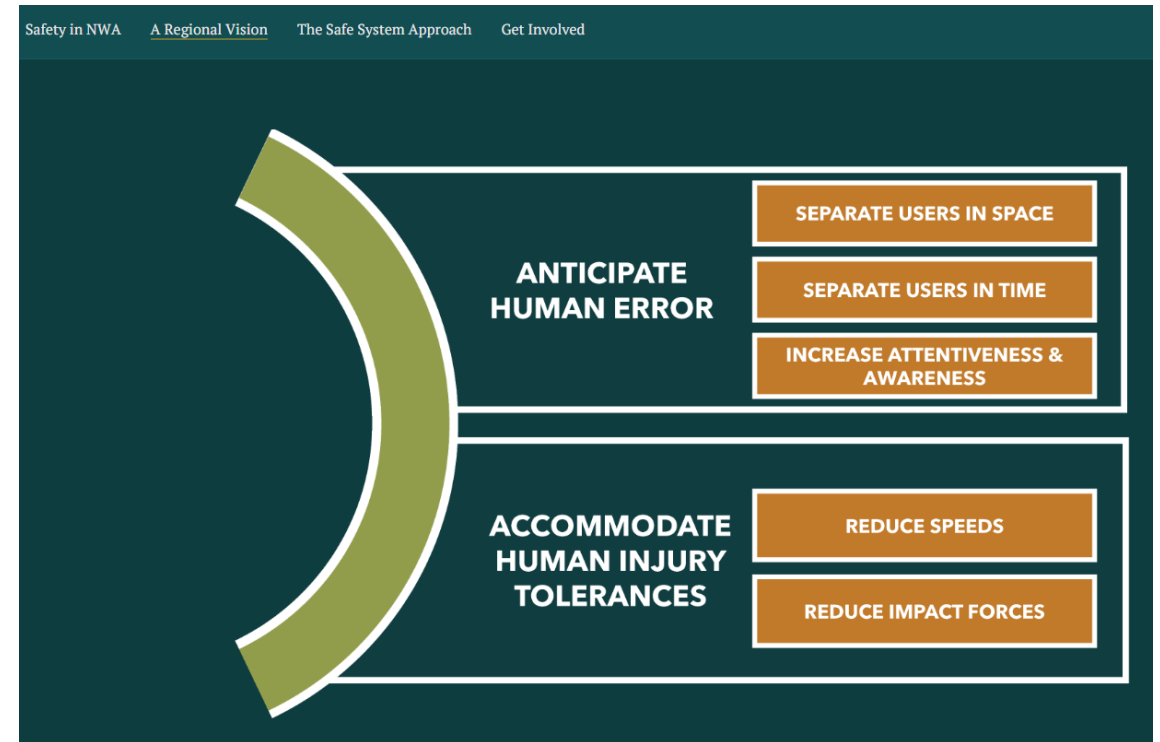
Safe roads



Post-crash care

Preview of Project StoryMap

- <https://storymaps.arcgis.com/stories/5333eabee244383b2ec4c70af467f17>



Crash Type Examples

- Pedestrians
 - Multiple Threat
 - Turning Vehicles
- Bicyclists
 - Right Hook
 - Vehicle Overtaking Bicycle
- Roadway Departures
 - Ran off road (with or without curve)
- Intersections
 - Left Turn
 - Sideswipe



Safety Focus Areas

- Speed Management
- Pedestrian/Bicyclist
- Roadway Departure
- Intersections
- Crosscutting



**Are there countermeasures
that are working in your
community?**

Proactive vs Reactive



Road Diet/Roadway Reconfiguration



Athens, GA

A classic Road Diet typically involves converting an existing four-lane undivided roadway to a three-lane roadway consisting of two through lanes and a center two-way left-turn lane (TWLTL).

Road Diet/Roadway Reconfiguration



PROACTIVE



Athens, GA

Safety
Focus
Area

Pedestrian/
Bicycle

* Speed
Management

Road Diet/Roadway Reconfiguration



Athens, GA

PROACTIVE

REACTIVE

Safety Focus Area

Crash Type

Pedestrian/
Bicycle

Dart/Dash
Midblock

Multiple
Threat/
Trapped

* Speed
Management

** Bicycle
Right Hook

** Vehicle
Overtaking
Bicycle

Road Diet/Roadway Reconfiguration



Athens, GA

PROACTIVE

REACTIVE

Safety Focus Area

Pedestrian/
Bicycle

* Speed Management

Crash Type

Dart/Dash
Midblock

Multiple
Threat/
Trapped

** Bicycle
Right Hook

** Vehicle
Overtaking
Bicycle

Expected
Crash
Reduction

19-47% of
all crashes

Road Diet/Roadway Reconfiguration



Athens, GA

PROACTIVE

REACTIVE

Safety Focus Area

Pedestrian/
Bicycle

* Speed Management

Crash Type

Dart/Dash
Midblock

Multiple
Threat/
Trapped

** Bicycle
Right Hook

** Vehicle
Overtaking
Bicycle

Expected
Crash
Reduction

19-47% of
all crashes

Relative
Cost

\$

Medians and Pedestrian Refuge Islands



Xenia, OH

A median is the area between opposing lanes of traffic, excluding turn lanes. Medians in urban and suburban areas can be defined by pavement markings, raised medians, or islands to separate motorized and non-motorized road users.

A pedestrian refuge island (or crossing area) is a median with a refuge area that is intended to help protect pedestrians who are crossing a road.

Medians and Pedestrian Refuge Islands



PROACTIVE

Safety
Focus
Area

Pedestrian/
Bicycle



Xenia, OH

Medians and Pedestrian Refuge Islands



PROACTIVE

REACTIVE



Safety
Focus
Area

Crash
Type

Pedestrian/
Bicycle

Dart/Dash
Midblock

Xenia, OH

Medians and Pedestrian Refuge Islands



PROACTIVE

REACTIVE



Xenia, OH

Safety Focus Area

Pedestrian/
Bicycle

Crash Type

Dart/Dash
Midblock

Expected Crash Reduction

* 46% of pedestrian crashes

** 56% of pedestrian crashes

Medians and Pedestrian Refuge Islands



PROACTIVE

REACTIVE



Xenia, OH

Safety Focus Area

Pedestrian/
Bicycle

Crash Type

Dart/Dash
Midblock

Expected Crash Reduction

* 46% of pedestrian crashes

** 56% of pedestrian crashes

Relative Cost

\$-\$\$

Bicycle Lanes



San Francisco, CA

A Bicycle Lane or Bike Lane is defined as a portion of the roadway that has been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes enable bicyclists to ride at their preferred speed without interference from prevailing traffic conditions and facilitate predictable behavior and movements between bicyclists and motorists.

Bicycle Lanes



PROACTIVE

Safety
Focus
Area

Pedestrian/
Bicycle



San Francisco, CA

Bicycle Lanes



San Francisco, CA

PROACTIVE

Safety
Focus
Area

Pedestrian/
Bicycle

REACTIVE

Crash
Type

Vehicle
overtaking
bicycle

Bicycle Lanes



San Francisco, CA

PROACTIVE

REACTIVE

Safety Focus Area

Pedestrian/
Bicycle

Crash Type

Vehicle overtaking bicycle

Expected Crash Reduction

* 49%
of total
crashes

** 30%
of total
crashes

Bicycle Lanes



San Francisco, CA

PROACTIVE

REACTIVE

Safety Focus Area

Pedestrian/
Bicycle

Crash Type

Vehicle overtaking bicycle

Expected Crash Reduction

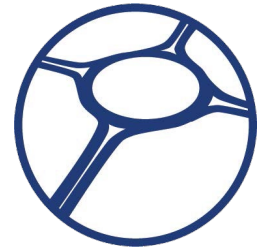
* 49%
of total
crashes

** 30%
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crashes

Relative Cost

\$-\$\$

Roundabouts

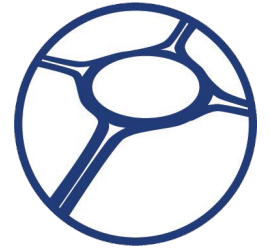


Woodinville, WA

A Roundabout is a type of intersection with a circular configuration that safely and efficiently moves traffic. The lower vehicle speeds associated with a roundabout reduce conflicts and can create a more suitable environment for walking and bicycling.

Roundabouts can be implemented under a wide range of traffic conditions. They can replace signals, two-way stop controls, and all-way stop controls

Roundabouts



PROACTIVE

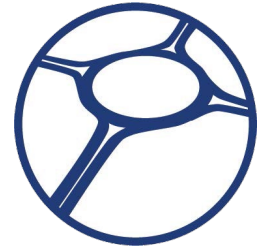
Safety
Focus
Area

Intersections



Woodinville, WA

Roundabouts



Woodinville, WA

PROACTIVE

Safety
Focus
Area

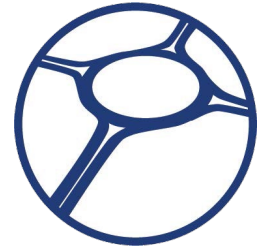
Intersections

REACTIVE

Crash
Type

Angle Left-
Turn

Roundabouts



Woodinville, WA

PROACTIVE

REACTIVE

Safety Focus Area

Crash Type

Expected Crash Reduction

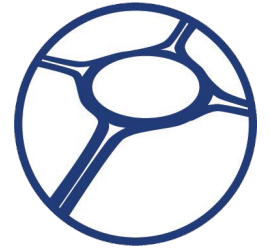
Intersections

Angle Left-Turn

* 82% reduction in fatal & injury crashes

** 78% reduction in fatal & injury crashes

Roundabouts



Woodinville, WA

PROACTIVE

REACTIVE

Safety Focus Area

Crash Type

Expected Crash Reduction

Relative Cost

Intersections

Angle Left-Turn

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\$\$-
\$\$\$\$

Enhanced Delineation for Horizontal Curves



Raleigh, NC

Enhanced delineation at horizontal curves include a variety of potential strategies. Treatment strategies range from sequential dynamic chevrons (pictured) to delineators and retroreflective strips on sign posts.

Treatments can alert drivers to upcoming curves, the direction and sharpness of the curve, and appropriate operating speed.

Enhanced Delineation for Horizontal Curves



PROACTIVE



Raleigh, NC

Safety
Focus
Area

Roadway
Departure

Enhanced Delineation for Horizontal Curves



Raleigh, NC

PROACTIVE

REACTIVE

Safety
Focus
Area

Crash
Type

Roadway
Departure

Ran Off the
Road (At
Curve)

Enhanced Delineation for Horizontal Curves



Raleigh, NC

PROACTIVE

REACTIVE

Safety Focus Area

Roadway Departure

Crash Type

Ran Off the Road (At Curve)

Expected Crash Reduction

* 16% reduction in fatal & injury crashes
25% reduction in night-time crashes

** 60% reduction in fatal & injury crashes

Enhanced Delineation for Horizontal Curves



Raleigh, NC

PROACTIVE

REACTIVE

Safety Focus Area

Roadway Departure

Crash Type

Ran Off the Road (At Curve)

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Relative Cost

\$-\$\$

Has your community been proactive in deploying any safety countermeasures?

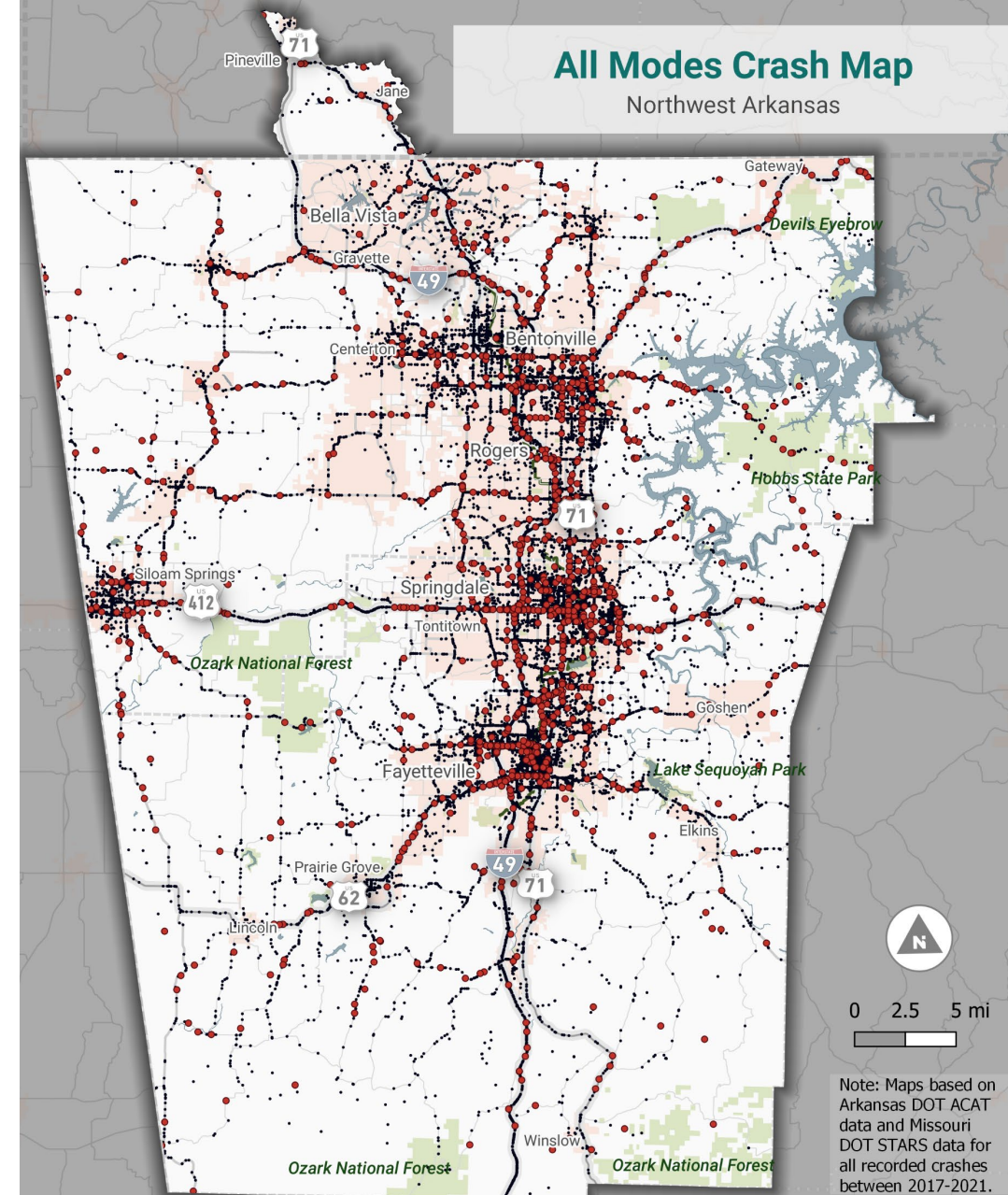
Why or why not?

NWA High Injury Network (HIN)



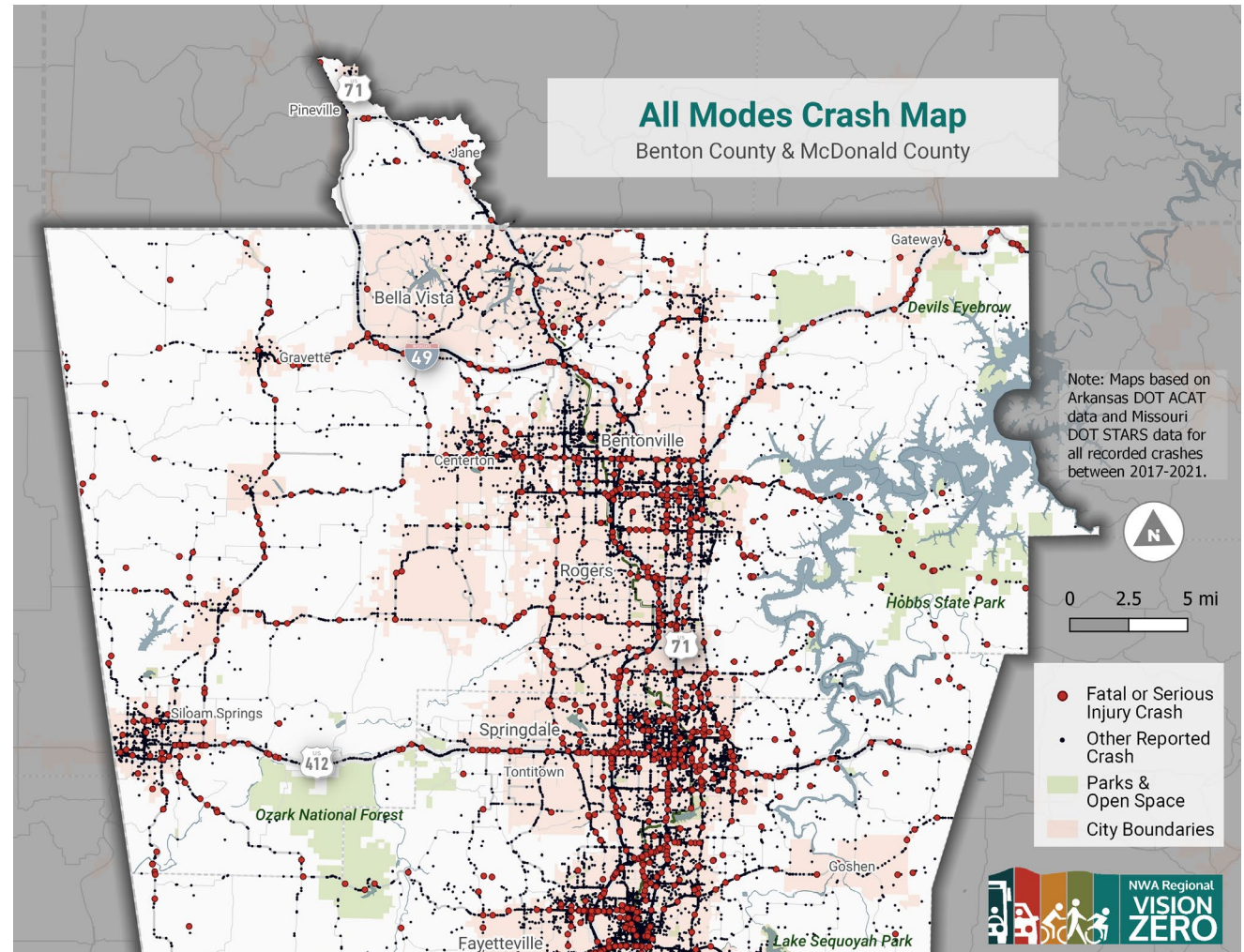
High Injury Network (HIN) Development

- These streets represent the corridors in NWA with the highest number of fatal and serious injury crashes



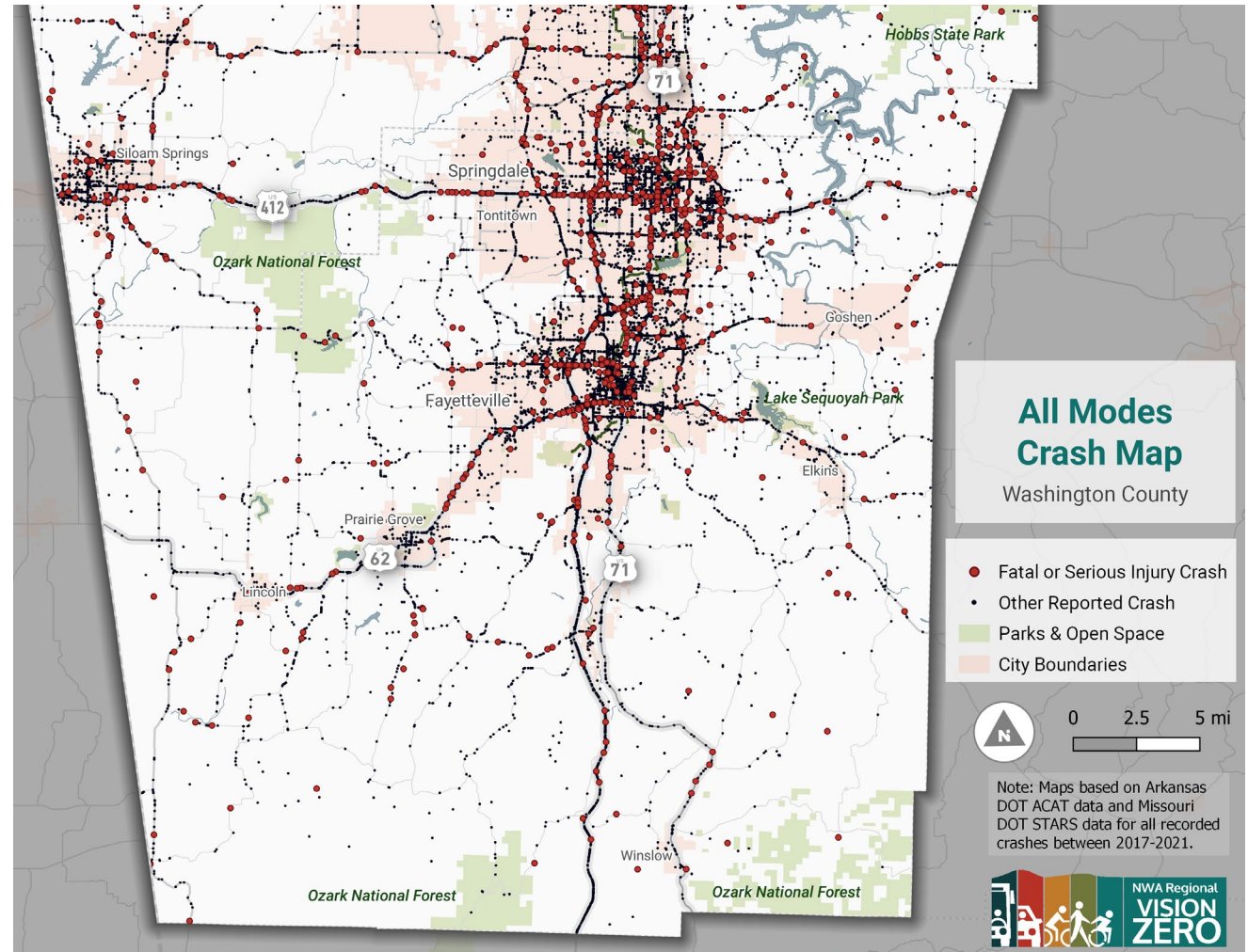
Map crashes

- Geolocate all reported crashes from 2017-2021
- Benton and McDonald Counties



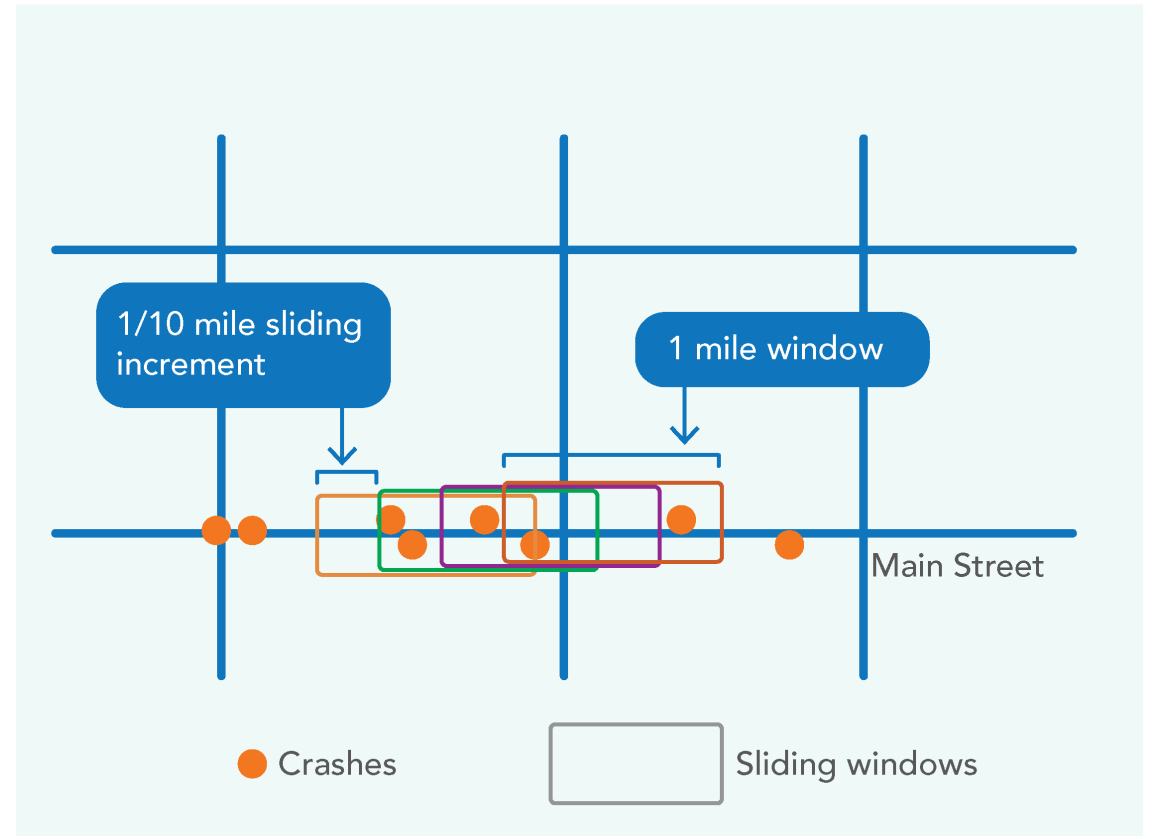
Map Crashes

- Geolocate all reported crashes from 2017-2021
- Washington County



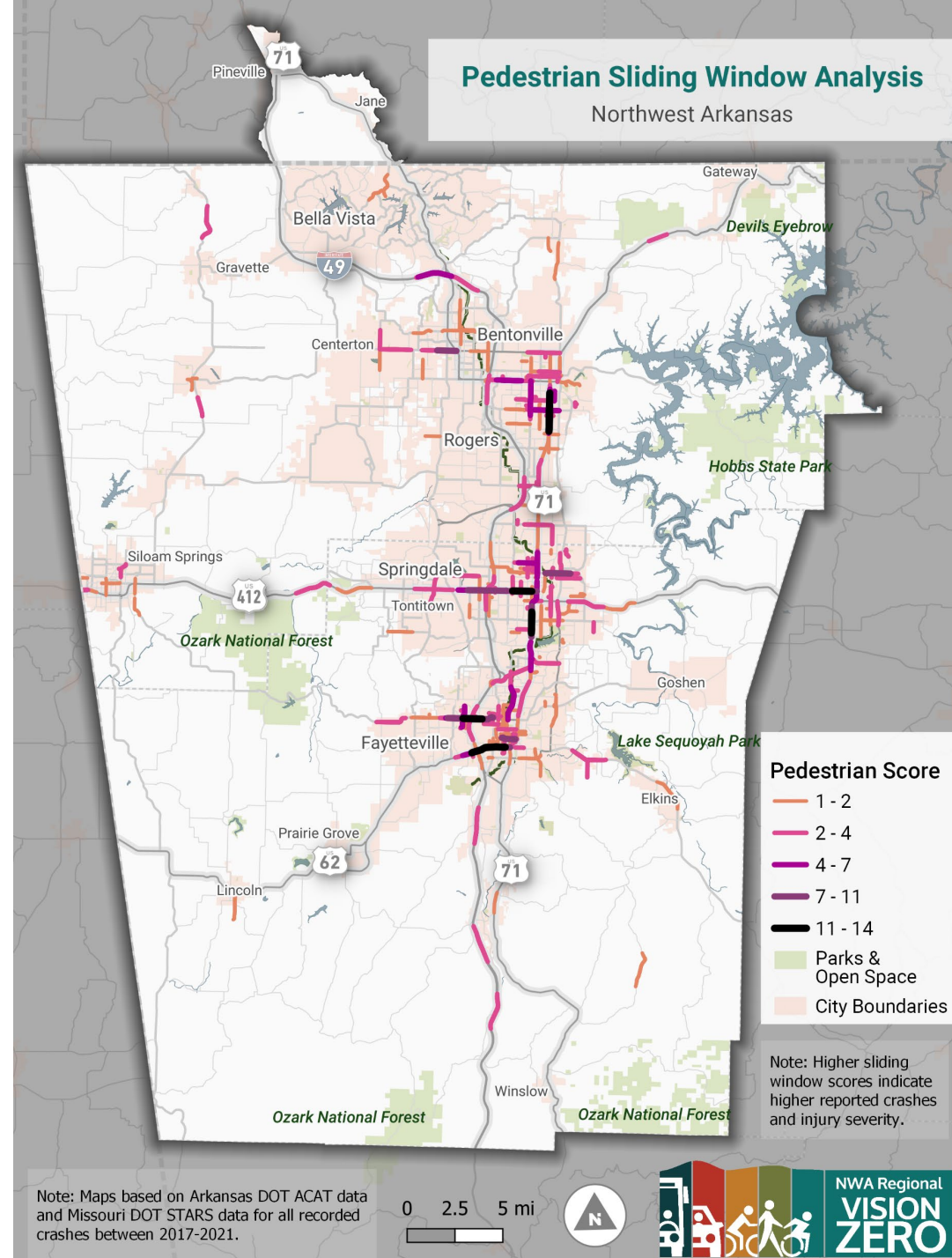
Sliding Window

- Conduct Sliding Window Analysis for each mode
 - Done for pedestrian, bicycle, motorcycle, and motor vehicle based on most vulnerable road user involved in crash
 - Sliding windows assign a score to areas based on a higher crash density and injury severity
 - Scoring:
 - Fatal (K) and Serious/Suspected Serious Injury (A) crashes = 3
 - Suspected Minor Injury (B) = 1
 - Possible Injury (C)/No Injury (0) = 0



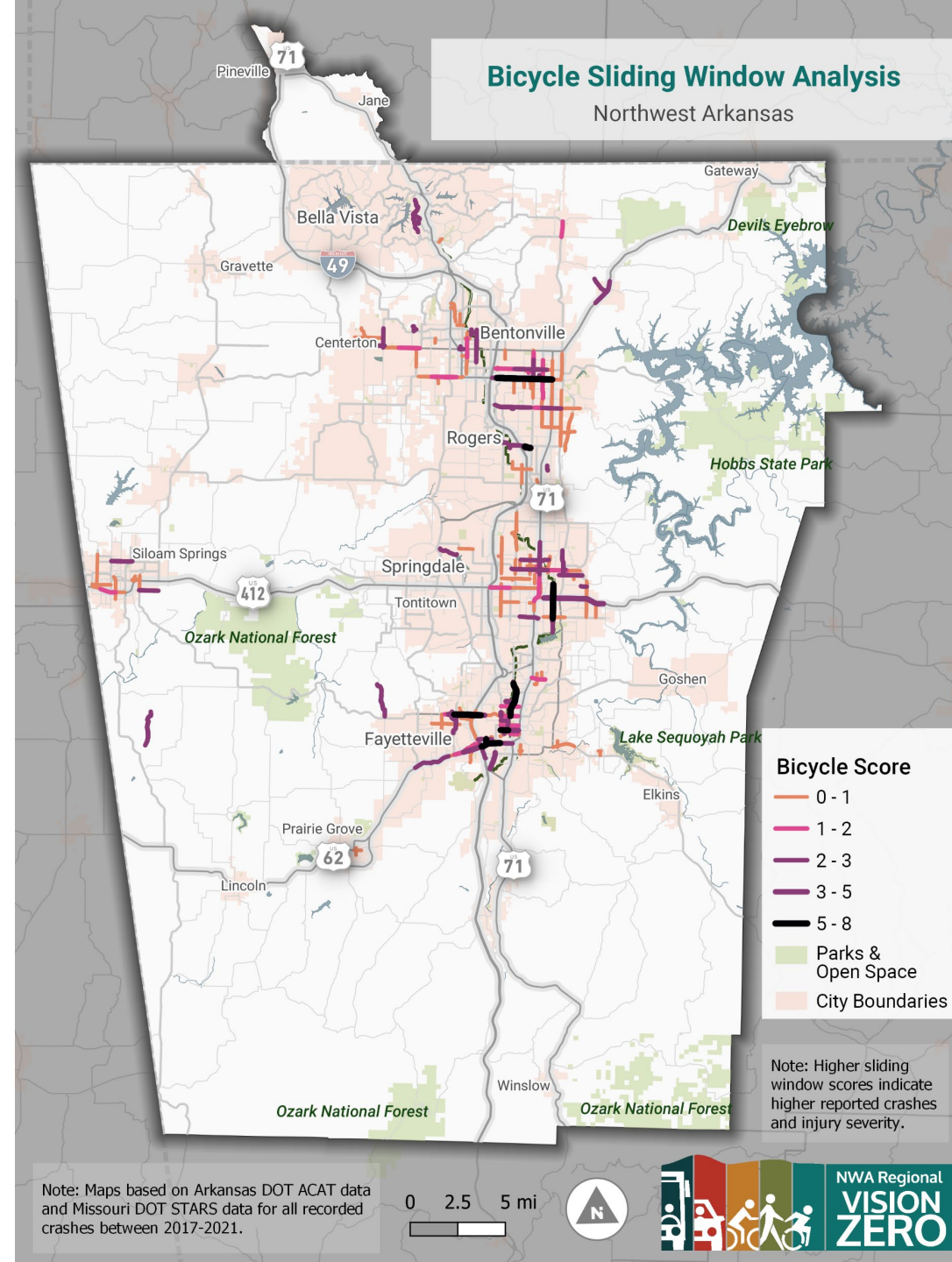
Sliding Window Thresholds

- Thresholds for each mode help to identify key corridors where safety risk is the highest.
- HIN thresholds for NWA:
 - **Pedestrian: 4**
 - Bicycle: 4
 - Motorcycle: 7
 - Motor Vehicle: 15



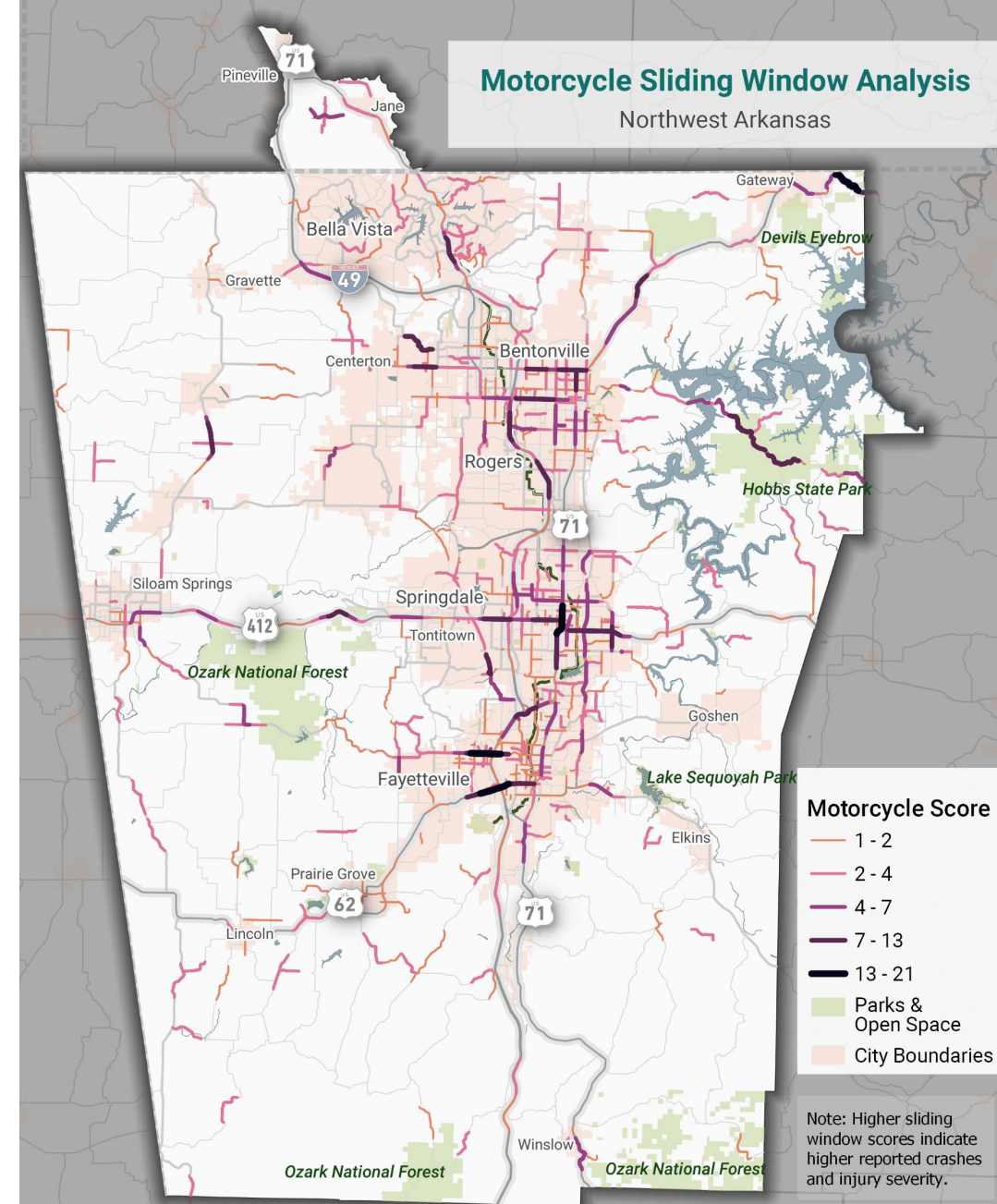
Sliding Window Thresholds

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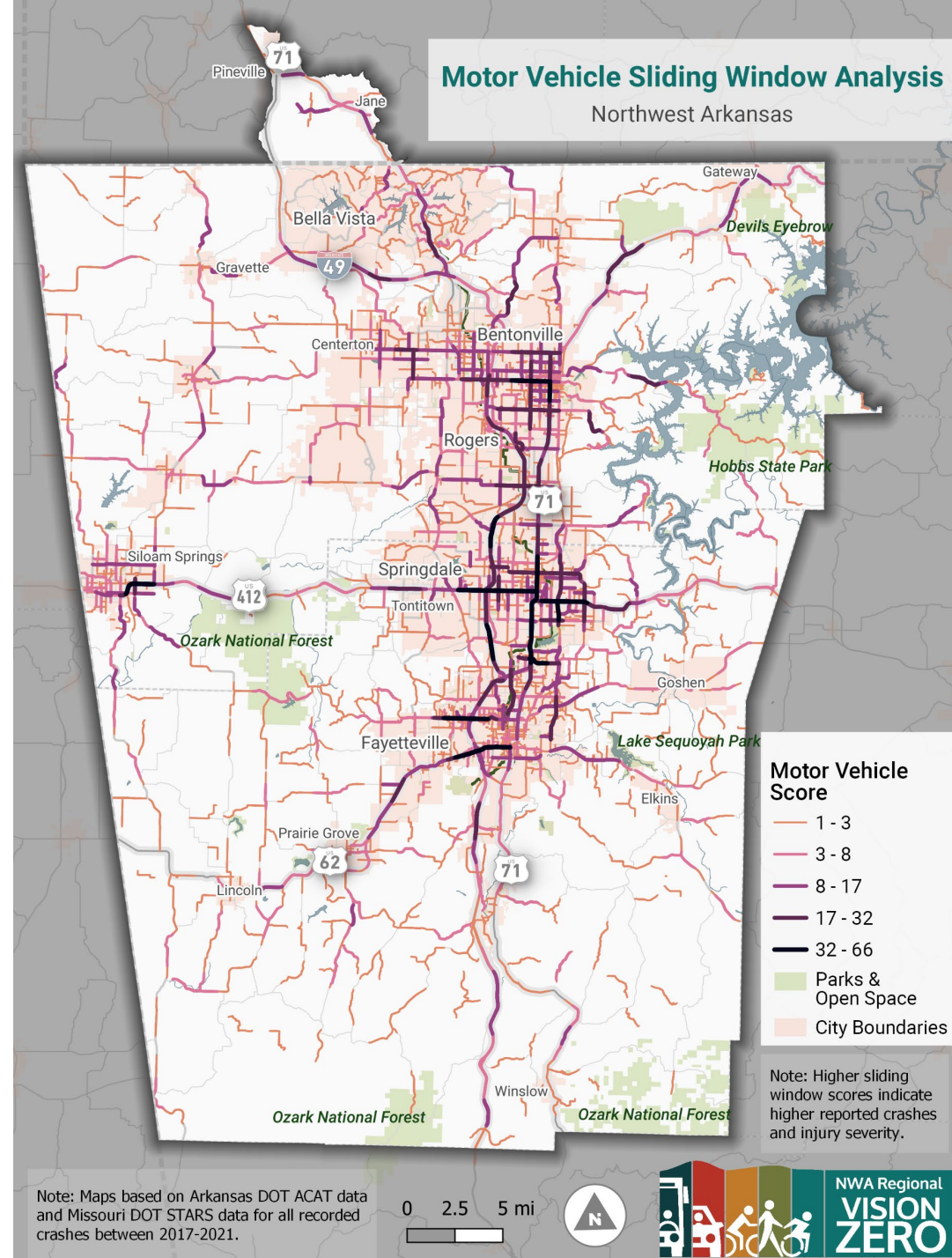
Sliding Window Thresholds

- Thresholds for each mode help to identify key corridors where safety risk is the highest.
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 - Bicycle: 4
 - **Motorcycle: 7**
 - Motor Vehicle: 15



Sliding Window Thresholds

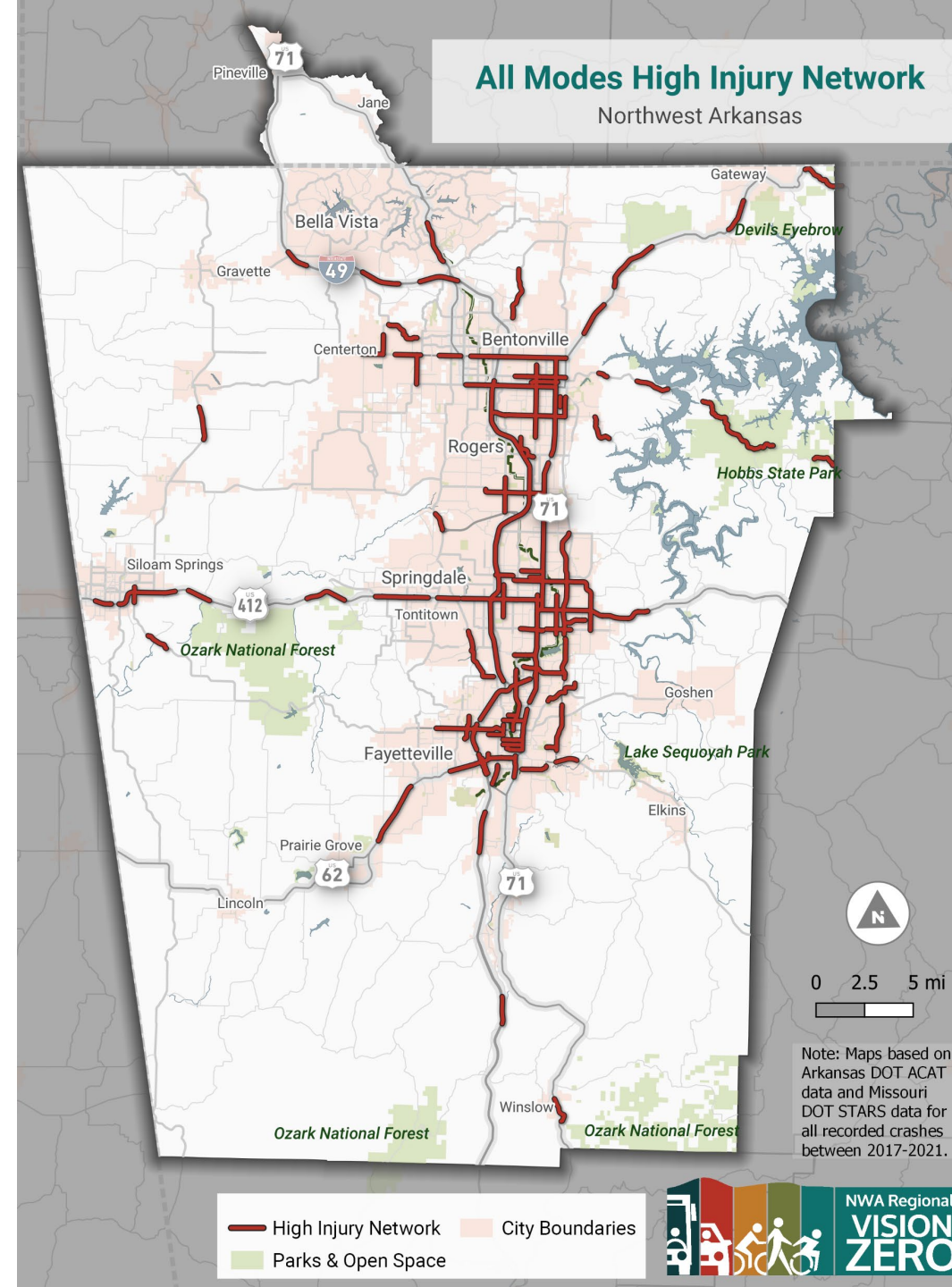
- Thresholds for each mode help to identify key corridors where safety risk is the highest.
- HIN thresholds for NWA:
 - Pedestrian: 4
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 - Motorcycle: 7
 - **Motor Vehicle: 15**



**Do you have any questions
about how a HIN is developed?**

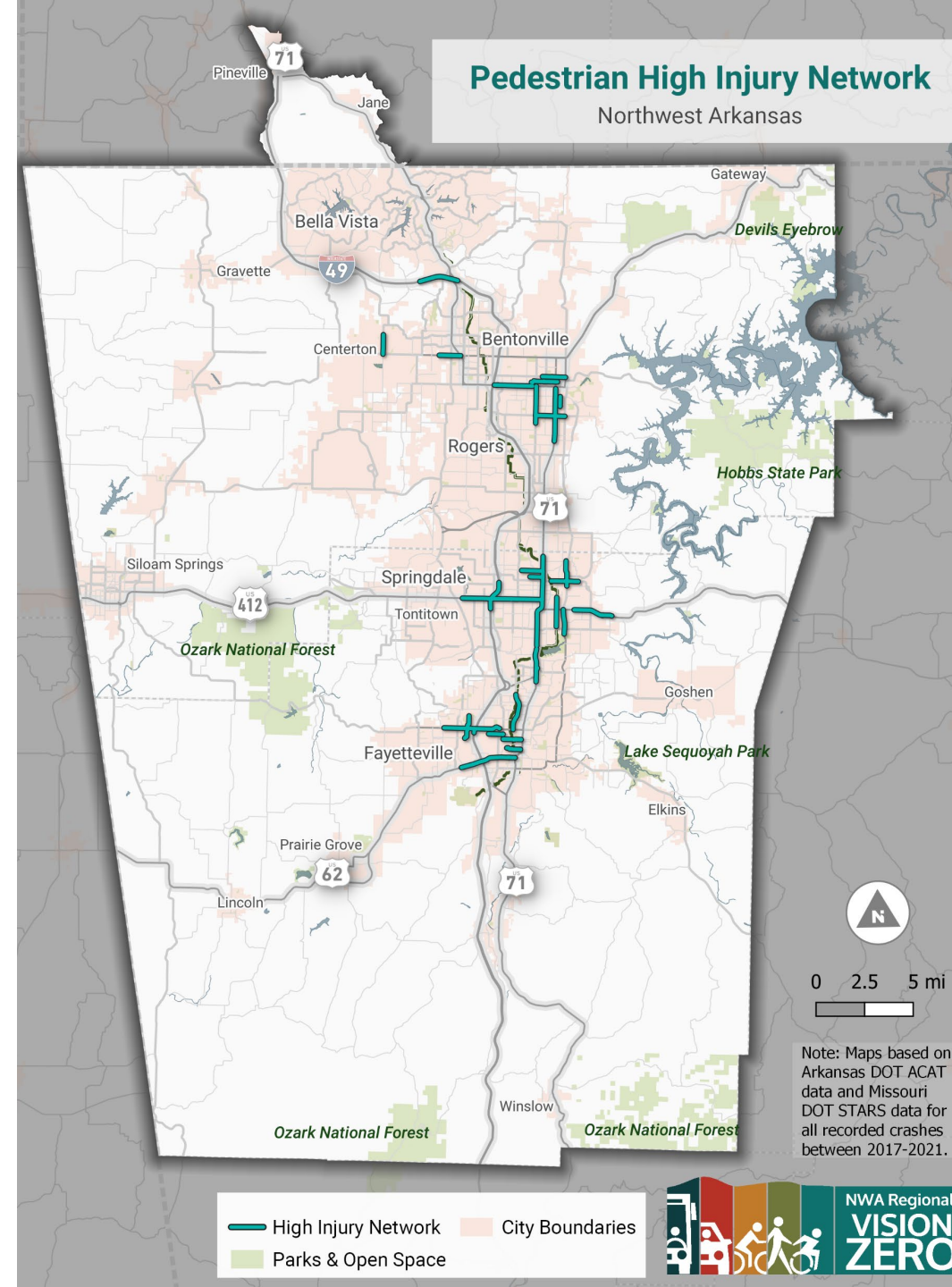
HIN Mapping

- Combine the segments with the scores noted above and review false-positive segments
- Maps include:
 - Pedestrian HIN
 - Bicyclist HIN
 - Motorcycle HIN
 - Motor Vehicle HIN
 - Combined Regional HIN



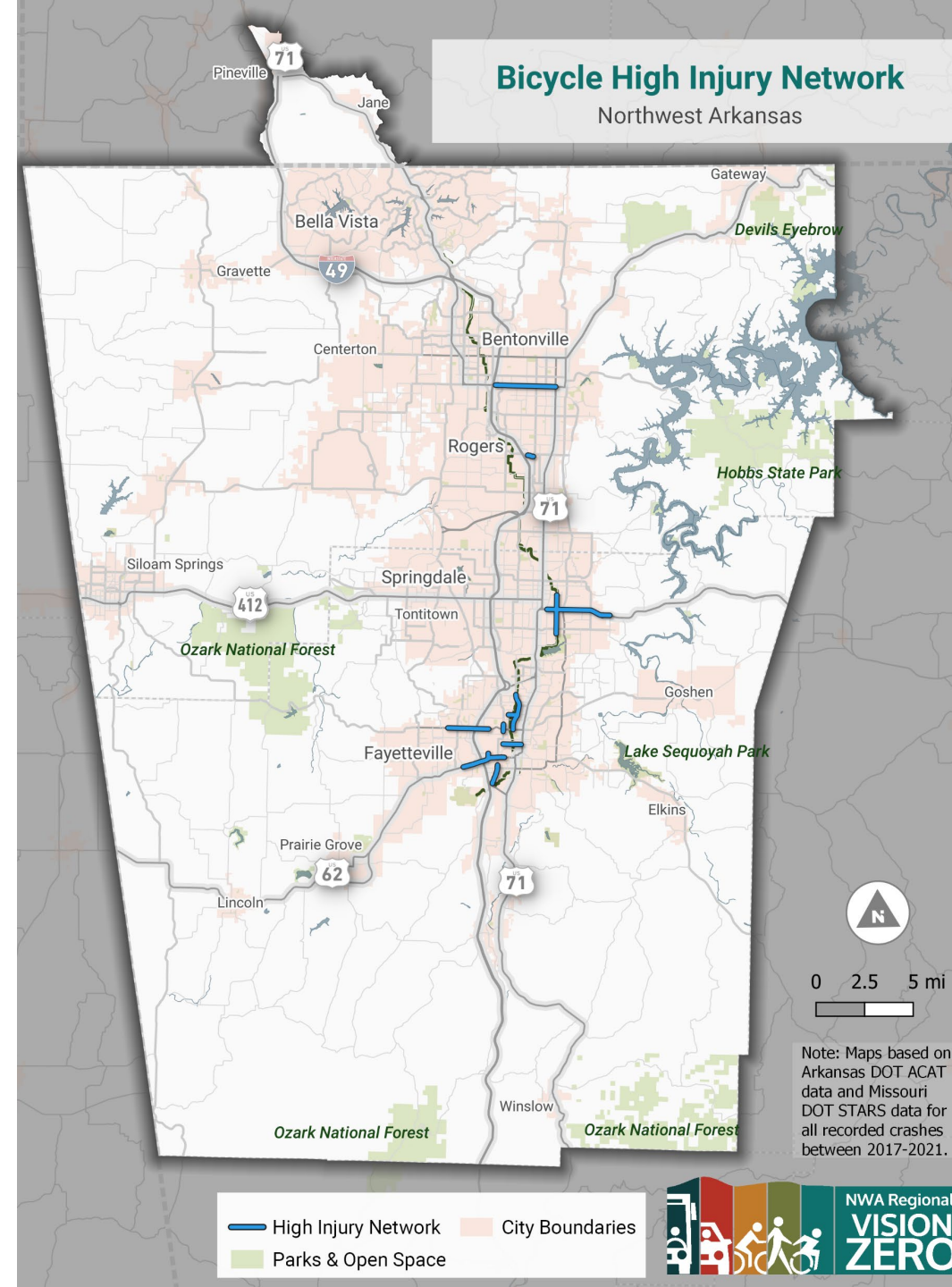
Pedestrian HIN

- Sample of Network Corridors:
 - Bella Vista Bypass
 - East Huntsville Avenue
 - North Gregg Avenue
 - West Olive Street
 - Southwest 14th Street



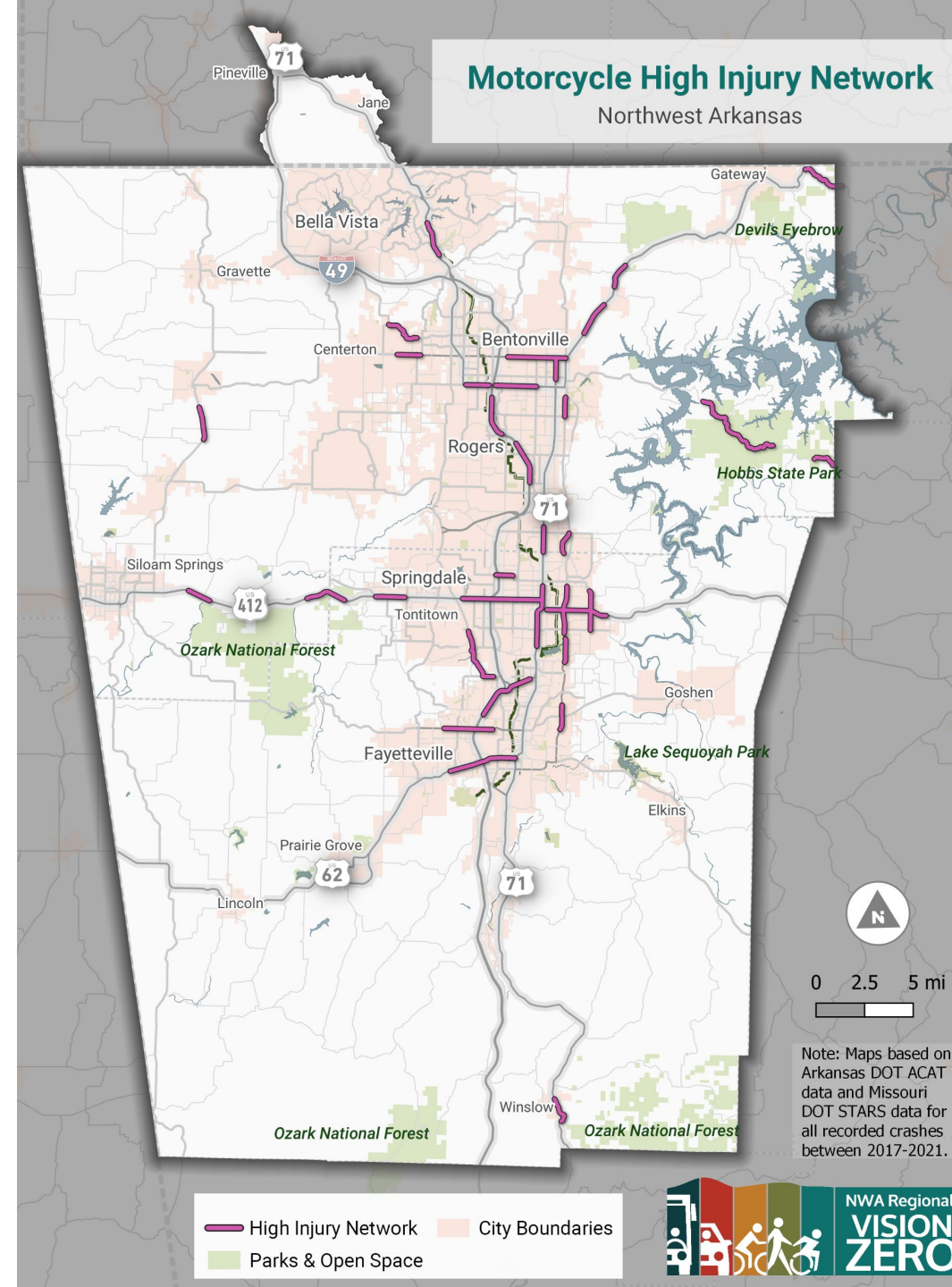
Bicyclist HIN

- Sample of Network Corridors:
 - Powell Street
 - West Martin Luther King Jr. Boulevard
 - West Walnut Street



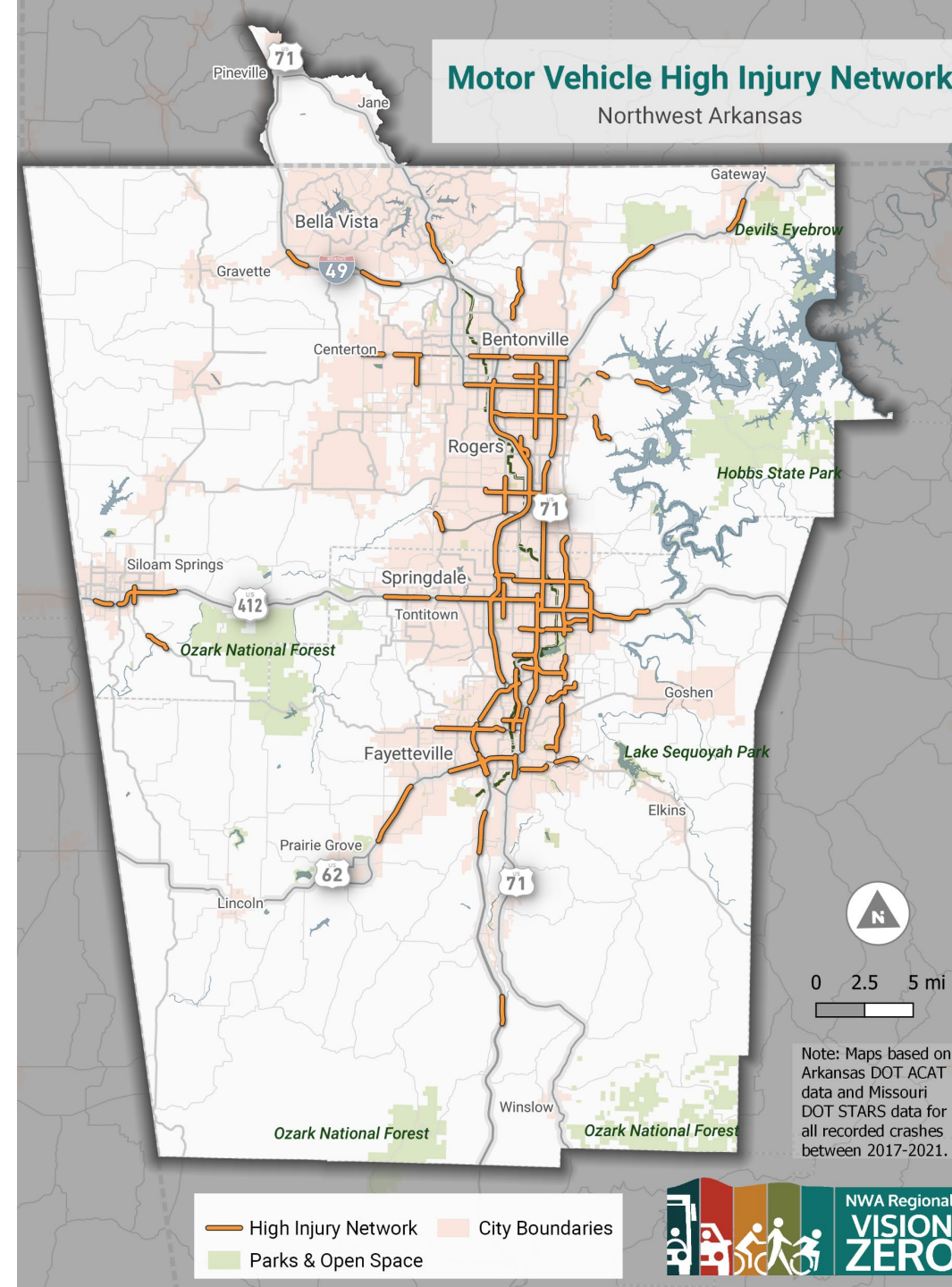
Motorcycle HIN

- Sample of Network Corridors:
 - AR 112
 - AR 12
 - East Centerton Boulevard
 - Southeast Walton Boulevard
 - North Crossover Road



Motor Vehicle HIN

- Sample of Network Corridors:
 - AR 12
 - Bella Vista Bypass
 - East Don Tyson Parkway
 - East Joyce Boulevard
 - Southeast 14th Street
 - Wedington Drive



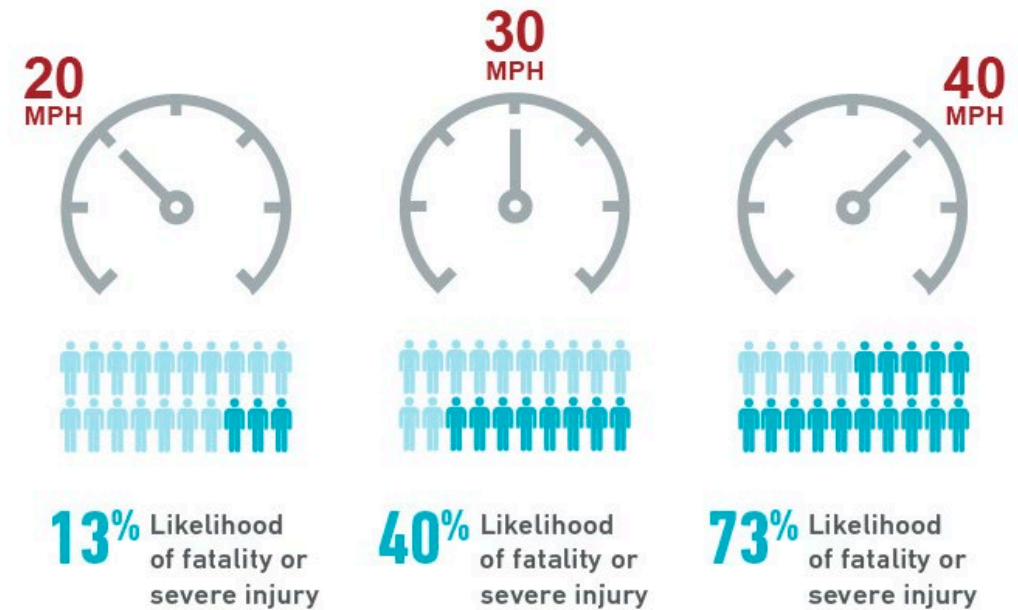
**Are there specific safety
project your community is
pursuing?**

Project Selection Approach



Addressing Crashes and Risk

- Project lists will use the HIN
- Characteristics of these streets will highlight other project locations
- Crash risk will be addressed in project lists



Data Citation: Tefft, B.C. (2011). *Impact Speed and a Pedestrian's Risk of Severe Injury or Death* (Technical Report). Washington, D.C.: AAA Foundation for Traffic Safety.

Next Steps



More Analysis and Engagement

- Complete descriptive analysis
- Complete equity analysis
- Launch project StoryMap
 - Add interactive map for input
- Coordinate demonstration events



Thank you!
