

VISION ZERO



DENTON
ACTION PLAN



City of Denton Vision Zero Task
Force Meeting #2 Sign-In Sheet



VISION ZERO TASK FORCE MEETING #2



Training Room 1, 2, and 3 | Denton Development Services Building
9 – 11 AM



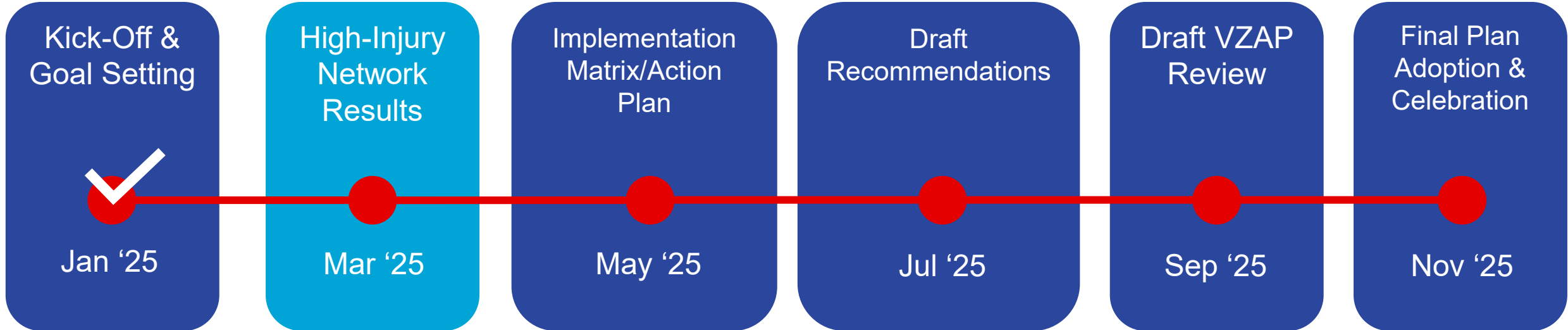
AGENDA

1. Project Updates
 2. Public Engagement Plan
 3. Crash History Analysis
 4. High Injury Network
- Break**
5. Study Corridor Exercise
 6. Safety Countermeasures
 7. Next Steps



PROJECT UPDATES

VISION ZERO ACTION PLAN TIMELINE



DRAFT MISSION STATEMENT

“Our mission is to create a safe, accessible, and sustainable transportation future for all Denton residents. Through data, community engagement, and innovation, we aim to eliminate fatalities and serious injuries, ensuring a network that protects and serves everyone.”



DRAFT VISION ZERO TARGET

Alignment with TxDOT
50% reduction by 2035
100% reduction by 2050
Add incremental goals





PUBLIC ENGAGEMENT PLAN

PUBLIC ENGAGEMENT PLAN

Public Engagement Plan



Leadership
Commitment &
Goal Setting



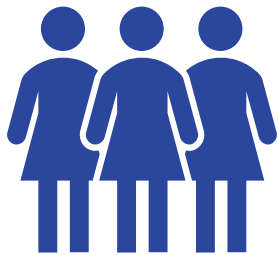
Planning Structure



Comprehensive
Safety Analysis



Engagement &
Collaboration



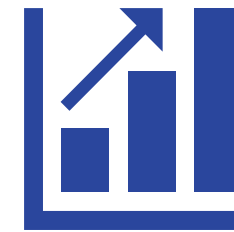
Equity
Considerations



Policy & Process
Changes



Strategy & Project
Selections



Progress &
Transparency

PUBLIC ENGAGEMENT PROCESS



BUILD COLLABORATION

- Engage with Vision Zero Task Force
- Foster partnerships and coalitions with key stakeholders



GATHER ROAD USER INSIGHTS

- Listen to the community's needs and experiences.
- Provide multiple ways for residents to voice their experiences with traffic safety through in-person events and online surveys



DEVELOP ACTIONABLE SOLUTIONS

- Analyze and evaluate resident feedback and community needs
- Recommend strategies to improve street safety
- Listen to community feedback to the recommended approach



IN-PERSON EVENTS

- **Vision Zero Task Force**
- **Public Pop-up Events**
 - #1 Easter Eggstravaganza
 - #2 Halloween Season
- **Public Workshops / Open Houses**
 - Workshop #1 in April
 - Workshop #2 in October

all events/dates are tentative and subject to change



ONLINE ENGAGEMENT

- Project Overview & Events
- Written Survey
- Map Survey



[Engagekh.mysocialpinpoint.com/denton-vzap](https://engagekh.mysocialpinpoint.com/denton-vzap)

Overview Written Survey **Interactive Map** Events Resources FAQs

Open

Denton Vision Zero Action Plan Map Comments

Use the map below to help us identify dangerous areas in Denton's county area. The information provided will be analyzed to increase safety across the region.

Click the 'Add Marker' button in the bottom-right corner to place your comment on the map.

0 contributions so far

Enter an address

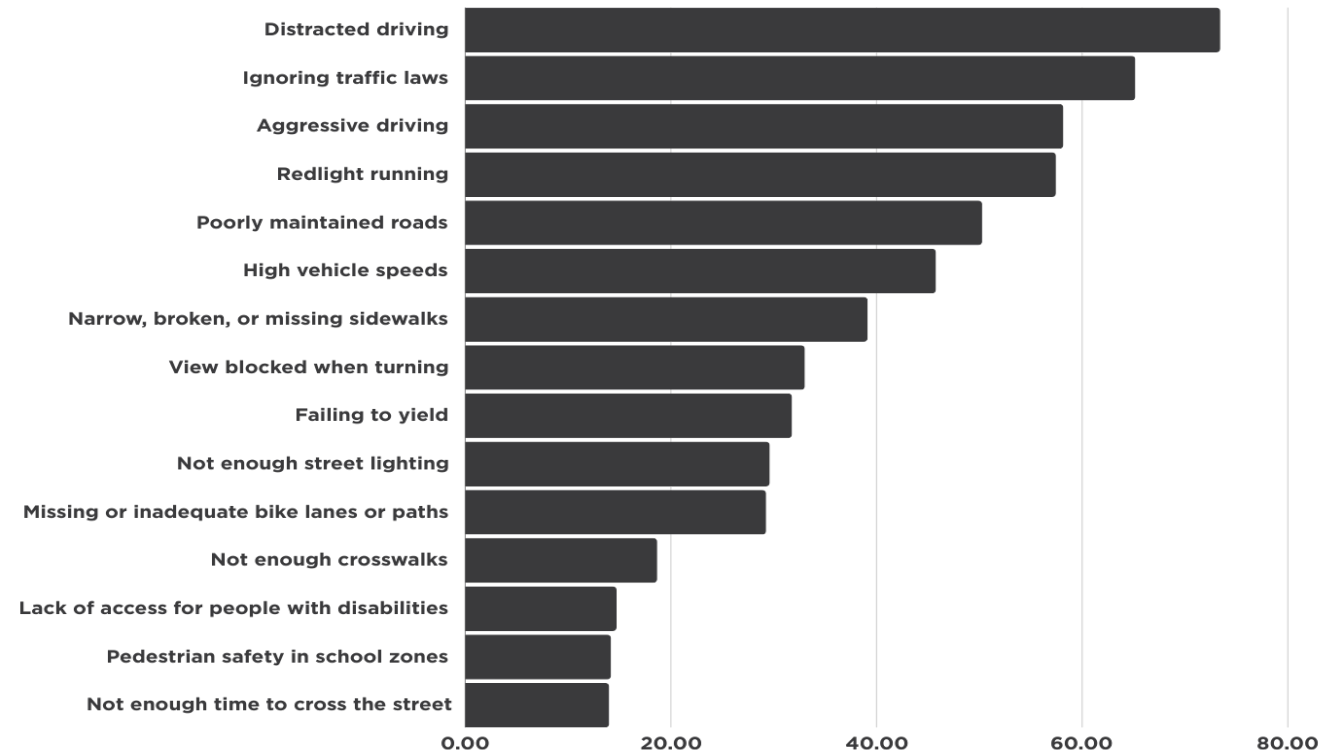
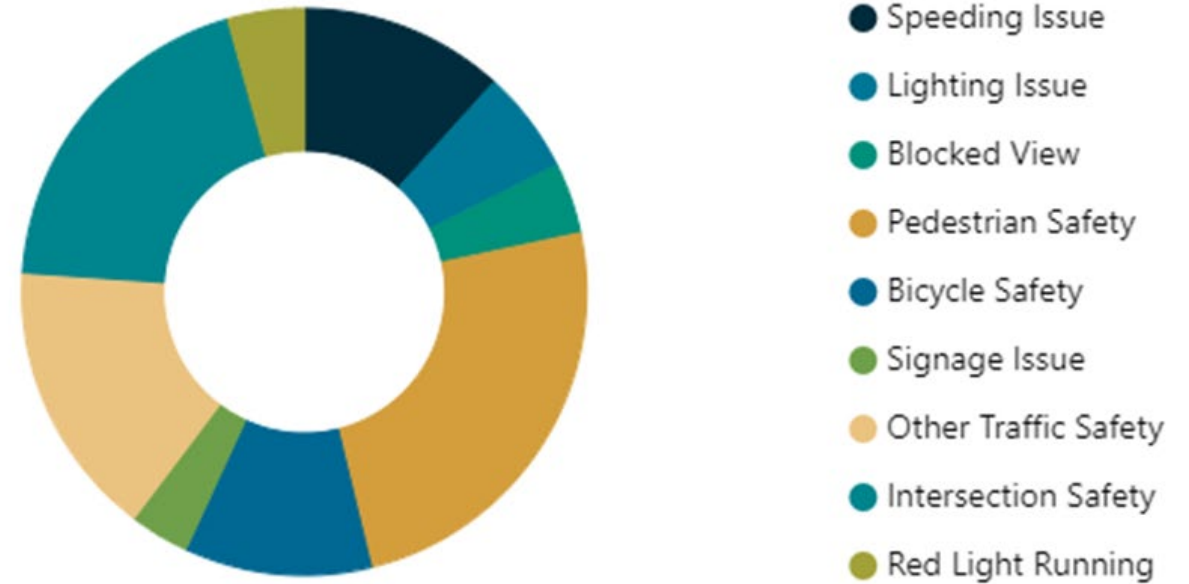
The map shows the Denton area with a blue outline of the city limits. A red pedestrian icon is placed on the map. The 'Add Marker' popup form is open, showing the following fields:

- Category Required:** Pedestrian Safety
- Your comment Required:** PUBLIC
- Email address Required:** PRIVATE

Buttons: Cancel, Submit

ENGAGEMENT SUMMARY

- Map survey trends
- Top safety concerns
- Written survey insights
- Level of comfort
- Pedestrian/bike safety



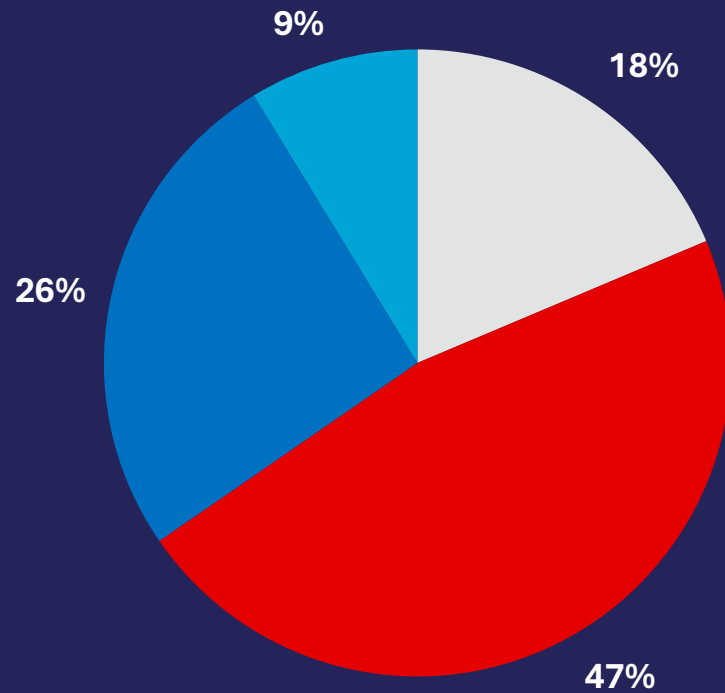
**QUESTIONS ON
THE PUBLIC
ENGAGEMENT
PLAN?**



CRASH HISTORY ANALYSIS

Crash Heat Map

Intersection Related



■ Intersection Related ■ Non Intersection ■ Intersection ■ Driveway Access

44% of all crashes are Intersection or Intersection Related crashes

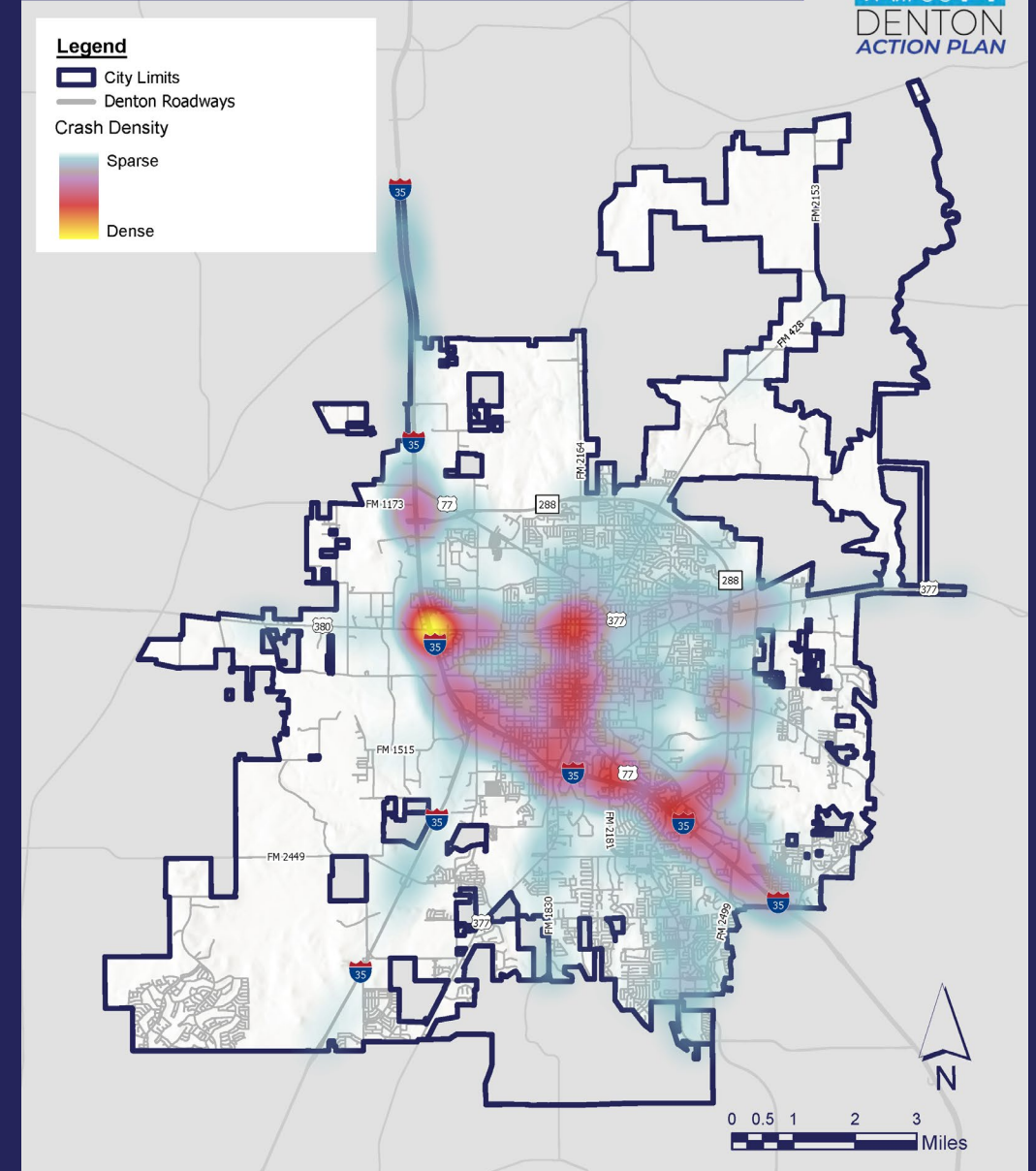
Crash Heat Map

Source: City of Denton, CRIS (2019 - 2023)



Legend

- City Limits
- Denton Roadways
- Crash Density
 - Sparse
 - Dense



CRASH SEVERITY

	Intersection	Crash Count
1	US 380 & IH 35	271
2	SL 288 & IH 35	181
3	Brinker Rd & SL 288	139
4	SL 288 & IH 35 East	114
5	US 77 & US 380	111
6	IH 35 East & US 377	102
7	FM 428 & US 77	99
8	N Carroll Blvd & US 380	89
9	Colorado Blvd & SL 288	77
10	N Mayhill Rd & US 377	72

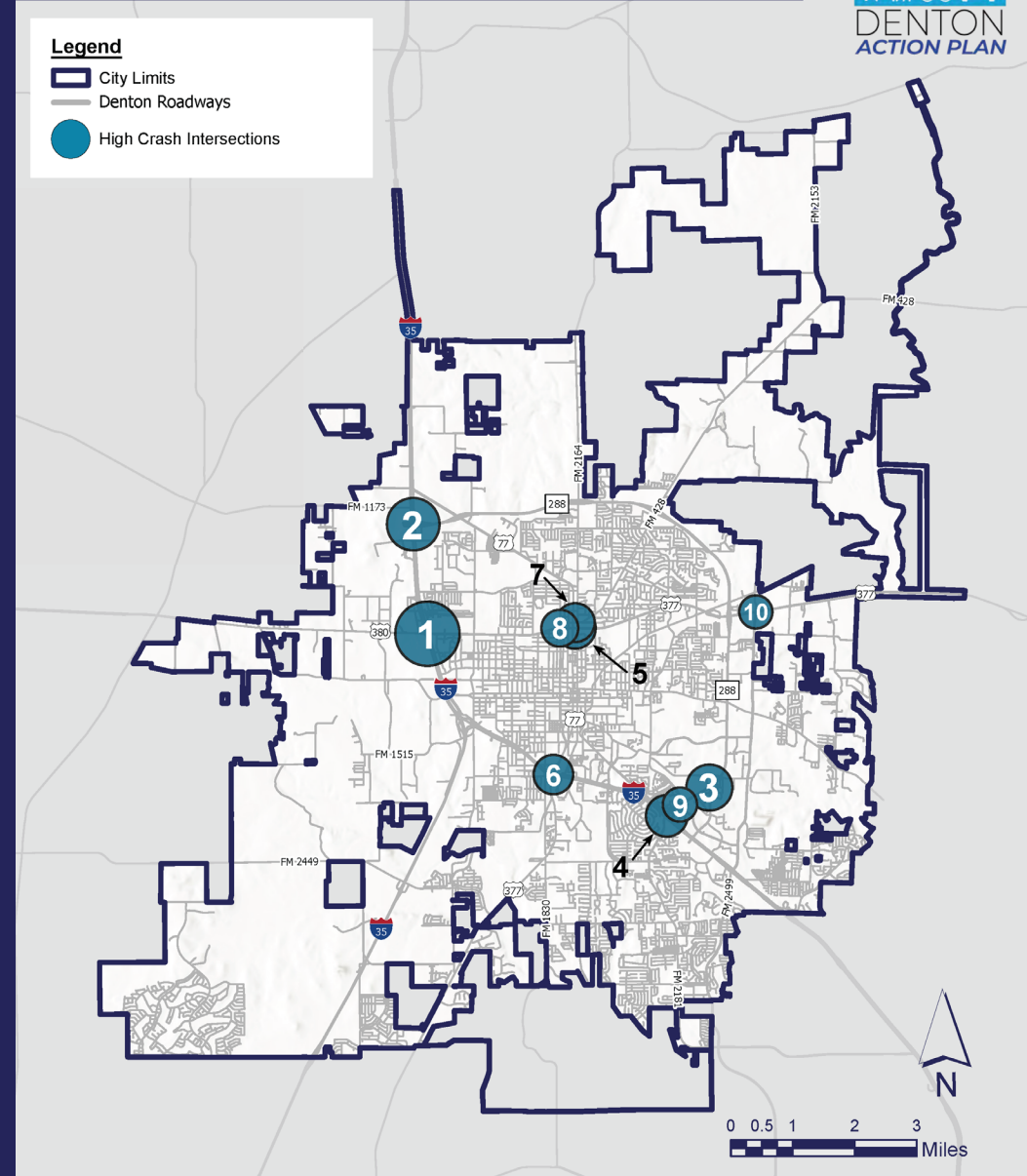
High Crash Intersections

Source: City of Denton, CRIS (2019 - 2023)



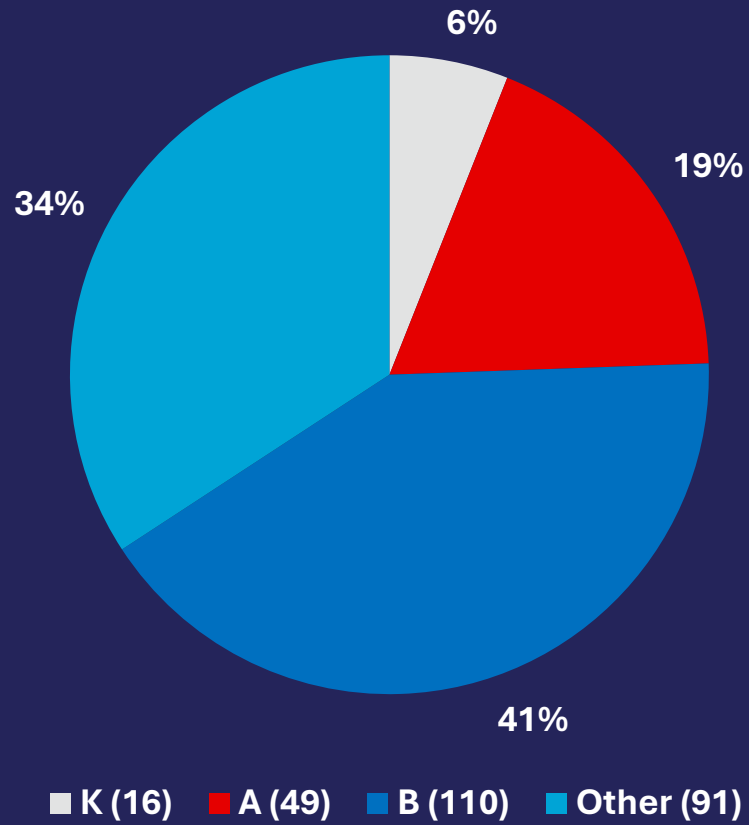
Legend

- City Limits
- Denton Roadways
- High Crash Intersections



BICYCLE AND PEDESTRIAN RELATED CRASHES

Crash Severity



23.5% of all fatalities in Denton are vulnerable road users

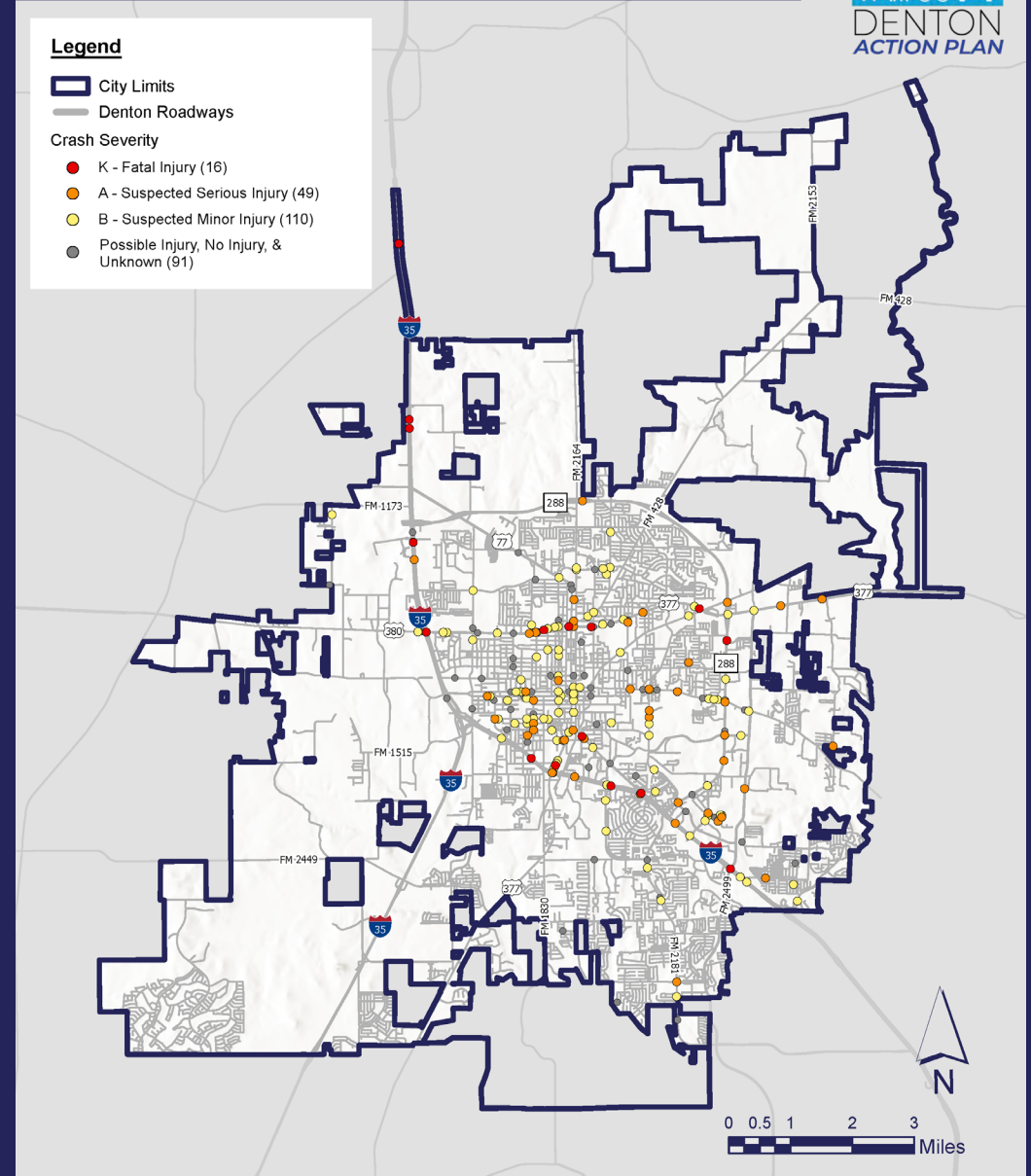
Bicyclists & Pedestrian Crashes Map

Source: City of Denton, CRIS (2019 - 2023)



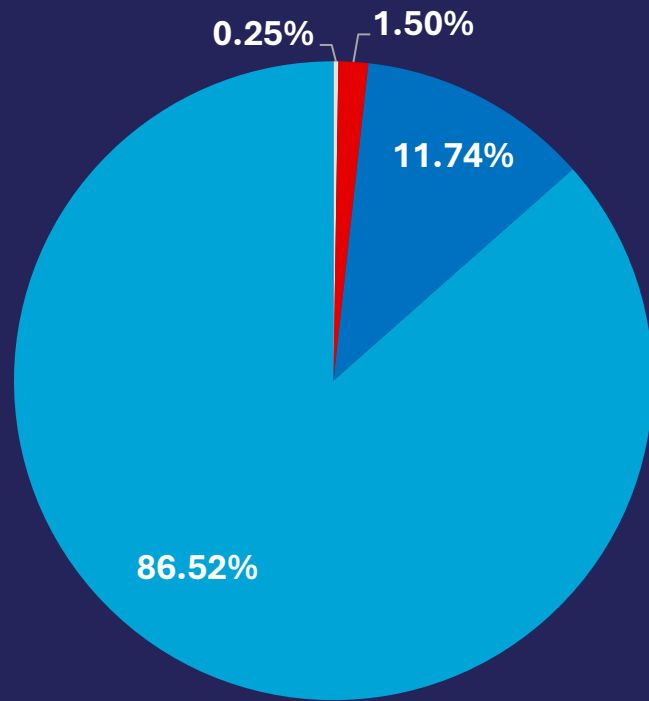
Legend

- City Limits
- Denton Roadways
- Crash Severity**
- K - Fatal Injury (16)
- A - Suspected Serious Injury (49)
- B - Suspected Minor Injury (110)
- Possible Injury, No Injury, & Unknown (91)



DISTRACTED DRIVING CRASHES

Crash Severity



■ K (4) ■ A (24) ■ B (188) ■ Other (1,386)

5.9% of all fatal crashes in Denton involve distracted driving

Distracted Driving Crashes Map

Source: City of Denton, CRIS (2019 - 2023)

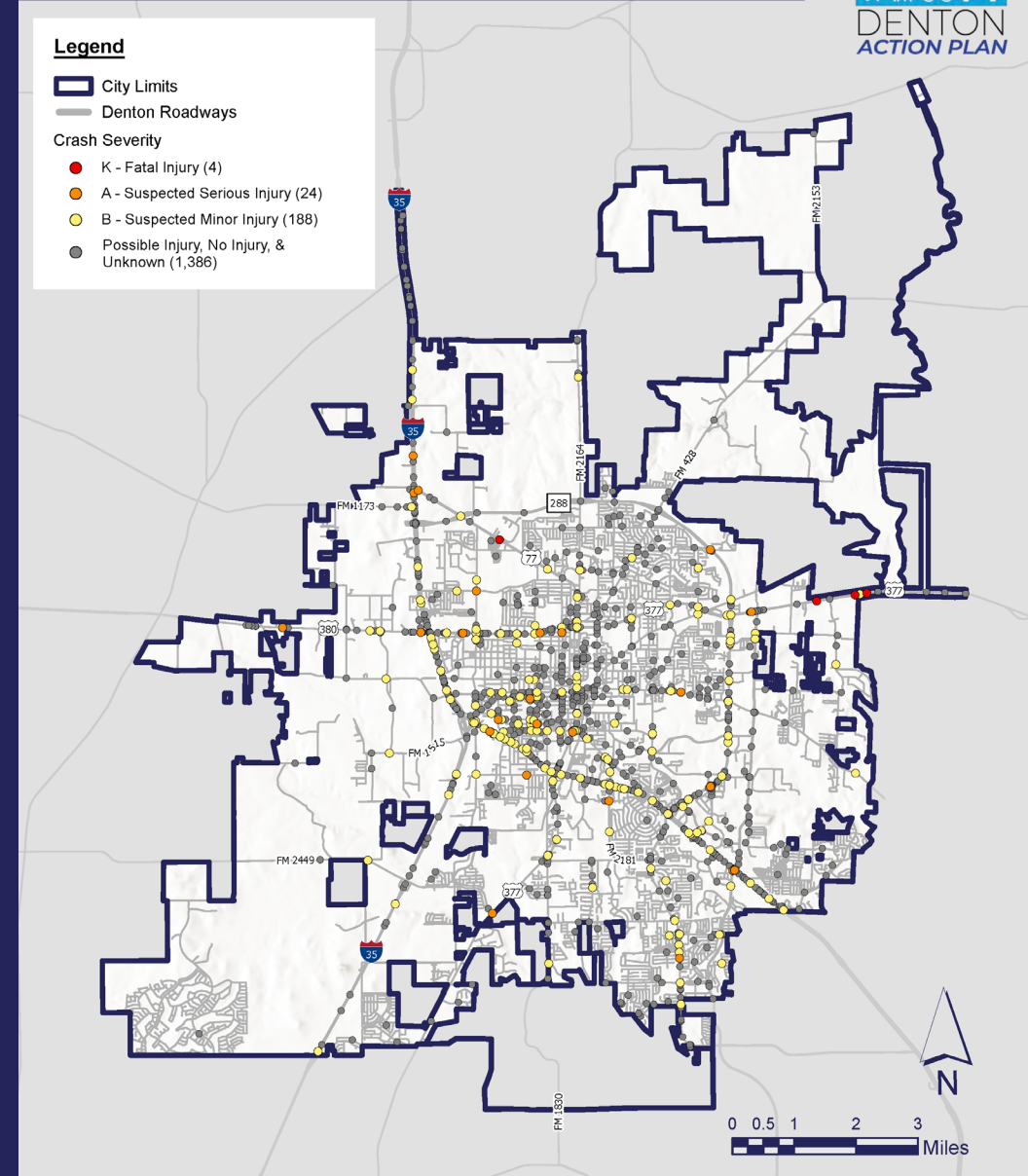


Legend

- City Limits
- Denton Roadways

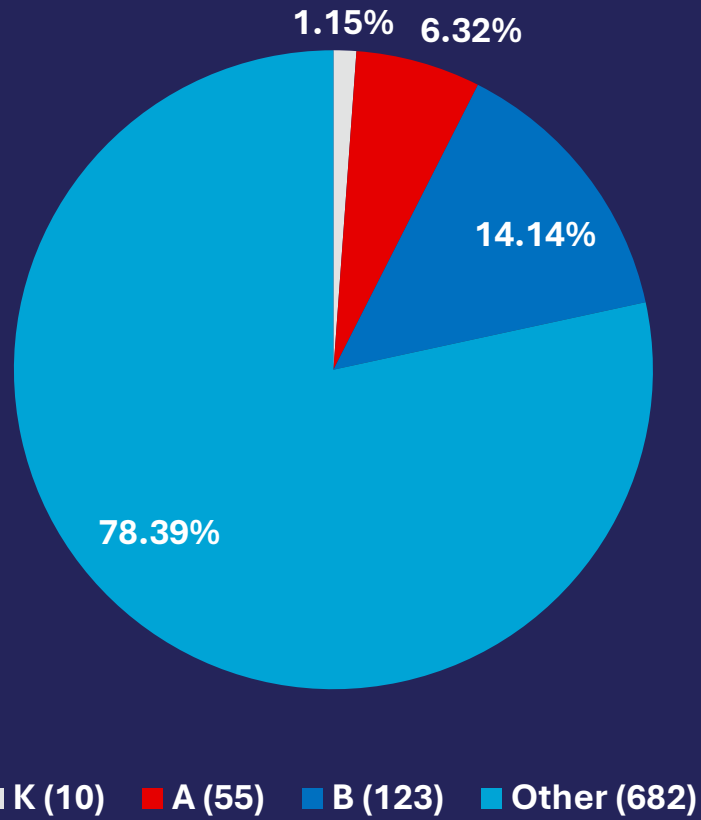
Crash Severity

- K - Fatal Injury (4)
- A - Suspected Serious Injury (24)
- B - Suspected Minor Injury (188)
- Possible Injury, No Injury, & Unknown (1,386)



IMPAIRED DRIVING CRASHES

Crash Severity



14.7% of all fatal crashes in Denton involve impaired driving

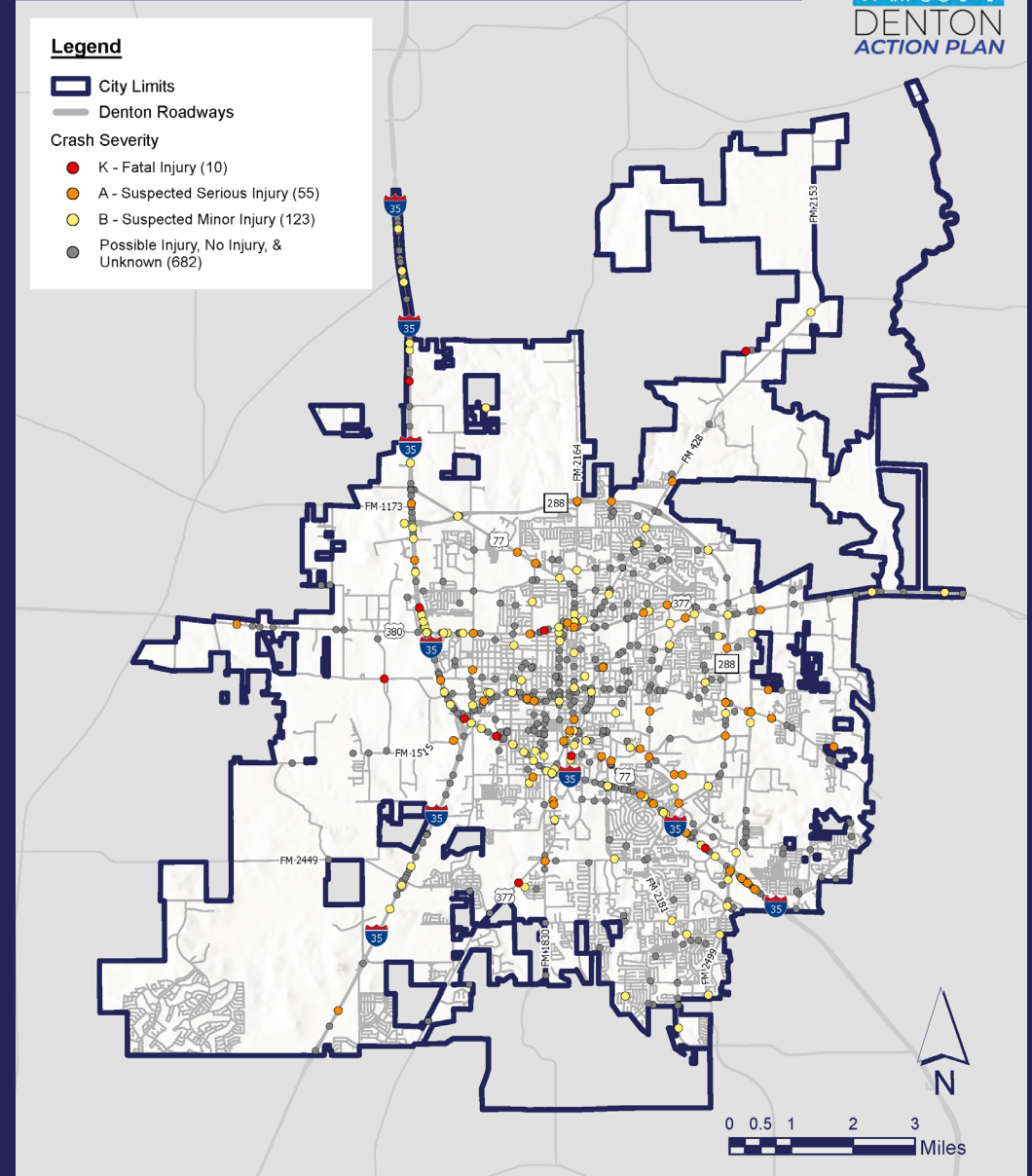
Impaired and Drunk Driving Crashes Map

Source: City of Denton, CRIS (2019 - 2023)



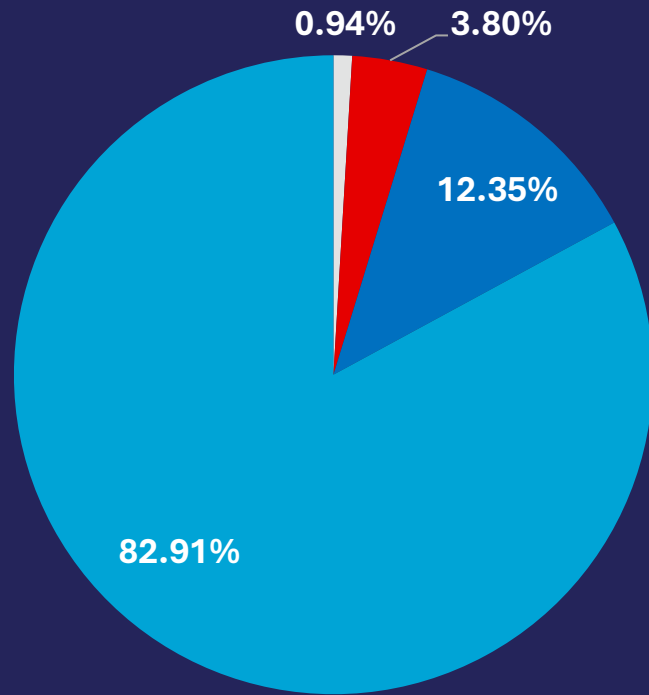
Legend

- City Limits
- Denton Roadways
- Crash Severity**
- K - Fatal Injury (10)
- A - Suspected Serious Injury (55)
- B - Suspected Minor Injury (123)
- Possible Injury, No Injury, & Unknown (682)



ROADWAY AND LANE DEPARTURE CRASHES

Crash Severity



■ K (19) ■ A (77) ■ B (250) ■ Other (1,678)

28% of all fatal crashes in Denton are Roadway and Lane Departure related

Roadway & Lane Departure Crashes Map

Source: City of Denton, CRIS (2019 - 2023)

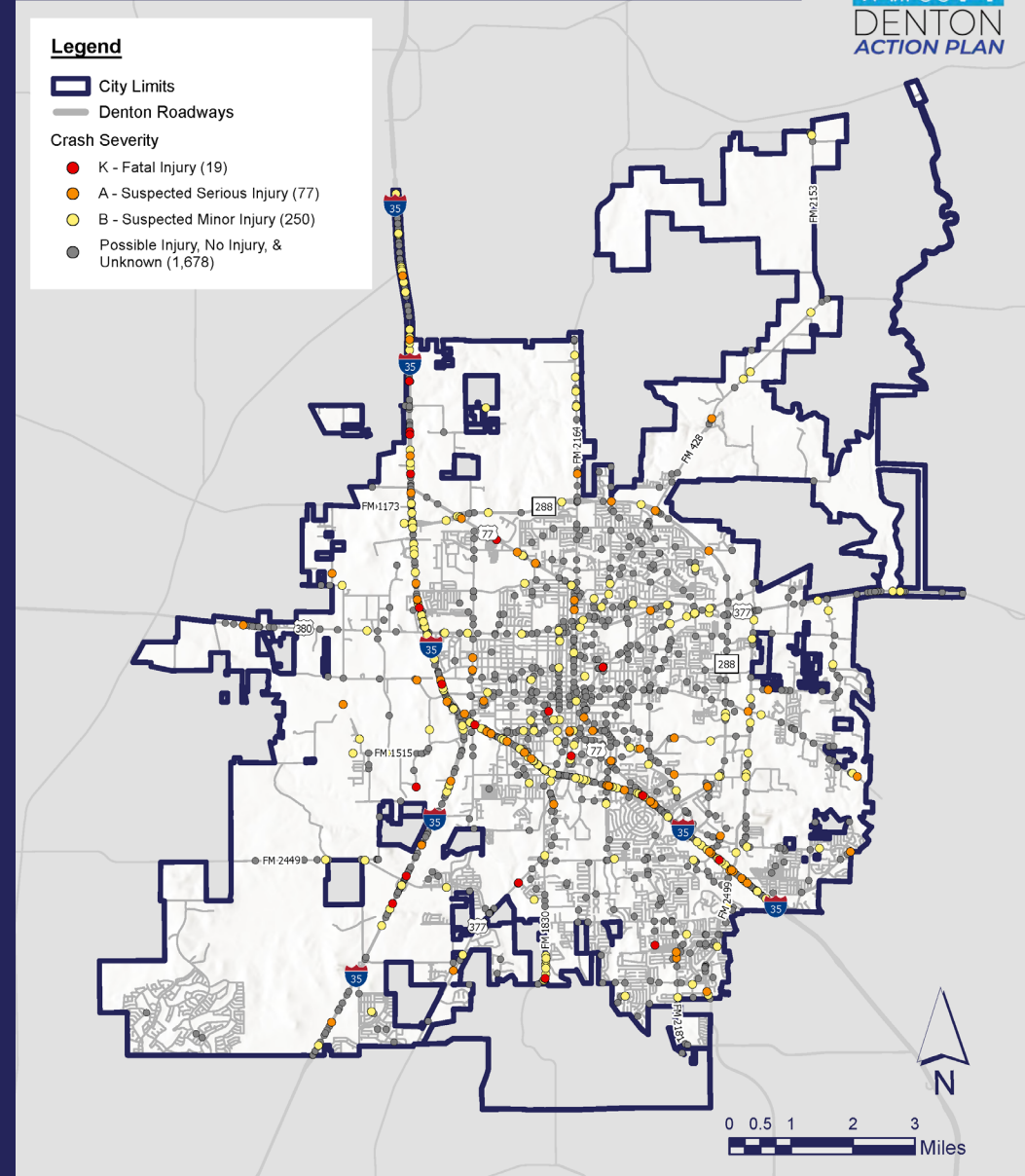


Legend

- City Limits
- Denton Roadways

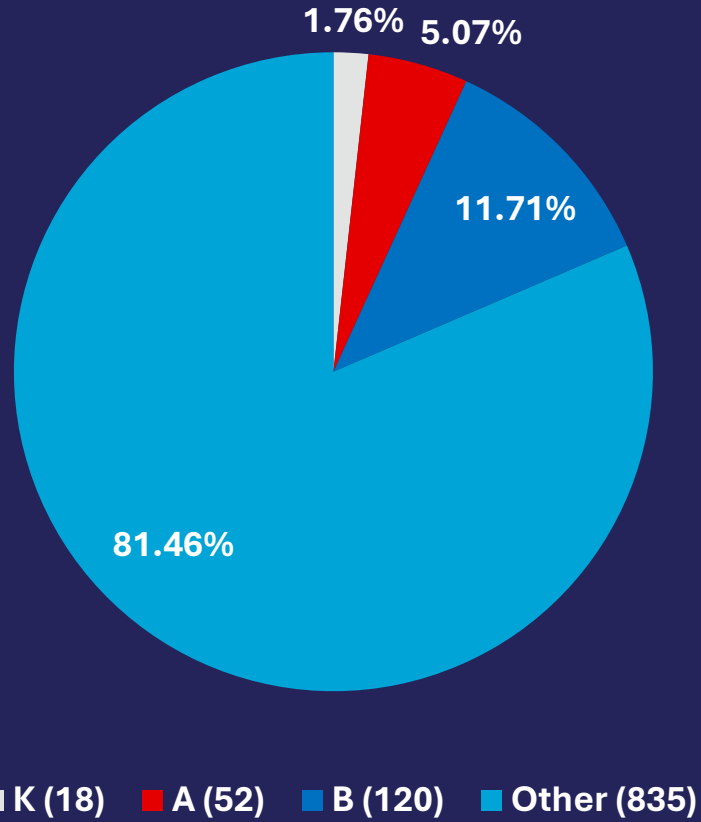
Crash Severity

- K - Fatal Injury (19)
- A - Suspected Serious Injury (77)
- B - Suspected Minor Injury (250)
- Possible Injury, No Injury, & Unknown (1,678)



LIGHTING RELATED CRASHES

Crash Severity



26.5% of all fatal crashes in Denton are lighting related

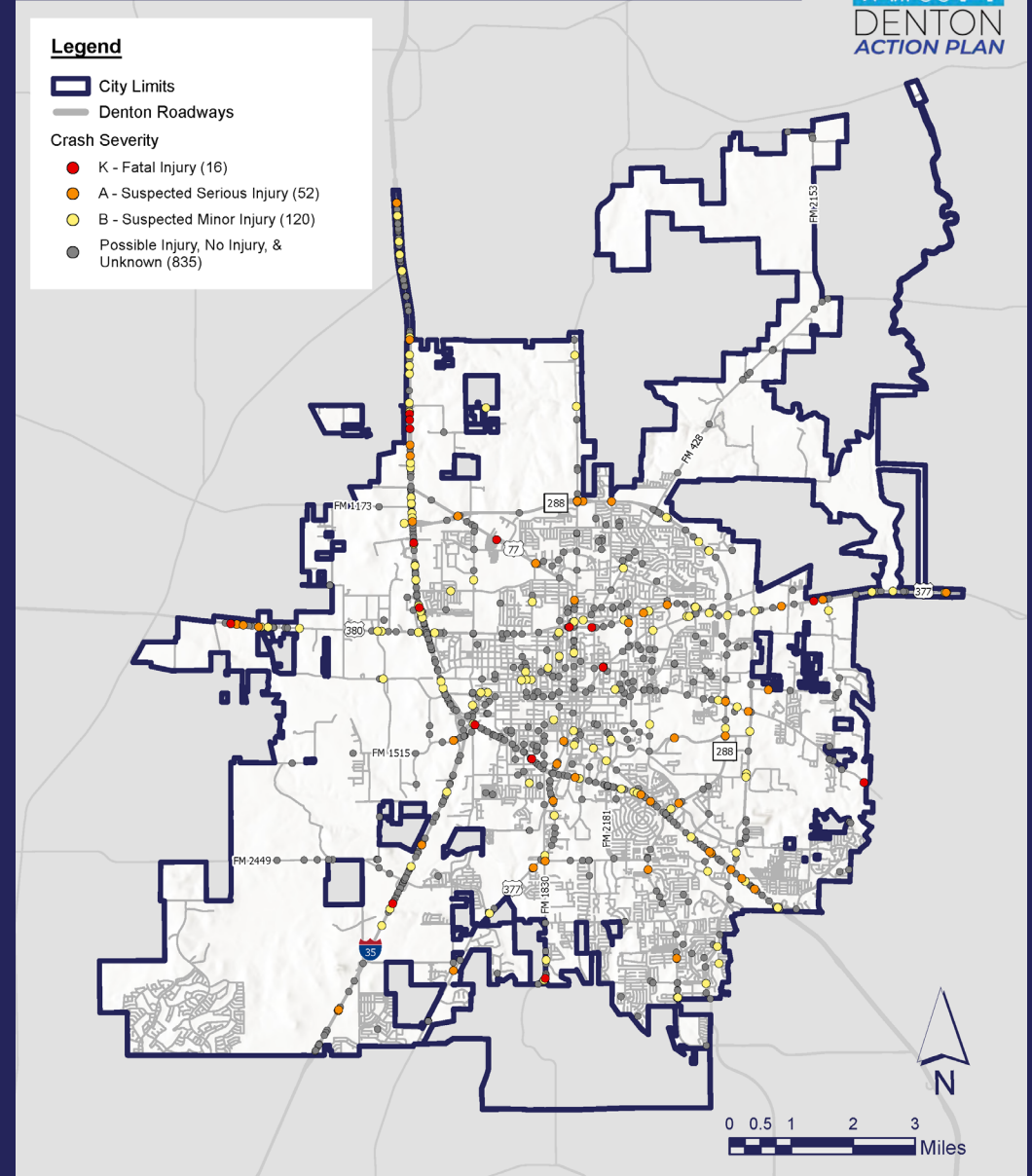
Unlit or Poor Lighting Condition Crashes Map

Source: City of Denton, CRIS (2019 - 2023)



Legend

- City Limits
- Denton Roadways
- Crash Severity
 - K - Fatal Injury (16)
 - A - Suspected Serious Injury (52)
 - B - Suspected Minor Injury (120)
 - Possible Injury, No Injury, & Unknown (835)



CRASH ANALYSIS TAKEAWAYS (2017-2021)



Speed-Related fatalities are the most common in Denton



Percentage of Bicycle & Pedestrian Related Crashes that are KAB severity

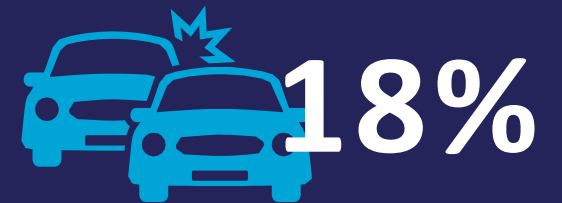


Impaired Driving and Pedestrian Crashes are More Severe than Average



High Crash Intersections:

- US 380 & IH 35
- SL 288 & IH 35
- Brinker Rd & SL 288



Percentage of Crashes Occurring at an Intersection



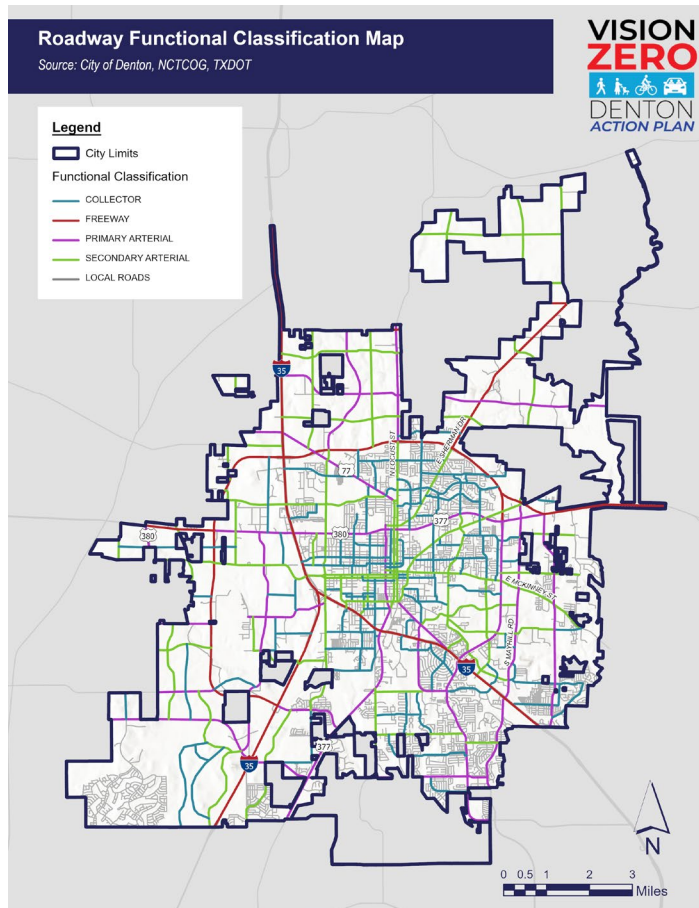
HIGH-INJURY NETWORK

DATA INPUTS

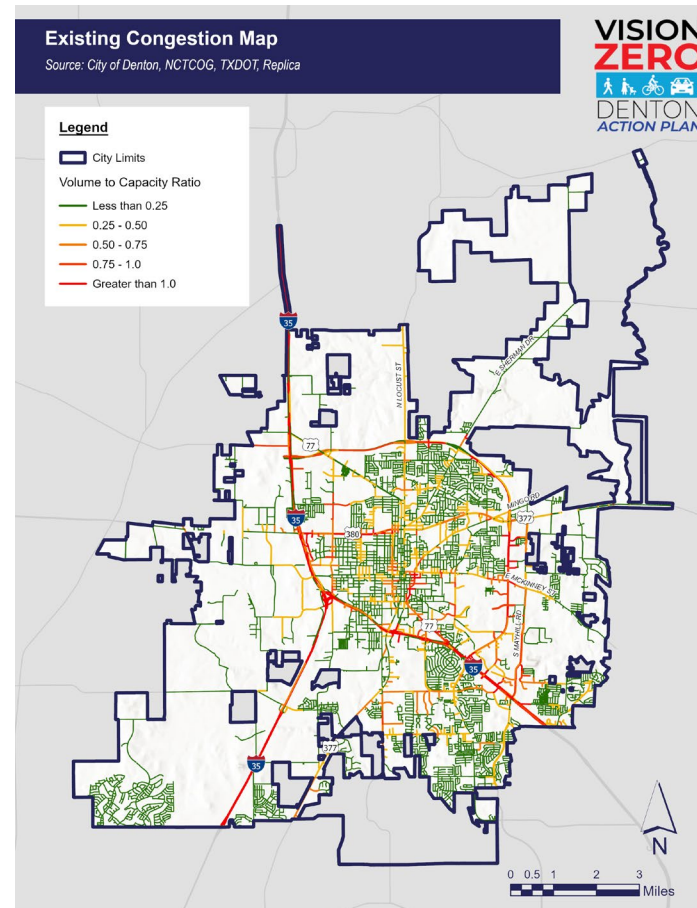
Critical Crash Rate Method

- A critical crash rate is evaluated for each segment and compared to the observed crash rate. Road segments with an observed crash rate greater than their critical crash rate are flagged for further investigation.

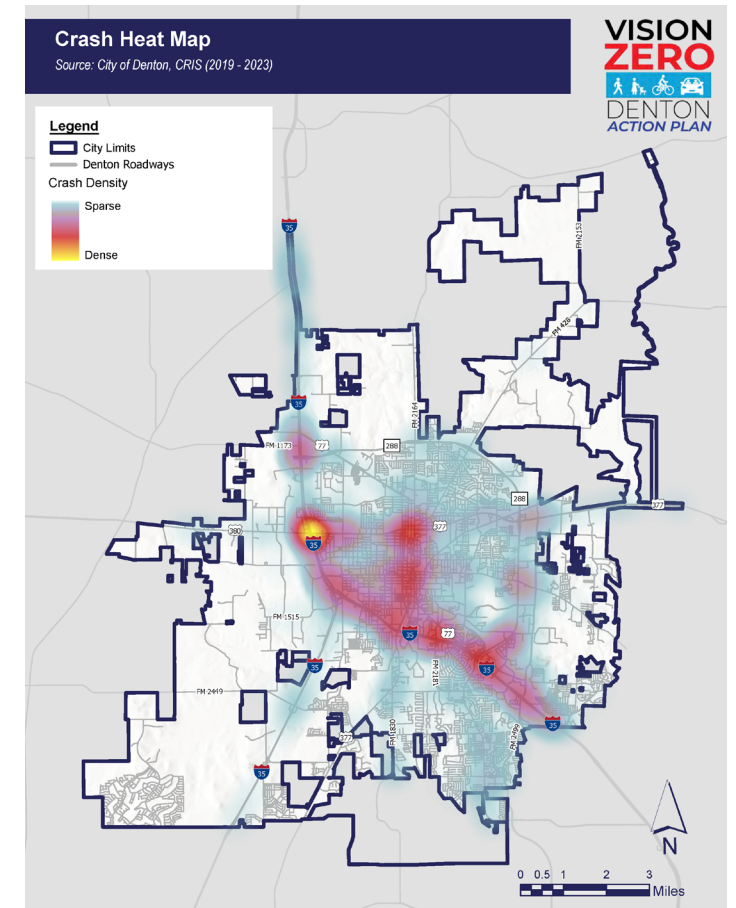
Functional Class



Traffic Volumes



Crash Count (KABs)



MODEL PROCESS

Assigning Data to Street Segments

- Functional Class
- Traffic Volumes
- Crash Count (KABs)



Calculating Variables of Critical Crash Rate

- Assign a weight to crashes by severity
- HMVMT = Hundred Million Vehicle Miles Traveled
- R_i = Observed Crash Rate (crashes per HMVMT)
- $R_{c,i}$ = Critical Crash Rate



Calculate Critical Crash Rate Ratio

- $R_i / R_{c,i}$
- > 1 = flagged for potential HIN

SEGMENT EXAMPLE: FM 2499

Assigning Data to
Street Segments

- Functional Class:
Primary Arterial
- Traffic Volumes:
13,407
- Crash Count (KABs):
16



Calculating Variables
of Critical Crash Rate

- HMVMT = **.064**
- R_i = **170** Crashes Per
HMVMT
- $R_{c,i}$ = **13.6** expected
average crash rate



Calculate Critical
Crash Rate Ratio

- $R_i / R_{c,i}$ = **12.55**
- > 1 = **Yes, Flagged
for HIN**

CRASH RATE RATIOS OF THE HIN

Critical Crash Rate Ratio Map - Original Model

Source: City of Denton, TxDOT, CRIS (2019 - 2023)

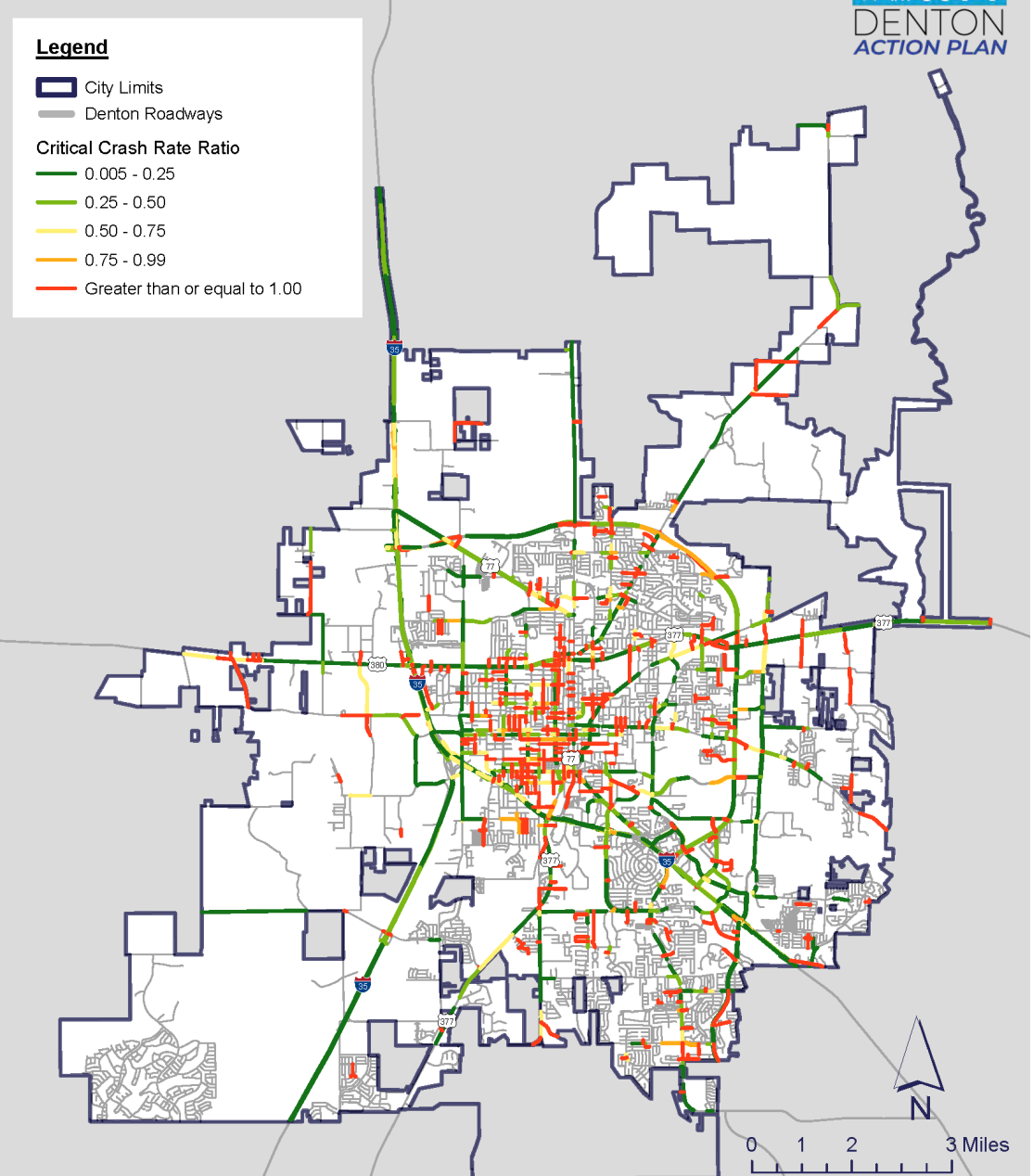


Legend

- City Limits
- Denton Roadways

Critical Crash Rate Ratio

- 0.005 - 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 0.99
- Greater than or equal to 1.00



POST PROCESSING

- Removed segments with a single crash
- What segments are being called out from the model ratio results?
- What gaps between these segments can we close?
- What percentages are we grabbing for each:
 - Road Network – minimize
 - Total KABs – maximize
 - Total Ks – maximize
 - Total As – maximize
 - Total Bs – maximize

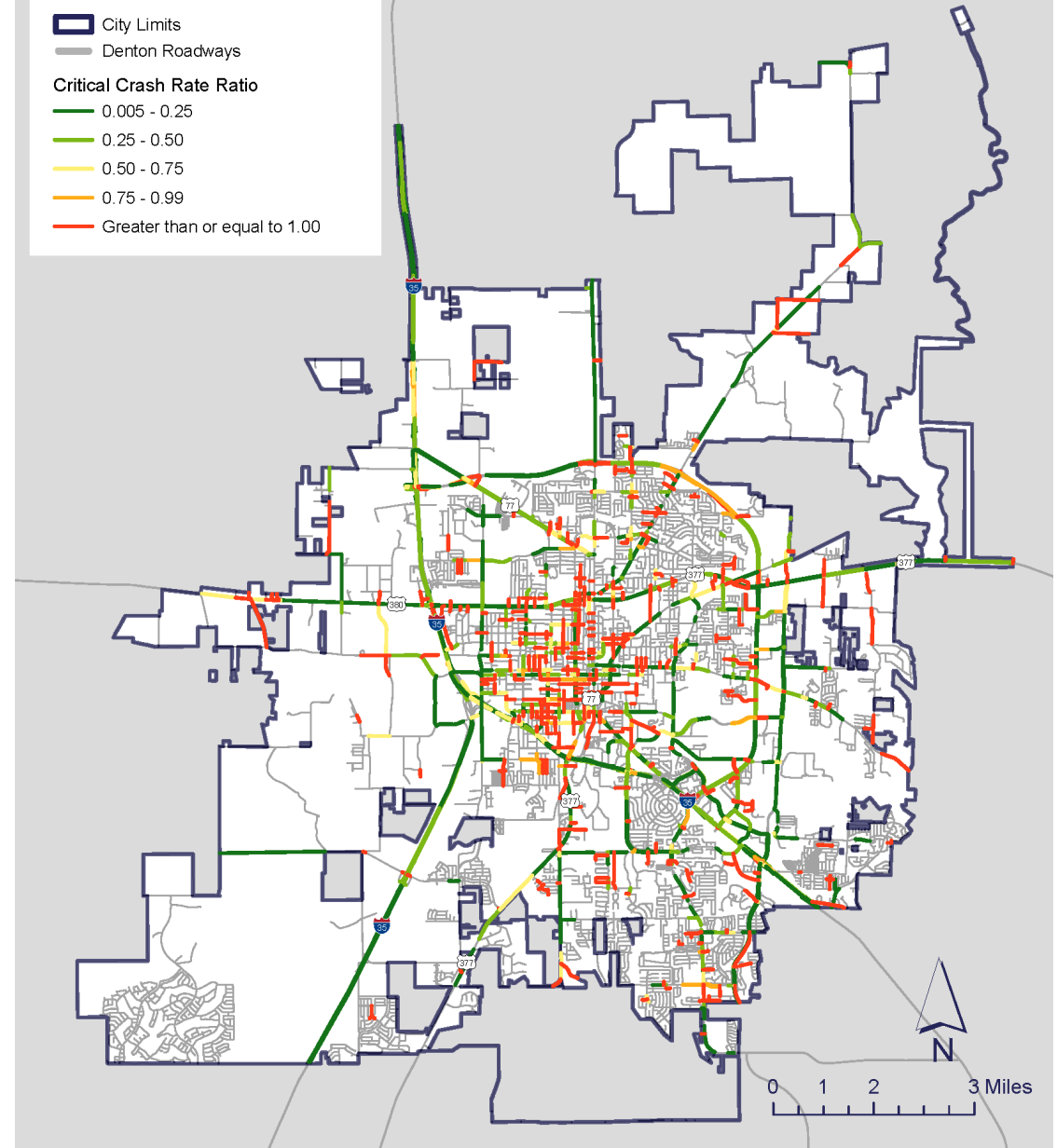
Critical Crash Rate Ratio Map - Original Model

Source: City of Denton, TxDOT, CRIS (2019 - 2023)



Legend

- City Limits
- Denton Roadways
- Critical Crash Rate Ratio
 - 0.005 - 0.25
 - 0.25 - 0.50
 - 0.50 - 0.75
 - 0.75 - 0.99
 - Greater than or equal to 1.00



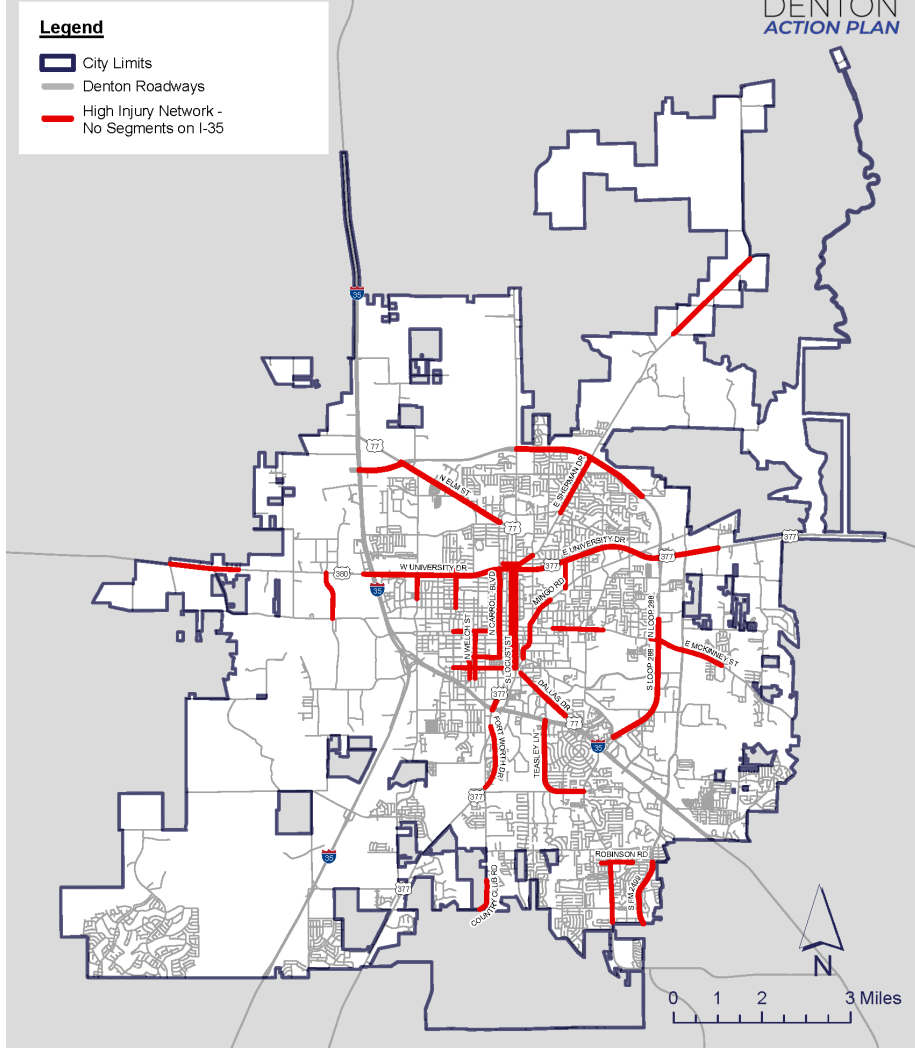
HIN VS CRASH RATE RATIO

Recommended High Injury Network

Source: City of Denton, TxDOT, CRIS (2019 - 2023)



- Legend**
- City Limits
 - Denton Roadways
 - High Injury Network - No Segments on I-35

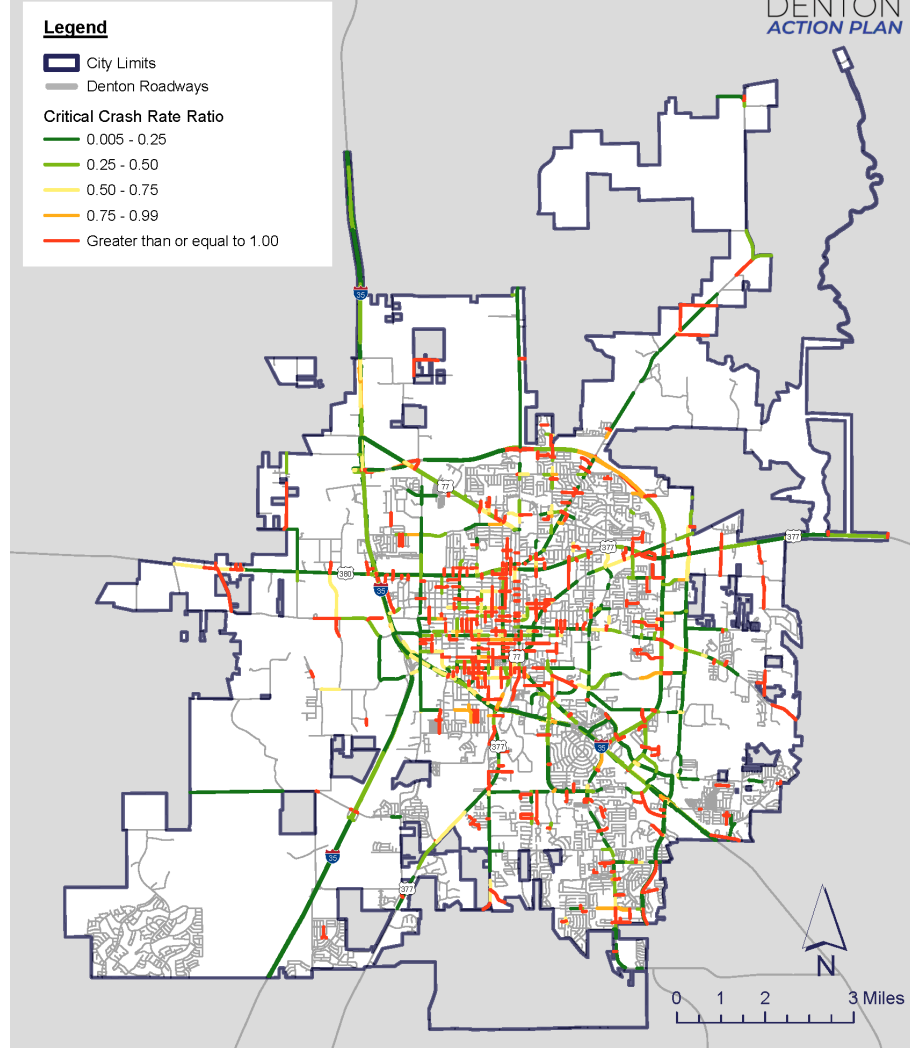


Critical Crash Rate Ratio Map - Original Model

Source: City of Denton, TxDOT, CRIS (2019 - 2023)



- Legend**
- City Limits
 - Denton Roadways
- Critical Crash Rate Ratio**
- 0.005 - 0.25
 - 0.25 - 0.50
 - 0.50 - 0.75
 - 0.75 - 0.99
 - Greater than or equal to 1.00



HIGH INJURY NETWORK

- 8.5% of total Road Network
- 64.9% of KABs
- 64.4% of K's
- 61.5% of A's
- 65.9% of B's

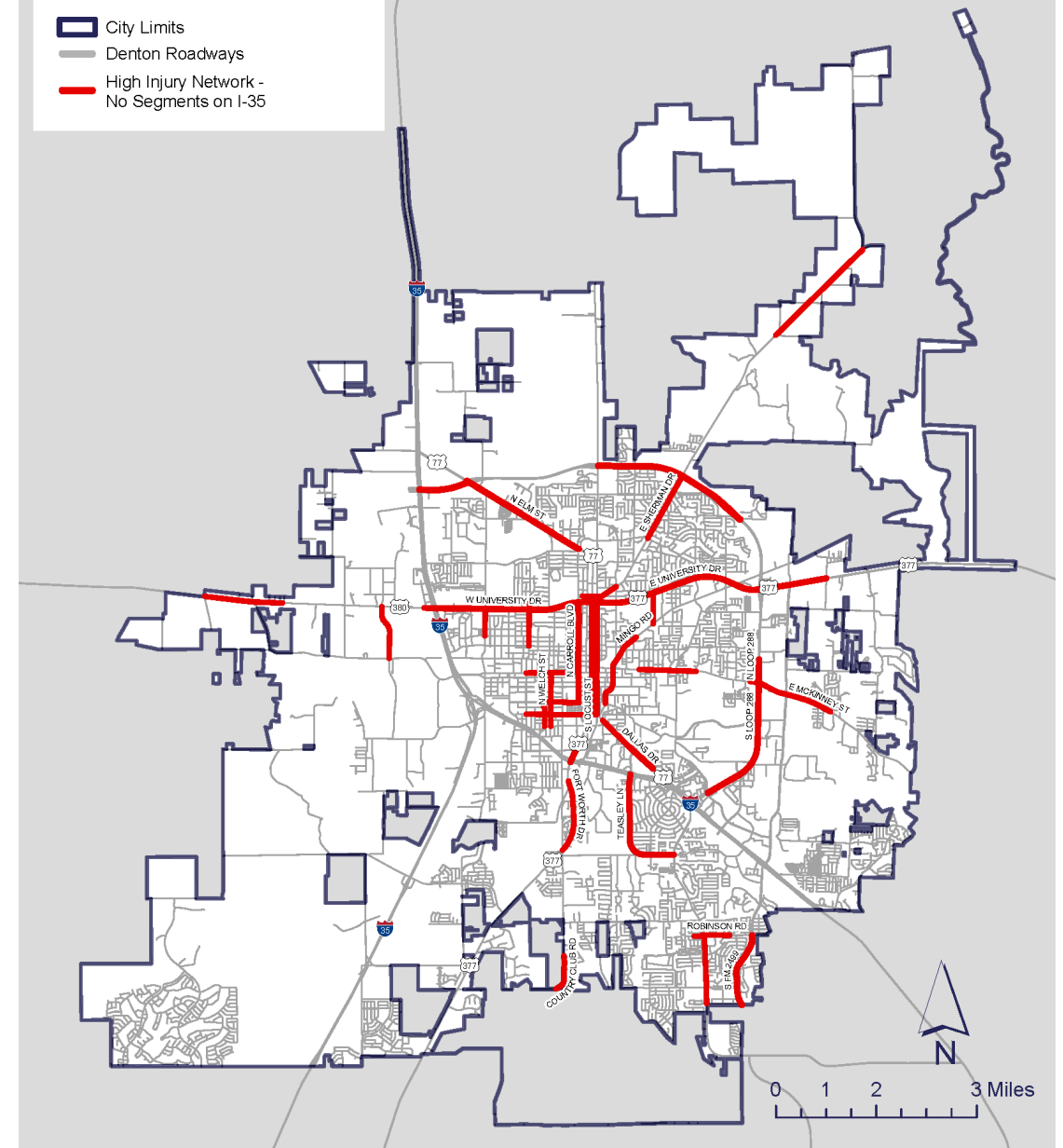
Recommended High Injury Network

Source: City of Denton, TxDOT, CRIS (2019 - 2023)



Legend

- City Limits
- Denton Roadways
- High Injury Network - No Segments on I-35



TOP 10 HIN CORRIDORS

Corridor Name	From	To	Functional Class	Peak Ratio	Peak Volume	Total KABs
FM 2499	City Boundary	Robinson Rd	Primary Arterial	12.56	13,407	16
Fry St	Scripture St	W Hickory St	Local	8.99	1,121	4
N Welch St	W Collins St	W Oak St	Secondary Arterial	7.59	2,311	15
W Highland St	Ave A	S Carroll Blvd	Collector	6.96	973	9
W University Dr	Private Drive at City Boundary	Cottonwood Ln	Primary Arterial	5.00	25,284	15
Mingo Rd	N Bell Ave	Texas St	Secondary Arterial	4.52	6,395	9
Robinson Rd	Teasley Ave	Bent Tree Lane	Secondary Arterial	4.05	5,965	3
Miranda Pl	Colina Ave	Teasley Ave	Local	3.76	615	5
Loop 288 (North West)	I-35 Interchange	N Elm St	Primary Arterial	3.45	72,724	23
E Mckinney St	Cardinal Dr	S Fork	Primary Arterial	3.37	33,667	43

City of Denton Vision Zero Task Force Meeting #2 Sign-In Sheet



BREAK





STUDY CORRIDOR EXERCISE

HIN MAPPING EXERCISE

- Split into three (3) groups
- Spend 20 minutes discussing HIN priorities
- Use markers to **note any surprises or discrepancies in the HIN**
- Use the **Crash History Maps** provided to help select study corridors
- Use the **Interactive Web Map** to aid with your analysis and **input comments** (Web Map on next slide)
- Use markers to **collectively decide on study corridors**
- Try to limit your group to **10 miles only**
- Be prepared to present and discuss your results

INTERACTIVE WEB MAP



VISION ZERO
A ZERO VISION
DENTON

Denton Vision Zero Interactive Web Application

To submit a comment, please navigate to your location or area of interest and select either Point Feature, Line Feature, or Polygon Feature from the Editor tool below, then place the feature accordingly.

Editor

Settings

Edit features

Select

Create features

Filter types

Point Feature Comment

Point Feature Comment

Line Feature Comment

Line Feature Comment

Polygon Feature Comment

Polygon Feature Comment

Comments

Point Feature Comment

☆

Line Feature Comment

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Polygon Feature Comment

▭

KAB Crashes

Crash_Seve

- A - SUSPECTED SERIOUS INJURY
- B - SUSPECTED MINOR INJURY
- K - FATAL INJURY
- others

Denton HIN

—

Denton Roadways

—

City Limits

▭

City Limits Mask

▭

5 km
2 mi

UnivNorthTexas, Texas Parks & Wildlife, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc., METI/NASA, USG... Powered by Esri



SAFETY COUNTERMEASURES

COUNTERMEASURES

- Safety countermeasures refer to specific strategies or interventions endorsed by the Federal Highway Administration to enhance roadway safety and reduce the likelihood of accidents or fatalities.
- Each countermeasure is assigned a Crash Modification Factor (CMF) score. CMFs represent the proportion of crashes that can be expected after implementing a countermeasure.

Crashes

100

CMF

.6

Expected Crashes

60



RAISED MEDIANS CMF 0.29

- Raised barriers in the center portion of the street or roadway
- Functional & aesthetic value
- They are most useful on high volume, speed, and driveway density roads



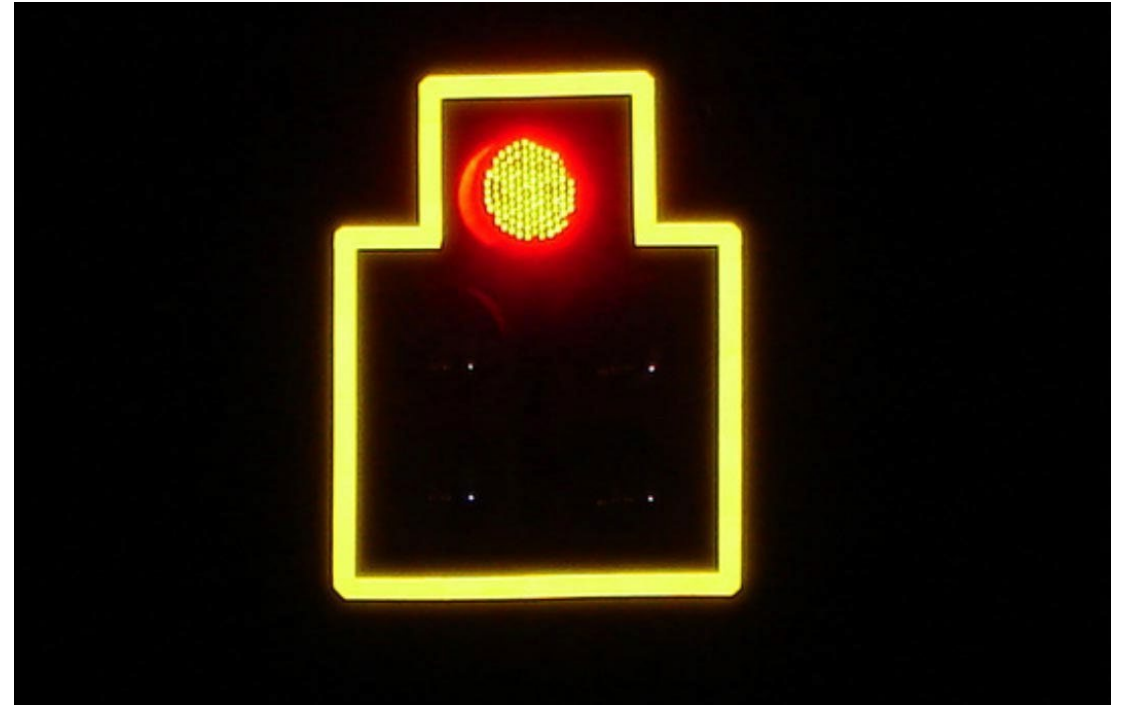
HIGH CONTRAST LANE MARKINGS CMF 0.75

- Road markings that are designed to be easily distinguishable from the surrounding pavement
- Improve visibility and clarity for drivers
- Can reduce lane departure, intersection, distracted driving, and impaired driving-related crashes



RETROREFLECTIVE BACKPLATES CMF 0.85

- Backplates made by framing a signal head with a 1-to-3-inch yellow retroreflective border
- Improved visibility of signals, especially at night
- Can assist with intersections, distracted driving, and impaired driving



ROUNDBABOUTS

CMF 0.59

- Intersection with a circular configuration that safely and efficiently moves traffic
- Reduce vehicle speeds, establish clear right-of-way, minimize conflict points
- Contribute to a better flow in traffic



BIKE LANES

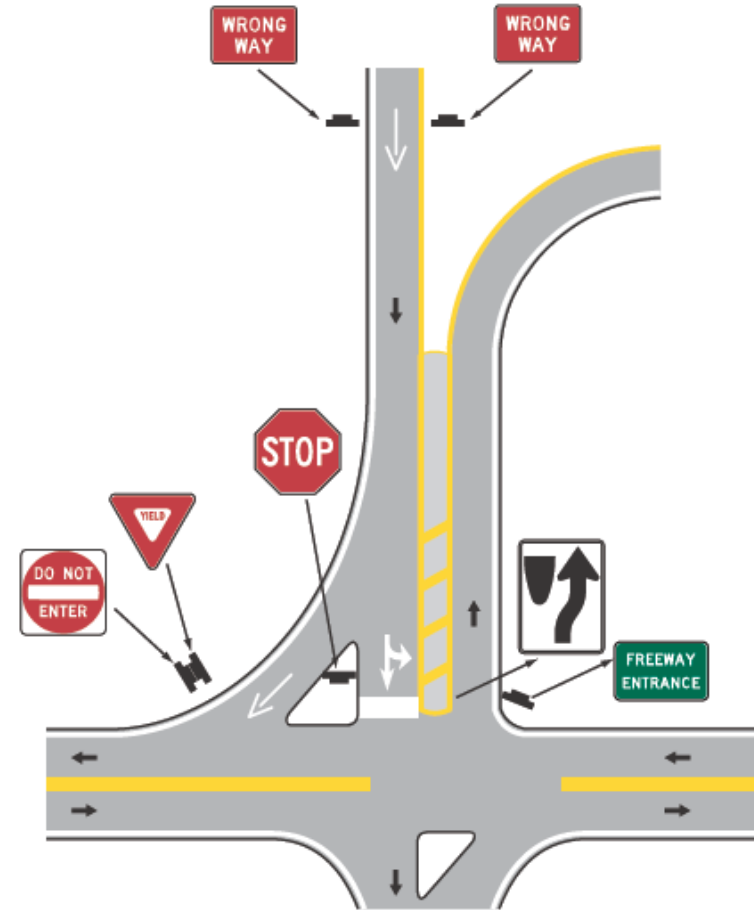
CMF 0.435

- Designated area of a roadway that is reserved for bicycles
- Reduce conflicts between cyclists and motorists
- Encourage multimodality



LANE DESIGNATION MARKINGS AND SIGNS CMF 0.75

- Pavement markings are painted or applied symbols, lines, and patterns on road surfaces to convey traffic regulations, guidance, and warnings to drivers
- Reduce confusion, improve flow, minimize the risk of crashes



RECTANGULAR RAPID FLASHING BEACON (RRFB) CMF 0.31

- RRFBs consist of two, rectangular-shaped yellow indications, each with a light-emitting diode (LED)-array-based light source
- Low-maintenance improvement
- Should be deployed at targeted locations



IMPROVING SIGNING AND VISIBILITY AT SIGNALS CMF 0.732

- Improvements may include lighting, high-visibility crosswalks, and signing and pavement markings
- Low-cost improvements that can be deployed on a large scale



SIDEWALKS

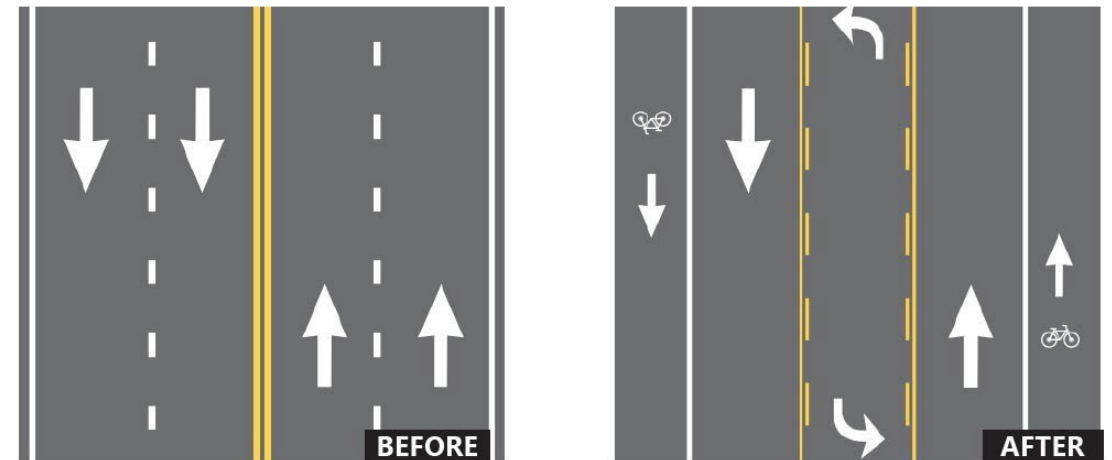
CMF 0.598

- Defined space or pathway for use by a person traveling by foot or using a wheelchair
- Improve the safety and mobility of pedestrians
- Increased separation increases safety and comfortability



ROADWAY RECONFIGURATION CMF 0.53

- A Roadway Reconfiguration 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
- Opportunity to repurpose existing ROW



SPEED FEEDBACK SIGNS CMF 0.95

- System of speed measurement and feedback sign alerting and warning drivers if exceeding the speed limit
- Feedback signs may display the actual speed or a warning message



MIDBLOCK CROSSINGS CMF 0.45

- Designated pedestrian crossings away from an intersection
- Inexpensive method to increase pedestrian safety
- Encourage pedestrians to use dedicated crossings
- Alert drivers to pedestrian crossings



PEDESTRIAN REFUGE ISLAND CMF 0.44

- Pedestrian Refuge Islands shortens pedestrian exposure when crossing an intersection
- Most useful at intersections with high traffic volumes



CURB EXTENSIONS

CMF N/A

- Curb extensions visually and physically narrow the roadway, creating safer and shorter crossings for pedestrians while increasing the available space for pedestrians or other amenities
- Help with speed reductions, and increased safety



WIDER EDGE LINES CMF 0.63

- Increasing edge line striping width
- Wider edge lines increases lane marking visibility
- Effective low-cost method





NEXT STEPS

HOMEWORK

- Review TZD actions and select the top 20 that would make the most sense within Denton
- Use the Interactive Web Map to suggest changes to the HIN



NEXT STEPS

May 14, 2025

- **VZTF Meeting #3:** Implementation Matrix/Action Plan

July 16, 2025

- **VZTF Meeting #4:** Draft Recommendations

September 17, 2025

- **VZTF Meeting #5:** Draft VZAP Review

November 19, 2025

- **VZTF Meeting #6:** VZAP Final Plan & Recognition of the VZTF

VISION ZERO



DENTON ACTION PLAN

THANK YOU

Project Management Team Contact Information

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