Item 7

Regional Roadway Safety Action Plan

PRESENTER: VERONICA CARTER, FAIRPOINTE PLANNING

ACTION: NO ACTION REQUIRED

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Knoxville TPO Regional Roadway Safety Action Plan

Knoxville TPO Technical Committee

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ROADWAY SAFETY ACTION PLAN

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1 - Safe System Approach

2 - Planning Process

3 - Short-term Actions

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Safe System Approach

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Safe System Approach

TRADITIONAL		SAFE SYSTEM
Prevent crashes	→	Prevent deaths and serious injuries
Improve human behavior	→	Design for human mistakes/limitations
Control speeding	→	Reduce speed
Individuals are responsible	→	Share responsibility
React based on crash history	→	Proactively identify and address risks

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Guiding Principles

Traffic deaths and severe injuries are unacceptable and preventable.

The region will prioritize actions that reduce crashes that result in a severe injury or death.

Human life is vulnerable and takes priority over moving cars.

The impact of heavy, fast-moving vehicles is often too much for our bodies. Saving lives is more important than improving roadway capacity.

Traffic safety is everyone's responsibility and should reflect community needs.

Everyone who lives in, works in, visits, or travels through the Knoxville region shares responsibility for the safety of our streets. This includes elected officials, government staff, advocates, the vehicle industry, and members of the public.

Roadways should be designed to account for human error and ensure that mistakes aren't deadly or life-altering.

We know humans make mistakes, but one mistake should not end a life. Design of our streets should anticipate these risks and minimize harm.

Quality data, transparent evaluation, and transparent decision-making are needed at all levels of government.

High-quality data is foundational to informing safety improvements. Data should be made available to the public to hold everyone accountable on progress toward zero traffic deaths.

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Planning Process

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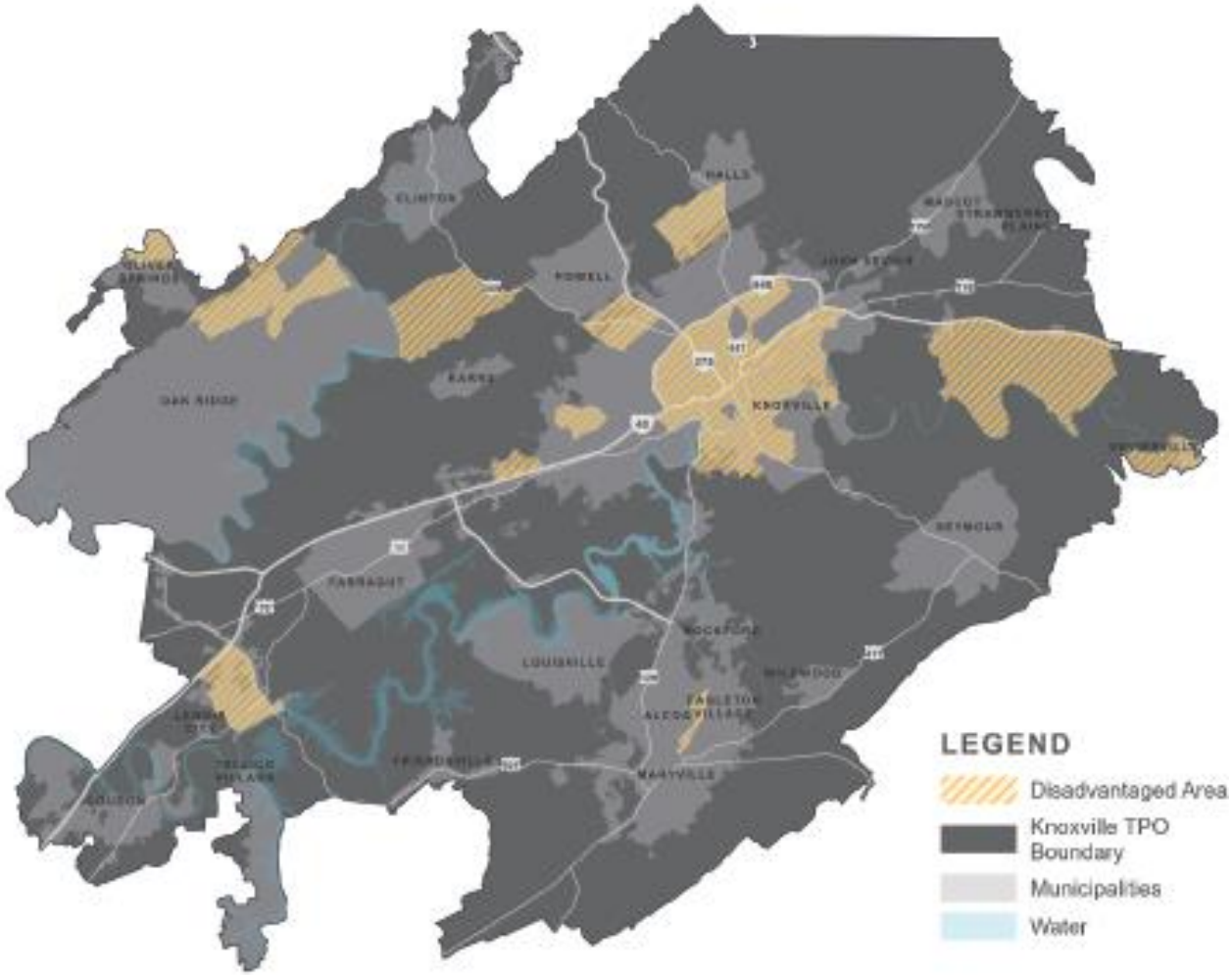
Prioritizing Equity

43% OF RESIDENTS IN THE KNOXVILLE REGION LIVE IN A DISADVANTAGED AREA



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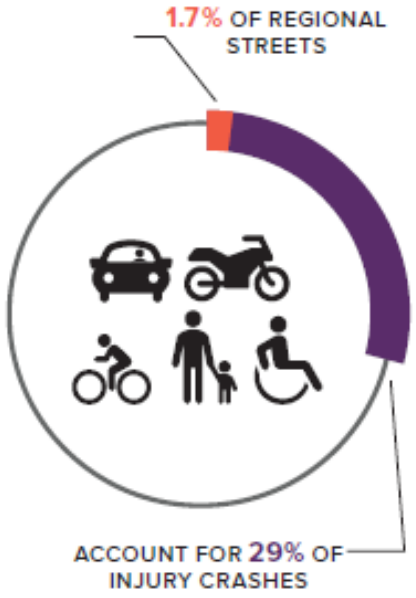
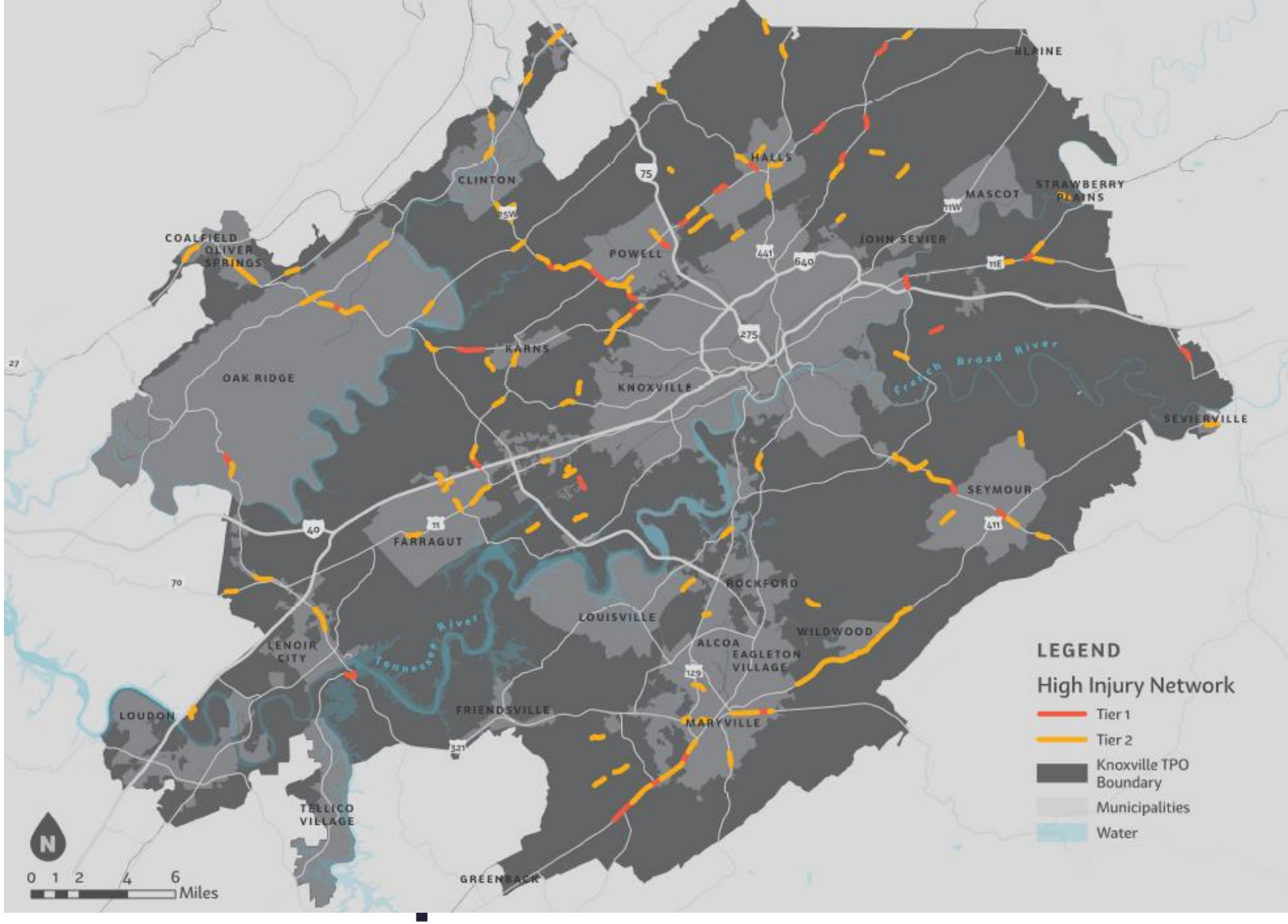
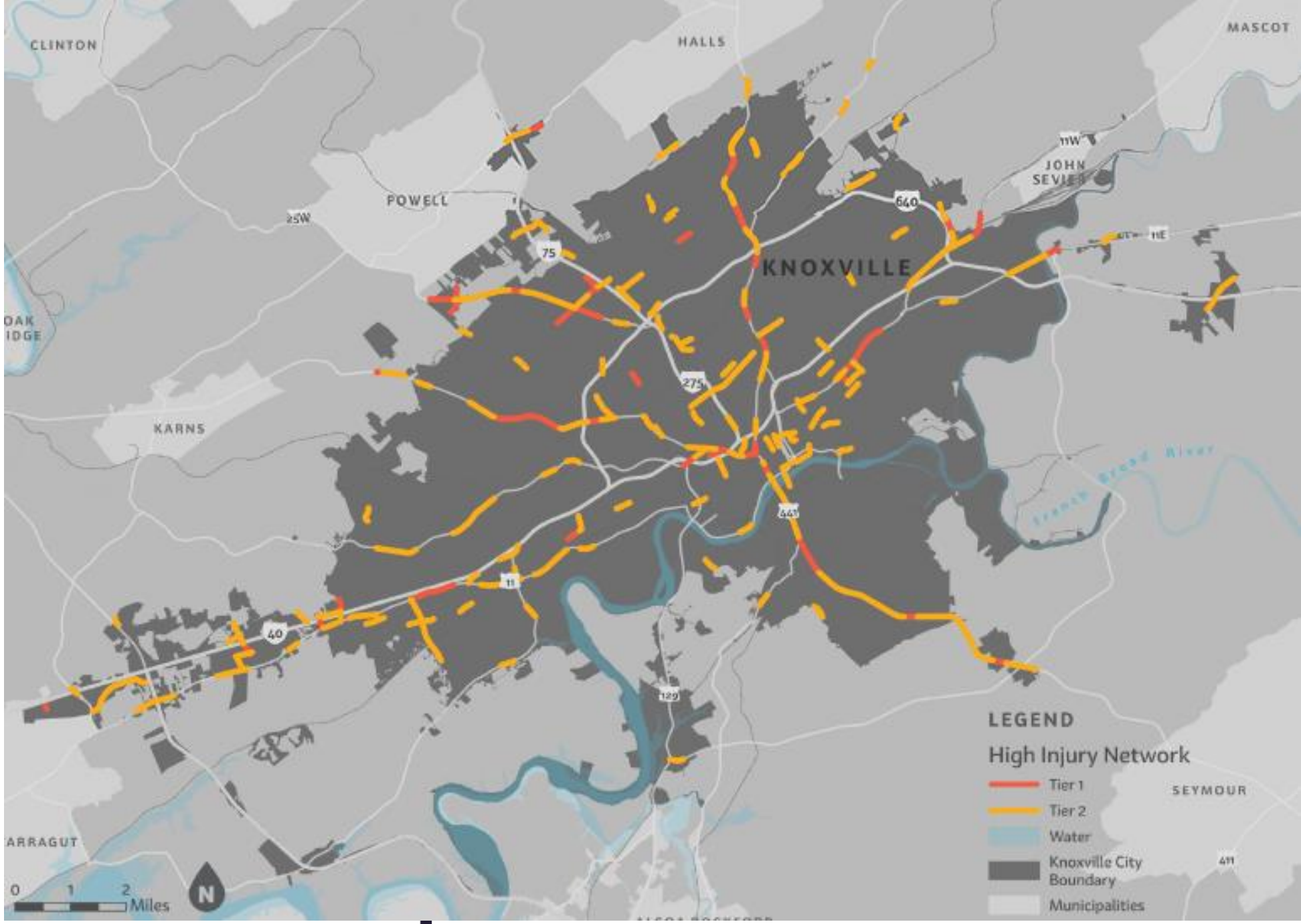
Regional High Injury Network





Knoxville's High Injury Network



Knoxville Crash Profiles

Crash Profile 1:

Motor Vehicle Crashes in Commercial Areas

OWNERSHIP

46% on local roads

54% on TDOT maintained roads

MODE: MOTOR VEHICLES

SERIOUS AND FATAL CRASHES

357

POTENTIAL COUNTERMEASURES

- Access management
- Driveway improvements, including sight distance improvements
- Lane narrowing
- Controlled pedestrian crossings

Crash Profile 2:

Left Turn/U-Turn-Related Motor Vehicle Crashes at Signalized Intersections

OWNERSHIP

27% on local roads

74% on TDOT maintained roads

MODE: MOTOR VEHICLES

SERIOUS AND FATAL CRASHES

83

POTENTIAL COUNTERMEASURES

- Reduced conflict intersections or other alternative intersections
- Protected left turn movements
- Flashing yellow arrow traffic signals (when protected left turn is not feasible)
- Retroreflective backplates
- One-lane roundabouts on lower volume roads
- Red light cameras
- Prohibit right turn on red
- Sight distance enhancements

Crash Profile 3:

Pedestrian/Bicyclist-related Crashes in Commercial Areas along Arterials

OWNERSHIP

34% on local roads

66% on TDOT maintained roads

MODE: WALKING & BIKING

SERIOUS AND FATAL CRASHES

56

POTENTIAL COUNTERMEASURES

- Access management
- Add sidewalk
- Prohibit right turn on red
- Driveway improvements, including sight distance improvements
- Adding midblock crossings and improvements
- Pedestrian hybrid beacon (PHB) or Rectangular Rapid Flashing Beacon (RRFB)
- Pedestrian refuge islands
- Raised crosswalks and high-visibility crosswalks
- Road diets (cross-section reallocation)
- Bike facilities; including bike paths, protected bike lanes, cycle track, depending on context
- Lighting
- Speed management strategies

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Regional Crash Profiles

Crash Profile 4:

Motor Vehicle Crashes at Nighttime on Arterials

OWNERSHIP

28% on local roads

72% on TDOT maintained roads

MODE: MOTOR VEHICLES

SERIOUS AND FATAL CRASHES

257

POTENTIAL COUNTERMEASURES

- Lighting
- Retroreflective traffic signal backplates
- Increase pavement marking reflectivity

Crash Profile 5:

Motor Vehicle Roadway Departure Crashes on Slopes and Hill Crests

OWNERSHIP

75% on local roads

25% on TDOT maintained roads

MODE: MOTOR VEHICLES

SERIOUS AND FATAL CRASHES

273

POTENTIAL COUNTERMEASURES

- Remove or relocate fixed objects
- Crash cushions
- Breakaway posts/supports
- Longitudinal edge line rumble strips
- Safety edge
- Speed humps/cushions/tables
- High-friction surface treatment
- Speed feedback signs
- Wider edge lines
- Reconstruct roadway to flatten crest vertical curve
- Spot shoulder widenings

Crash Profile 6:

Crashes Involving Motorcycles

OWNERSHIP

37% on local roads

63% on TDOT maintained roads

MODE: MOTORCYCLES

SERIOUS AND FATAL CRASHES

183

POTENTIAL COUNTERMEASURES

- Longitudinal rumble strips and stripes
- Lane narrowing
- Safety edge
- High-friction surface treatment
- Sight distance improvements
- Systemic application of multiple low-cost countermeasures at stop-controlled intersections

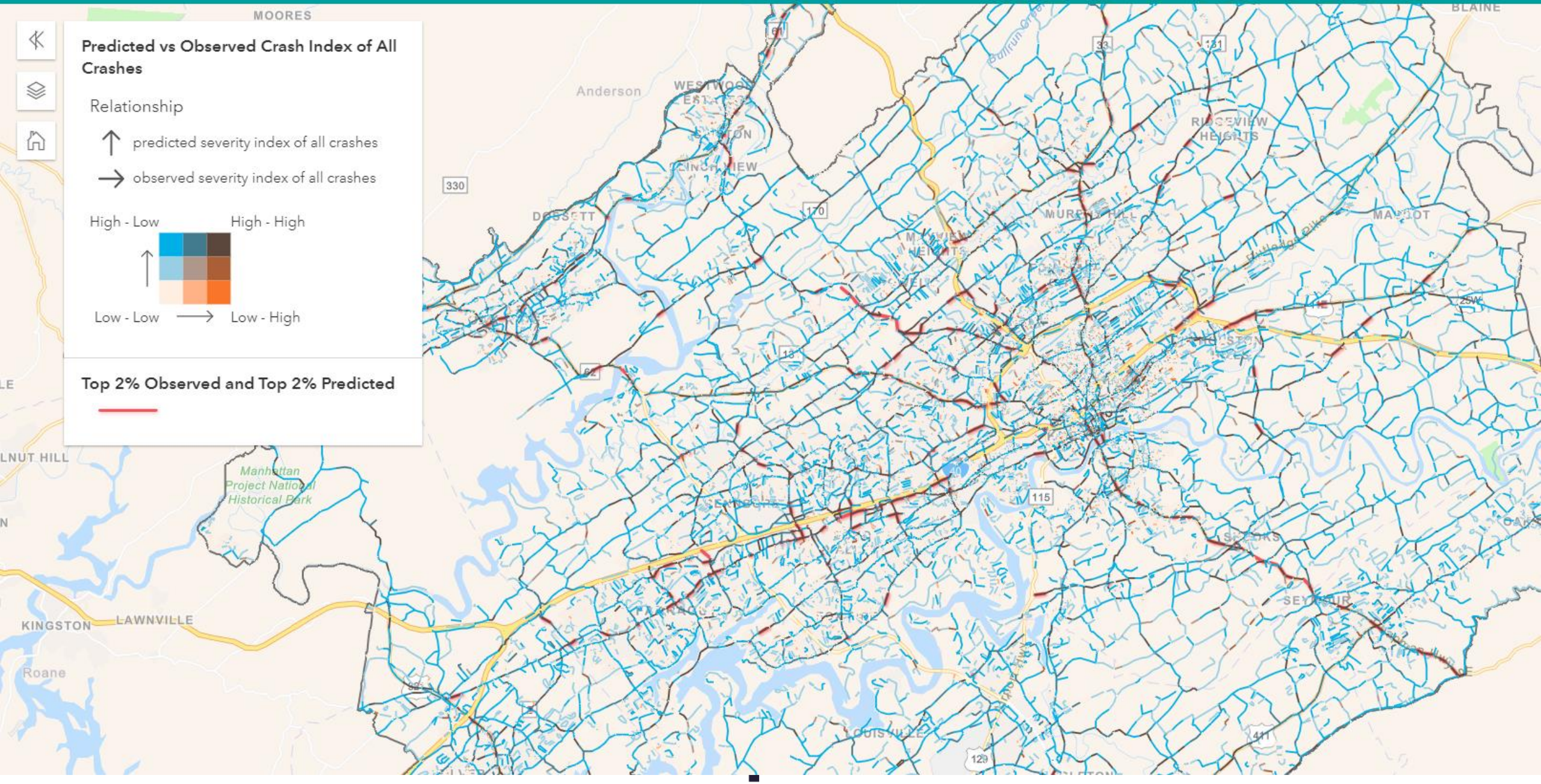
Predictive Analysis

- Variables:
  - Near commercial + multifamily land use
  - Average Annual Daily Traffic (AADT)
  - At intersection
  - Speed limit
  - Function class
  - Segment length
  - Road curvature

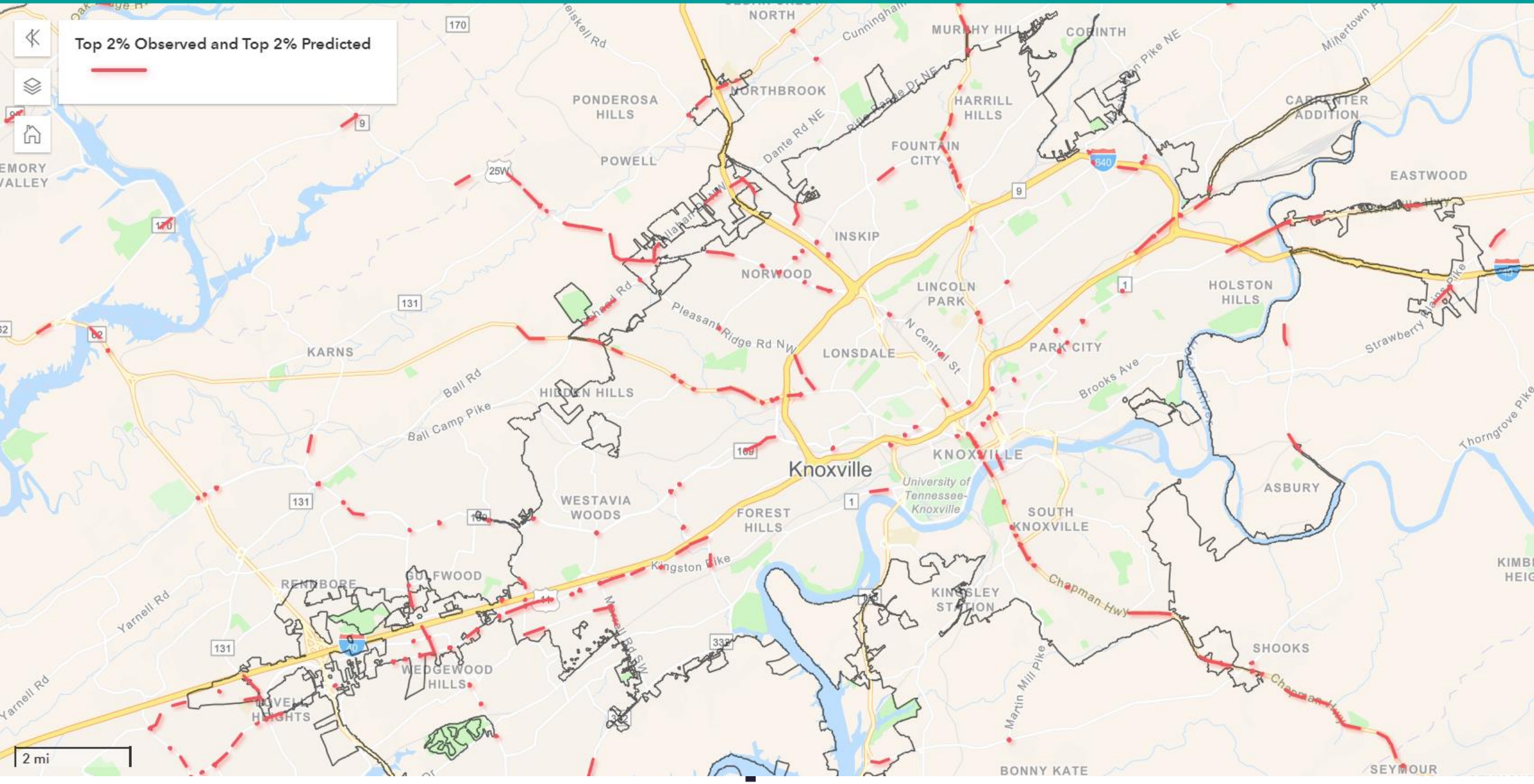
Table 2. Roads with the Highest Predicted Crash Index (all injury crashes)

Road Name	From	To
N. Hall Road	US 129 Ramp	Tyson Boulevard
Lovell Road	Simmons Road	I-40 Ramp
Clinton Highway	W. Emory Road	Bell Stanley Road
W. Broadway Avenue	William Blount Drive	Fairview Drive
Chapman Highway	Hendrons Chapel Road E.	Kimberlin Heights Road
Clinton Highway	Rhealand Lane	Lakewood Lane
Clinton Highway	W. Beaver Creek Drive	Larkspur Lane
Oak Ridge Highway	N. Burchfield Road	South of Melton Hill Reservoir Bridge
W. Lamar Alexander Parkway	Foothills Mall Drive	Bridgeway Drive
Chapman Highway	Sevierville Pike	E. Simpson Road

Predictive Analysis Viewer



Predictive Analysis Viewer



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Short-term Actions

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TPO Priority Actions

- Apply for Knoxville Regional SS4A Implementation Grant
- Conduct a regional roadway safety education and encouragement campaign
- Oversee the Regional Roadway Safety Task Force
- Collaborate with TDOT to prioritize, fund, and implement safety improvements on HIN
- Maintain crash data quality and transparency
- Make annual progress on implementing policy and program recommendations
- Monitor progress towards significantly reducing traffic fatalities and severe injuries by 2045

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Short-term Actions

30 total actions > 9 short-term actions

DESIGN
LAND USE
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POLICIES
PROGRAMS

HOW TO READ THE RECOMMENDATIONS

The table below outlines the definitions for the columns in the following pages.

Safe System Categories	Safe Road Users, Safe Vehicles, Safe Speeds, Safe Roads, Post-Crash Care
Recommendation	The key steps needed to achieve the recommendation.
Timeline	When the action should take place. Short (<1 Year) Medium (1-2 Years) Long (>2 years)
Action Lead	Who are the leading and supporting partners?
Implementation Needs	Identifies if the action item will require funding, additional staff capacity, relationship building with external partners, or policy legislation in order to advance. (Significant) (Minimal)
Example Performance Measure	How will the action be monitored, evaluated or communicated on progress?
Cost	What is the general expected cost to implement this recommendation?

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L.1 Targeted reductions to off-street parking requirements.

Timeline:

Cost:

$$

Action Lead:

Local Governments

Organizational Needs

Policy Changes

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L.2 Require new developments to consider bicycle and pedestrian impacts.

Timeline:

Cost:

$$

Action Lead:

Local Governments

Organizational Needs

Policy Changes

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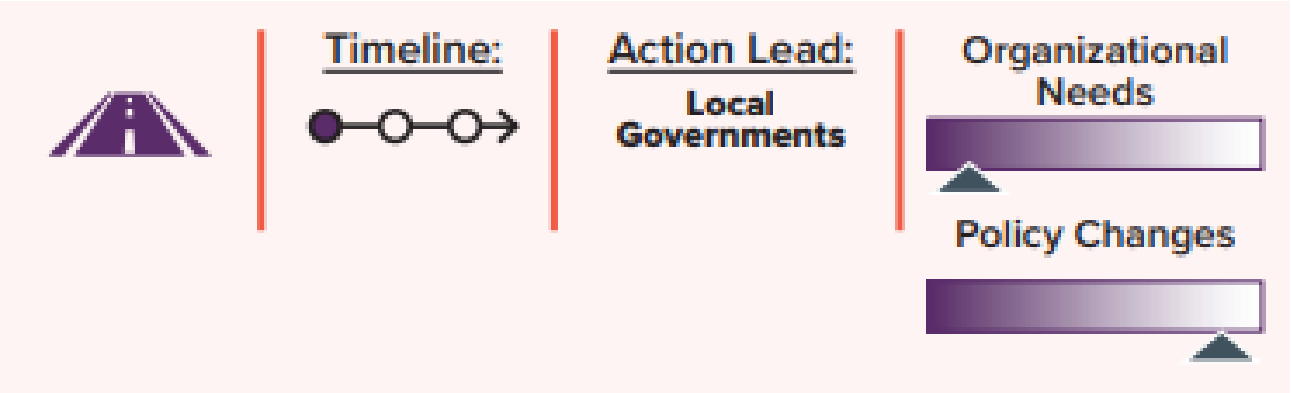
L.3 Expand bicycle parking requirements in appropriate locations.



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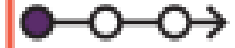
PL.3 Audit bus stops along the HIN to identify both quick build strategies and long-term improvements needed, including ADA compliance.

Timeline:



Cost:

$

Action Lead:

Knoxville Area Transit

Organizational Needs

Policy Changes

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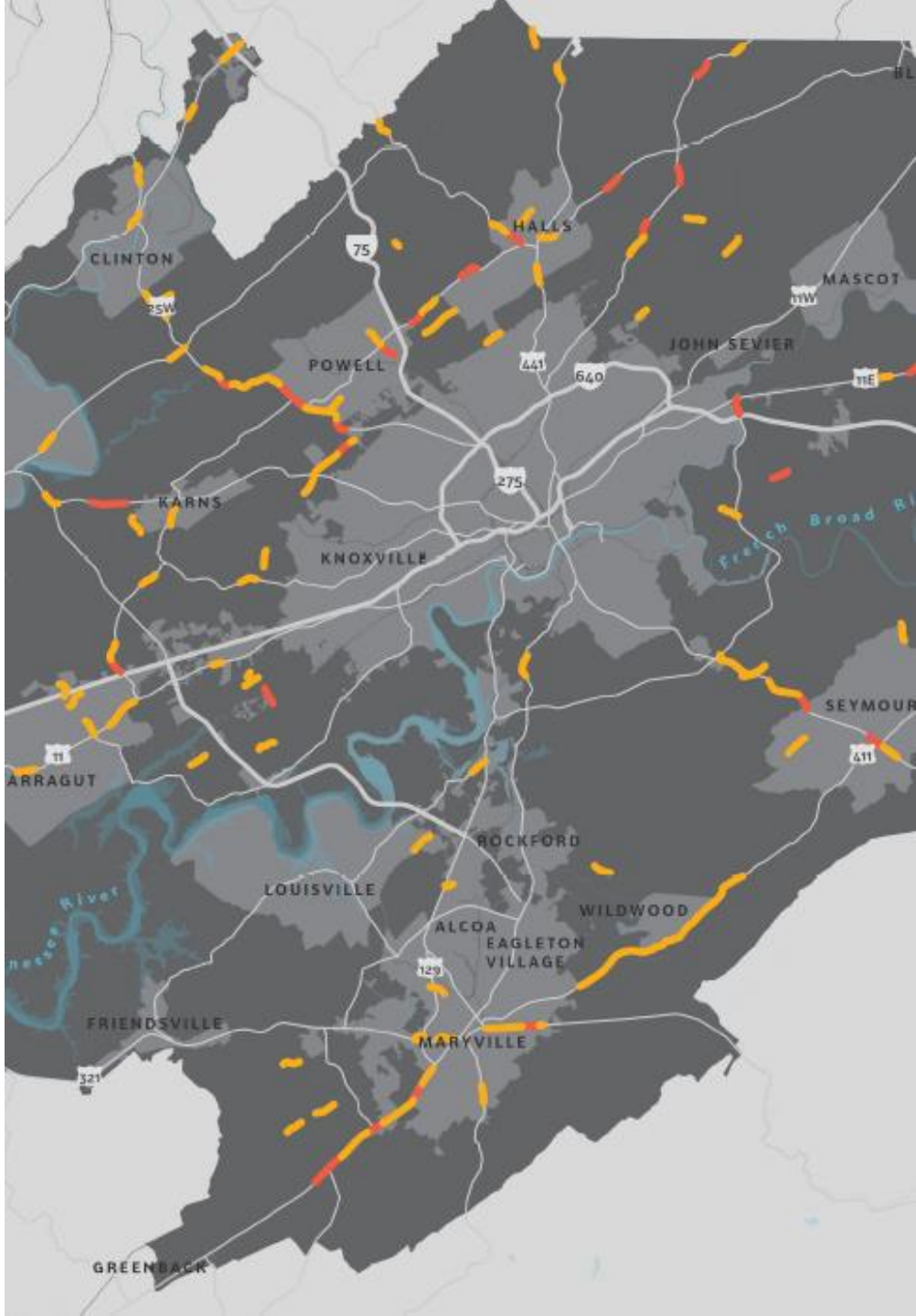

DESIGN

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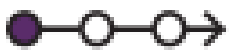
PO.6 Provide for pedestrian and bicycle access in policies addressing roadway construction.

Timeline:



Action Lead:

TDOT

Local Governments

Organizational Needs

Policy Changes

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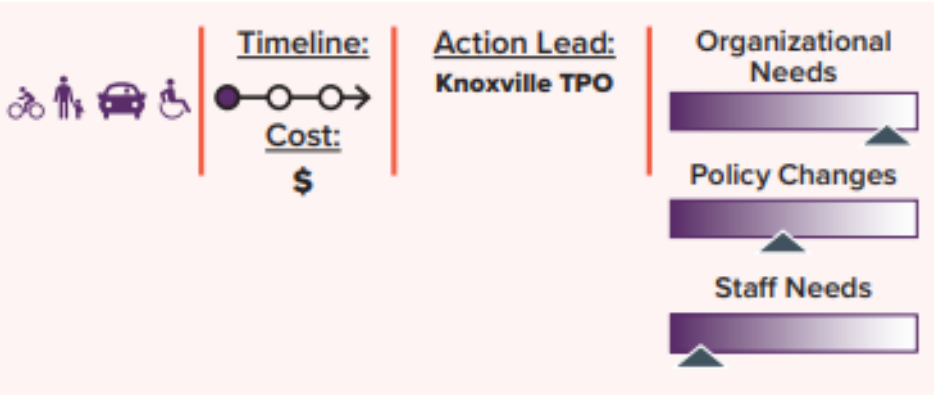
PR.3 Spread awareness of and participation in Smart Trips, the existing regional transportation demand management (TDM) program.

SMART TRIPS



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PR.5 Improve crash data and transparency.

Timeline:

Cost:
$$

Action Lead:
TDOT
Knoxville TPO

Organizational Needs

Policy Changes

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PR.6 Establish regional safety evaluation working group to monitor performance measures.

Timeline:

Action Lead:
Knoxville TPO

Organizational Needs

Staff Needs

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thank you!

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