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A

Appendix 1: Systemic Safety Analysis



NDOT



Executive Summary

This systemic safety analysis assesses the characteristics of collisions that occurred between January 2014 and August 2021 to identify locations within Nashville that have an increased risk for specific crash types. As part of the Nashville Vision Zero program, this analysis specifically focuses on traffic collisions that resulted in a person being injured to some degree, whether that injury be minor, serious, or fatal. Particular attention was paid to serious and fatal collisions, otherwise known as killed and severely injured collisions (KSI). The analysis did not include collisions that resulted in property damage only. By investigating factors associated with each injury collision (e.g., lighting conditions, demographics) and the characteristics of the

roadway on which the collision occurred (e.g., number of lanes, surrounding land use context, presence of sidewalks), this analysis identifies some of the most pertinent trends in Nashville's injury collisions.

Collisions used in this analysis were accessed via the Tennessee Department of Transportation's E-Trims digital platform. Only collisions that occurred along state and locally controlled roadways were included. The high rates of traffic on federally controlled interstates would obscure trends from state and local roads. The crash factors involved in interstate collisions tend to differ substantially relative to other facility types. Additionally, local authorities have less control over these roads.

Key Findings

Who is impacted?

BY MODE

- One in four people hit by a car while walking in Nashville are killed or seriously injured.
- Pedestrians in Nashville are disproportionately involved in fatal and serious injury collisions. Though only 3% of typical commuters, pedestrians are involved in 17% of fatal and serious injury collisions.
- Pedestrians account for 9% of minor injury hit-and-runs but 35% of fatal and serious injury hit-and-runs.
- Although bicyclists make up less than 0.3% of Nashville commuters, they represent 2% of all fatal and serious injury collisions.

BY DEMOGRAPHICS

- Across all modes, Vulnerable and Highly Vulnerable Areas, as determined by the prior Equity Analysis, have collision rates 2-4 times greater than non-vulnerable areas when normalized by square mile.
- A person walking in a highly vulnerable area is 9 times more likely to be killed or severely injured on a high-speed road.

When are collisions occurring?

- Pedestrians and Motorists are most often killed or seriously injured in a traffic collision between 5pm and 9pm.
- 67% of collisions where a pedestrian was fatally or seriously injured occurred after dark. Dark-lighted conditions means that the collision occurred after daylight hours on a roadway with lighting. The high percentage of pedestrian collisions occurring in dark-lighted conditions could indicate lighting along these roadways is not sufficient for people to walk them after dark.
- Collisions involving pedestrians are rising. If the current trend continues, the number of annual fatal and serious injury crashes involving a pedestrian will increase from 81 in 2019 to a projected 96 by 2026.

Where are collisions happening, and what roadway facility characteristics are associated with collisions?

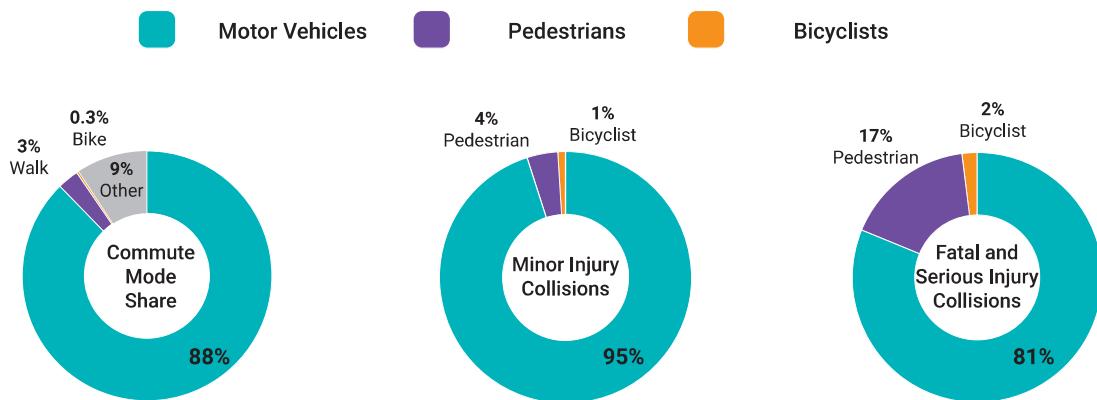
- An increase in the posted speed limit from 30 to 35 mph results in a three- to six-fold increase in collision rates for all modes and all severities.
- 60% of pedestrian and 52% of bicyclist fatal and serious injury collisions occur within 500 feet of a high frequency transit stop (defined as having 15-minute or shorter headway from 6 – 9 AM).
- Commercial areas account for just 4% of the county's total land use but an average of 22% of the parcel area within 500' of all collisions.

Safety Overview

When examining overall patterns in modes and temporal trends, the analysis determined that pedestrians and bicyclists are more at risk for fatal and serious injury collisions than motorists. While **pedestrians account for just 3% of commuters and 4% of minor injury collisions, they account for 17% of collisions where a person was killed or seriously injured.** Overall, one in four (25%) of people hit by a vehicle while walking was killed or seriously injured, which is nearly double the percentage of cyclists (13%) and four times that of motorists (6%). Temporal trends indicate that pedestrians are most at risk during the evening hours, between 5:00pm and 9:00pm. Furthermore, the slight increase in pedestrian-involved collisions during the winter months could suggest a greater need for adequate pedestrian lighting during twilight and dark conditions as there is less daylight during that time of year.

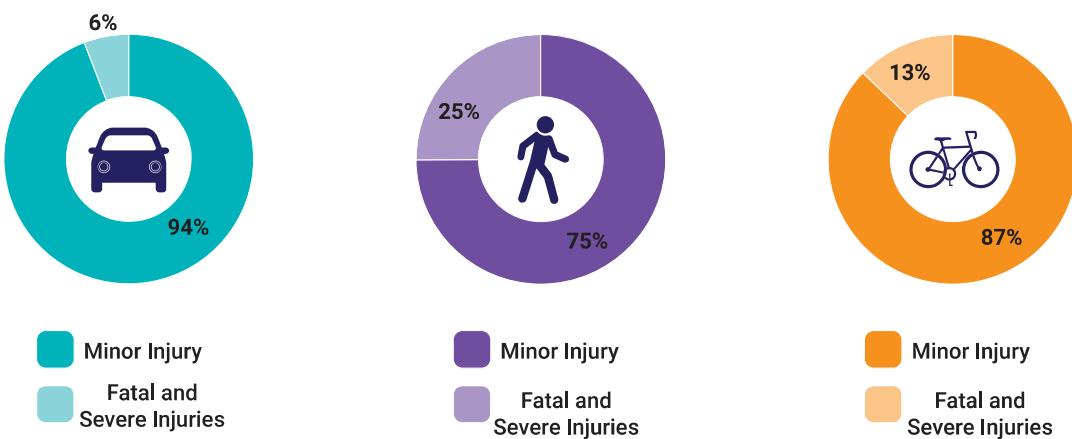
Crashes by Mode

Figure 1 - Collisions by Mode



Commuting data is from the 2019 U.S. Census American Community Survey, 1-year estimates

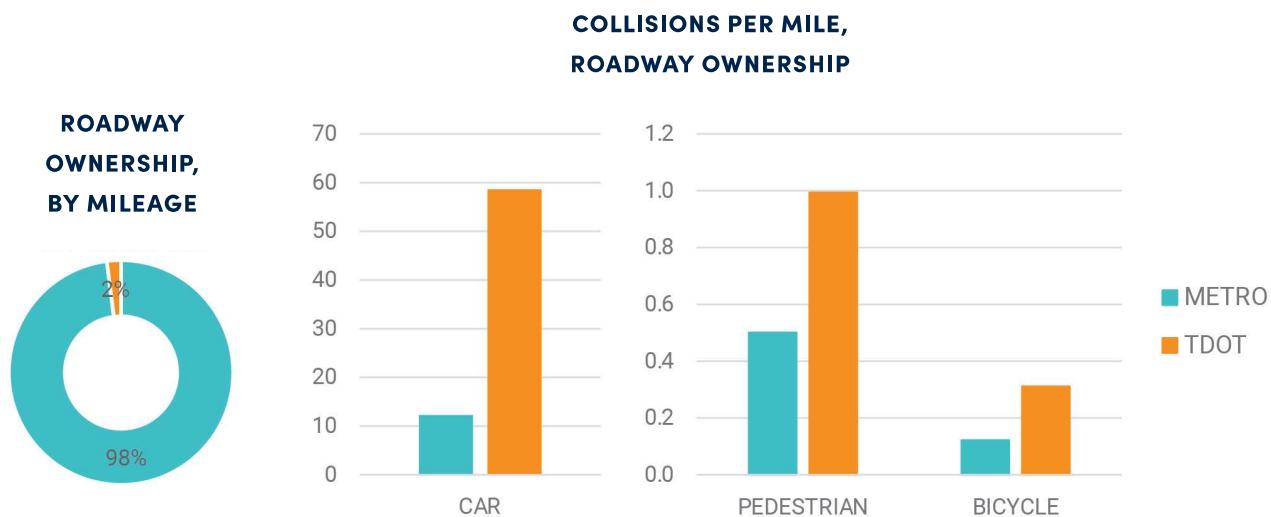
SHARE OF KSI COLLISIONS BY MODE



Crash Hotspots

While 91% of collisions occur on Metro controlled roadways, TDOT roadways have more collisions per mile. Further, state-owned roadways feature the highest density of collisions that result in injury, regardless of severity, meaning state-owned roads have the most minor injury, serious injury, and fatal collisions per mile. This is likely due to the fact that state-controlled roadways comprise just a small portion of the total road network in Nashville, but make up many of the higher-speed arterial roads whereas Metro owns the majority of the local road network.

Figure 2 – Roadway Ownership of Collisions, by Severity and Mode



Among state-owned roads, Nolensville Pike and Gallatin Pike are the roadways with the greatest collision frequency for all modes of travel. Murfreesboro Pike and Dickerson Pike also feature a high number of collisions for pedestrians and motorists. Regardless of roadway ownership, collisions are concentrated along arterial connectors and in the downtown areas which underscore the roles of speed and roadway width in influencing collisions.

Map 1 - Motorist-Involved Collisions

**MOTORIST COLLISION
HEAT MAP**

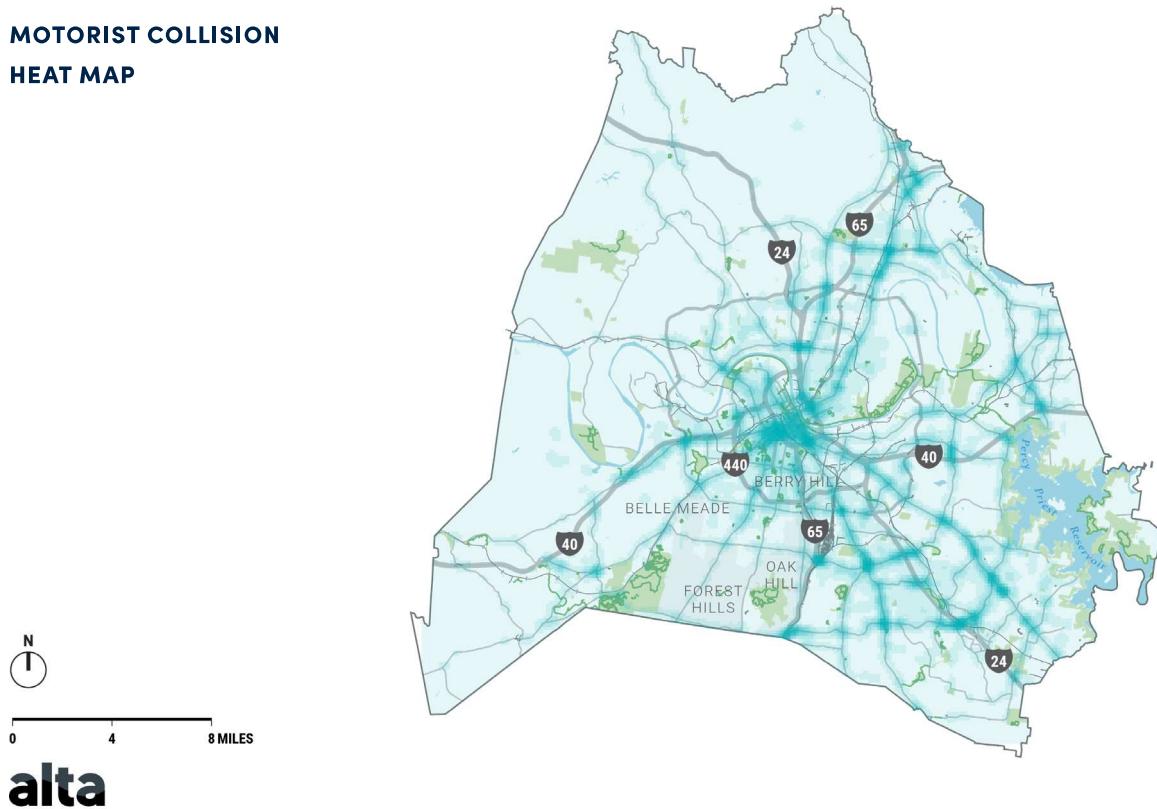


Table 1 - Greatest Frequency of Motorist-Involved Collisions within 50 Feet of the Roadway

ROADWAY	COLLISIONS
Murfreesboro Pike	2755
Nolensville Pike	2087
Bell Rd	1847
Old Hickory Blvd	1765
Gallatin Pike	1453
Dickerson Pike	1280
Harding Pl	1259
Lebanon Pike	806
Charlotte Pike	800
Charlotte Ave	726

Map 2 - Pedestrian-Involved Collisions

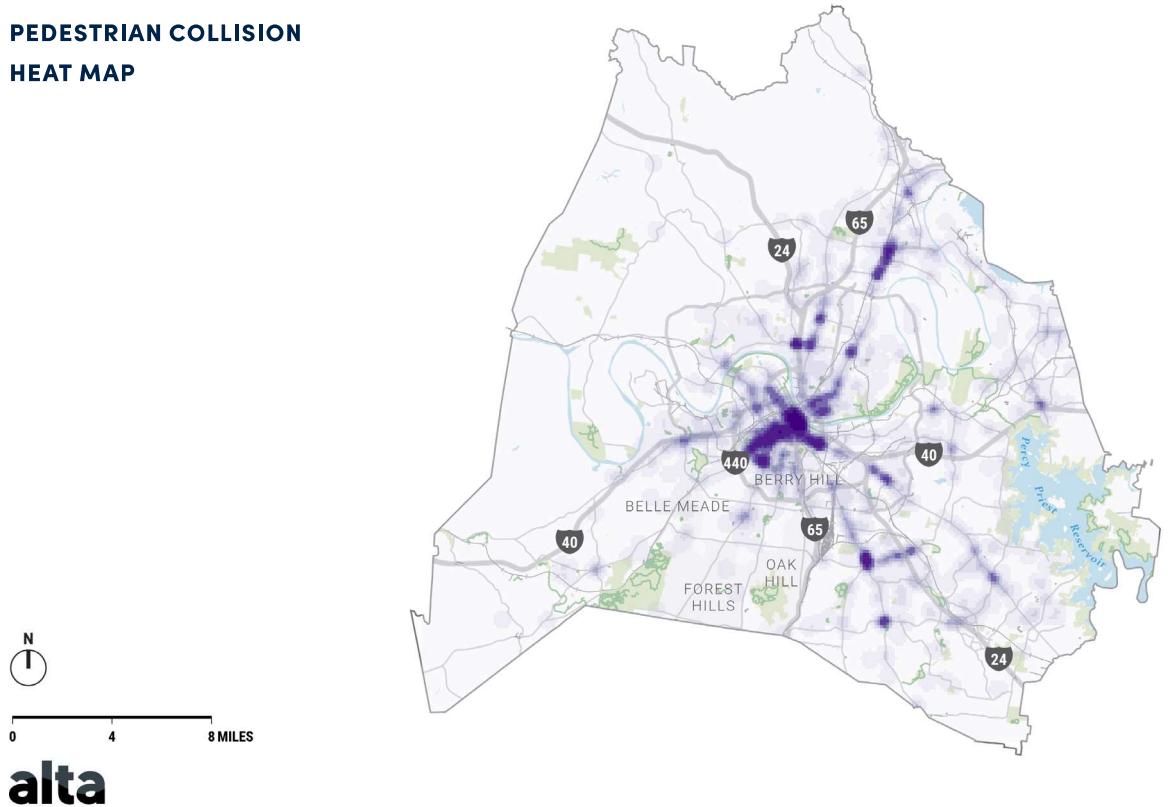


Table 2 – Greatest Frequency of Pedestrian-Involved Collisions within 50 Feet of the Roadway

ROADWAY	COLLISIONS
Gallatin Pike	107
Murfreesboro Pike	106
Nolensville Pike	104
Broadway	90
Dickerson Pike	69
West End Ave	67
Church St	64
Lafayette St	60
12th Ave S	47
21st Ave S	45

Map 3 – Bicyclist-Involved Collisions

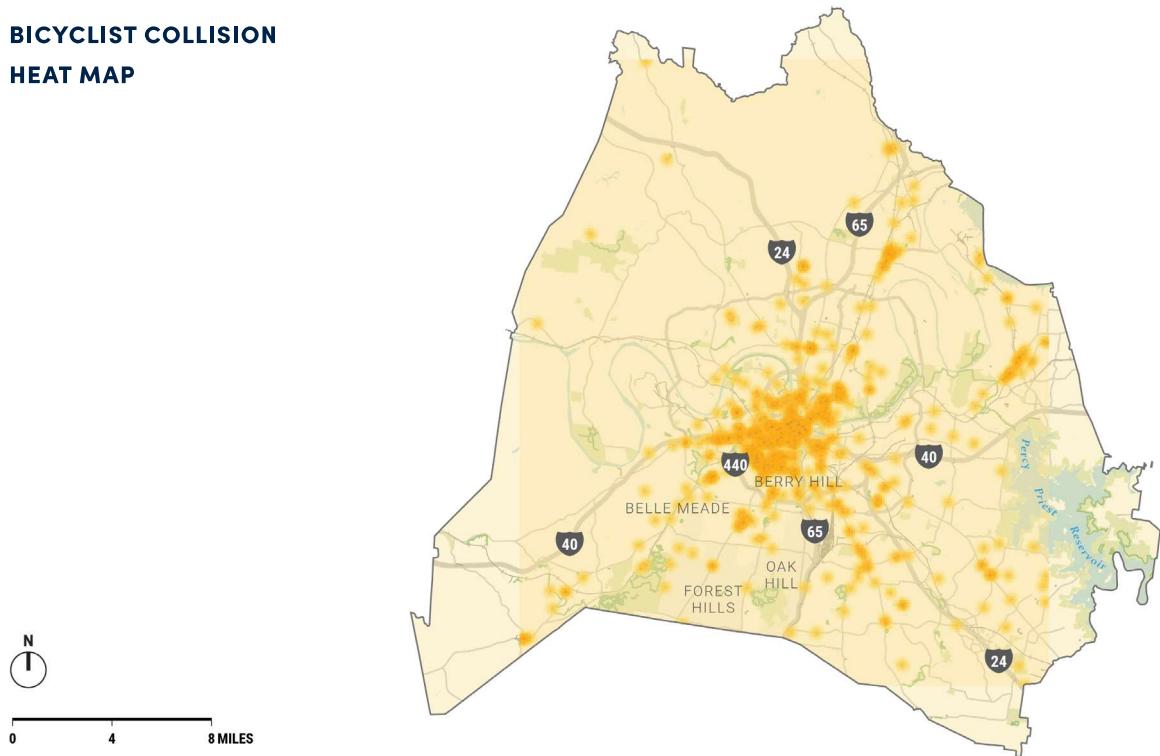


Table 3 – Greatest Frequency of Bicyclist-Involved Collisions within 50 Feet of the Roadway

ROADWAY	COLLISIONS
Charlotte Ave	24
Church St	18
Nolensville Pike	16
Gallatin Pike	13
8th Ave S	12
Lebanon Pike	12
21st Ave S	11
West End Ave	11
Demonbreun St	10
Jefferson St	10

Crash Rates per 100,000 People

The National Highway Traffic Safety Administration documents and reports yearly traffic fatality rates per 100,000 population for cities and counties across the nation. In 2019, **Nashville had the 24th highest fatality rate and 21st highest pedestrian fatality rate per 100,000 population amongst the**

Table 4 - Top 25 Metro Areas by Crash Rates per 100,000 People, All Modes

CITY	FATALITY RATE PER 100,000 POPULATION (2019)
Chattanooga, TN	24.07
Knoxville, TN	23.99
Jackson, MS	23.66
Fort Lauderdale, FL	22.47
Macon-Bibb County, GA	22.2
Memphis, TN	19.97
St. Louis, MO	19.96
Tucson, AZ	19.52
Lubbock, TX	19.32
Baton Rouge, LA	18.62
Albuquerque, NM	18.02
Birmingham, AL	17.67
Detroit, MI	17.16
Atlanta, GA	16.97
Mobile, AL	16.96
Little Rock, AR	16.72
Jacksonville, FL	16.35
Kansas City, MO	15.95
San Bernardino, CA	15.76
Tampa, FL	15.76
Louisville/Jefferson County, KY	15.22
Lakewood, CO	15.2
Nashville-Davidson County, TN	14.46
Palmdale, CA	14.19
Lancaster, CA	13.96

Source: [NHTSA Annual Tables](#), "People Killed, Population, and Fatality Rates in Cities With Populations of 150,000 or Greater, 2019"

174 cities and counties with populations over 150,000 residents. Generally, cities and counties with the highest fatality rates were concentrated in the southeastern United States, and four of the top 25 cities and counties are located in Tennessee.

Table 5 – Top 25 Metro Areas by Crash Rates per 100,000 People, Pedestrians Only

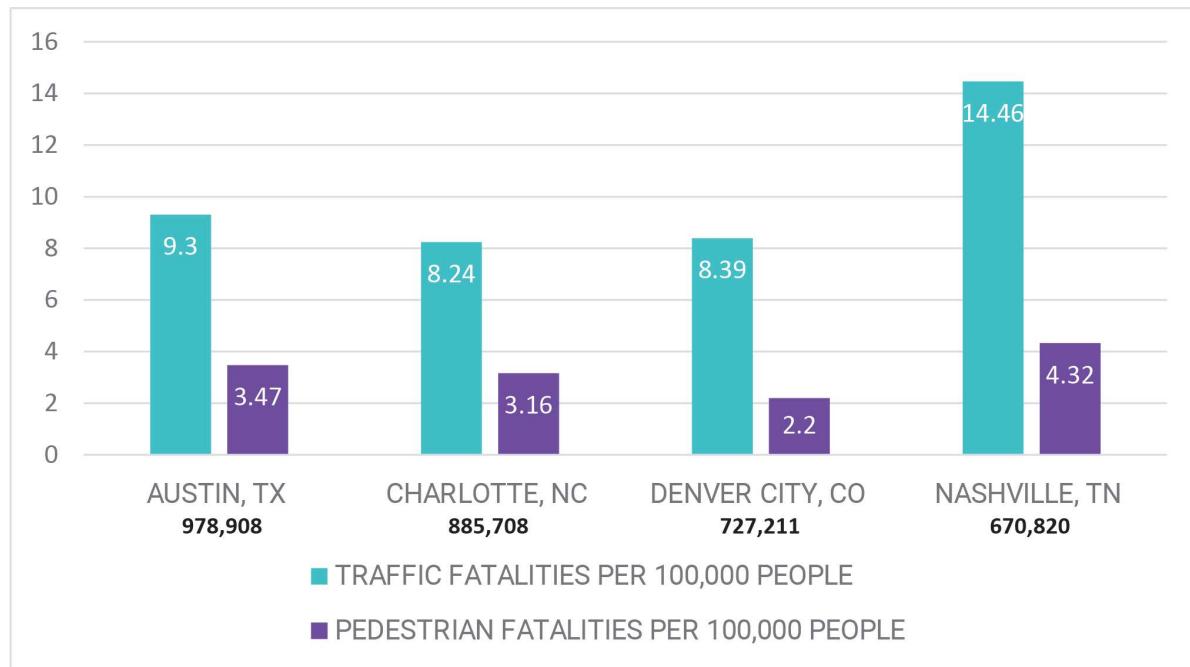
CITY	PEDESTRIAN FATALITY RATE PER 100,000 POPULATION (2019)
Fort Lauderdale, FL	10.96
Albuquerque, NM	7.49
Tucson, AZ	7.48
Macon-Bibb County, GA	7.18
Orlando, FL	6.61
Jackson, MS	6.23
Little Rock, AR	6.08
San Bernardino, CA	6.02
Miami, FL	5.77
Memphis, TN	5.53
St. Louis, MO	5.32
St. Petersburg, FL	5.28
Stockton, CA	5.12
Lakewood, CO	5.07
Tampa, FL	5
Phoenix, AZ	4.82
Columbus, GA	4.6
Atlanta, GA	4.54
Jacksonville, FL	4.5
Dallas, TX	4.39
Nashville-Davidson, TN	4.32
Knoxville, TN	4.26
Newark, NJ	4.26
El Paso, TX	4.25
Detroit, MI	4.18

Source: [NHTSA Annual Tables](#), "People Killed, Population, and Fatality Rates in Cities With Populations of 150,000 or Greater, 2019"

Vision Zero Cities – Peer Comparisons

Compared to identified peer cities Austin, Charlotte, and Denver, Nashville has a significantly higher rate of fatal crashes per 100,000 population. Nashville also has the highest rate of fatal pedestrian-involved crashes among peer cities. However, Nashville features a slightly lower proportion of pedestrians among the total fatalities reported in 2019.

Figure 3 - Fatal Crash Rates Among Peer Cities, by All Modes and Pedestrian-Only



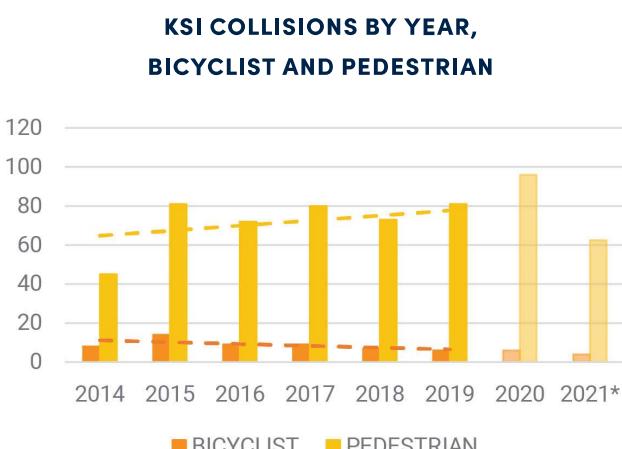
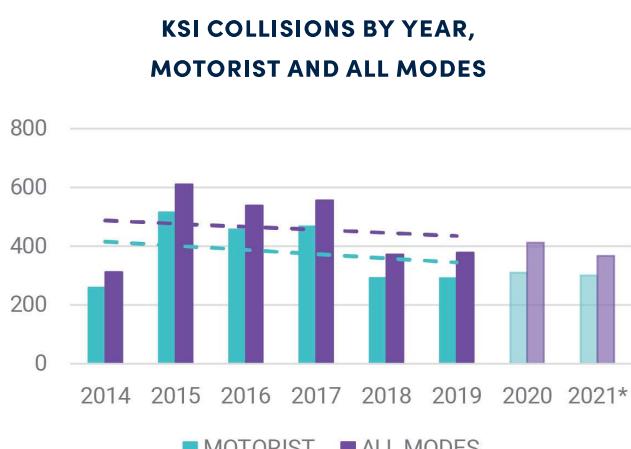
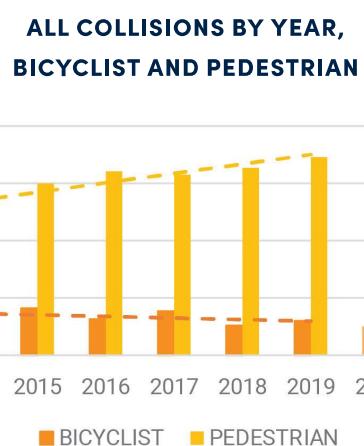
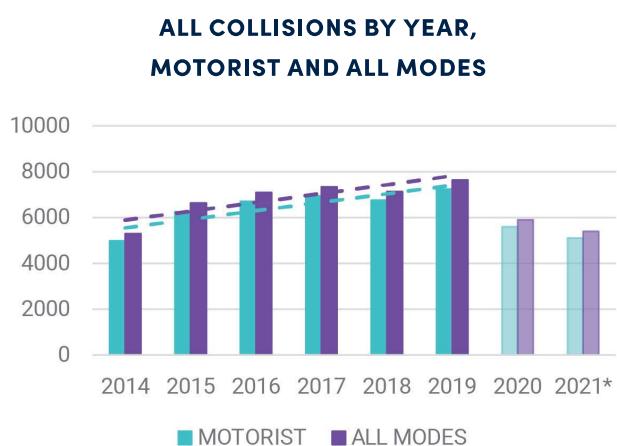
Source: [NHTSA Annual Tables](#), "People Killed, Population, and Fatality Rates in Cities With Populations of 150,000 or Greater, 2019"

Collisions by Year

On average, the number of collisions per year have increased since 2014 in Nashville. Separating collisions by mode also reveals that pedestrian- and motorist-involved collisions have increased. Furthermore, there is a slight upward trend in collisions where a person walking has been killed or seriously injured. Conversely, collisions where a motorist was killed or severely injured trended downward. While bicyclist-involved collisions show a downward trend, the smaller sample of bike collisions included in the analysis compared to pedestrian and motorist collisions limits confidence in the trendline.

The COVID-19 pandemic has significantly impacted travel patterns and as such, It is difficult to accurately forecast future travel demand. The year 2020 was removed from the trend analysis due to the sharp decline in vehicle miles traveled that year. 2021 data was also not included in the trend line as the data analyzed only captures collisions through August.

Figure 4 - Collisions, by Year and Injury



*2021 Data only includes crashes recorded through August, 2021.

Projected Collisions by Year

Collisions for the next five years (up to 2026) were projected, excluding 2020 and 2021, based on the calculated trendlines described above. Though the ongoing impacts of the COVID-19 pandemic make projecting future travel difficult to confidently predict, if the current trend continues, **we can expect an increase from 81 crashes resulting in the death or serious injury of a person walking in 2019 to a projected 96 by 2026.**

Figure 5 – Projected Collisions, by Year and Injury

PROJECTED COLLISIONS BY YEAR, MOTORIST AND ALL MODES



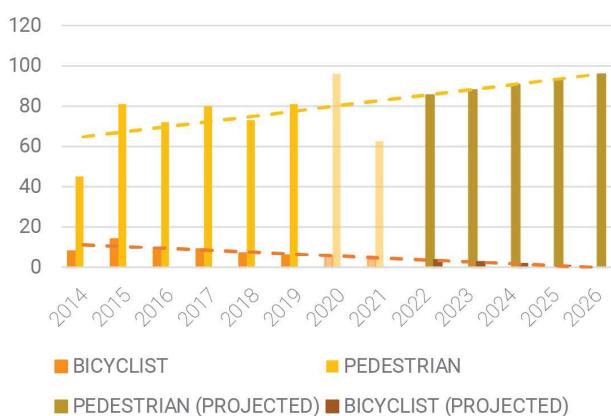
PROJECTED COLLISIONS BY YEAR, BICYCLIST AND PEDESTRIAN



PROJECTED KSI COLLISIONS, MOTORIST AND ALL MODES



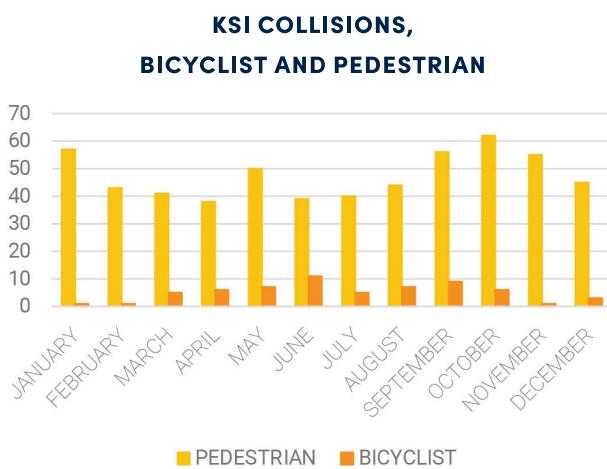
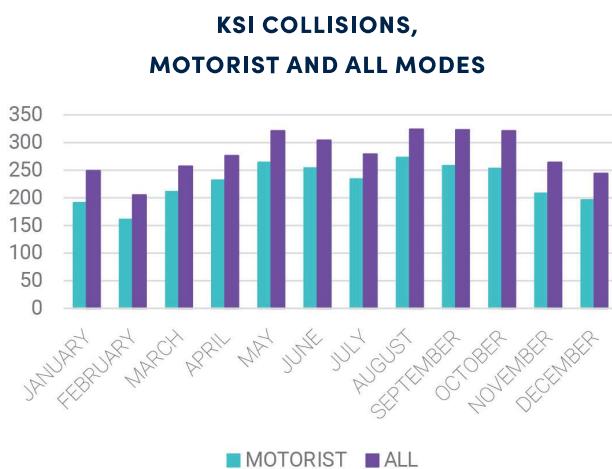
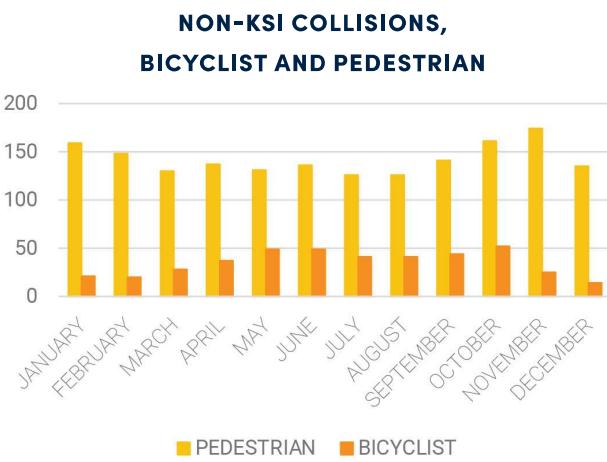
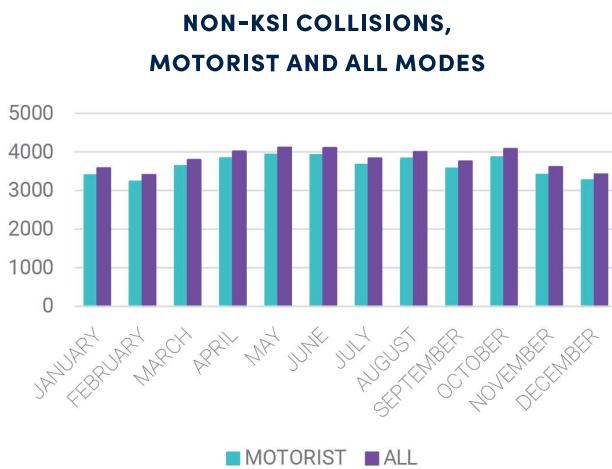
PROJECTED KSI COLLISIONS, BICYCLIST AND PEDESTRIAN



Collisions by Month

When examining collisions by month, there is a slight trend towards pedestrian and bicyclist collisions occurring more during the fall and winter months. Although people typically walk and bike more during the warmer months, the reduced daylight hours during the fall and winter can present more dangerous walking and biking conditions that can result in an increased number of collisions.

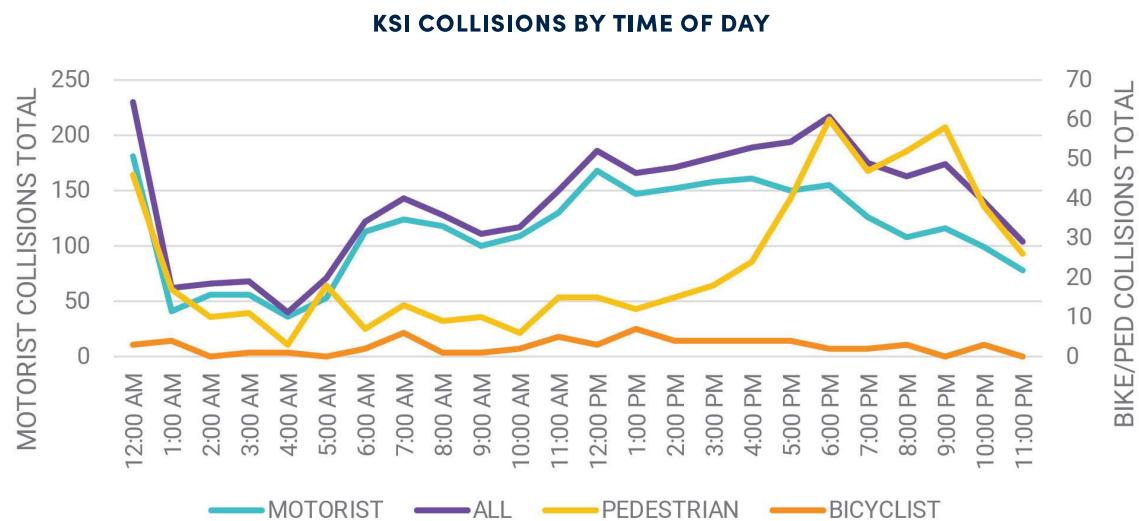
Figure 6 – Collisions, by Month and Injury



Collisions by Time of Day

The top crash times of day for minor injury collisions for all modes occurred between 4:00pm and 7:00 pm, which is consistent with evening commuting peaks. **There is a significant spike in collisions for pedestrians who were killed or seriously injured between 5:00pm and 9:00pm.** These evening hours may represent times with peak traffic volumes due to evening commuting and low-light conditions, making it more dangerous for pedestrians to walk during these hours.

Figure 7 - Fatal and Serious Injury Collisions, by Time of Day



Collisions by Presence of Street Lighting

The majority of collisions for all modes of travel occur during daylight hours, which are the hours when most people are traveling. **Notably, 67% of crashes where a pedestrian struck by a vehicle is killed or severely injured happen after dark. 51% of collisions where a pedestrian struck by a vehicle was killed or seriously injured occurred during Dark-lighted conditions.** Dark-lighted conditions refer to collisions that occur at night but with some source of lighting nearby, usually street lighting. The high percentage of fatal and serious injury pedestrian collisions that occur in dark-lighted conditions may potentially indicate that while lighting is present on the roadways where these crashes are occurring, it is not sufficient for safe pedestrian use.

Table 6 – Collisions, by Illumination and Injury

	MINOR INJURY			FATAL OR SERIOUS INJURY		
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST
Dark - Unknown Lighting	0%	1%	1%	0%	1%	0%
Dark - Lighted	23%	35%	14%	24%	51%	24%
Dark - Not Lighted	5%	8%	3%	10%	15%	3%
Dawn	1%	2%	1%	1%	1%	2%
Daylight	68%	51%	79%	62%	30%	68%
Dusk	2%	2%	2%	2%	2%	3%
Other/unknown	0%	1%	1%	0%	0%	0%

Note: Reported percentages are rounded and may not total to 100%.

High Risk Users

Collisions in Vulnerable Area

Collision rates were examined among areas with vulnerable populations identified in a transportation vulnerability analysis. The areas with the highest vulnerability scores were determined through a [degree of vulnerability analysis](#) adapted from the Greater Nashville Regional Council's methodology. For the analysis, thirteen indicators were assessed to identify vulnerable communities with high transportation need. Indicators used in the analysis include:

- Active transportation users
- Carless households
- People with disabilities
- Educational Attainment
- Females
- Cost-burdened households
- Limited English proficiency
- People of color
- Households below the federal poverty line
- Unemployment rate
- Homeownership
- Older adults
- Youth

Areas with the highest rates of people living in poverty, and places with the highest rates of renters bear 37% of all crashes, despite these areas accounting for only 20% of the total Nashville population. Areas with high rates of housing cost burden and areas with the largest share of people of color also disproportionately experience traffic collisions. **Residents in Vulnerable or Highly Vulnerable Areas, as determined by the degree of vulnerability analysis, face collision rates 2-4x greater than non-vulnerable areas when normalized by square mile.**

The following map represent the 20% most vulnerable populations and Table 7 highlights the collisions for each indicator used in the vulnerability analysis.

Map 4 - Highly Vulnerable Areas

**VULNERABLE AND HIGHLY
VULNERABLE AREAS**

LEGEND

- HIGHLY VULNERABLE
- VULNERABLE

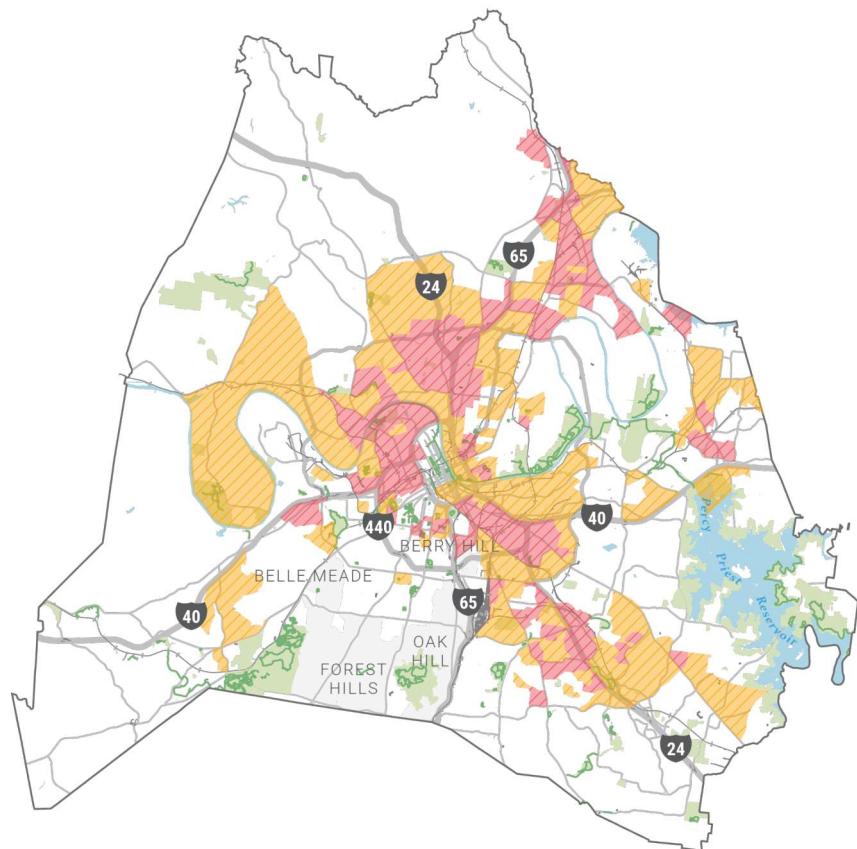


Table 7 – Demographic Inputs and Collisions of the Highly Vulnerable Areas (Top 20% of all Block Groups)

PERCENT OF COLLISIONS BY DEMOGRAPHIC GROUP

BLOCK GROUPS INCLUDING THE TOP 20% OF EACH DEMOGRAPHIC GROUP	NON-KSI	KSI
Active transportation users (workers that use transit, walk, or bike to work)	25%	21%
Carless households (no vehicles available)	20%	20%
Disabled population	20%	24%
Educational level (less than High School)	27%	29%
Females	26%	24%
Housing cost-burdened households (spending 30% or more of income on housing/rent)	30%	29%
Limited English households	20%	18%
People of Color (non-white and/or Hispanic/Latinx)	29%	28%
Poverty	37%	35%
Renters vs. owners	37%	33%
Seniors (65+)	23%	22%
Unemployment rate	21%	23%
Youth (under 18)	19%	20%

Note: Reported percentages represent overlapping census block groups and do not add up to 100%.

Table 8 – Collision Rates in Vulnerable Areas, by Mode and Injury

	TOTAL AREA (SQ. MI)	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS
		MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST	
Non-Vulnerable Area	396.1	62.6	2.1	0.6	4.0	0.6	0.1	69.9
Vulnerable Area	88.1	127.7	6.0	1.5	7.8	1.6	0.2	144.7
Highly Vulnerable Area	41.8	225.8	8.7	1.6	13.6	4.6	0.3	254.6
All	525.9	86.4	3.3	0.8	5.4	1.1	0.1	97.1

Trip Destinations by Income

Data from Replica Places contains information on trip endpoints for users by household income. This data provides an estimate of not only where low-income populations live, but also where they travel to in order to understand if there are any significant collision patterns. **53% of pedestrian collisions occurred in the highest percentile of low-income trip-ends per square mile.**

Table 9 - Low-Income Trip Destinations, by Mode and Injury

TRIPS PER SQUARE MILE	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST	
Low (least low-income trips)	15%	4%	9%	22%	4%	16%	15%
Low-Moderate	16%	8%	6%	19%	9%	10%	16%
Moderate	21%	15%	13%	19%	20%	19%	21%
High-Moderate	24%	20%	23%	22%	27%	23%	24%
High (most low-income trips)	24%	53%	49%	18%	41%	32%	24%

Notes:

- Reported percentages are rounded and may not total to 100%.
- The breakpoints for each of the categories is based on quantile splits.
- This chart is based on Replica Places data that is filtered to trips made by households with an annual income less than \$25,000; the data shows where low-income people are traveling to at the block group level.
- Replica Places is a data product provided by Sidewalk Labs spin-off Replica. Replica Places is an activity-based model developed off a combination of mobile, land use, census, and transaction data to generate census-block level OD estimates that can be used to estimate trip distances and understand common origins-destinations. Their data also provides estimates of mode split and trip purpose based on their synthetic populations that are created as part of their estimation process.

Collisions by Driver Behavior

Examining the reported crash types revealed that the majority of collisions were considered angled collisions. Bicyclist and pedestrian collisions are all reported under the “No collision with vehicle” category, limiting further analysis on possible collision types for these modes.

Table 10 – Manner of Collision of Motorist-only Collisions, by Mode and Severity

MANNER OF COLLISION	MINOR INJURY	FATAL OR SERIOUS INJURY	ALL COLLISIONS
Angle	35%	34%	35%
Head-on	5%	14%	5%
No Collision with Vehicle	14%	29%	15%
Rear to Rear	0%	0%	0%
Rear to Side	0%	0%	0%
Rear-end	38%	17%	36%
Sideswipe, Opposite Direction	2%	2%	2%
Sideswipe, Same Direction	5%	3%	5%
Other	1%	1%	1%
Unknown	0%	1%	0%

Note: Reported percentages are rounded and may not total to 100%. All Bicycle and Pedestrian Collisions are listed as ‘No collision with vehicle’ in E-Trims.

Hit-and-Run Collisions

HIT-AND-RUN COLLISIONS BY YEAR, SEVERITY, AND MODE

In comparison to previous years, the number of pedestrian-involved hit-and-run collisions is up significantly in 2021. 2021 has seen 74 pedestrian-involved hit-and-runs as of the end of August. In just 8 months, this is already higher than the total pedestrian hit-and-runs in 2020. **39% of pedestrian hit-and-run collisions occur within the most highly vulnerable areas.**

Figure 8 - Hit-and-Runs Involving Pedestrians Yearly Trends



*2021 data includes data through August, 2021

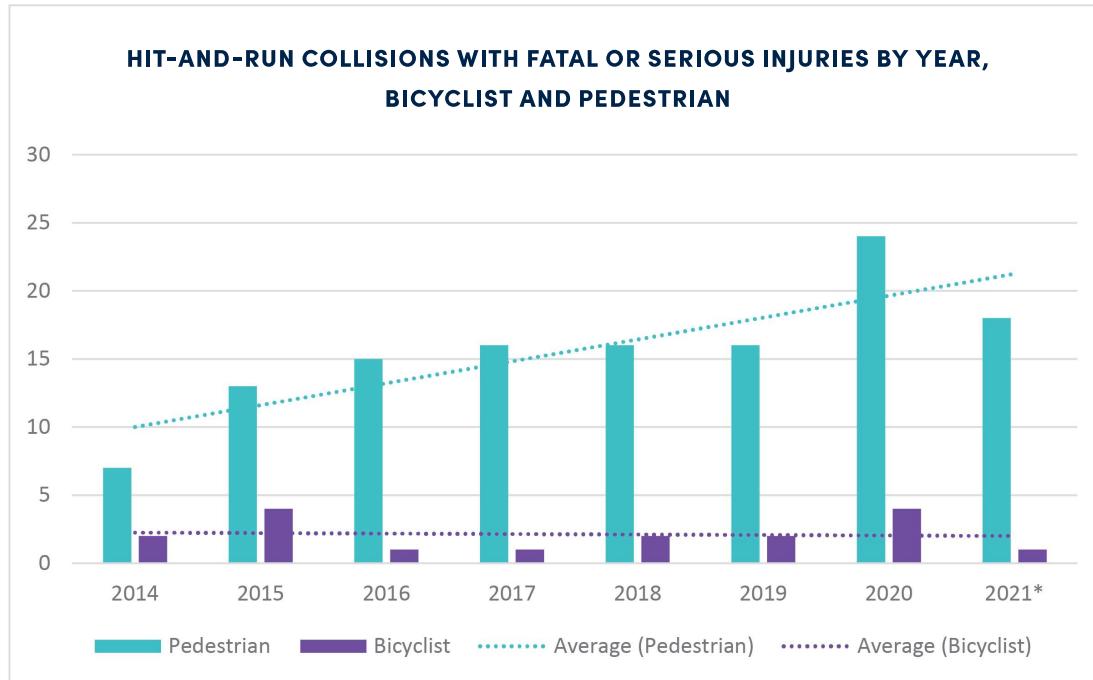
Table 11 - Share of Hit-and-Run Collisions, by Mode

YEAR	PERCENT OF ALL COLLISIONS THAT WERE HIT-AND-RUN	PERCENT OF TOTAL PEDESTRIAN COLLISIONS THAT WERE A HIT-AND-RUN	PERCENT OF TOTAL BICYCLIST COLLISIONS THAT WERE A HIT-AND-RUN
2014	9%	30%	14%
2015	10%	26%	26%
2016	11%	29%	17%
2017	10%	27%	14%
2018	12%	28%	17%
2019	11%	28%	28%
2020	15%	29%	16%
2021*	11%	31%	19%

*2021 data includes data through August, 2021

Note: Reported percentages are rounded and may not total to 100%.

Figure 9 – Pedestrian Hit-and-Run Collisions that Result in a Fatal or Serious Injury

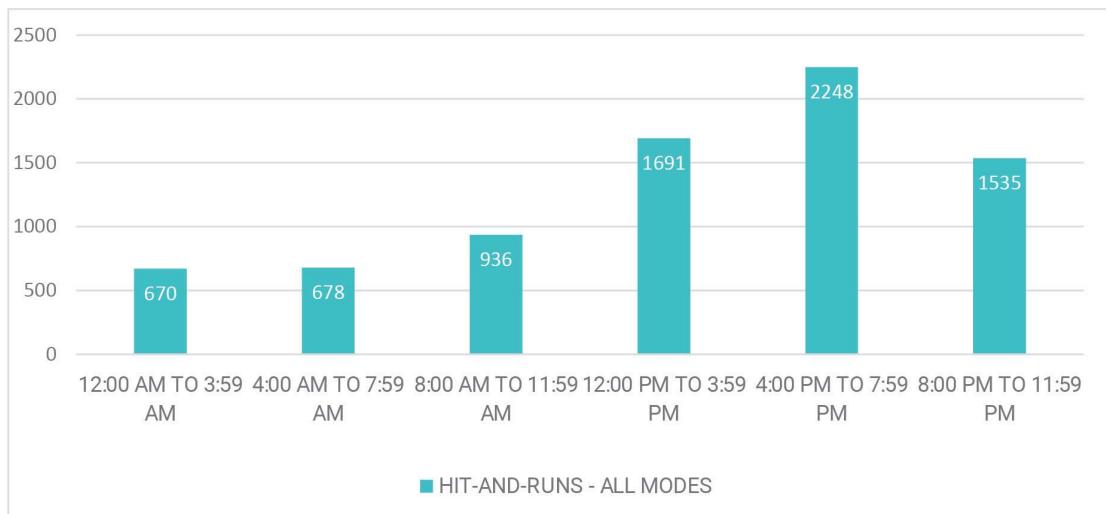


*2021 data includes data through August, 2021

PEDESTRIAN HIT-AND-RUN COLLISIONS, BY DAYLIGHT VS. DARK CONDITIONS

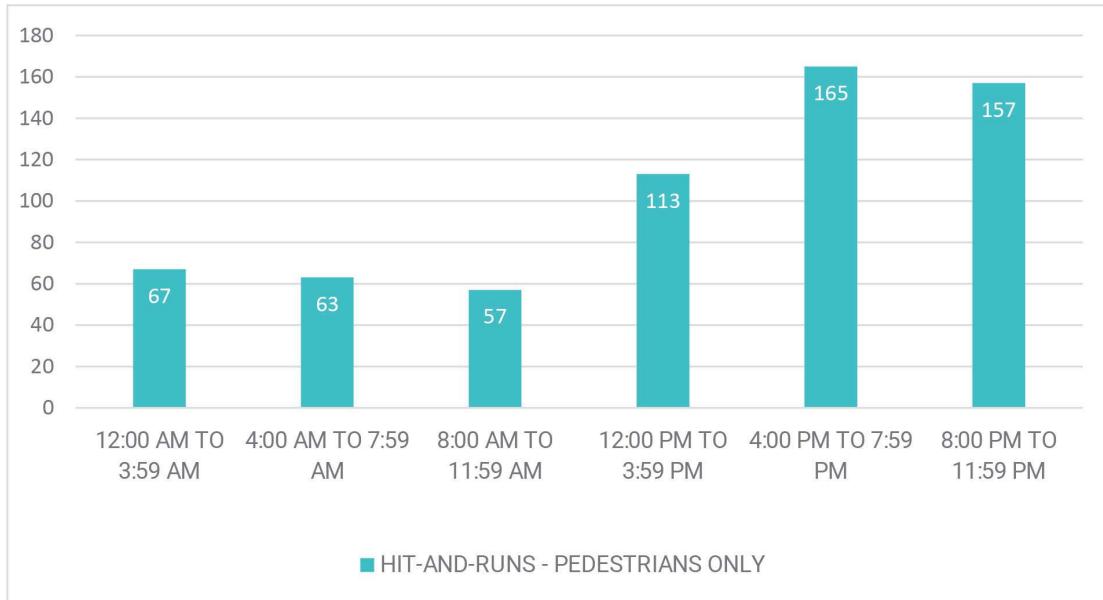
52% of pedestrian hit-and-run collisions occur during dark conditions. The majority of pedestrian collisions occurred during dark-lighted conditions, which refer to collisions that occur at night but with some source of lighting nearby, usually street lighting.

Figure 10 – Hit-and-Runs by Time of Day: All Modes



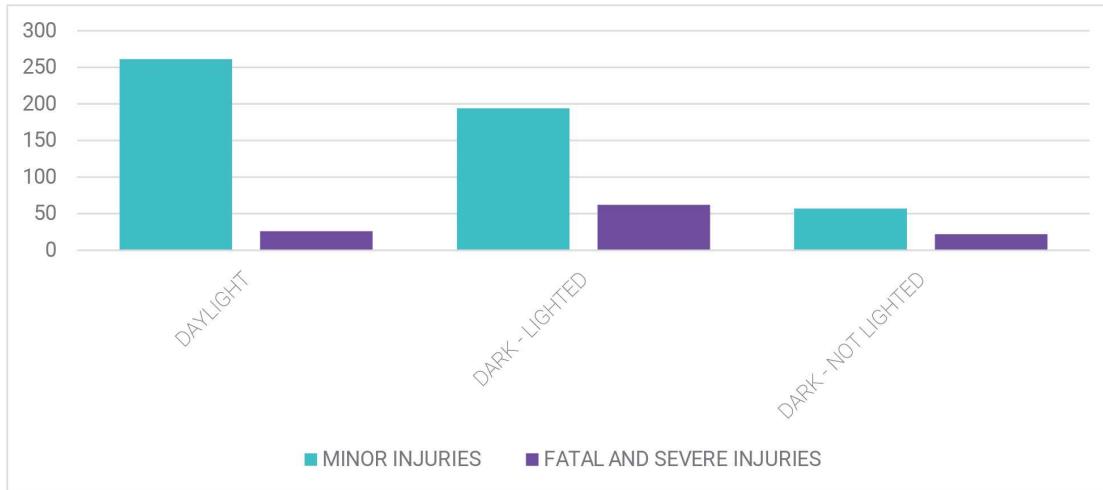
Note: 484 of 8,242 collisions were missing time information.

Figure 11 – Hit-and-Runs by Time of Day: Pedestrian Only



Note: 66 out of 688 collisions were missing time information

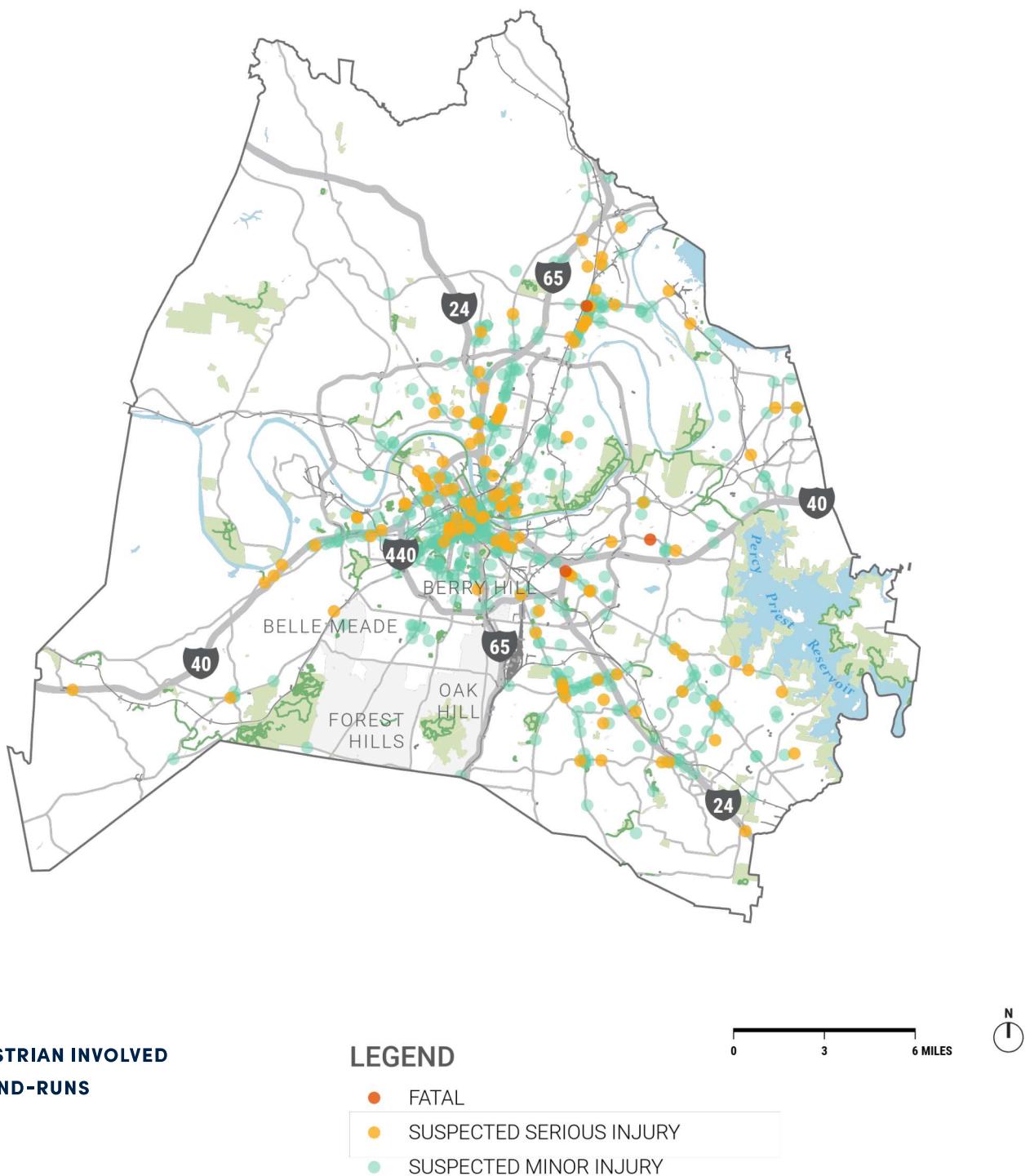
Figure 12 – Lighting Conditions of Pedestrian Hit-and-Run Collisions by Severity



Note:

- 66 out of 688 collisions were missing time information
- Dark-Lighted is when either street lights or pedestrian scale lighting is present along the roadway.
- Dark-Not Lighted is when there is no illumination present along the roadway.

Map 5 - Pedestrian-Involved Hit-and-Run Collisions



High Risk Facilities

The characteristics of roadways and land use that correlate with high-crash rates are roadways with the highest speeds and highest traffic volumes. The most dangerous roads in Nashville are arterial roadways, and roadways with posted speed limits of 40 miles per hour or greater when looking by roadway mile. 27% of all collisions occur at an intersection, and **41% of bicyclist-involved collisions are associated with an intersection.** Land use also plays a role: as compared to the overall county land use mix, collisions happen at disproportionately high rates in commercial areas.

Collisions in Commercial Corridors

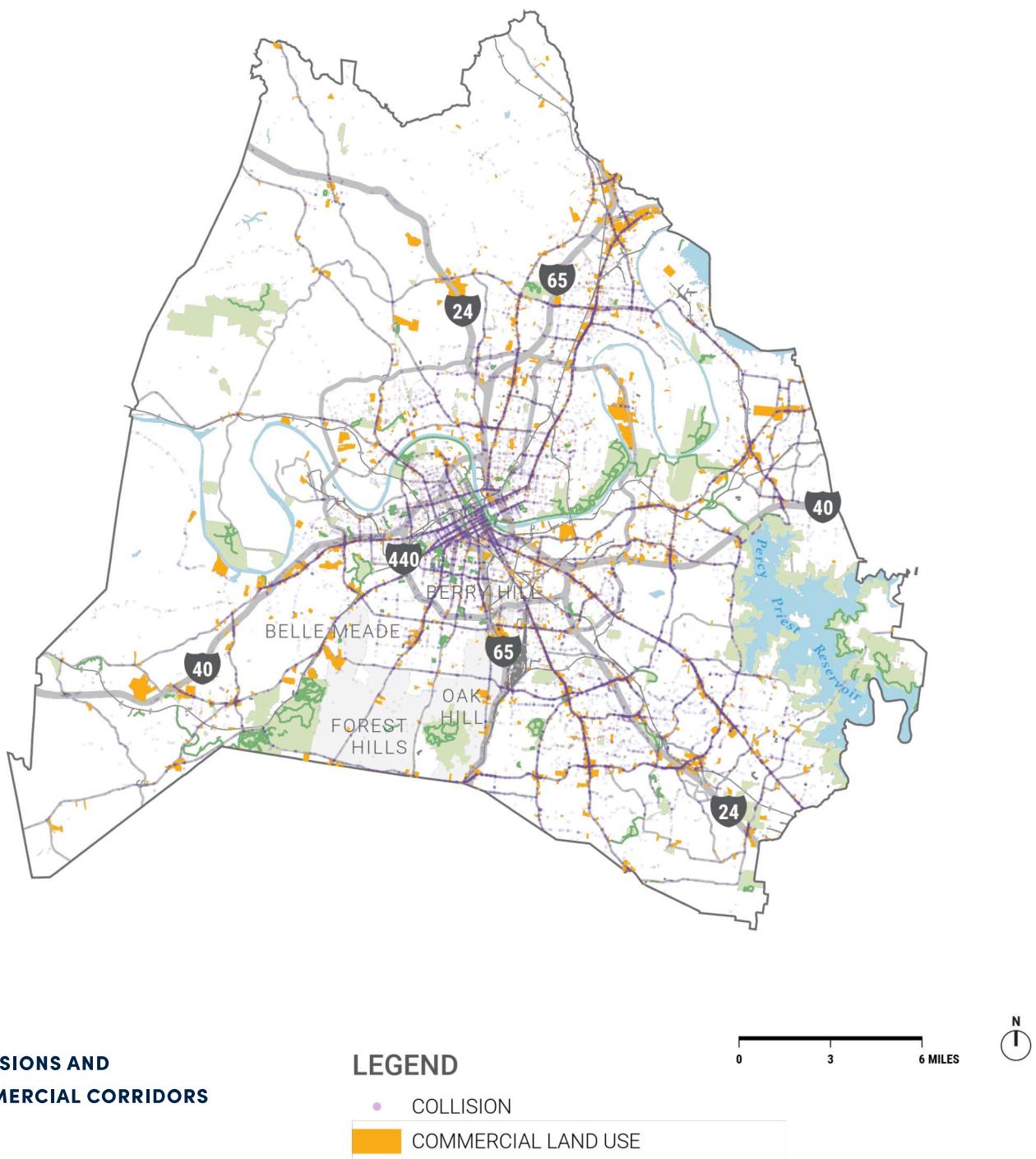
The analysis revealed a connection between land use and collision frequency. **Parcels with commercial land uses represent just 4% of the total land use type, but make up, on average, 22% of all parcels within 500' of all collisions.**

Table 12 - Land Use Mix Within 500' of Collisions, by Injury and Mode

LAND USE TYPE	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS	PERCENT OF TOTAL LAND USE TYPE
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST		
Commercial	22%	23%	18%	20%	28%	18%	22%	4%
Single Family	20%	13%	19%	23%	14%	29%	20%	47%
Multifamily	13%	16%	13%	12%	16%	14%	14%	6%
Office	12%	19%	17%	9%	12%	15%	12%	4%
Industrial	10%	10%	10%	9%	11%	8%	10%	5%
Parks and Open Space	18%	14%	18%	20%	15%	13%	18%	30%
Other/ Unknown	5%	6%	5%	6%	4%	3%	5%	4%

Note: Reported percentages are rounded and may not total to 100%.

Map 6 – All Collisions in Nashville, Shown with Commercial Land Use Highlighted.



Collisions Near High-Frequency Transit

Nearly half of all collisions in Nashville occur within 500 feet of a high-frequency transit stop. **For fatal and serious injury pedestrian collisions, 60% occur within 500 feet of a high-frequency stop compared to just 33% for vehicle-only fatal and serious injury collisions.** High frequency transit stops are defined as stops with a 15-minute headway during peak morning commuting hours (6:00 am – 9:00 am).

Table 13 – Distance to Frequent Transit Stop from Each Collision, by Injury and Mode

DISTANCE	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST	
Less than 500'	40%	65%	53%	33%	60%	52%	48%
500' to 1000'	15%	16%	20%	14%	17%	18%	17%
Greater than 1000'	45%	20%	27%	54%	23%	31%	35%

Note: Reported percentages are rounded and may not total to 100%.

Map 7 – Pedestrian-Involved Collisions Less Than 500' From a High Frequency Transit Route

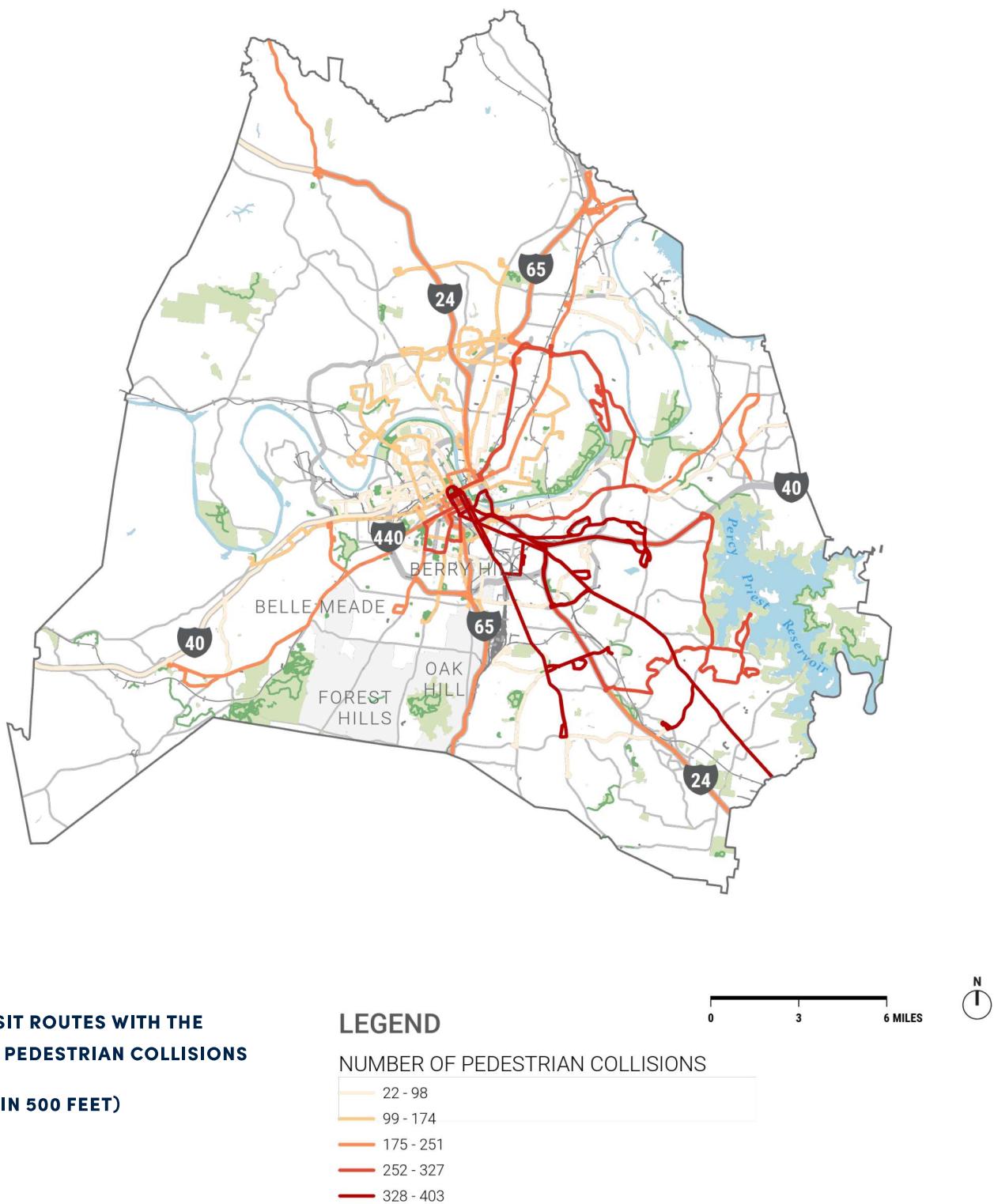


Table 14 – Transit Routes with the Highest Frequency of Pedestrian Collisions within 500 Feet

ROUTE NAME	ORGANIZATION	PEDESTRIAN COLLISIONS
Nolensville Pike	MTA	403
Murfreesboro Pike	MTA	388
Nashville-Murfreesboro	MTA/RTA	360
Airport	MTA	333
Star West End Shuttle	MTA/RTA	290
Antioch	MTA	288
Opry Mills	MTA	251
Gallatin Pike	MTA	249
Springfield	RTA	242
Franklin Express	RTA	240

Collisions by Roadway Classification

Collisions across modes were significantly more likely to occur on arterial roadways. This is likely due to the greater traffic volumes and higher speeds associated with these roadways. Arterial roadways make up 12% of Nashville’s road network (excluding federally controlled freeways), demonstrating that these roads are more dangerous to travel on.

Table 15 – Road Classification of Collisions, by Injury and Mode

ROAD CONTEXT	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST	
Arterial	54%	59%	52%	50%	65%	61%	65%
Major Collector	15%	11%	19%	16%	11%	13%	14%
Minor Collector	31%	29%	28%	33%	22%	26%	20%
Local	1%	1%	0%	1%	1%	0%	0%

Note: Reported percentages are rounded and may not total to 100%.

Collisions by Roadway Context

Many collisions are occurring at intersections, and the trend is particularly strong for bicyclists. **41% of bicyclist involved collisions resulting in a minor injury happen at an intersection.** Yet, for pedestrians, the majority of fatal and serious injury collisions are occurring at midblock locations.

Table 16 – Road context of Collisions, by Injury and Mode

ROAD CONTEXT	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST	
Accel/deceleration Lane	0%	0%	0%	0%	0%	0%	0%
Crossover related	0%	0%	0%	0%	0%	2%	0%
Driveway, alley access, etc.	2%	1%	6%	1%	2%	2%	2%
Entrance/exit ramp related	3%	1%	0%	3%	1%	3%	3%
Intersection	27%	32%	41%	28%	22%	35%	27%
Intersection related	9%	10%	11%	5%	5%	5%	9%
Non-junction	58%	53%	41%	62%	70%	52%	58%
Rail grade crossing	0%	0%	0%	0%	0%	0%	0%
Shared use path or trail	0%	0%	0%	0%	0%	0%	0%
Other/unknown	1%	3%	1%	1%	1%	2%	1%

Note: Reported percentages are rounded and may not total to 100%.

Collisions On High-Speed Roads

When analyzing collision rates per mile, roads with higher posted speed limits have higher collision frequencies. **Focusing on the 5 mph increase in speed from 30 to 35 mph, all modes and all severities show three- to six-fold increases in collision rates.** Though Nashville recently decreased residential speed limits from 30 mph to 25 mph, this analysis assumed residential speed limits of 30 mph because the majority of collision data was collected prior to the policy change went into effect.

Table 17 – Collisions per Mile by Posted Speed Limit, by Injury and Mode

TOTAL LENGTH	SPEED LIMIT	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS
		MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST	
4.0	15 mph	22.3	0	0	0.8	0	0	23.0
4.2	20 mph	6.2	1.19	0.2	0.7	0.5	0	8.8
6.9	25 mph	2.5	0	0	0.1	0	0	2.6
2,993.3	30 mph	4.6	0.3	0.07	0.3	0.1	0.01	5.4
224.0	35 mph	28.2	1.07	0.3	1.5	0.3	0.1	31.4
489.9	40+ mph	47.6	1.1	0.3	3.2	0.6	0.1	52.8
3,722.3	All	11.7	0.5	0.1	0.7	0.2	0.1	13.2

Collisions by Traffic Control Device

Breaking down the collisions that occurred within 50 feet of an intersection found that there is a nearly equal share of collisions at non-signalized intersections as there are signalized intersections.

Table 18 – Traffic Control Device at Collisions, by Injury and Mode

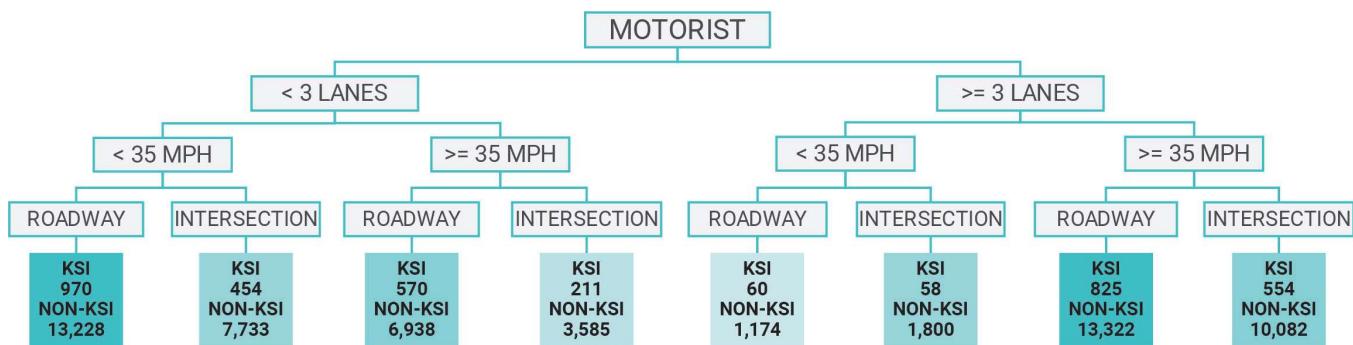
TRAFFIC CONTROL	INTER-SECTION TYPE	MINOR INJURY			FATAL OR SERIOUS INJURY			ALL COLLISIONS
		MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST	
Not at Intersection	N/A	50%	42%	33%	57%	58%	45%	50%
Within 50' of Intersection	Non-sig-nalized	23%	25%	35%	22%	20%	29%	23%
	Signalized	26%	34%	31%	21%	22%	26%	26%

Predictive Roadway Characteristics

Crash Trees by Mode

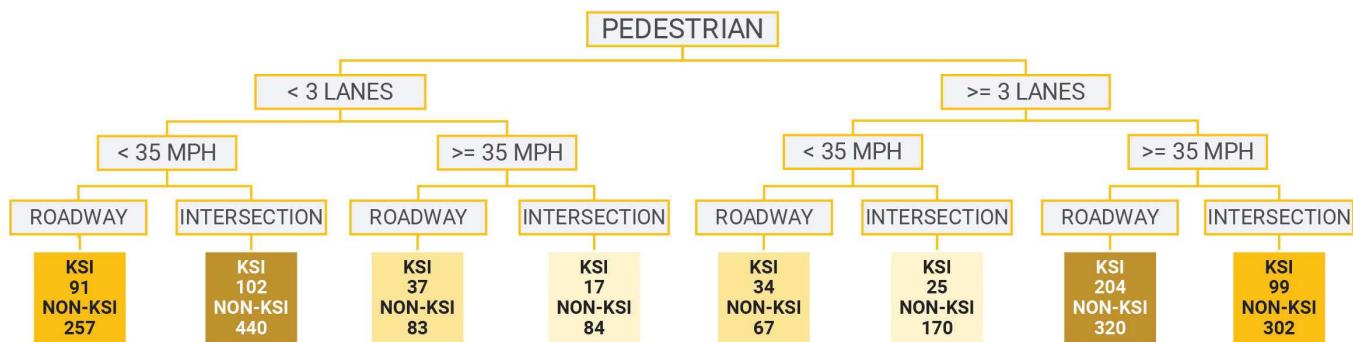
The crash trees below categorize collisions based on the shared characteristics of the roadways they occurred on. Roadway characteristic collisions were categorized by number of lanes, posted speed limit, and whether the collision occurred along a roadway segment or at an intersection. While factors identified in the executive summary above, such as land use and proximity to high-frequency transit stops, were found to be associated with collisions, this predictive model focuses solely on roadway characteristics. **The crash trees utilize the abbreviation KSI to represent collisions where a person was killed or seriously injured.** “Non-KSI” refers to collisions that resulted in minor injury.

Figure 13 – Crash Tree of Motorist-Involved Collisions



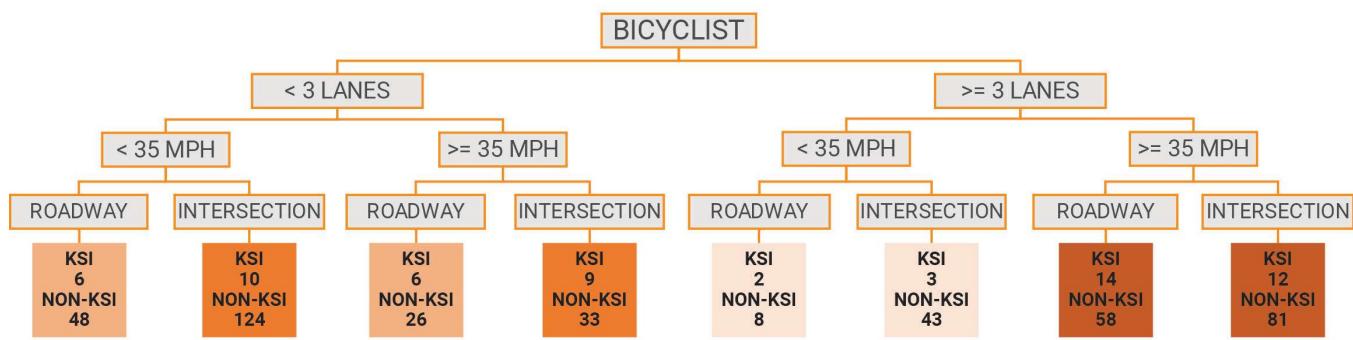
Roads with three or more lanes and speed limits of 35 mph or greater are among the most unsafe for pedestrians. Furthermore, many of Nashville's high-frequency transit stops are along such roadways, which can create conflicts between motorists and the transit riders who board and disembark at these stops, contributing to the 60% of fatal and serious injury pedestrian collisions that occur within 500 feet of a high-frequency transit stop.

Figure 14 – Crash Tree of Pedestrian-Involved Collisions



For all speed and lane configurations, most bicyclist collisions occur at intersections. Roads with three or more lanes and 35 mph or greater speed limits are the most dangerous for bicyclists

Figure 15 – Crash Tree of Bicyclist-Involved Collisions



Fatal + Serious Injury Predictive Indicators

As transportation safety practice has progressed, more emphasis is being placed on proactive approaches to identifying safety improvements based on the identification of facilities that have similar characteristics to high collision locations. Often, predictive models called safety performance functions, are developed that use information about roadway geometry and operations (volumes) to estimate the frequency of crashes per year. While safety performance functions were not created as part of this systemic safety analysis, an exploratory analysis using random forest regression modeling was used to identify potential characteristics that are “predictive” of fatal or severe injury collisions per road segment¹. The following highlight the key findings of the predictive model:

- When considering all fatal or severe injury collisions, AADT, number of lanes, and speed limit were the most important variables.
- Filtered to just predict motorist involved fatal or severe injury collisions, the posted speed limit increases in importance, while AADT decreases, and number of lanes remains about the same.
- When considering only pedestrian fatal or severe injury collisions, traffic volume is the most important variable, followed by the number of lanes, and the fraction of commercial land use within 500' of the collision location.

Due to sample size limitations, random forest regression is not suitable for predicting bicyclist fatal or severe injury collisions.

Table 19 – Predictive Indicators of Fatal or Severe Injury Collisions per segment for All Modes

VARIABLE	IMPORTANCE
Traffic Volume (AADT)	0.39
Speed Limit	0.33
Number of Travel Lanes	0.14
Local Commercial Land Use Density	0.08
Shoulder Width	0.05
Local Job Density	0.01
Lane Width	0.01
Local Population Density	0.01

¹ Alta developed multiple models looking at predictions of collisions per segment and collisions per mile. The example here focuses on collisions per segment as models looking at collision per mile seemed to be sensitive to outliers and produced non-intuitive results. Earlier work on the study network was done to normalize segmentation so that segments were roughly one mile long, but not all segments were that length. These model results illustrated the importance of road geometry and speeds consistent with our tabulations and analysis of collision trends.

Appendix 1

Methodology

The data used in the collision analysis was provided by the Tennessee Department of Transportation, through their E-Trims digital platform, queried to include all collisions resulting in injury that occurred in Davidson County between January 2014 and August 2021. Special queries identified hit-and-run collisions and collisions involving alcohol during the same time period. Alta combined street centerline data from Nashville Metro and Greater Nashville Regional Council (GNRC) to produce a single, consolidated street network identifying local road characteristics for each collision.

IDENTIFYING COLLISION ATTRIBUTES

Collision data pulled directly from E-Trims contains several useful attributes for crash analysis, which Alta supplemented with other provided data sources. A summary of crash-level attributes and their sources is provided in Table 1.

Table 20 – Crash Attributes and their Data Sources

CRASH ATTRIBUTE	SOURCE	EXAMPLE VALUE(S)
Location on Road	Collision report pulled from E-Trims	Acceleration/Deceleration lane, driveway, intersection related
Time of Day	Collision report pulled from E-Trims	1400 (2:00 pm)
First Harmful Event	Collision report pulled from E-Trims	Vehicle in transport, pedestrian, other object
Manner of Collision	Collision report pulled from E-Trims	Rear-end, head-on, sideswipe
Weather Conditions	Collision report pulled from E-Trims	Rain, cloudy, clear
Lighting Conditions	Collision report pulled from E-Trims	Daylight, dark – not lighted, dark – lighted
Proximity to Frequent Transit Stop	Near analysis in ArcGIS to find closest high frequency transit stop*	1000 feet
Proximity to any Transit Stop	Near analysis in ArcGIS to find closest transit stop	1000 feet
At Intersection	Near analysis to provided intersection points, limited to 50' search radius	1 (collision within 50' of an intersection), 0 (not within 50' of an intersection)
Intersection Type	Near analysis to provided signalized intersection points, limited to 50' search radius	1 (signalized), 0 (non-signalized)
Council District	Spatial join to provided council district boundaries	District 25
Vulnerable Area Status	Spatial join to Davidson County vulnerability index	Non-vulnerable area, vulnerable area, highly vulnerable area

IDENTIFYING ROADWAY ATTRIBUTES

A centerline file data provided by GNRC included several road characteristics like posted speed limit, number of lanes, and traffic volumes. However, this road network did not include most local and residential roads, which were merged from the Nashville Metro provided centerline data set. The inclusion of local roads from another dataset meant that the residential streets had fewer attributes relative to the GNRC data. In cases where residential were missing important road attributes their missing values were filled with the following assumptions, informed by road design standards and expert judgment. All road attributes are summarized in Table 2.

Table 21 – Road Attributes and their Data Sources

CRASH ATTRIBUTE	SOURCE	EXAMPLE VALUE(S)
One-Way	GNRC, local roads assumed to be two-way	1 (one-way street), 0 (two-way street)
Bikeway Status	Spatial join of provided bike network data	No facility, current facility, future facility
Bikeway Type	Spatial join of provided bike network data	PBL, BL, SSR
Sidewalk Presence	Spatial join of provided sidewalk data	0 (no sidewalk), 1 (sidewalk on one side), 2 (sidewalk on both sides)
Number of Travel Lanes	GNRC, local roads assumed to be two lanes	4 lanes
Speed Limit	GNRC, local roads assumed to be 30 mph*	35 mph
Lane Width	GNRC, local roads assumed to have 12' lanes	10 feet
Shoulder Width	GNRC, local roads assumed to have 8' parking lane shoulders	2 feet
Traffic Volume (AADT)	GNRC, local roads assumed to have AADT of 2400 vehicles/day	2400 vehicles/day
Surrounding Land Use	Fraction of land use types in area within 500' of each road segment, from provided property data	25% commercial, 10% multifamily, 10% office
Median Income	Maximum median income of all Census tracts within 500' of each road segment**	\$60,000
Percent White	Maximum fraction of population that identifies as white in all Census tracts within 500' of each road segment**	35%
Population Density	Maximum population density of all Census tracts within 500' of each road segment**	4000 people/square mile
Job Density	Maximum job density of all Census blocks within 500' of each road segment***	1000 jobs/square mile

*Nashville residential speed limits were lowered to 25 mph beginning in March 2021, but because the majority of collision data is from before that policy change, we assumed the speed limit to be 30 mph.

**Census data from 2019 ACS, reported at the Census block group level.

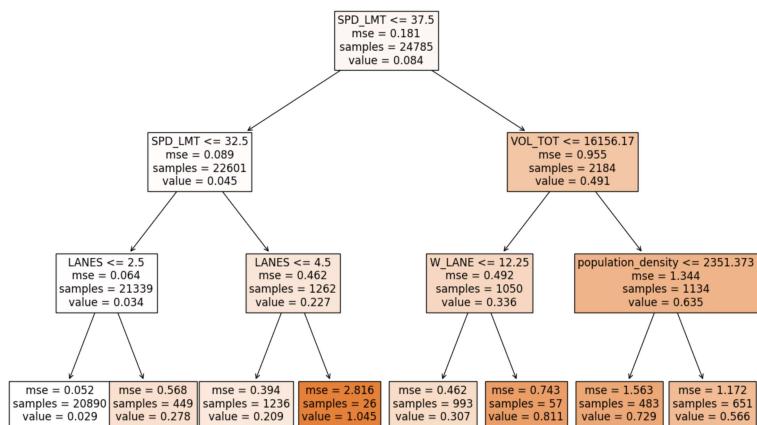
***Jobs data from 2018 LEHD LODES, reported at the Census tract level.

Random Forest Road Attribute Selection

Using the populated roadway characteristics table, Alta staff created a random forest regression model to investigate which variables are most important in predicting the number of KSI collisions per road segment. The regression included eight total variables and after a grid search model parameter optimization process, three variables rose to the top as the most important predictors of KSI collisions of all modes: (1) number of lanes, (2) posted speed limit, and (3) AADT. These variables remained important when considering motorist involved KSI collisions. AADT and number of lanes also stand out as important variables in the case of pedestrian involved KSI collisions, along with the fraction of commercial land use within 500' of the road segment.

Random forest regression builds many decision trees with a subset of the input variables, all trained on historic KSI collision data with the goal of identifying combinations of underlying roadway characteristics that are common to these dangerous crashes. This ensemble method relies on strength in numbers by averaging predictions across 100 models rather than relying on a single model.

Figure 16 – Sample of a Decision Tree Underlying the Random Forest Regression Model



Data Limitations

The following limitations were identified in the collision data:

- The systematic safety analysis is derived from collision data collected on the scene of an incident. Collisions are hand-recorded by law-enforcement officers at the scene of the incident. Factors related to human error may yield incomplete or inaccurate results.
- All of the data recorded on the police report at the scene of the incident isn't available within the E-Trims data platform maintained by TDOT. Once a police report is filed, it's then collected and entered into the TITAN data platform, managed by the Department of Safety. E-Trims pulls data directly from TITAN but in a different format, resulting in some loss of data – such as victim age, race, gender, etc.
- Collision data is recorded by incident only, not by the number of people involved. Because of this, there's limited data available for every person involved in the collision.
- There is no "cause of collision" field within the E-TRIMS data. In addition, the "crash type" field contains limited types and only relate to motorist-involved collisions.
- The low reported alcohol involved figures, 3% of motorist collisions and 1% of pedestrian collisions, indicate that there may be an issue in the incident reporting.
- While bicycle and pedestrian involved collisions featured other attributes associated with the collision, all pedestrian and bicyclist collisions examined did not have a listed "crash type" attribute. Rather, bicycle and pedestrian crash types were characterized as "not a collision with a motor vehicle". This is an unfortunate omission as it limits our ability to understand potential contributing behavior to a bicycle or pedestrian collision (such as a left turn, rear-end, or head-on collisions).
- AADT data provides the ability to measure collision rates (the number of collisions per average traffic volume). Bicyclist and Pedestrian volumes are not captured by AADT, meaning there is limited ability to determine the number of collisions by pedestrian or bicyclist traffic volume.
- If the driver of a hit-and-run collisions is identified after time of the incident, the original police report is often not updated – limiting the amount of data available as to the cause or conviction of the hit-and-run collision.

In addition, the collision data collected does not count for unreported incidents and near misses. A 2021 public survey conducted by Alta in support of the Nashville Vision Zero Action Plan found that 19% of respondents (318 respondents) stated they were involved in an unreported crash or near miss involving a bicyclist or pedestrian, much higher than the percentage that stated they were involved in a reported crash. Gathering traffic collision data through medical reports, 911 dispatch logs, or the original police reports could shed light on unreported incidents involving a pedestrian or bicyclist.

BICYCLIST KILLED AND SERIOUSLY INJURED COLLISIONS

Over the study period from 2014-2021, there were 483 bicyclist collisions involving a minor injury. Among these collisions, 61 were serious injuries and 1 was fatal. With such a small sample size, it is difficult to identify data trends.

PEOPLE EXPERIENCING HOMELESSNESS

People experience homelessness in a multitude of ways. Unsheltered homelessness is typically only a small percentage of the total unhoused population. It is very challenging for municipalities to collect location data on people experiencing unsheltered homelessness. Furthermore, the public use of this data could be used to target, profile, or harass unhoused individuals. As a result of missing geospatial data, Alta was unable to incorporate the effect of traffic collisions on people experiencing homelessness.

Additional research could be conducted using medical records from area hospitals or the Davidson County medical examiner. [Journalists](#) in Austin, Texas examined the cause of death where an individual was marked as "transient" in the medical death report, finding 14% of all fatalities among this population were connected to traffic collisions.

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Appendix 2:

High Injury Network

Executive Summary

Vision Zero asserts that traffic injuries and fatalities are preventable. High injury networks illustrate that often a small number of improvable roadways can address the majority of injury-causing collisions. This approach moves beyond typical crash history, and allows for a better understanding of the types of roadways in Davidson County where users are most at risk. High injury networks focus primarily on roadways and intersections with the highest potential for harm. Therefore, a greater emphasis is placed on collisions that result in a severe injury or fatality than collisions that involve a minor injury or no injury. Collisions involving a fatality or severe injury are commonly referred to as KSI (killed or severely injured) collisions.

- The roadways identified in the composite HIN comprise **59% of collisions** where a person is killed or severely injured and **61% of total collisions** on just **6% of the roadway miles**.
- The pedestrian only HIN captures **60% of collisions** where a person walking is killed or severely injured in traffic on just **2% of the roadway miles**.
- The bicyclist only HIN captures **50% of collisions** where a person biking is killed or severely injured in traffic on less than **1% of the roadway miles**.
- The motorist only HIN captures **40% of collisions** where a person driving is killed or severely injured on **3.5% of the roadway miles**.

Collecting and analyzing this data also illuminates the disproportionate impacts of traffic violence on certain populations. **53% of the total high injury network miles fall within identified highly vulnerable areas.** This sobering statistic points to a larger problem of inequity in the built environment.

Addressing road facilities and characteristics also can have an impact in reducing collisions. The majority of collisions along the high injury network have a speed limit of 40 miles per hour or higher. Additionally, protecting transit users, particularly those who rely on transit to access essential services such as work or healthcare is vitally important. **For pedestrian-involved collisions, 81% of minor injuries and 73% of serious and fatal injuries occurred within 500 feet of a transit stop.**

Finally, Vision Zero requires a multi-agency approach and strong collaboration and leadership. **This is particularly important when considering that 46% of the high injury network is located on TDOT-controlled roadways.**

Methodology

Collision Preparation

This collision analysis examines data from January 2014 through August 2021 for collisions that involved an injury or fatality. The data is inclusive of motor vehicle, bicyclist, pedestrian, and motorcycle collisions within Davidson County. The data used in the collision analysis was provided by the Tennessee Department of Transportation, through their E-Trims digital platform. Collision data was summarized along the roadway network. Alta removed federally-managed freeways, and on and off ramps, as well as any crashes associated with these facilities. Including freeways would significantly alter the HIN, given the high volume of vehicle miles traveled on these roads. In cases where collisions were within 50 ft. of another segment (intersections), the collisions were snapped to the facility with the highest functional classification for the purposes of HIN collision accumulation. Ultimately, this resulted in 48,460 total collisions considered in the analysis.

Collision Weighting

Collision points were weighted accounting for severity, vulnerable users, and equity. Following precedents from previous Vision Zero plans, weights were determined that were high enough to generate network prioritization metrics to emphasize fatal or severe collisions, but not ignore the risks implied by minor injury collisions patterns. A severity index is created when these collision weights are aggregated to segments and intersections to inform HIN generation and network screening. The following summarizes the methodology used to determine the scoring of each collision:

- **Severity Index¹** - The severity weighting scheme is as follows:
 - » Fatality = 15
 - » Serious Injury = 5
 - » Minor Injury = 0.5
- **Vulnerable Users** - Collisions involving pedestrians and bicyclists were weighted more than collisions only involving a motorist. Collisions involving bicyclists or pedestrians had their severity index multiplied by 1.5.
- **Equity** - Finally, collisions within a highly vulnerable area were multiplied by 2. Vulnerable areas were defined using the Greater Nashville Regional Council (GNRC) equity methodology (refer to Nashville Vision Zero Equity Analysis Technical Memo).

The final weighting index is determined by multiplying the severity index, the vulnerable users index, and the equity index. The highest possible score an individual collision can receive is 45 (15 multiplied by 1.5 multiplied by 2).

¹ Severity weighting was informed by the FHWA safety manual (page 14) safety.fhwa.dot.gov/hsip/docs/fhwasa17071.pdf.

Centerline Network Preparation

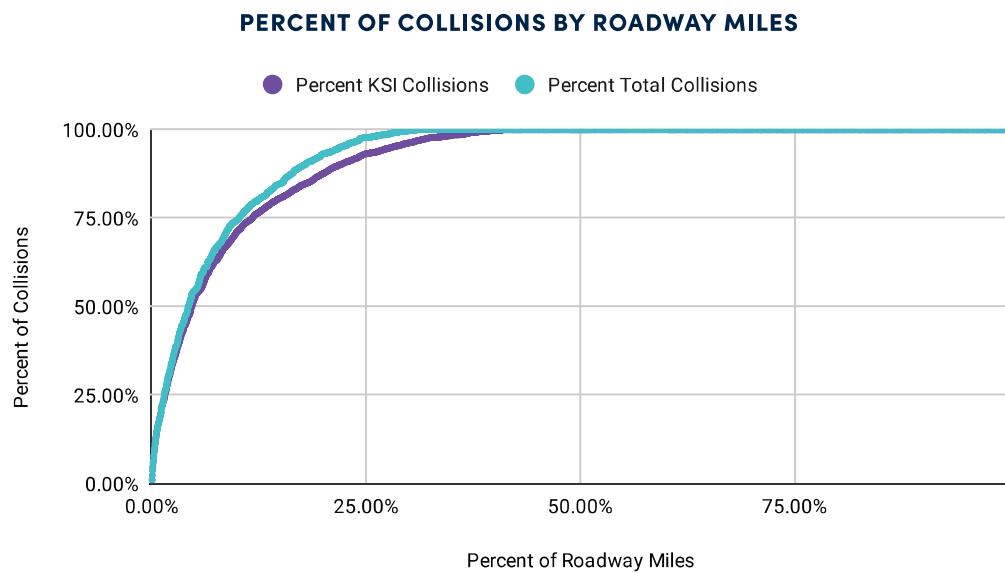
Alta prepared a centerline file for analysis by ensuring that dual-carriage ways were consolidated. Additionally, Alta removed federally-managed freeways and on/off ramps. Contextual attributes such as speed limits, lane width, road ownership, council district, and the presence of bikeways and sidewalks were added to the centerline network to aid in analysis of characteristics of identified high injury network segments. To capture segments that more closely conform to the general understanding of a street, the centerline segments were dissolved into non-multipart segments containing the same “Full Name” attribute. The segment lengths were normalized to be approximately the same length, at 1-mile segments.

High Injury Network Determinations

Alta conducted two spatial joins of the weighted collision points to the centerline network. The first join associated all collisions within 50 ft. of prepared network segments so that the segment based weighted severity index could be determined for every segment. This index would reflect not only collisions directly on segments, but those within its sphere of influence at intersections. The second join associated all collisions directly on the network to the centerline network. These collisions were used for the purposes of accumulating KSI collisions associated with the draft HIN, (i.e. how many collisions are captured by high injury network streets). These “accumulation collisions” were checked to ensure no collision points were double counted. The length in miles for each segment was calculated and added to the network, but to mitigate the influence of sliver segments, the minimum length of each segment was assumed to be 0.25 miles. The final HIN severity index was determined by dividing the weighted collisions by the calculated length in miles.

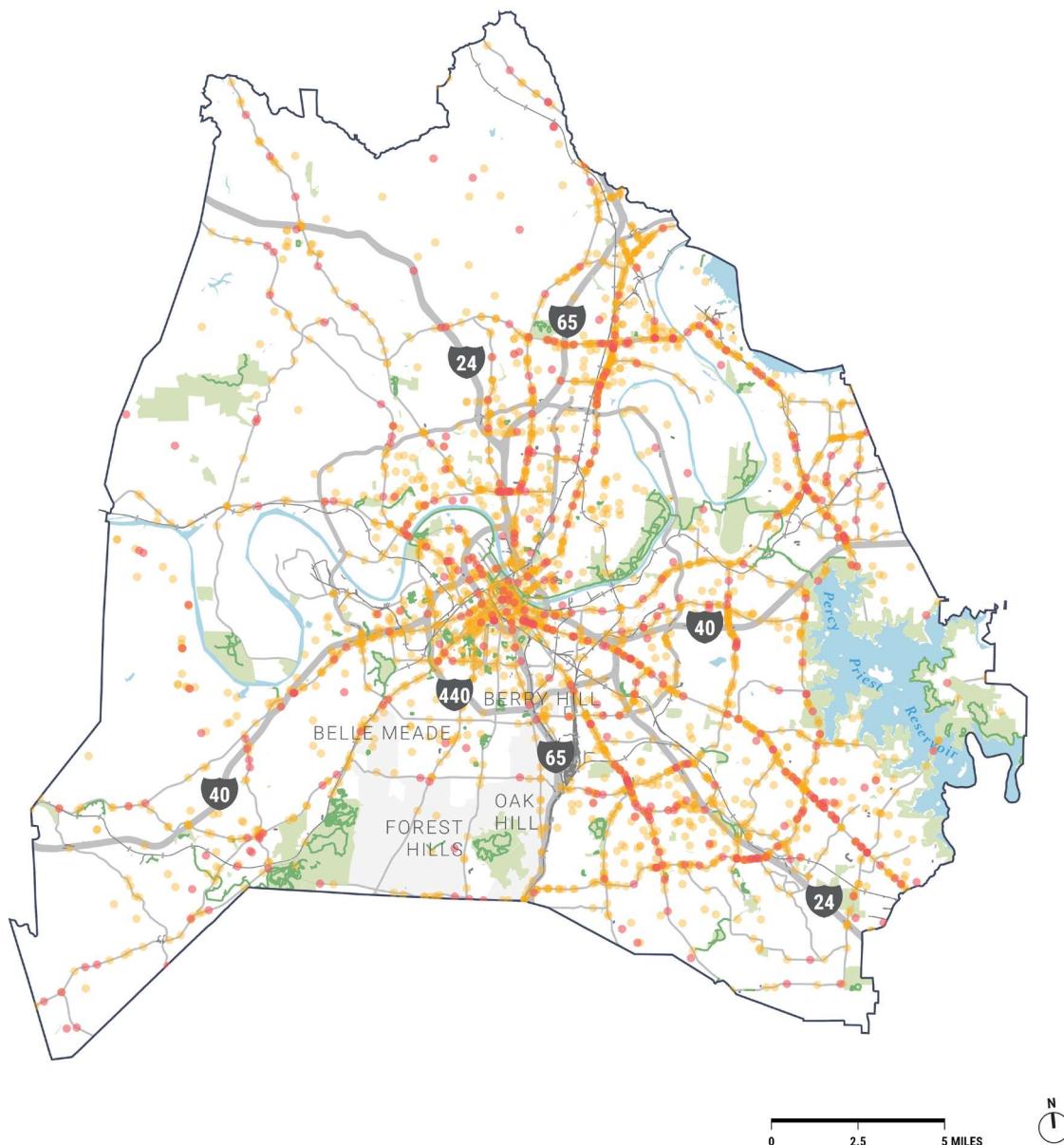
The threshold for what qualifies a segment as part of the high injury network was determined using Microsoft Excel. The table with the final HIN score was converted into an Excel file and sorted in descending order by the HIN score. The percentage of total road network, percentage of total fatal and serious collisions, and percentage of all injury-causing collisions were calculated. Using these percentages, and examining the rate of the percent of collisions by percent of roadway, an HIN threshold of 59% of KSI collisions was identified.

Figure 1 – Accumulated Collisions by Roadway Miles



In order to reduce segments being disproportionately weighted based on length and enable a logical network, segments with only 1 collision and segments shorter than 0.25 miles were removed from the HIN. **The final HIN comprises of 6% of total Davidson County roadway miles, 59% of killed or severely injured collisions (1,955), and 61% of all collisions (29,530).**

Map 1 – All Collisions, by Severity



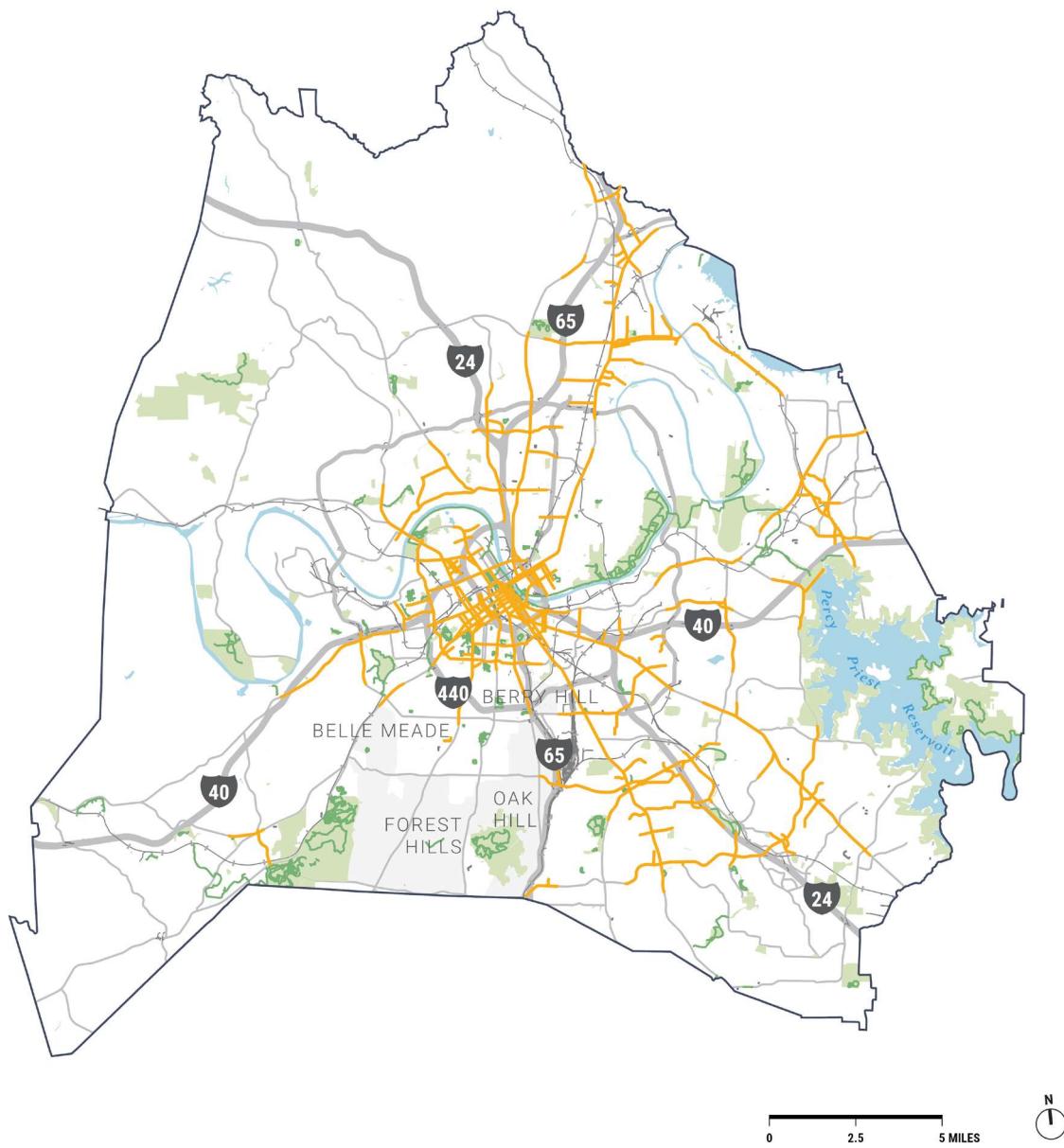
**NASHVILLE COLLISIONS
RESULTING IN A FATAL
OR SERIOUS INJURY**

LEGEND

KSI COLLISIONS

- FATAL
- SUSPECTED SERIOUS INJURY

Map 2 – Nashville High Injury Network, All Modes

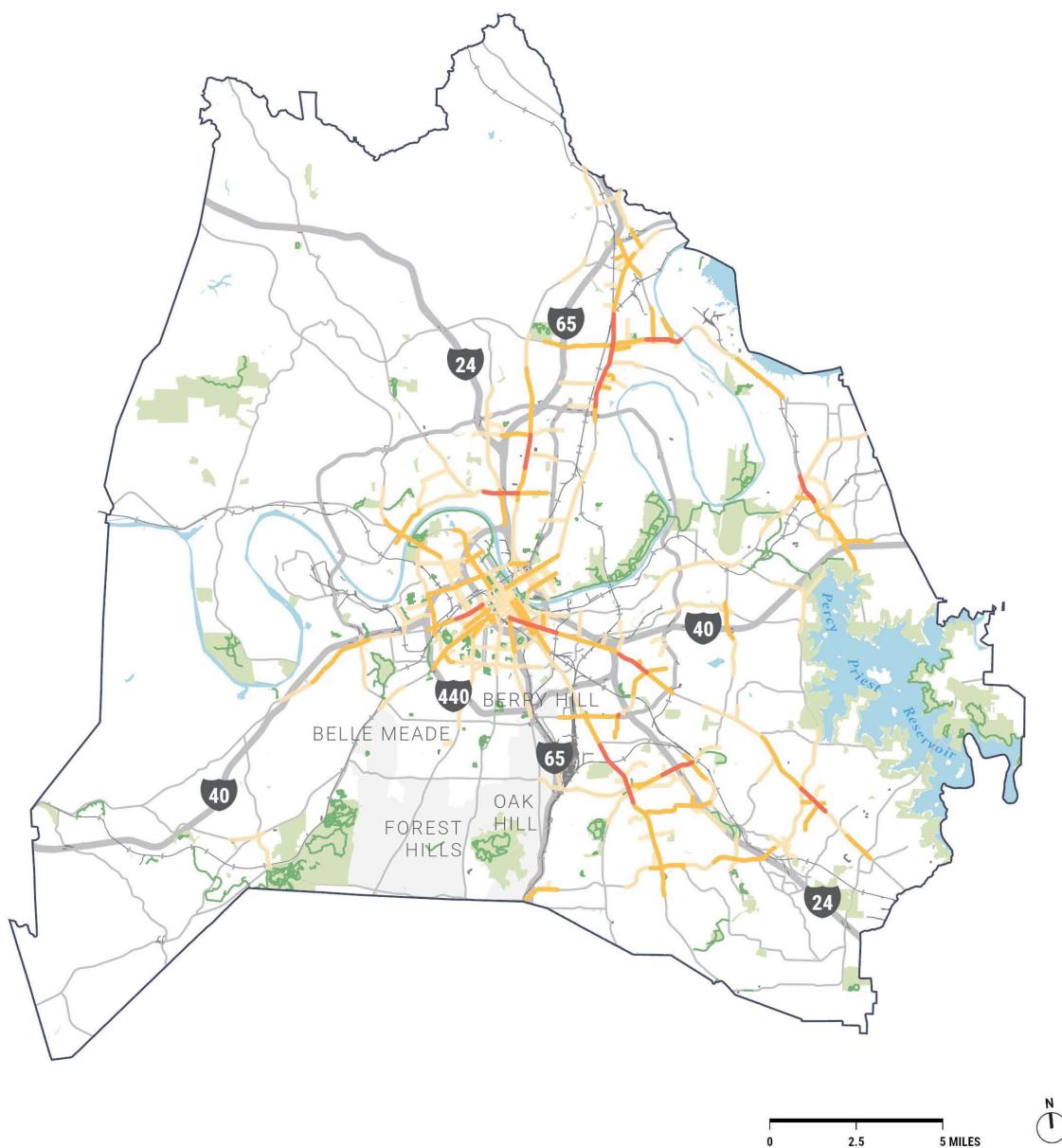


**NASHVILLE
HIGH INJURY NETWORK**

LEGEND
— HIGH INJURY NETWORK

Map 3 - Nashville High Injury Network Severity Index

The high injury network was symbolized with a graduated color ramp to identify the roads along the high injury network in the highest tier, in terms of where the most serious crashes are occurring. The symbology was determined using ESRI's natural breaks algorithm, which identifies natural groupings in the data.



NASHVILLE HIGH INJURY NETWORK TIERS

LEGEND

TIERS

- LOW
- MEDIUM
- HIGH

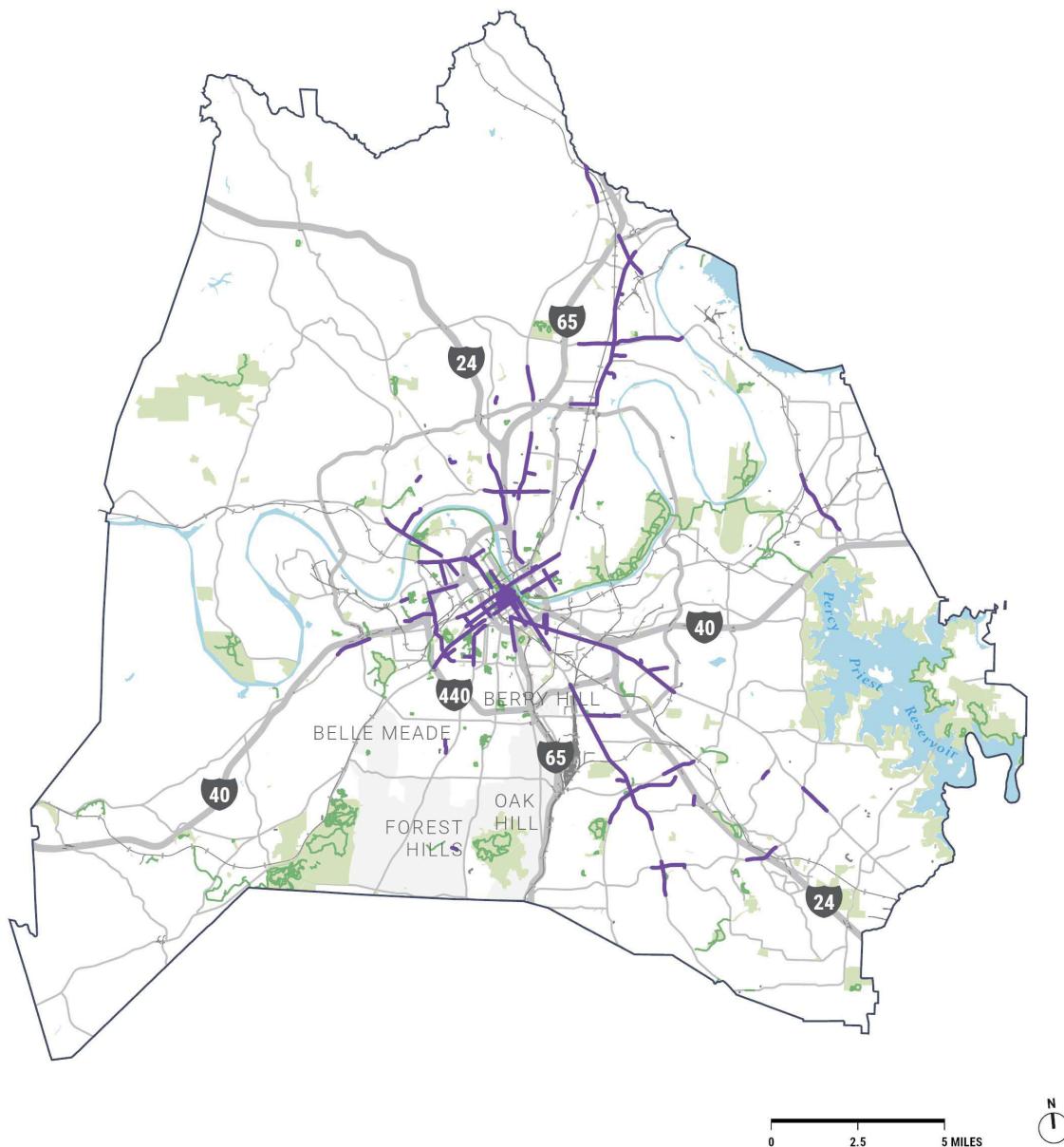
Modal High Injury Networks

In addition to the high injury network that takes into account all modes of transportation, three additional high injury networks were developed for motorist collisions, bicyclist collisions, and pedestrian collisions. The collision points were prepared in the same manner as the composite high injury network, minus the vulnerable road users weighting. While bicyclists were considered, the data is less reliable as the other modes given the small sample size.

The results of the high injury networks are the following:

- The motorist high injury network captures 40% of collisions where a motorist is killed or severely injured on 3.5% of the network.
- The bicyclist high injury network captures 50% of collisions where a bicyclist is killed or severely injured on <1% of the network.
- The pedestrian high injury network captures 60% of collisions where a pedestrian is killed or severely injured on 2% of the road network.

Map 4 - Pedestrian High Injury Network

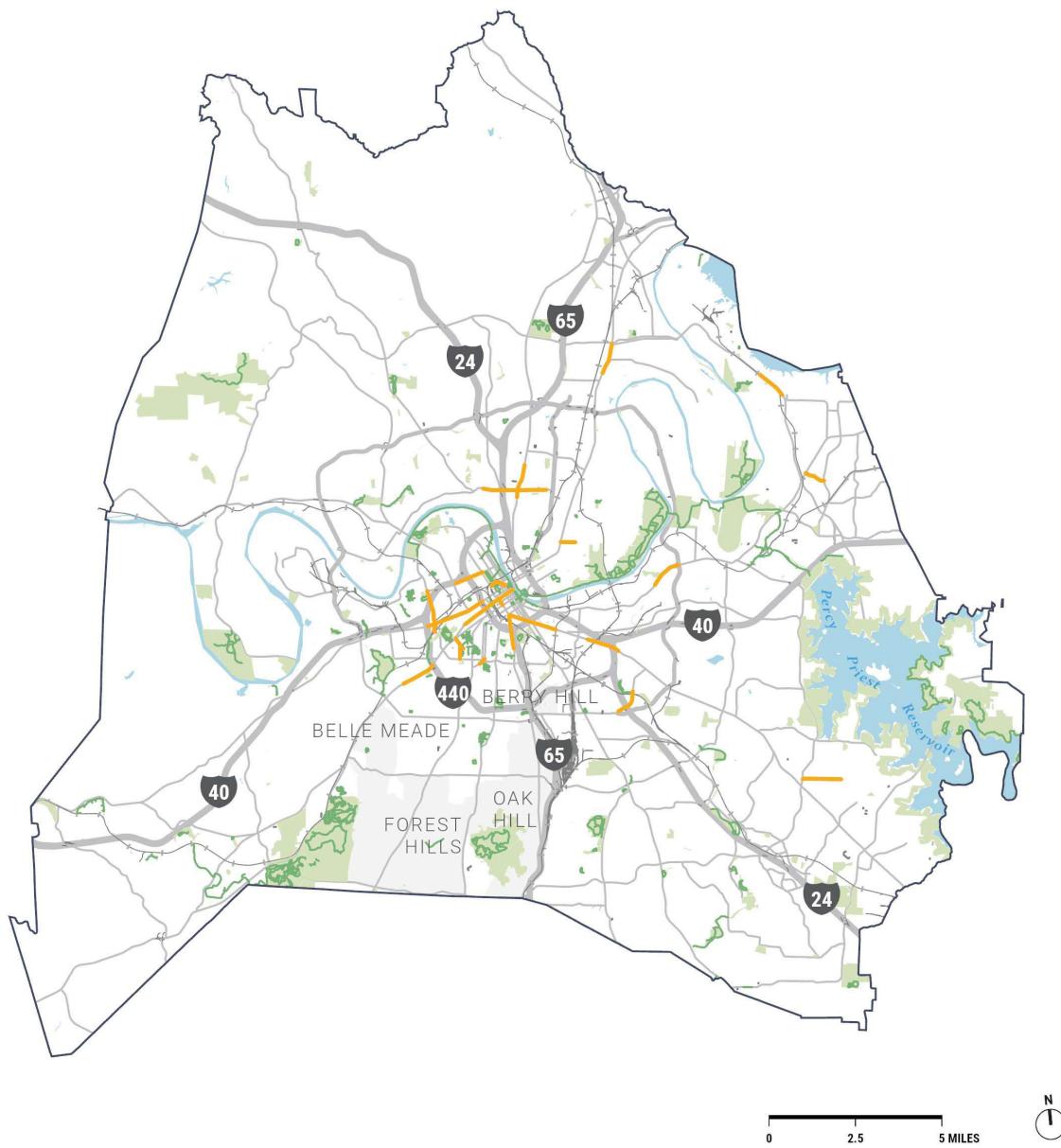


**NASHVILLE PEDESTRIAN
HIGH INJURY NETWORK**

LEGEND
PEDESTRIAN HIN



Map 5 – Bicyclist High Injury Network



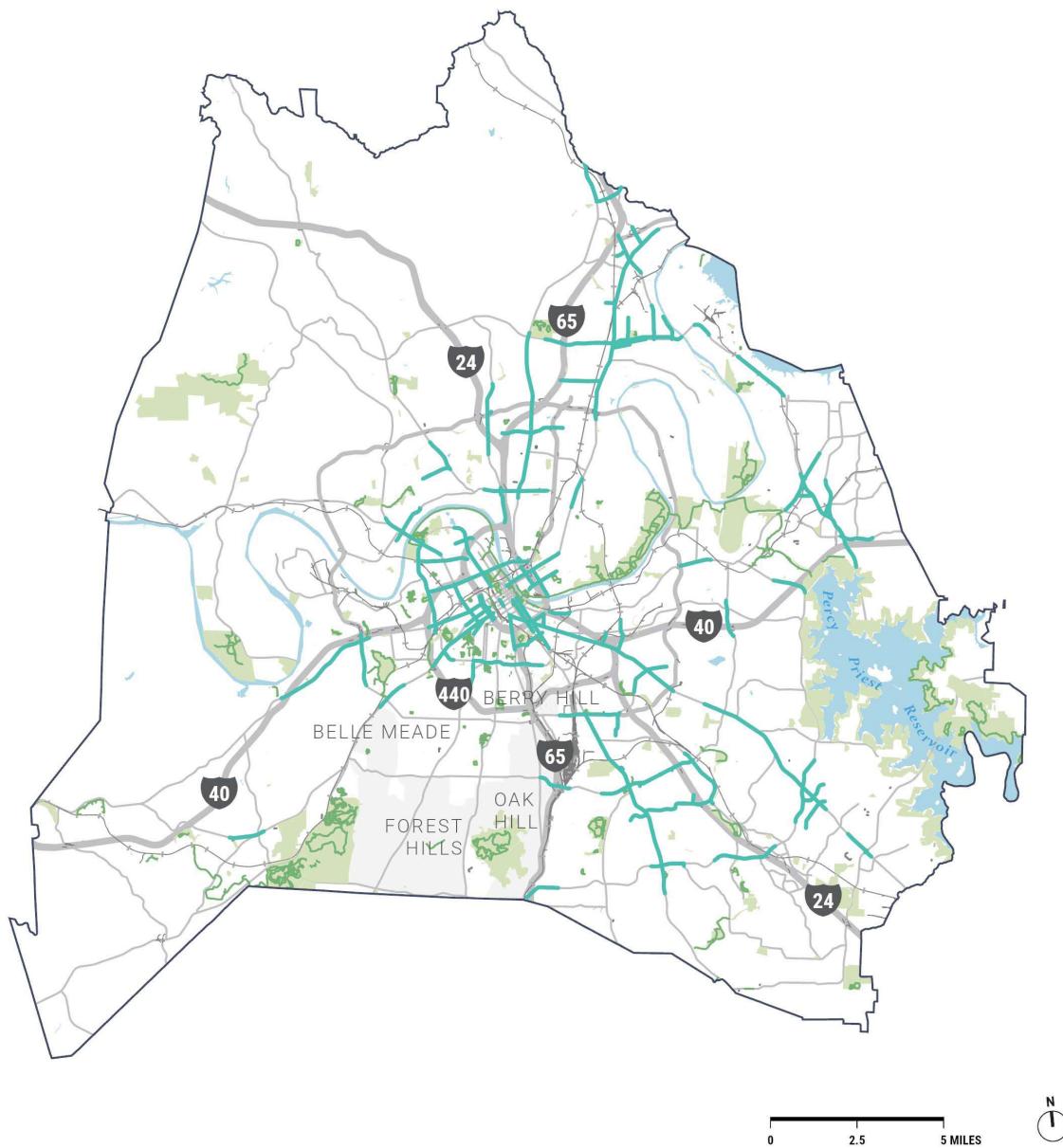
**NASHVILLE BICYCLIST
HIGH INJURY NETWORK**

LEGEND

BICYCLIST HIN



Map 6 – Motorist High Injury Network



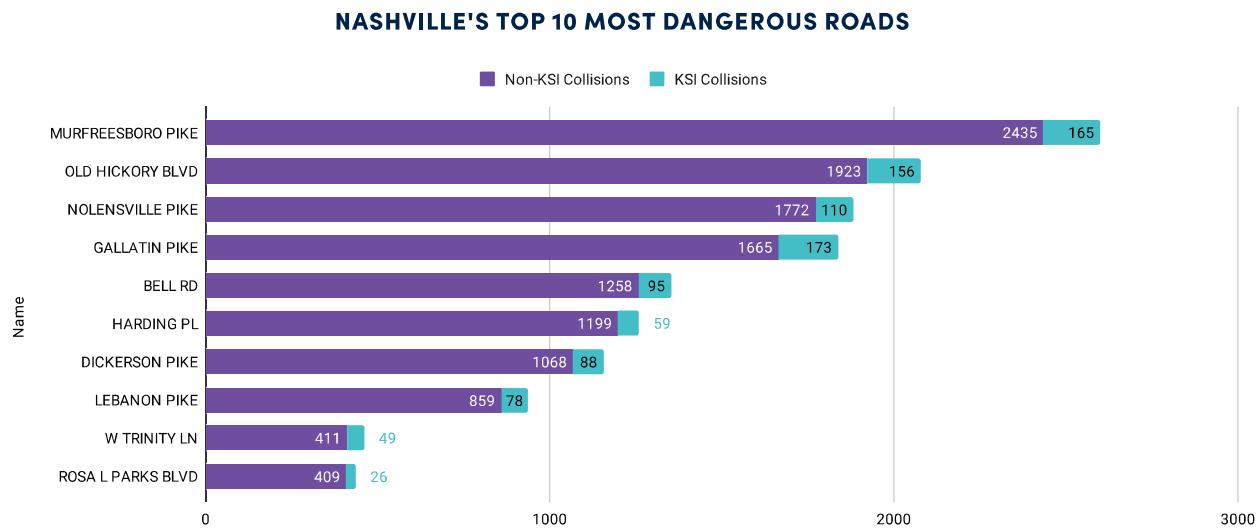
**NASHVILLE MOTORIST
HIGH INJURY NETWORK**

LEGEND
MOTORIST HIN



Nashville's Top 10 Most Dangerous Roads

Figure 2 – Nashville Roads with the Highest Severity Score



High Injury Network Crash Types

Table 1 – Collision Types along the High Injury Network

CRASH TYPE	MINOR INJURIES	FATAL OR SERIOUS INJURIES
Angle/Sideswipe	39%	42%
No collision w/ vehicle (includes all collisions with a bicyclist, pedestrian, or single vehicle)	7%	20%
Rear-end	40%	19%
Head-on	5%	13%
Sideswipe, same direction	5%	3%
Sideswipe, opposite direction	2%	2%
Other	1%	1%

Note:

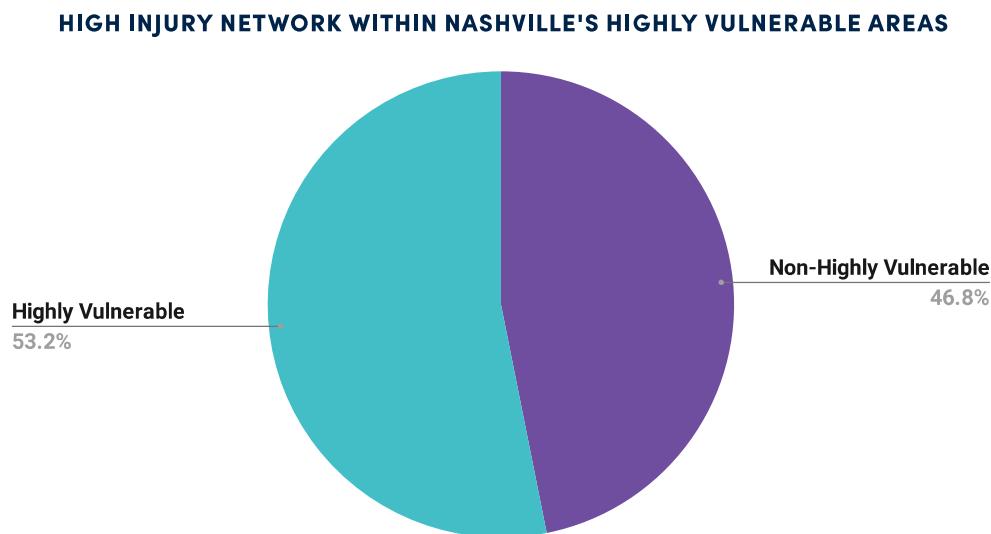
- Reported percentages are rounded and may not total to 100%.
- Bicyclist and pedestrian collisions are all listed as 'No Collision with Vehicle'.

Equity

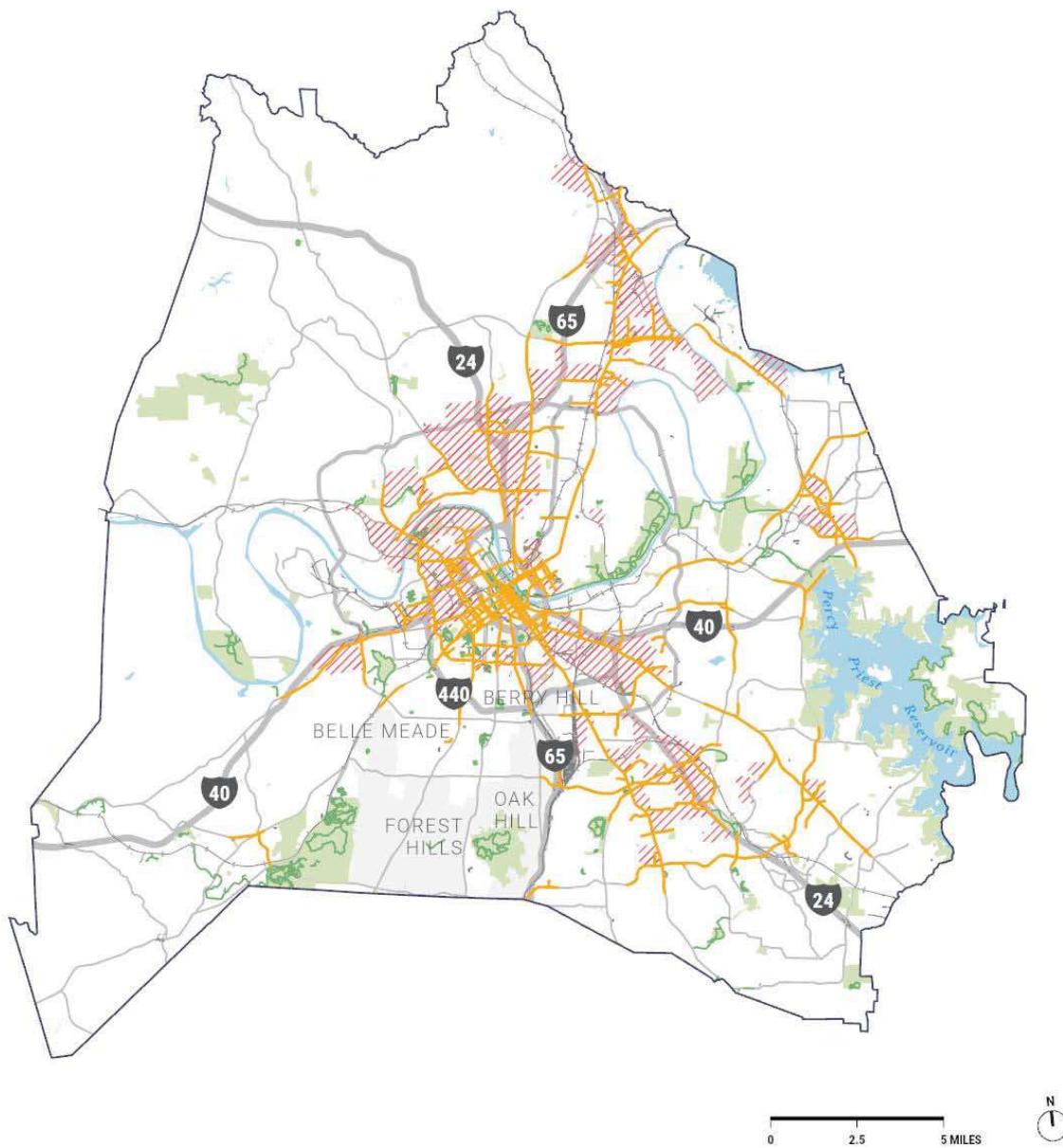
Consistent with national trends, those who live in highly vulnerable communities are more likely to be impacted by traffic violence. Highly vulnerable communities were determined using methods adapted from the Greater Nashville Regional Council's (GNRC) 2019 [degree of vulnerability analysis](#) (refer to Nashville Vision Zero Equity Analysis Technical Memo for more detail on methodology).

Though the highly vulnerable areas comprise just 20% of Davidson County's census block groups, 53% of the HIN occurs within these areas.

Figure 3 – High Injury Network within Highly Vulnerable Areas



Map 7 - Nashville High Injury Network & Highly Vulnerable Areas



**NASHVILLE HIGH INJURY NETWORK
AND HIGHLY VULNERABLE AREAS**

LEGEND

- HIGH INJURY NETWORK
- ▨ NASHVILLE HIGHLY VULNERABLE AREAS

Highly vulnerable areas were determined through a tabulation involving 13 demographic inputs. The following table represents the 20% most vulnerable population, by block group, and the percentage of the High Injury Network that falls within each area. Block groups with the highest percentage of people living in poverty feature 47% of the High Injury Network miles, and block groups with the highest proportion of renters had 44% of the High Injury Network within its boundaries.

Table 2 – Nashville Vulnerable Demographics and HIN

MOST VULNERABLE 20% OF NASHVILLE BLOCK GROUPS	PERCENT OF HIGH INJURY NETWORK
Active transportation users (workers that use transit, walk, or bike to work)	32%
Carless households (no vehicles available)	28%
Disabled population	25%
Educational level (less than High School)	33%
Females	25%
Housing cost-burdened households (spending 30% or more of income on housing/rent)	37%
Limited English proficiency households	20%
Minorities (non-white and/or Hispanic/Latinx)	35%
Poverty	47%
Renters vs. owners	44%
Seniors (65+)	20%
Unemployment rate	28%
Youth (under 18)	21%

Note: Reported percentages represent overlapping census block groups and do not add up to 100%.

Facilities

Crashes that occurred along the High Injury Network were tabulated by roadway characteristics and roadway facilities:

- 41% of all motorist fatal and severe injury collisions, 27% of all pedestrian collisions where somebody is fatally or severely injured, and 38% of all bicyclist fatal and severe injury collisions were related to an intersection.
- The majority of pedestrian collisions occurred at midblock locations.
- Speed was also a major factor in HIN collisions, with 61% of pedestrian involved fatal and severe injury collisions and 50% of bicyclist involved fatal and severe injury collisions occurring on roadways with a 40 mph or greater speed limit.
- Transit stops also were associated with HIN collisions, with 81% of minor injury pedestrian collisions and 73% of pedestrian collisions where somebody was fatally or severely injured occurred within 500 feet of a transit stop.

Percent of HIN Crashes by Roadway Type

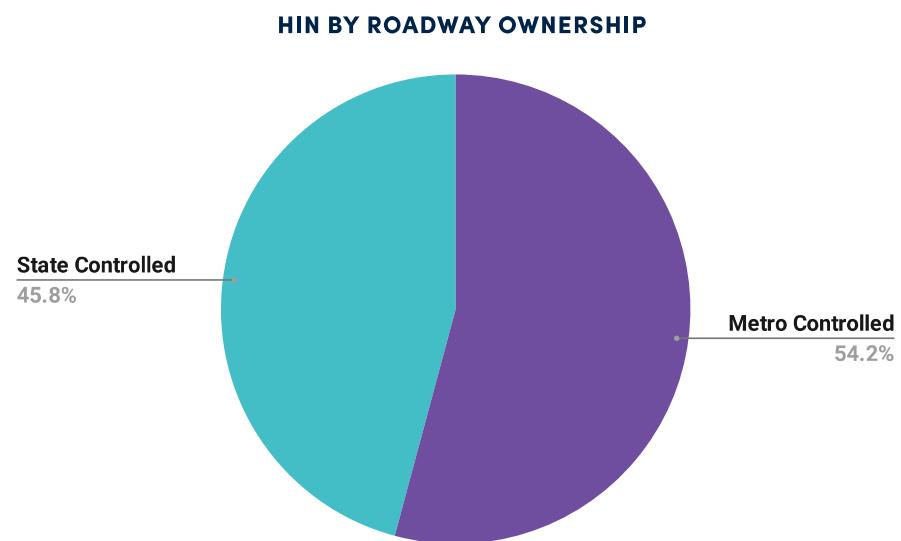
Table 3 – Roadway Characteristics for High Injury Network Collisions

	MINOR INJURY			FATAL OR SEVERE INJURY		
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST
Acceleration/Deceleration Lane	0%	0%	0%	0%	0%	0%
Crossover Related	0%	0%	0%	0%	0%	0%
Driveway, Alley Access, etc.	2%	1%	6%	2%	2%	3%
Entrance/Exit Ramp Related	4%	1%	0%	3%	1%	6%
Intersection	31%	35%	44%	34%	23%	32%
Intersection Related	11%	10%	13%	7%	5%	6%
Non-Junction	51%	50%	36%	53%	68%	50%
Rail Grade Crossing	0%	0%	0%	0%	0%	0%
Shared Use Path or Trail	0%	0%	0%	0%	0%	0%
Other/Unknown	1%	2%	1%	2%	1%	3%

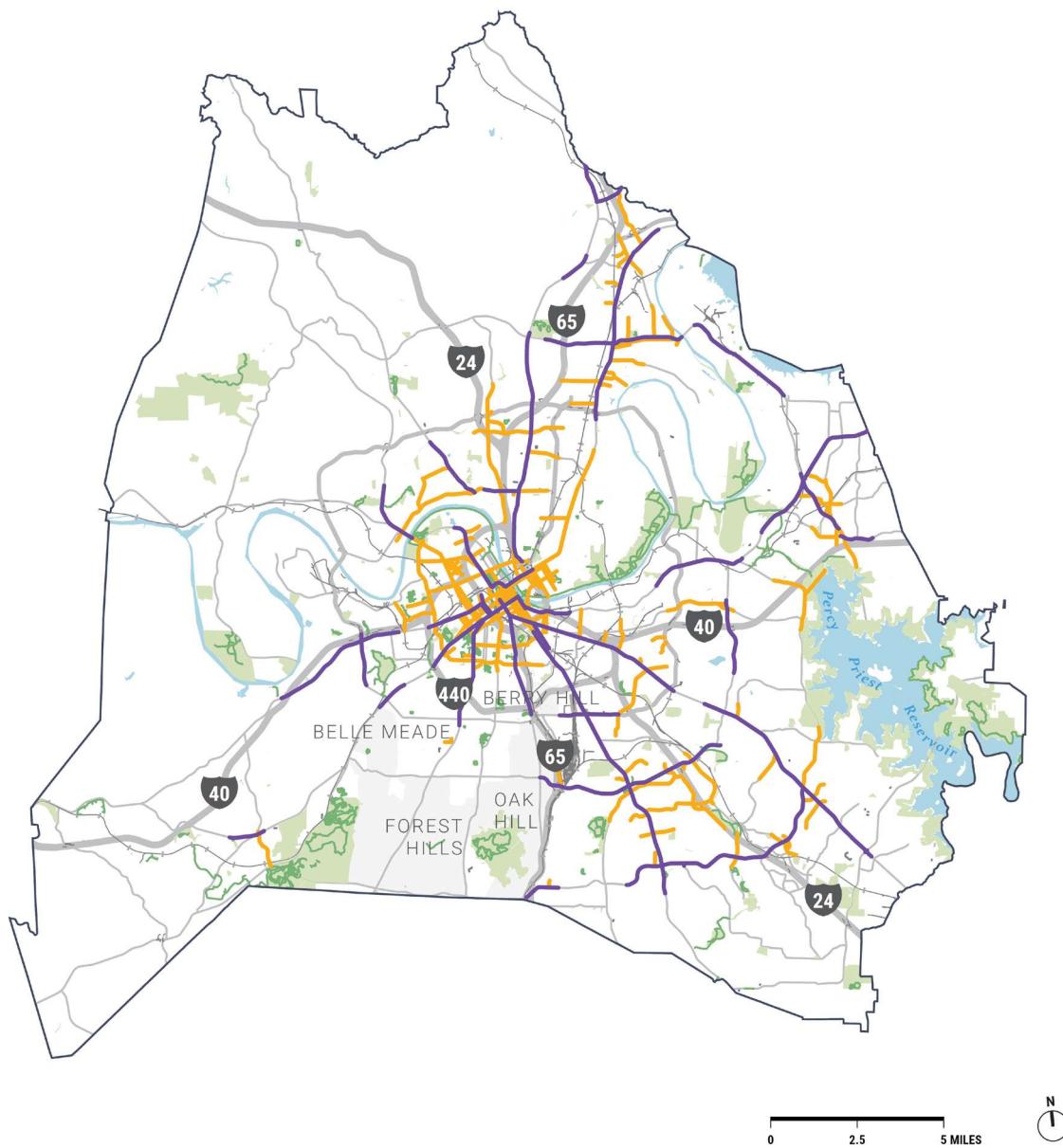
Note: Reported percentages are rounded and may not total to 100%.

HIN Collisions by Roadway Ownership

Figure 4 - Share of HIN by Ownership



Map 8 – Nashville High Injury Network by Roadway Ownership



**NASHVILLE
HIGH INJURY NETWORK
BY ROAD OWNERSHIP**

LEGEND

- HIGH INJURY NETWORK - STATE ROADS
- HIGH INJURY NETWORK - LOCAL ROADS

HIN Collisions by Speed Limit

Table 4 – Speed Limit in Collisions on the High Injury Network

	MINOR INJURY			FATAL OR SEVERE INJURY		
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST
<20 mph	0%	0%	0%	0%	0%	0%
25 mph	0%	0%	0%	0%	0%	0%
30 mph	16%	37%	33%	12%	23%	24%
35 mph	14%	18%	19%	12%	15%	26%
40+ mph	69%	44%	48%	75%	61%	50%

Note: Reported percentages are rounded and may not total to 100%. Local roadways without speed limit attributes were assigned a 30-mph speed limit, as the majority of the data was collected prior to the reduction in residential speed limits.

HIN Collisions by Sidewalk Presence

Table 5 – Sidewalk Presence in Collisions on the High Injury Network

	MINOR INJURY			FATAL OR SEVERE INJURY		
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST
No sidewalks	27%	13%	11%	31%	18%	15%
Sidewalks on one side	32%	26%	21%	31%	27%	44%
Sidewalks on both sides	41%	62%	68%	38%	56%	41%

Note: Reported percentages are rounded and may not total to 100%.

HIN Collisions by Bikeway Presence

Table 6 – Bikeway Presence in Collisions on the High Injury Network

	MINOR INJURY			FATAL OR SEVERE INJURY		
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST
Complete	43%	43%	52%	40%	47%	35%
Future	34%	36%	29%	34%	32%	38%
No Facility	23%	21%	18%	25%	21%	26%

Note: Reported percentages are rounded and may not total to 100%.

HIN Collisions by Bikeway Type

Table 7 – High Injury Collisions by Bikeway Type

	MINOR INJURY			FATAL OR SEVERE INJURY		
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST
Future Facility	34%	36%	29%	34%	32%	38%
No Facility	23%	21%	18%	25%	21%	26%
Buffered Bike Lane	9%	8%	11%	9%	13%	3%
Bike Lane	17%	13%	21%	16%	16%	12%
Protected Buffered Bike Lane	1%	1%	1%	0%	1%	3%
Protected Bike Lane	0%	0%	1%	0%	0%	0%
Signed Shared Route	14%	18%	15%	13%	15%	18%
Wide Outside Lane	2%	3%	3%	2%	3%	0%

Note: Reported percentages are rounded and may not total to 100%.

HIN Collisions by Transit Stop Presence

The following chart represents the presence of collisions near transit on the high injury network.

Table 8 - High Injury Network Collisions by Transit Stop Presence

	MINOR INJURY			FATAL OR SEVERE INJURY		
	MOTORIST	PEDESTRIAN	BICYCLIST	MOTORIST	PEDESTRIAN	BICYCLIST
Less than 500'	64%	81%	76%	59%	73%	62%
500' to 1000'	19%	12%	17%	18%	16%	24%
Greater than 1000'	18%	7%	7%	23%	10%	15%

Note: Reported percentages are rounded and may not total to 100%.

High Injury Intersections

Introduction

High injury intersections identify junctions in the network that have the largest concentrations of collisions where victims are killed or injured. Intersections are considered within the high injury network. However, intersections are summarized separately to the network as there are many collision types that are specific to where streets meet, and their unique characteristics warrant a separate review and summary.

Methodology

This collision analysis examines data from January 2014 through August 2021 for collisions that involved an injury or fatality. The data is inclusive of motor vehicle, bicyclist, pedestrian, and motorcycle collisions within Davidson County. The data used in the collision analysis was provided by the Tennessee Department of Transportation, through their E-Trims digital platform. Collisions were prepared for analysis in the same manner they were prepared for the High Injury Network, and collisions occurring on an interstate were removed. Additionally, the same weighting scheme was applied.

Intersection points were provided to Alta by Metro. A total of 18,620 intersection points were considered. A Near analysis was completed to determine intersection distances from collision data marked as "occurring at an intersection" to determine the optimal buffer distance. 95% of collisions labeled as occurring at an intersection were located less than 49.5 feet from an intersection. Using this information, intersection points occurring at a major or minor arterial

roadway were assigned a 50-foot buffer. Intersections occurring on a local or residential roadway were assigned a 25-foot buffer. The buffer sizes varied to account for the larger intersection area and queuing area present in arterial roads. A spatial join with the intersection buffer and prepared collision points was conducted, with the total collisions, total fatal and severe injury collisions, and total weighted collisions summed in the resulting intersection features. This resulted in 25,878 collisions associated with an intersection.

High Injury Intersections were determined by examining the table in Microsoft Excel, sorting the highest weighted intersections and examining the percent of total fatal and severe injury collisions associated with the intersections. For all modes, the top 50 high injury intersections were identified. These intersections account for 10% of fatal and severe injury collisions associated with an intersection, but comprise just 0.27% of total intersections in Davidson County. The same process was used to examine vulnerable user collisions separately. A total of 321 bicyclist collisions and 1,264 pedestrian collisions were associated with an intersection. The top 44 pedestrian and top 34 bicyclist high injury intersections were identified.

Highest Crash Density Intersections

Table 9 – Dangerous Intersections: All Modes

INTERSECTION	ALL COLLISIONS	FATAL OR SEVERE INJURY	BICYCLIST OR PEDESTRIAN INVOLVED
TN 255 & Sidco Drive	146	2	0
Murfreesboro Pike & Hamilton Church Road	102	6	2
W. Trinity Lane & Brick Church Pike	92	8	6
Nolensville Pike & Harding Place	84	6	3
Murfreesboro Pike & Hobson Pike	74	7	0
Old Hickory Blvd & Gallatin Pike S.	72	5	6

Table 10 – Dangerous Intersections: Pedestrians Only

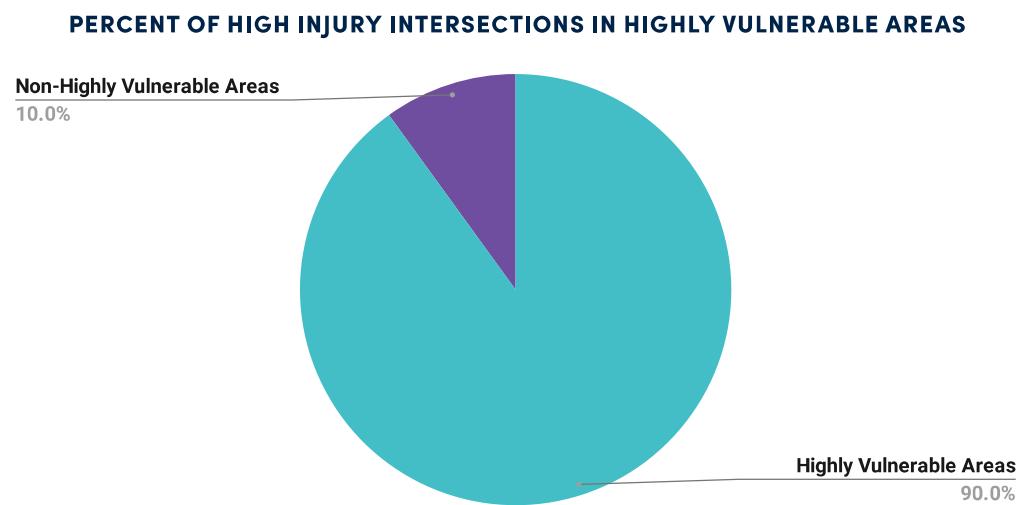
INTERSECTION	ALL COLLISIONS	FATAL OR SEVERE INJURY
Lafayette Street & Charles E. Davis Blvd.	7	1
Gallatin Pike S. & Neelys Bend Road	7	3
Gallatin Pike S. & Berkley Drive	7	2
Dr. Martin Luther King Jr. Blvd & Rep. John Lewis Way	6	2
Gallatin Pike S. & Madison Street	6	2
Nolensville Pike & Welshwood Drive	6	2
Murfreesboro Pike & Millwood Drive	6	2

Table 11 – Dangerous Intersections: Bicyclists Only

INTERSECTION	ALL COLLISIONS	FATAL OR SEVERE INJURY
Division Street & 12th Avenue S.	2	1
Lebanon Pike & Bonnabrook Drive	2	1
Clifton Avenue & 28th Avenue N.	2	1
Gallatin Pike S. & Emmit Avenue	2	1
Highland Avenue & 25th Avenue S.	2	1
E. Thompson Lane & Old Glenrose Avenue	2	1

Percent of High Injury Intersections in Highly Vulnerable Areas

Figure 5 – Percent of High Injury Intersections in Highly Vulnerable Areas



High Injury Intersection Collisions by Collision Type

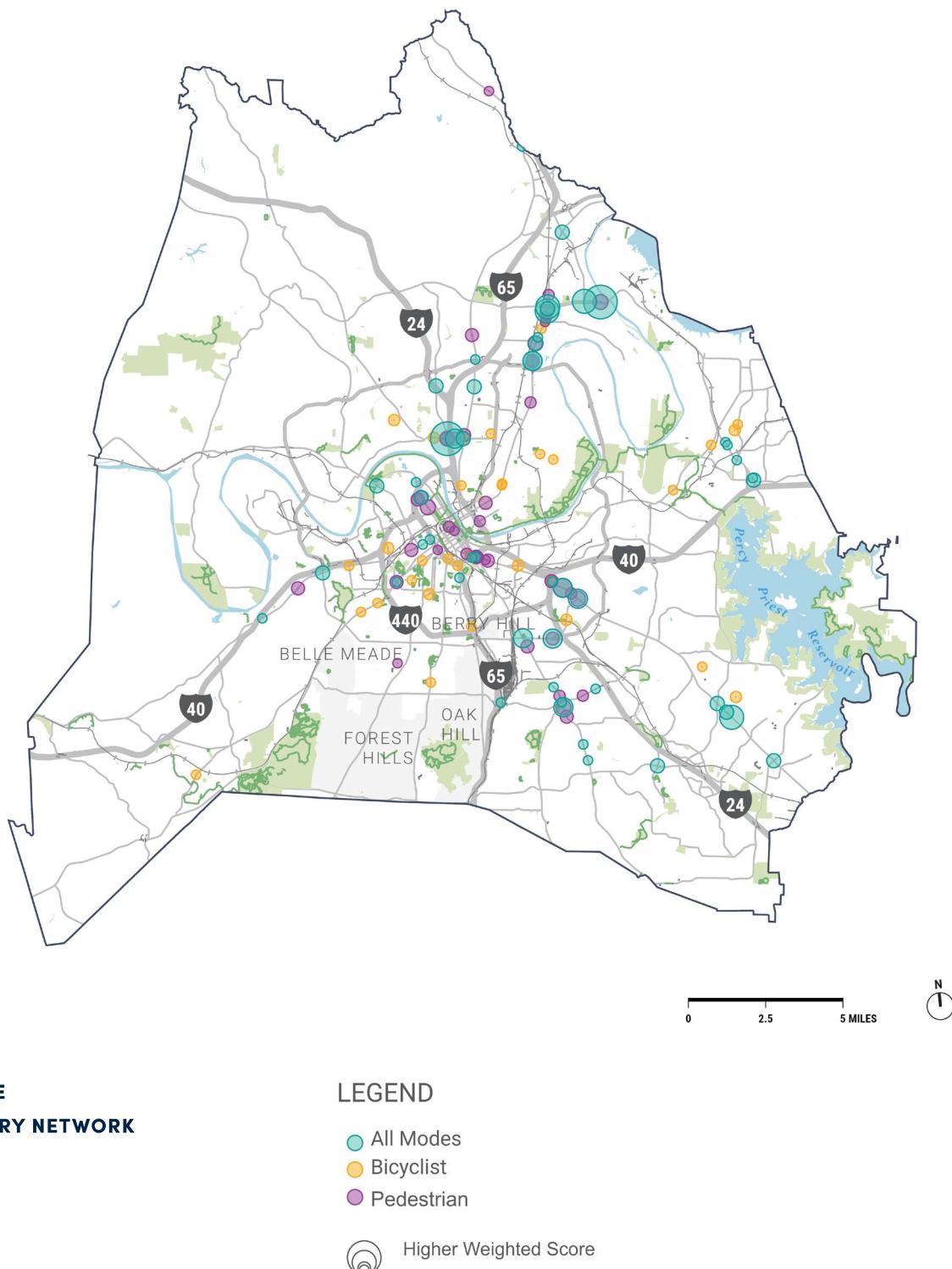
The majority of crash types along the High Injury Network were angled/sideswipe collisions or rear-end collisions. Bicyclist and pedestrian collisions are all reported under the “No collision with vehicle” category, limiting further analysis on possible collision types for these modes.

Table 12 – Predictive Indicators of Fatal or Severe Injury Collisions per segment for All Modes

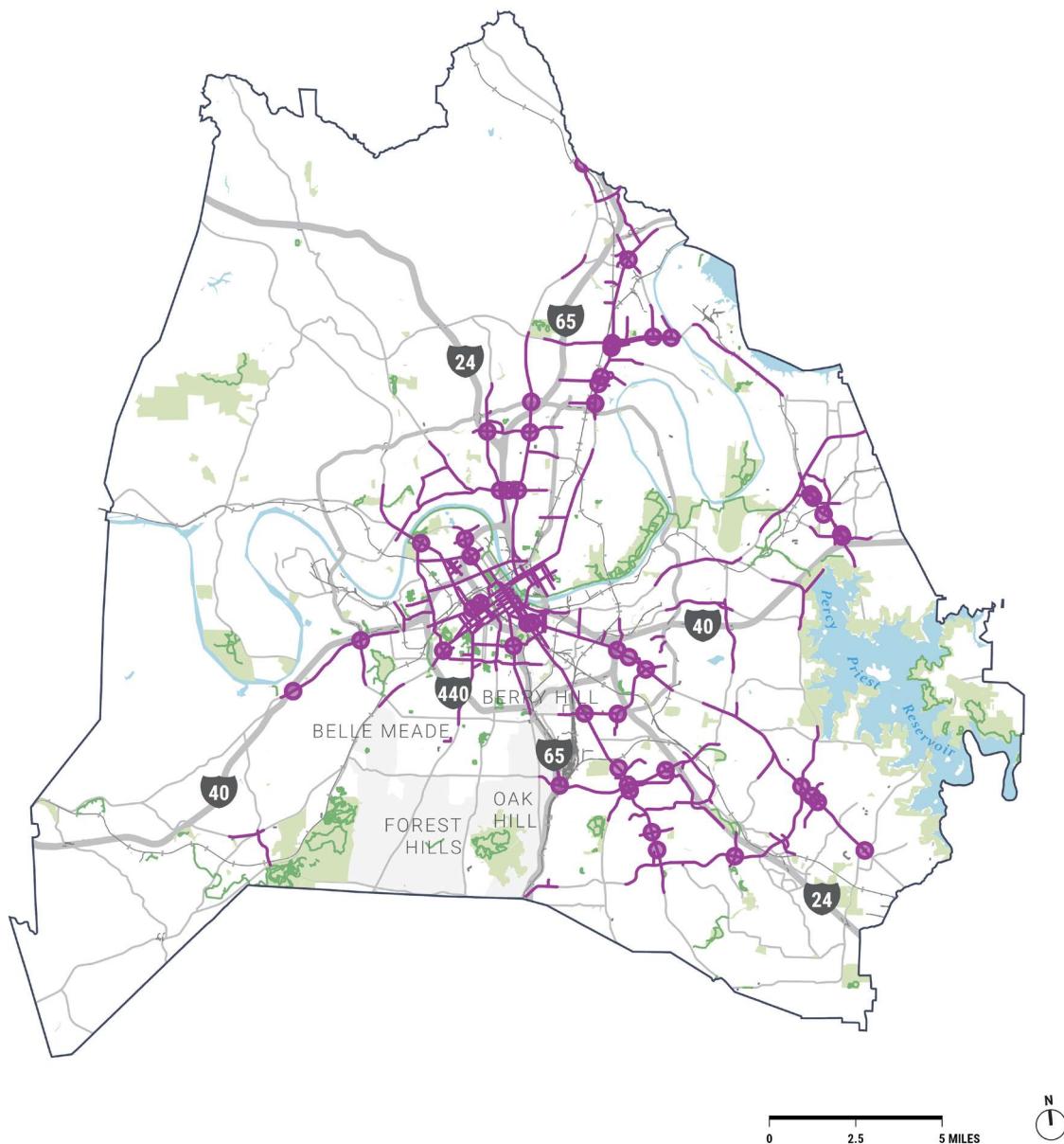
COLLISION TYPE	PERCENT OF ALL COLLISIONS
Angle/Sideswipe	48%
Rear-end	32%
No collision w/ vehicle (Includes all collisions with a bicyclist, pedestrian, or single vehicle)	7%
Head-on	7%
Sideswipe, same direction	3%
Sideswipe, opposite direction	1%
Other	1%

Note: Reported percentages are rounded and may not total to 100%.

Map 9 – Nashville High Injury Intersections by Mode



Map 10 – Nashville High Injury Network and High Injury Intersections



**NASHVILLE
HIGH INJURY NETWORK
BY MODE**

LEGEND

- HIGH INJURY NETWORK
- HIGH INJURY INTERSECTIONS

 Higher Weighted Score

Conclusion

High injury networks identify streets and intersections with the largest concentrations of collisions where victims are killed or injured. The high injury network identifies corridors that have the potential for the most significant interventions to decrease traffic-related injuries and fatalities. The high injury network works in conjunction with the comprehensive systematic safety analysis to identify locations, contributing factors, and countermeasures to traffic deaths and injuries in Nashville.

High injury networks are derived from collision data collected on the scene of an incident. Factors related to human error may yield incomplete or inaccurate results. Additionally, high injury networks are constrained by their ability to measure exposure to a crash (taking into account traffic rates); this is particularly true when considering bicyclist and pedestrian collisions, where data related to pedestrian and bicycle volumes are not included with average daily traffic counts.

Data limitations

High Injury networks vary greatly among Vision Zero cities in their assumptions and weighting schemes. Additionally, data can suffer from human error in its collection and processing. The collision data collected does not count for unreported incidents and near misses. A public survey conducted by Alta in support of Vision Zero in Nashville found that 19% of respondents (318 respondents) stated they were involved in an unreported crash or near miss involving a bicyclist or pedestrian, nearly ten times the percentage that stated they were involved in a reported crash.

Collisions are often associated with intersections, causing potential problems when joined to individual street segments. Determining when a collision occurs on a roadway segment versus an intersection and determining which street segment an intersection crash is associated with are not clear-cut decisions. Furthermore, collisions only involving motorists far outnumber collisions involving pedestrians or bicyclists, though both these groups experience greater rates of traffic collisions. As there were less available data for both modes, there is less certainty about the associations between collision characteristics among these groups.



Appendix 3: Executed Transportation System Safety Policy Resolution No. RS2021-1236

SUBSTITUTE RESOLUTION NO. RS2021-1236

A resolution recommending implementation of certain transportation system safety policies in furtherance of Vision Zero.

WHEREAS, Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries while increasing safe, healthy, and equitable mobility for all; and,

WHEREAS, on January 18, 2020, Mayor Cooper announced his administration's commitment to Vision Zero to help eliminate traffic fatalities and severe injuries in Nashville and Davidson County; and,

WHEREAS, Vision Zero is a strategy to eliminate all traffic fatalities and severe injuries while increasing safe, healthy and equitable mobility for all; and,

WHEREAS, the Metro Nashville WalknBike Strategic Plan of 2017 recommended the completion of a Vision Zero plan, and in January, 2020, Mayor Cooper announced his administration's commitment to Vision Zero in Nashville and Davidson County, and the Metro Council is represented on the Vision Zero Task Force Steering Committee;

WHEREAS, committing to Vision Zero requires implementing policies that require the Metropolitan Government of Nashville and Davidson County ("Metro") strategies and transportation safety policies, allowing the Metropolitan Government of Nashville and Davidson County ("Metro") to shape to engineer its transportation and mobility infrastructure around for the safety and well-being of all residents and all modes of travel; and,

WHEREAS, implementation of a quick-build policy by the Metropolitan Department of Finance, Procurement Division, would enable Metro to deliver quick-build projects in a more efficient and expedited manner by streamlining project delivery; and,

WHEREAS, implementation of a crosswalk policy would provide a framework with procedures for installation, enhancement, removal and relocation of crosswalks throughout Nashville and Davidson County, with specific guidance on crosswalks near bus stops; and,

WHEREAS, implementation of a fatal crash investigative team led by the Nashville Department of Transportation and Multimodal Infrastructure ("NDOT") in connection with Metro Nashville Police Department ("MNPD") would enable Metro to evaluate the engineering, environmental, vehicle, and behavioral factors for deadly crashes; and,

WHEREAS, advancing these policies and ensuring the success of Vision Zero is in the best interest of the citizens of the Metropolitan Government and Davidson County.

WHEREAS, implementation of a multi-disciplinary working group led by the Nashville Department of Transportation & Multimodal Infrastructure ("NDOT"), working in concert with the fatal crash investigative team of the Metropolitan Nashville Police Department Traffic Division, would enable NDOT to consistently evaluate and address engineering factors in deadly and severe-injury crashes; and

WHEREAS the draft Vision Zero Plan will be released for public comment on December 15, 2020 and advancing complimentary policies now will be compatible with that work and lay the foundation for Vision Zero efforts; and

WHEREAS, implementing and reporting on these and other Vision Zero policies and goals, and organizing staff and work flow to manage processes that deliver timely infrastructure improvement and safety results is in the best interest of the citizens of the Metropolitan Government of Nashville & Davidson County.

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY:

Section 1. That the Metropolitan Council hereby goes on record as recommending that the Finance Department, Division of Procurement, examine current law, in consultation with the Metro Legal Department, to determine the legality of a quick-build policy and if feasible, implement the same.

Section 2. That the Metropolitan Council hereby goes on record as recommending that the Nashville Department of Transportation and Multimodal Infrastructure implement a cross-walk policy with framework with procedures for installation, enhancement, removal and relocation of crosswalks throughout Nashville and Davidson County.

Section 3. That the Metropolitan Council hereby goes on record as recommending that the Nashville Department of Transportation and Multimodal Infrastructure, in connection with the Metro Nashville Police Department, formalize a multi-disciplinary work group and referral process in concert with the fatal crash investigative team of the Metropolitan Nashville Police Department Traffic Division to evaluate the enable NDOT to address engineering, environmental, vehicle, and behavioral factors for all deadly and severe-injury crashes.

Section 4. That the Metropolitan Clerk is authorized to send a copy of this resolution to Department of Finance, Procurement Division Director, the Metropolitan Nashville Police Department, Traffic Division, the Metropolitan Legal Department Director and the Nashville Department of Transportation and Multimodal Infrastructure.

Section 5. That NDOT will report to the Metropolitan Council on the recommendations of this resolution on or before March 1, 2022.

Section 56. That this resolution shall take effect from and after its final passage, the welfare of The Metropolitan Government of Nashville & Davidson County requiring it.

Mayor


John Cooper

Date

DEC 08 2021



Metropolitan Nashville and Davidson County, TN

Legislative History

File Number: RS2021-1236

File ID: RS2021-1236

Type: Resolution

Status: Passed

Version: 2

Agenda
Section:

In Control: Metropolitan
Council

File Created: 11/05/2021

Subject:

Final Action:

Caption: A resolution recommending implementation of certain transportation system safety policies in furtherance of Vision Zero.

Sponsors: Young, OConnell, Allen, Henderson, Benedict,
Porterfield, Welsch and Hancock

Enactment Date:

Attachments: Substitute RS2021-1236

Enactment Number:

LS:

Hearing Date:

Entered by: Danielle.Godin@nashville.gov

Effective Date:

Related Files:

History of Legislative File

Ver- sion:	Acting Body:	Date:	Action:	Sent To:	Due Date:	Return Date:	Result:
1	Metropolitan Council	11/09/2021	filed				
1	Budget and Finance Committee	11/15/2021	approved				
1	Metropolitan Council	11/16/2021	deferred				
1	Transportation and Infrastructure Committee	12/07/2021	approved with amendments				
1	Metropolitan Council	12/07/2021	substituted				
1	Metropolitan Council	12/07/2021	adopted				
2	Mayor	12/08/2021	approved				



D

Appendix 4: Record of Public Comments on the Draft Action Plan

Public Response

Public comments on the draft Action Plan were accepted from December 15th, 2021 through February 4th, 2022. Additional comments made by internal Metro staff and partner organizations are not included in this appendix item.

As a response to the desire for more detail, accountability, and transparency around implementing the Vision Zero Action Plan, a companion Implementation Plan will be released in April 2022. The 11 immediate action steps were removed from the Action Plan, and the implementation plan will provide additional detail regarding immediate actions Nashville should take towards reducing traffic deaths and severe injuries..

COMMENT TEXT	METRO RESPONSE
<p>Thank you for launching the vision zero initiative. I live in Hermitage. There is virtually no place in Hermitage where someone without a car can safely move from their immediate neighborhood to another neighborhood or to shopping or to a bus line. Sidewalks are scattered and disconnected. Bike lanes are limited. Neighborhoods are separated by long stretches of road with narrow or nonexistent shoulders, so walking or biking outside your own neighborhood is treacherous. Again, thank you for your interest in community input. I pray that this initiative will bear fruit for the common good.</p>	<p>Comment did not require an edit to the Action Plan. Sidewalk requests should be made through https://hub.nashville.gov/</p>
<p>I read your taking suggestions about traffic at this email. I'd suggest giving some serious thought to more roundabouts in and around Nashville- we've had a few newly built near me down crockett road and i find them safer and easier to navigate than lights. I'm sure you're up to date on all their benefits but In case you haven't heard this freakanomics podcast on roundabouts it's worth a listen. https://open.spotify.com/episode/7wQkkJT9bJbNNeuFvPsWEX?si=L9GrTOBLTWW4T5GFMP-4dQ&dl_branch=1</p>	<p>Comment did not require an edit to the Action Plan.</p>
<p>Hello, I am not a Nashville resident but I do work here. I moved to TN in 2006. What struck me most was the lack of sidewalks. I understand work is being done on adding sidewalks, Great! My other concern /observation is the condition of the bike lanes and roadsides where bikes will be traveling. The amount of debris, rocks, litter, etc. is on the level of a third-world country. Does the city even own a street sweeper? I live in Mt. Juliet and you only need to cross the county line to see the difference this makes. Wilson County cities like Mt. Juliet and Lebanon take pride in the appearance of our roads and byways. There is not a week going by where you do not see the street sweeper out and about. All this debris is a hazard not only to motorist tires but I can only imagine the destruction bicycle tires will receive. A prime example is to drive down Harding Pike on the Donelson (east) end and OHB in Hermitage where there is a bike lane but you will see it is in sad condition. Thanks for letting me vent. Stay safe.</p>	<p>A-1f action item updated to specify on-road bikeway maintenance.</p>
<p>I've noticed that most of the North Nashville neighborhood has sidewalks. However 24th ave N is lacking a continuous sidewalk (there are small pieces of sidewalks here and there as some builders included sidewalks with the construction of new houses). With the large number of residents who walk/run down this street (with pets and children), I believe it's only a matter of time before a traffic related injury occurs. This issue is exacerbated by the fact that many people speed down this street (sometimes going 50 miles/hr). I would really appreciate it if the street was given at least one continuous sidewalk (on either side of the street) and a few speed bumps to slow drivers down. Thanks and please let me know if any additional information is needed.</p>	<p>Comment did not require an edit to the Action Plan. Sidewalk requests should be made through https://hub.nashville.gov/</p>

COMMENT TEXT	METRO RESPONSE
<p>Thank you, Sgt. Bourque. Hobbs, Stammer, Trimble, and Castleman are used as a cut-through network by people driving to avoid back-ups at the Hobbs and Hillsboro Pike signalized intersection (or when eastbound, the traffic lights at Harding and Estes and on Hillsboro to get into the west side of the Green Hills commercial district). Traffic calming investment on Castleman has certainly helped, but Trimble and Stammer and Hobbs continue to be a problem for speeding, and stop signs are regularly run and rolled on Trimble at Colewood and at Lindawood. Further drivers rarely stop when a pedestrian is present at the crosswalk at Hobbs and Stammer. All these areas are in the walking/biking zone for Julia Green Elementary School and the Green Hills commercial district, and as such, the surrounding roadways and sidewalks on Hobbs are heavily utilized by people on foot.</p> <p>I would be grateful if certain repeat problem areas/streets throughout the West Precinct could be regularly scheduled for traffic enforcement. Every council member has their short list of problem streets that they hear about perpetually and would benefit from enforcement. If the traffic division cycled through those for all precincts with random but intentional consistency every few months (rather than solely on request), it would do a world of good to increase compliance with the speed limits and increase safety. People are speeding and driving distracted/looking at their phones, mostly with impunity in Nashville. The inability of people to walk safely across and along collector streets (where sidewalks and crosswalks are absent) and on local streets that serve as cut-throughs, is my primary request for service as a council member. Our lack of data on near misses and areas of need/fear means that we focus MNPD staff time and Public Works/TDOT capital investment mostly, understandably, in a reactive manner on the crashes and fatalities that our poorly engineered (move-more-cars-faster) system generates.</p> <p>That said, people who live on and nearby these streets really do give up over time asking for speeding enforcement, b/c historically there has not been consistent follow up/communication/reporting back from MNPD and Council about when and where the enforcement happened (this appears to be improving lately) and folks feel defeated and adopt a ""why bother/it's never going to get better"" attitude, which is why the HUB records might not reflect actual needs and latent demand. I am copying also Castleman/Hobbs neighborhood leadership and Planning & Public Works/DOT staff working on Vision Zero Task Force efforts so the above general concerns/suggestions about speeding enforcement will be registered.</p>	<p>Additional details regarding enforcement strategies will be included in the implementation plan.</p>
<p>The yield sign on Old Harding Pike entering Hwy 70 has a yield sign that people are ignoring and actually speeding through to enter Hwy 70 in Bellevue. Not sure if a flashing light needs to be placed around the yield sign or something else to grab people's attention. I go by this almost every day and witness people ignoring the sign and people traveling on Hwy 70 having to dodge them or almost come to a stop which could cause another accident. It would be great to have this area monitored</p>	<p>Comment did not require an edit to the Action Plan. Safety concerns can be reported through https://hub.nashville.gov/</p>

COMMENT TEXT	METRO RESPONSE
<p>Thank you for your attention to a future that includes safe multimodal transportation for our city's future. This attention is sorely needed, particularly in the areas experiencing the most rapid growth of residential buildings, such as near the house I've purchased in West Nashville after many years of renting in East Nashville.</p> <p>As you know, West Nashville was previously a largely industrial area with relatively few homes and apartments. In 2021, we are in a situation where new condos appear almost daily, bringing with them new drivers and new street parking. While street parking is a problem throughout the city, reducing 3 lanes of traffic to 1.5 lanes or even requiring drivers to fold in their mirrors, the problem is particularly acute in West Nashville around Briley because the parkway forces many streets that would otherwise connect to dead-end. This constricts the flow of through traffic onto a handful of streets once you get west of 51st: Centennial, Morrow, Robertson, and James. Street parking on these streets, particularly Morrow, combined with a near total lack of sidewalk and bike lane infrastructure makes multimodal travel dangerous for those of us foolish enough to try it and impossible for residents who have their heads on right.</p> <p>As a cycling commuter, there are a few items that would make me feel much safer traveling near my home.</p> <p>(1) The James Ave bridge over Briley has no lights for night travel, short retaining walls, no bike lane or sidewalk, and much littering. The visibility on the bridge is poor in daylight, but that doesn't stop drivers doing 40–50 MPH over it or driving over the double yellow line to pass slower traffic. Any of the material features I list, especially street lights, will save lives, maybe my own. Enforcing the speed limit in this area would also add a lot of peace of mind. Speeding and passing on the double yellow line are endemic throughout the city. Reducing the speed limit on Robertson to match the 30MPH of the other area roads would also be ideal to give me a chance at avoiding the bridge if necessary.</p> <p>(2) The prevailing attitude in the city is that bike lanes and greenways are purely recreational and not of practical use. My bike is my car. It is not a toy. I care for it as if its safe operation protects my life and others' because it does. Unfortunately, this prevailing attitude creates problems for commuters in multiple ways. First, bike lanes are used for parking, jogging, and trash dumps and are not cleaned by the city. This means I often need to leave the bike lane on short notice, which is dangerous to me and to drivers. It also means I spend way too much time and money each year on pulling roofing staples, screws, and other construction debris from my tires. Second, recreational (non-commuter) cyclists ride as they like with no concern for the rules of the road (based on car drivers' behavior, presumably this is how they drive as well) and those of us who rely on bike infrastructure for transport bear the cost, both in anger directed towards us and in ourselves facing another obstacle to dodge.</p> <p>Changing attitudes about the practicality of non-car modes of transport seems to be one of your main goals. I applaud this, but the primary solution is serious spending on cycle infrastructure (like clean, interconnected lanes and bright lights) and serious spending on enforcement of speed limits and incursions into the bike lane from parking, joggers, and road debris. Only we fanatical few will commute despite the danger. Making cycling and walking safe for all must come first. This same problem applies to public transportation. People do not use public transportation because it doesn't get them where they're going on time, and this lack of use causes routes to be cut, creating a vicious cycle wherein public transport is used only by the desperate.</p> <p>Making the city safe for all riders and all pedestrians is not only the right thing for reintroducing community to our isolated world, it is also the right move for reducing the effects of climate change, and it is a moral imperative that we include all our residents in the life of our city, even those whose disabilities preclude them from driving a car. This includes safe sidewalks for wheelchair users, but also biking and public transportation infrastructure for those who are unable to drive due to developmental disabilities.</p> <p>I would also like to extend a personal invitation for any city official involved in this project for me to join me on my cycling commute from West Nashville to Vanderbilt during rush hour. I'll save you a place next to me.</p>	<p>A-1f action item updated to specify on-road bikeway maintenance. Safety concerns can be reported through https://hub.nashville.gov/</p>

COMMENT TEXT	METRO RESPONSE
<p>Here is PDF case example of the area near the intersections of Rosa L Parks and James Robertson Pkwy, I provided over a year after a state employee was hit by a car and taken away in an ambulance. Although, I provided the example to Public Works, the Mayor's Office, and my council person, nothing was done to make improvements.</p> <p>The other PDF has a few more examples since then. We know more people have been hit by cars. We know a dog walker got two broken legs on James Robertson recently (https://www.newschannel5.com/news/man-searches-for-answers-in-james-robertson-parkway-hit-and-run). We know, although maybe cannot document, that many more people have nearly been hit by cars.</p>	<p>Comment did not require an edit to the Action Plan. Safety concerns can be reported through https://hub.nashville.gov/</p>
<p>I have lived in the Hillsboro Village area for several years and would like to propose a traffic change for an area in my neighborhood where there are frequent crashes and pedestrian risks that I believe Vision Zero can help resolve.</p> <p>At the intersection of 21st Ave S and Portland Ave, right past Hillsboro Village, there are many different traffic maneuvers all occurring in a compact area that results in frequent serious crashes, deaths, and injuries. Attached is a diagram of the possible traffic moves that vehicles can currently make from all directions contrasted with a diagram of my proposed changes. Below, I will justify the several proposed changes in detail that will help create a safer pedestrian and traffic space for the community:</p> <ol style="list-style-type: none"> 1. Adding a pedestrian crosswalk across 21st Ave S. - As a busy pedestrian traffic pattern, this crosswalk will protect those crossing Portland Ave across 21st Ave S from oncoming traffic. I attempt to make this cross frequently but feel unsafe as the intersection is busy with traffic. The next safest crosswalk option is at the traffic light of Fairfax Ave. and 21st Ave. 2. Designate turning traffic from Portland Ave onto 21st Ave as Right Turn only - As you can see in the map below, the left turn is the most dangerous traffic move with oncoming traffic in both directions as well as legal cross traffic. Designating the Portland Ave. lanes as right only will streamline the traffic at the intersection for both the safety of drivers and pedestrians. Drivers currently do not use blinkers often and as a result, other drivers and pedestrians must play a guessing game as to which turn the driver will make. Lastly, during rush hour when lanes are full of cars in both directions, vision is hindered for drivers attempting to turn left onto 21st Ave S. This was the case for a friend of mine 1 year ago who made the left turn thinking the lane was open but there was a car speeding down the adjacent lane resulting in a high speed crash. <p>If you would like to speak over the phone about these proposed changes, I would love the opportunity to advocate for them. I am passionate about the shared vision we have for safer streets in Nashville, and at an intersection in such close proximity to my home, I want to advocate strongly for this action plan. I am willing to meet in person as well and continue discussion of proposed changes further.</p> <p>Thank you so much and please let me know if you have any questions or need clarifications.</p>	<p>Comment did not require an edit to the Action Plan.</p>

COMMENT TEXT	METRO RESPONSE
<p>IMMEDIATE ACTION STEPS Add detail about phasing and contingencies to the 11 immediate action steps. What should go first? What has to happen first before another immediate action step can happen? Make that clear. I know detail is included in the detailed strategy tables but I recommend a similar level of detail be added to the immediate action steps. Here is how I would do this. Create an action step list that is doable based on current funding and staff capacity. What are the immediate steps NDOT, TDOT, MNPD, the Mayor and the Council are taking NOW, with current staff capacity and funding. List those. Then have a list of any additional immediate action steps that require more funding and/or more staff capacity. Before this is finalized in Feb., have a staffing plan to include in the report to supplement immediate action #1, so the details are available for discussion in this upcoming Metro budget cycle (Jan.-June 2022). Add the lead agency and a time frame to each of the 11 immediate actions, otherwise this does not feel like a list of immediate, implementable actions.</p>	
<p>#10, the equitable engagement immediate action step, I would encourage the NDOT team to speak publicly about equitable engagement as a key piece of all of the immediate action steps and especially the quick build projects. I would want this engagement strategy to be integrated into the planning and evaluation process for the quick build program, especially because the vision zero report findings make it so clear that vulnerable areas overlap with high crash areas. #3 education campaign immediate action step, I would strongly recommend against an immediate next step of creating a new brand and messages to target specific behaviors. We need to educate the public that traffic safety is a problem. Let's spend a year talking to the public about how traffic deaths are a problem and there are solutions. Just use the content you have in the report! And focus your creative energy on HOW to get it out there! I recommend the team at NDOT who would work on such a campaign brand, focus on developing materials and social content with the findings of the plan and make sure that the engagement plans for all projects related to the plan (as well as the #10 action step mentioned above) are well-executed. You could do a whole communications plan this year just to find creative ways to talk about how 6% of roads account for 60% of crashes and tie the report findings to external events and holidays (e.g. back to school, daylight savings, etc.) I'd love to see, for example, a social media toolkit that partners like us at Walk Bike Nashville, and elected officials could use to share the report findings and encouragement from NDOT staff to share content throughout the year. Do the campaign called for in #3 in year 2 or 3 after we have more community awareness about the problem and the problem areas.</p>	<p>Short, mid, and long term timelines included in the Action Plan. References to industry best practices included in the Action plan. Additional details regarding staffing, prioritization, and action step implementation will be included in the implementation plan.</p>
<p>TIMELINE AND PERFORMANCE TARGETS Short, medium and long under timeline as well as short-term, medium-term, long-term under performance targets should be defined somewhere very clearly in the detailed strategy tables.</p>	<p><i>National fatality rates per 100,000 added to the Action Plan.</i></p>
<p>Transportation projects have a long planning and implementation timeframe, even under the best circumstances. More education of community leaders about why transportation projects take a long time to build, is needed. Defining these timeframes and explaining why in this report, is an opportunity for more education about the transportation planning process.</p>	
<p>NATIONAL CONTEXT In addition to the data (and powerful infographic) included about other cities, I recommend including data for the US overall and the State of TN. I want to put the Nashville data trends, and urban data trends, in a national and regional context.</p>	
<p>MENTION OF THE STEP PROGRAM FHWA's STEP measures are so clear and the documentation/resources available are so helpful. Can it be mentioned in the strategy tables or somewhere in the report?</p>	

COMMENT TEXT	METRO RESPONSE
<p>It feels like your action plan says a lot without really saying much of anything. I don't think we needed a committee to tell us the streets aren't safe.</p> <p>If you want to make the streets safer, remove people from them:</p> <ul style="list-style-type: none"> -Add light rail. You already have freight rail going in nearly every direction with central stopping locations. A deal needs to be made with the rail companies to add tracks adjacent to their tracks, with stops that have small pedestrian bridges to get from one side to the other, as well as stations at high traffic areas. -Add upper and lower avenues and interstates. Like Austin, St Louis, or Chicago. Have upper interstates one direction, and lower the other direction. Or have the upper just be a complete bypass of the city with no onramps/ offramps until you get outside of traffic. I'm sure there are plenty of pikes/ avenues that would be suitable candidates for an ""upper"" section, that would skip a bunch of intersections. <p>With the constant influx of people, any changes implied in your action plan will be obsolete much sooner than anticipated. Safety will require major change, that will take a big chunk of financial input, as well as imminent domain of rail, even though I doubt our city could make any deals with the rail company, as they are hard to deal with.</p>	Comment did not require an edit to the Action Plan.
<p>Hello,</p> <p>Glad to see Mayor Cooper and NDOT's vision on making Nashville a safer place for drivers and pedestrians. One issue I've echoed to the city for years about this is mass street lighting outages across the city. No real process in place to be regularly maintained or fixed by NES/NDOT. See email thread below for reference. Can walk-bike Nashville or any other stakeholders with VisionZero assist or support here? We've got thousands of street lights out across the city and it's absolutely a safety risk.</p> <p>Please review and reach out if you have any questions or if there is anything I can assist with.</p>	A-4b updated to include maintenance of street lighting.
<p>Fix Gallatin for pedestrians! The new Publix area is a disaster!</p>	Comment did not require an edit to the Action Plan. Gallatin Pike was identified on the high injury network and more details will be provided in the implementation plan. Safety concerns can be reported through https://hub.nashville.gov/
<p>Is there a newsletter I can sign up for to receive updates?</p>	Comment did not require an edit to the Action Plan.
<p>Hello - Is there a specific form for submitting ideas for improving traffic safety or is this email where we are supposed to submit? Thanks.</p>	Comment did not require an edit to the Action Plan.

COMMENT TEXT	METRO RESPONSE
<p>Thank you for your work involved in promoting a safe walking/biking world. My comments:</p> <p>Sidewalks, please. I see my legs as transportation as much as possible. But sidewalks end and danger begins. For example, my car was in the shop on a beautiful day, only 3 miles from my condo. I was going to walk home, but thought...how will I cross over 440 without killing myself? I took the bus instead.</p> <p>There are no sidewalks from Bosley Springs road headed East on Harding Pike until you get to Cherokee. What makes this a problem? St. Thomas West and Aquinas have no access for walkers on the north side of Harding Pike.</p> <p>It seems that roads surrounding hospitals and schools need priority in building out sidewalks.</p> <p>Poor Drivers. There must be a way to better train drivers to LOOK RIGHT when TURNING RIGHT. I'm in the crosswalk and here comes a driver barreling down the road to turn right on red. Does that driver pause to look right? No. Isn't it a pity that pedestrians have to risk death, in the crosswalk, because drivers won't obey traffic laws?</p> <p>State Road Vs Metro Road I have asked for those little person things to be put in crosswalks, re-striping crosswalks, blinking lights...anything that can help me stay alive as I battle poor drivers. I was told by Metro...that's a state highway (for example HWY 70/Harding Pike/West End is considered a state highway) so we can't do anything. Is there any way Metro and the State can get together to protect the life of the people who live in the state and in metro?</p> <p>Again, thank you for your work in keeping me alive. I certainly don't want to be one of your statistics.</p>	<p>Comment did not require an edit to the Action Plan. Sidewalk requests should be made through https://hub.nashville.gov/</p>
<p>I live in East Nashville, so I'm often driving on Gallatin Pike. I'm very grateful that you're coming together around a Vision Zero Action Plan because even as a conscientious driver, I've had a few close calls with pedestrians on Gallatin Pike who are crossing the road without a crosswalk and darting across the street. It's particularly bad where there are many restaurants on one side with limited parking, between Sharpe Ave and Grenada Ave. Then again where the Kroger is.</p> <p>The traffic is already so congested on that street, so perhaps a couple pedestrian bridges? But definitely, the speed limit needs to be lower. I used to live in Boston, where they lowered the speed limit to 25 in congested areas, because there's a 90% reduction in fatalities at that speed versus 30 mph. More bike lanes would also reduce the need for as many cars. Plus, it's such nice weather here for cycling compared to the Northeast, where somehow, there are even more cyclists! More people would bike to work and around the city if it was safer to do so. There is an influx here of people like myself who come from other places where public transit and bike lanes are the norm. You may find it's more receptive than you think to take these steps away from a car-centric culture, especially with the impact on the environment.</p> <p>Thanks for all of your work to address these issues,</p>	<p>No Action Plan Edits Required, Gallatin Pike was identified as a high injury road and safety improvements will be prioritized here. Safety concerns can be reported through https://hub.nashville.gov/</p>

COMMENT TEXT	METRO RESPONSE
<p>Vision Zero Team – As a Nashville resident, I would like to thank you for your continued efforts to make the streets of Nashville safer for the community. I thought the Action Plan was extremely well done and look forward to seeing the implementation of the plan from 2022–2026 and beyond.</p> <p>As my wife and I are both avid neighborhood walkers, runners and cyclists I thought it would be beneficial to provide our feedback on the plan.</p> <p>A-2B - Throughout the city we've noticed there are pedestrian crosswalks, but either drivers can't see them or just don't abide by them. I would encourage stricter driving violations or something easier as in making sure the painted lines are visible with fresh paint, better lighting or flashing crosswalk signs in high traffic areas.</p> <p>A-2E - We really like the idea of this item. We think the best option would be to turn some streets into one-ways. In certain neighborhoods streets are already so tight with parking on both sides that this would allow the parking to be kept and add either a sidewalk or bike lane.</p> <p>A-3B - We absolutely love this idea of car-free zones downtown and are shocked it hasn't happened yet. If possible. I would encourage car-free zones at certain hours (ex. daily after 6p).</p> <p>A-4a, A-4b, A-4c - We couldn't agree more and would love to see A-4a implemented as soon as possible.</p> <p>Bicyclist lanes - We love seeing all the bike lanes popping up throughout the city, but have noticed so much debris in these lanes that sometimes it's safer for cyclists to use the roads. Unfortunately, we do not have any cost efficient/effective ideas on how to address this issue. We fully understand this might not fall under the Vision Zero Plan, but figured it's worth mentioning.</p> <p>Again, thank you for your efforts of making Nashville a safer community for all. Please let us know if there is anything we can do to help (surveys, feedback from residents, etc.).</p> <p>Thank you!</p>	<p>A-1f action item updated to specify on-road bikeway maintenance, additional details on the action items will be included in the implementation plan.</p>
<p>For immediate action steps, LPIS should be considered for every pike and transit route as a default. Why can't we have more Leading Pedestrian Intervals (LPIS), especially on the Pikes and our major transit routes in the next six months? If LPIS can be done easily, as it is now being done after a teenager was injured as a pedestrian in a crash on Gallatin & Ardee, why can't we immediately change signal timing to LPI for all of the busiest bus stops and commercial centers on our arterial streets. While the Vision Zero plan calls for safety audits of bus stops, the LPI change could be done today, while the audits are still in progress.</p>	<p>Additional details will be included in the implementation plan.</p>
<p>I have a suggestion I have long thought of to improve pedestrian safety that could shape up anywhere in the country for that matter. Why not build overpasses like a crosswalk from one side of the streets to the other in the areas most deadly. This way it's high enough for motorists to continue and foot traffic to be safe because they walk up steps and over rather than right in the path of deadly traffic. A overpass bridge for foot traffic would be a safer and better alternative for any location in the country like that.</p>	<p>Comment did not require an edit to the Action Plan.</p>
<p>I have lived at this Mobile Home Park since 2010 Children are supposed to catch school bus at this location for grammar school. When it rains it pours a gully full of water here, no side walk for children to stand on for bus..they walk down Highway toward traffic to catch bus at 2518 Dickerson Pk to stand on steps at that location.. The mayor just needs to drive over to this location the next day it rains pretty bad around 7:20 in the morning at this location and observe exactly what I'm saying.. Sidewalk for this area needed pretty bad..and a cross walk needed across to store on opposite side of this location Another question. Why is no one on the Board of Education Transportation on this Vision Zero Plan??</p>	<p>Representatives from the Board of Education will be included in the newly established permanent Vision Zero task force, who will oversee implementation. Safety concerns can be reported through https://hub.nashville.gov/</p>

COMMENT TEXT	METRO RESPONSE
<p>Hello,</p> <p>Just wanted to provide some feedback on the Vision Zero plan after reading an article about it on Vanderbilt's webpage. Several thoughts:</p> <p>Overall, it looks really great. Everything seems to be well-thought out, and I was pleased to see that the plan's designers were concerned with equity and with how motor injuries/deaths are distributed across vulnerable areas.</p> <p>To be frank, the biggest thing that concerns me is the possibility that a lot of the proposed policy changes/legislation might run into trouble in the state legislature.</p> <p>Good luck with the promotion of the culture of safety... drivers are awful in Nashville, particularly after the pandemic (it's like everyone decided that no one else mattered and that they were just going to fend for themselves on the road, same as they have done in the pandemic). I think education and enforcement of existing laws will be key. Related thought: you've probably accounted for this, but make sure that cyclists are included under the "Educate all roadway users" strategy, as I so often see them running lights and stop signs, which is dangerous to them and to drivers who might swerve to avoid them and crash.</p> <p>The Amber Alert-style notifications for hit-and-runs sounds like a good idea, although I wonder how that will affect policing of one another. In other words, will there be false calls in response to the alerts that target people of lower socioeconomic status or that target people based on the color of their skin (if their cars are even remotely similar to what's described on the alerts)? I don't know if this is a thing that happens with Amber Alerts or not, but I suppose that would be a good comparison/data source.</p> <p>Thanks for sharing the plan with the public. I hope you get good responses/feedback.</p>	<p>Comment did not require an edit to the Action Plan.</p>
<p>Too many Nashville drivers have poor driving skills #1. And too many of them don't care. Nobody enforces the traffic laws so why should they care. And too many Nashville drivers are distracted by their phones. It's a zoo out there. It's a wonder more people aren't killed.</p> <p>Vision Zero won't do any good at all unless you get the police to enforce the laws and you do something to get drivers to put down their damn phones while driving.</p>	<p>Additional details regarding enforcement strategies will be included in the implementation plan.</p>

COMMENT TEXT	METRO RESPONSE
<p>Dear Nashville.gov / Vision Zero committee / Mayor John Cooper: You mentioned advocating for a change in state law in your draft – Why not advocate for a change in federal law and/or policies as well?</p> <p>The ""GravTrans"" 'Acts' have been sitting on representative Jim Cooper's desk in one form or another for over 7 years! You can find the latest version at https://www.m.facebook.com/GravTrans</p> <p>""GravTrans"" (U.S. patent #8322943) is the best practice available in urban planning and mass-transit. It is a state-of-the-art 21st century system that will aid you in achieving zero traffic fatalities.</p> <p>Since the public is largely unaware of the ""GravTrans"" option, your methodology was flawed by asking people who are unaware of the best practice available for their expectations. (Which incidentally was also a flaw with the NashvilleNext and 2020 community input phases).</p> <p>""GravTrans"" scores 90/100 on the Clarksville2045 plan scoring system. It nearly pays for itself and it improves upon the ""best practice"" used in DeMoines, IA where they connected 28 city blocks with pedestrian bridges.</p> <p>A GravTrans would ""automatically"" help you achieve the ""road diets"" you mentioned by reducing the need for automobiles and buses.</p> <p>A ""GravTrans"" will also help reduce greenhouse gases and will most likely be a popular tourist attraction.</p> <p>Your draft mentions 'best practices' but fails to mention ""GravTrans"" specifically which is similar to the errors Karl Dean and Joe Biden made in the NashvilleNext and BuildBackBetter plans respectively.</p> <p>(Karl Dean merely put a ""potential multimodal freeway corridor"" on a NashvilleNext map key and then failed to place the specifics in the neighborhood plan (as required)(probably out of fear of ridicule (over 20% of any given population has ""neo-phobia"" and something like 40% of any given population oppose change of any kind.))).</p> <p>Logic dictates that you evaluate the impacts of constructing a ""GravTrans"" in the Nashville area and ""run the numbers"" to determine its cost-effectiveness (you might even find enough savings to establish a ""relocation fund"" to help residents move there).</p> <p>Since the non-transportation related floors of a ""GravTrans"" structure can be leased or sold at a profit, no other urban-planning / mass-transit system is more cost-effective (even when you include the current patent licensing fees (see attached)). Also, since the pedestrians are completely segregated from multi-ton vehicles, few, if not zero, fatalities are expected to occur due to collisions in the ""GravTrans""</p>	<p>Comment did not require an edit to the Action Plan.</p>
<p>Dear Members:</p> <p>The answer to the issues that confront the city in terms of pedestrians, congestion and the like is simple. The city must find a way to establish a plan for light rail that begins with incorporating the airport. Congestion, accidents, etc. could be alleviated significantly with the introduction of an immediate transit plan that includes the likes of Murfreesboro, Smyrna, North, East and West Nashville. The longer it takes to implement a transit plan, the worse matters will become. Thank you.</p>	<p>Comment did not require an edit to the Action Plan.</p>

COMMENT TEXT	METRO RESPONSE
<p>Thank you for the opportunity to review the Vision Zero Action Plan. Overall I think it's a great document, and hopefully signifies a transition from years of diagnosing the issue to real action.</p> <p>Please consider making the changes below, and feel free to contact me if you have any questions at this email or at (315) 264-8328.</p> <p>Page 9: Clarify that 3 percent of people report walking as their main form of transportation for their commute. Many people walk for other reasons. Adding clarity will ensure we don't minimize this population, and it also puts the 17 percent figure in a more accurate context.</p> <p>Page 9: Bottom of the histogram, change the label to "Actual and Projected Killed and Severely Injured Pedestrian Collisions." Also, why are 2020 and 2021 a light grey color? Are those actual numbers and are they factored into the trend line, or is the trend calculated off the 2014–2019 period? The note at the bottom of Page 11 suggests that 2020 and 2021 aren't included in the Page 9 trend line. If you still think that's the right approach, I'd suggest adding the same note to Page 9.</p> <p>Page 11: Clarify by saying "As of August 2021, there have been 75 pedestrian hit-and-runs."</p> <p>Page 12: 8x more likely than who? Someone walking to a bus stop in an area that's not highly vulnerable? Someone who's not walking to a bus stop?</p> <p>Page 13: Renters vs. Owners—clarify that they're areas where people are more likely to be renters (that's what I'm assuming, although I'm not sure why this is included in the ID process because you're already accounting for poverty and housing costs and there's an unfortunate stigma against renters).</p> <p>Page 23: The general public might not know what "all modes" means. Clarify by saying "among cyclists, pedestrians, and people driving?"</p> <p>Pages 24–26 & 28: Spell out "HIN" in the legend.</p> <p>There is nothing in the action framework about reducing VMT. I don't think safe street design is enough; we need fewer people driving, which I understand is somewhat of a chicken-and-egg problem because people don't always feel safe walking and biking. But this plan should still emphasize the fact that too many people drive because there aren't disincentives to doing so. We need to charge for street parking and eliminate mandatory parking minimums if they still exist.</p> <p>While I like the premise behind Metro's traffic calming program and would love it on my street, it's not equitable. The plan accurately points out how crashes are happening on a few dangerous streets, so why are we allocating resources toward projects all across the city through the traffic calming program? Let's move toward calming all streets instead.</p> <p>Will the Vision Zero Task Force meet twice a month or once every two months? I think they need to meet at least once a month for accountability.</p> <p>For the education campaign, please focus it on drivers and avoid victim blaming—e.g., telling cyclists and pedestrians they need to wear more reflective gear, cross in crosswalks when so many streets lack them.</p> <p>Implement leading pedestrian intervals at intersections.</p> <p>Clarify who will be held accountable if we receive a "failing" grade on the report card.</p> <p>Can strategies A-2e, A-3b, and A-3c be on a shorter timeline?</p> <p>The intent behind Strategy A-5a is unclear. Will it inadvertently lead to criminalization of homeless people?</p> <p>Suggested strategy: Advocate for state law to prohibit vehicle window tinting.</p> <p>Suggested strategy: Advocate for state and federal laws to regulate vehicle heights/size and require automakers to install speed governors (perhaps through our congressional representatives). Also get the many automakers in Tennessee involved in this conversation.</p> <p>Strategy D-2c: Do we have carshare companies in Nashville? Are these TNCs?</p> <p>Clarify somewhere in the document, probably up front, whether pedestrians include people in wheelchairs, using walkers, on scooters, etc. Clarify if they're reflected in the crash data.</p>	<p>Text edits were made to the Action Plan to clarify intent. Additional comments will be addressed in the implementation plan.</p>

COMMENT TEXT	METRO RESPONSE
<p>Strategy 1 C is missing collaboration with the State of Tennessee - likely the largest property owner and employer in downtown. (many of your photo quotes were on state property) You have TDOT, though you need something like Tennessee Department of General Services who is responsible for property maintenance.</p> <p>I've lived and worked downtown for more than 20 years. I have to constantly remind the State to do anything responsible to maintain their properties for pedestrian safety.</p> <p>I proved the attached two years ago. Almost nothing has changed. Just this week, most cars ignored me waiting to use crosswalks and drove on through; once a car actually stopped to let me use the crosswalk...both cars behind screeched brakes and honked; a car made a left turn on red through the crosswalk I was approaching; and those stupid little yellow make eye contact signs continued to block views.</p> <p>There are lots of reasons the city and state need to cooperate. Please consider adding a purposeful planning team between city and state. A successful interaction would improve pedestrian safety and be a model for other cities to communicate with the state. Oh, plus, you can make the state pay their fair share to make overdue pedestrian improvements.</p> <p>(also, in the why, move 2014 onto the first line at the beginning so it does not look like 2014,486)</p>	<p>The text on page 5 was revised for clarity. The rest of the comments, including specifics on the partnership with the State of Tennessee, will be included in the implementation plan.</p>
<p>You have one of the most dangerous roads in Nashville, that is a stated fact from your research. Yet, still no active police presence in the area. All sorts of money can be spent to study the problem yet enforcement is your best answer for the problem. Will our Mayor please direct the Police Department to enforce our traffic laws?</p>	<p>Additional details regarding enforcement strategies will be included in the implementation plan.</p>
<p>I am a pedestrian who has lived in a business district for decades. I have been hit by cars four times, over a period of several decades, breaking a patella on two of those three occasions.</p> <p>I was injured while walking in Green Hills on Hillsboro Road (near the mall) and, closer to home on the other two occasions, while walking on Harding Road sidewalks across the street from St. Thomas (West) Hospital. This is possible because the sidewalks are ""broken up"" by business' driveways. Drivers who are in a rush and not looking where to the left and right for pedestrians have cause my injuries even at speeds less than 5 mpg. On one such occasion I was knocked to the concrete bleeding from my head before the driver stopped and called 911 and I was taken to the ER, bleeding from the head and suffering a concussion.</p> <p>I have experienced many ""near misses"" while using the downtown Nashville Public Library crosswalk and the crosswalk at 11th and Broadway when our city's newspapers were headquartered there.</p> <p>The areas that will benefit most from Vision Plan Zero will not reduce my chances of being injured or killed.</p> <p>There should be a sidewalk in front of St. Thomas (West) hospital and on both sides of Kenner Avenue, the side street off of Harding Road, where only one side of the road has what I would term a ""partial"" sidewalk.</p> <p>I am forever dodging traffic while walking in these areas and would greatly appreciate attention paid to them.</p>	<p>No Action Plan edits required. Safety concerns can be reported through https://hub.nashville.gov/</p>

COMMENT TEXT	METRO RESPONSE
<p>I have contacted my council person, the traffic department, traffic engineers, and anyone I could to ask for help. We are in a neighborhood that is all residential, yet people drive way over the speed limit (which is also too high at 40 mph) and often into to bike lanes. We need sidewalks to walk on and walk out dogs safely. Metro did add part of a sidewalk from Estes down Woodmont for a little piece, but needs to continue the sidewalk all the way down to Harding Rd.. There is room to build one in the Metro-owned easement, so we cannot understand why Metro doesn't do this. Many of us on Woodmont feel trapped by the heavy amount of traffic when we want to walk and bike. When I asked to be considered in the last traffic calming efforts, I was told that Woodmont is a state highway so there is nothing they can do. Get real!! This is ridiculous. If TDOT needs to help pay for saving lives, then please ask them to. We literally risk our lives just to walk up the street to get to Woodmont Circle so we can get to our neighborhood park. We also would like to have a pedestrian crossing on Woodmont to walk over to see friends. Please support our neighborhood by making it safe to walk and ride bikes as many other neighborhoods enjoy. Thank you for your consideration and support</p>	
<p>Hi, I read the article in West Side news that you are seeking feedback for the Vision Zero draft action plan and just want to provide some input that people crossing between the Centennial Dog Park and the Centennial Park on 31st Avenue from Parthenon Avenue is extremely dangerous and would benefit tremendously by having some sort of designated pedestrian path with for example a button that could be pressed to light up signs to alert drivers that pedestrians are crossing.</p>	<p>Please be sure to submit a sidewalk request through https://hub.nashville.gov/</p> <p>Comment did not require an edit to the Action Plan</p>
<p>I am excited that we have gotten the plan out for public comment, and I appreciate all the work that has gotten us to this point. Here are my comments: I think it is great that this contains an Action Plan, and I would really like to see tangible Actions contained in each step, including the Immediate Action Steps for 2022. This plan has done a good job of identifying the most dangerous streets and intersections. Actions Steps for 2022 should include choosing one or more of the most dangerous intersections and begin design and funding authorization for intersection improvements. The arc of the plan should be to accelerate the process of improving identified intersections in a sequence based on the data that has already been gathered. A lot of great study and policy making has been done. Even if this Vision Zero plan doesn't explicitly state which intersections are chosen first, it should lay out the criteria for selection - most accidents/deaths/ and highest vulnerability index, and then set goals for how many improvements can be completed in the next five years. Performance measures should include the number of intersection improvements that are implemented this year and each following year. We know we won't get to them all in the first year, but we need to see concrete (literally) evidence that we have started implementing the improvements that have already been identified: improved illumination, pedestrian crossing enhancements, signal timing adjustments, streetscape elements such as bulbouts, medians, bikeways, etc., to slow traffic.</p>	<p>Additional details will be included in the implementation plan.</p>

COMMENT TEXT	METRO RESPONSE
<p>Good Morning , Yesterday we participated in the memorial for pedestrians lost in 2021 . It was hard to hear the suffering families are going through . We have got to do better . There are lots of good ideas on this plan. Get going on the changes.</p> <p>In doing safety surveys along Murfreesboro Pike this past fall and summer I heard a lot about the dangers for pedestrians . But I also heard about how great the bus system was : on time , multiple stops , the expanded hours , the fact that extra buses are sent when needed, the notification system that is now in place So I recommend that this committee keep making measurable visual changes for safety - slower speeds , more sidewalks, better lighting. I know Nashville has not put pedestrians first :here when pedestrians push the signal button it does not respond to them - they have to wait for the entire lighting system to cycle through. Here when a pedestrian steps up to any light , there is no guarantee a walk signal will AUTOMATICALLY come up for them so both cars and pedestrians can learn the flow . If lights don't respond to pedestrians especially in non peak times - they will cross without it. It is an illustration every time they push that button and it does not respond, that cars matter more .</p> <p>We want to be known as a walking, biking friendly place for health, environmental and safety reasons . If car travel becomes more difficult yet buses, bikes and walkers get priority - people will make changes .</p>	<p>Additional details will be included in the implementation plan.</p>
<p>Thank you for all of the work that has gone into this proposal. I offer the following feedback:</p> <ol style="list-style-type: none"> 1. I could not agree more that " managing vehicle speed is fundamental to guiding principles ". What is missing throughout is there is no way identified throughout in how to do that. Though Austin is several years ahead in a similar program of the same name they identify HOW they will work with the police and the courts to achieve this. I have heard to my own ears key members of MNPD say that they are not focused at all on speeding vehicles and that traffic calming us what must be done. Traffic calming is cumbersome, too many rules re what Metro will use or not, too many signoffs required (we were approved in my neighborhood several years ago for traffic calming and basically we did not complete or achieve anything significant in several areas for the reasons stated). 2. I walk across Post and Davidson most every day. People have NO idea what to do in a crosswalk . Like Austin what is needed is clear signage (we never even got the signage moved or added to at this 4 way stop as part of traffic calming). Again, Metro is VERY restricted re what signage they will approve. It is a study in exhaustion. PSA's are needed on all type of media constantly as a FIRST STEP. 3. Speed is a risk for everyone you write. The observed and tracked on speed monitoring devices in our neighborhood show a regular speed of 40 mpg regularly. Post Rd is marked 25 mph. I would guess as I walk there daily that the average speed is 45 mph. No enforcement ever. 4. Traffic calming measures need to be updated. What we need Belle Meade has put in place but a mile away the same traffic calming is not allowed. 5. I cross in a crosswalk . Drivers act like I am not there . They behave as if my dog and I are invisible. <p>In summary, police/ court/ traffic calming quick updating as well as PSA's are critical here. Without that it is more of the same. I also note that Nashville's plan is data heavy. Austin's plan is based on practicality, photos, change to impact goals involving all area streets. Since Austin and Nashville are frequently compared it seems practical to compare them here.</p> <p>Thank you again. The need is great. Our numbers climb each week in the damages direction. I know you are focused on the worse 6 intersections but I implore you to do more at the onset as soon as this program gets off the ground.</p>	<p>Comment did not require an edit to the Action Plan. Sidewalk requests should be made through https://hub.nashville.gov/</p>