CONNECTING Ouachita 2045

TECHNICAL REPORT #2

Existing Conditions Analysis

May 2020

Prepared for:

OCOG Ouachita Council of Governments

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2045 Metropolitan Transportation Plan
Monroe Metropolitan Planning Organization

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1.0 Introduction

This report identifies the conditions and characteristics of the existing transportation system in the Monroe Metropolitan Planning Area (MPA) for the base year, 2018. Where required by the Fixing America's Surface Transportation (FAST) Act, it provides the data for the most recent year available.

For each mode of transportation, the report focuses on the following information:

- Network facilities and assets
- Maintenance
- Safety and security
- Traffic and demand

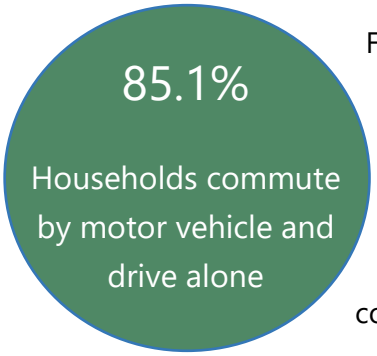
Detailed information for federally required performance measures and targets are discussed in a separate document, *Technical Report 2: Transportation Performance Management Report*.

Planning for the future transportation system and its improvements begins with evaluating the existing transportation system.

2.0 Roadways and Bridges

2.1 Introduction

The region's roadways and bridges are used by personal motor vehicles, public and private transportation providers, bicyclists, and freight trucks. These roadways can also be used to provide access to other transportation modes. This section discusses the general use of the MPA's roadways and bridges. The existing conditions for biking, walking, public transit, and freight will be further discussed in greater detail later in this report.



For households in urbanized areas, like Monroe, traveling by motor vehicle is the primary means of transportation. The most recent American Community Survey (ACS) 5-year estimates show that commuting by motor vehicle without carpooling is the most common method of commuting within the MPA. This means the overwhelming majority of household travel is affected by the condition of the MPA's roadways and bridges.

2.2 The Roadway Network

Several federal and state highways serve the study area and comprise its main roadway network. The most significant of these facilities are shown in Table 2.1.

Table 2.1: Significant Roadway Facilities in the Monroe MPA

Road	Description
	I-20 begins at I-10 in Scroggins Draw, TX and travels east to I-95 in Florence, SC. The Interstate travels west to east through the study area.
	US 80 begins at I-30 in Dallas, TX and travels east to SR 26 in Tybee Island, GA. The U.S. highway travels west to east through the study area and to the north of I-20.
	US 165 begins at US 90 in Iowa, LA and travels north to US 70 in North Little Rock, AR. The U.S. highway travels south to north through the study area.
	LA 2 travels west to east through the northern end of the study area. LA 2 is concurrent with US 165 from Sterlington, LA to Bastrop, LA.
	LA 34 travels southwest from its terminus at US 80 in West Monroe towards Winnfield, LA. The state highway follows Stella St, Mill St, and Jonesboro Rd in West Monroe.
	LA 139 begins at US 80 north of Monroe Regional Airport and parallels US 165 towards Bastrop, LA.
	LA 143 begins at LA 34 in West Monroe and travels north to LA 33 in Marion, LA. The state highway is also named N 7th St and Whites Ferry Rd.
	LA 594 parallels I-20 to the north of I-20 from Downtown Monroe to east of Monroe Regional Airport, then travels south to north to LA 139. The state highway is also named Millhaven Rd.
	LA 616 is a west to east state highway to the north of US 80 in West Monroe. The state highway is also named Arkansas Rd.
	LA 617 connects US 80 to LA 34 in West Monroe. The state highway is also named Thomas Rd.
	LA 840-6 connects US 80 north and east to US 165 in Monroe. The state highway is also named N 18th St and Forsythe Ave.

Roadways by Functional Classification

Each type of roadway serves a function in the overall roadway network. Roadways are divided into functional classes based on their intended balance of mobility (speed) and access to adjacent land. Their designs vary in accordance with this functional classification. Table 2.2 summarizes this information by centerline miles and lane miles. Figure 2.1 illustrates the functional classification of the Monroe MPA's roadways.

Interstate

- Divided highways with full access control and grade separations at all intersections.
- The controlled access character results in high lane capacities, three times greater than the individual lane capacities of urban arterials.

Expressways

- Provides for movement of large volumes of traffic at relatively high speed, and are primarily intended to serve long trips.
- Have some grade separated intersections, while the majority of the intersections are widely spaced and signalized.

Arterials

- Serve both as feeders to Interstates and expressways, and as principal travel ways between major lane use concentrations within the study area.
- Typically divided facilities (undivided where right-of-way limitations exist) with relatively high traffic volumes and traffic signals at major intersections.
- The primary function of arterials is to move traffic; they are the main means of local travel, with a secondary function of land access.

Collectors

- Provide both land service and traffic movement functions.
- Serve as intermediate feeders between arterials and local streets and primarily accommodate short distance trips.
- Generally not continuous for any great length since they serve few through trips.

Local Streets

- Provide access to immediately adjacent land.
- WIthin the local street classification, three subclasses are established to indicate the type of area served: residental, industrial, and commercial.

Within the arterial classification are principal and minor subclassifications. Principal arterials in both rural and urban areas serve as high volume traffic corridors. They provide access to the major centers of activity of a metropolitan area from its furthest points. Minor arterials connect the principal arterials and provide a lower level of travel mobility for shorter travel lengths.

Within the collector classification are major and minor subclassifications. Major collectors are those collectors that carry low-medium traffic volumes and connect arterials and local streets. These roadways typically carry more volume and minor collectors. Minor collectors perform the same function as major collectors but carry less volume.

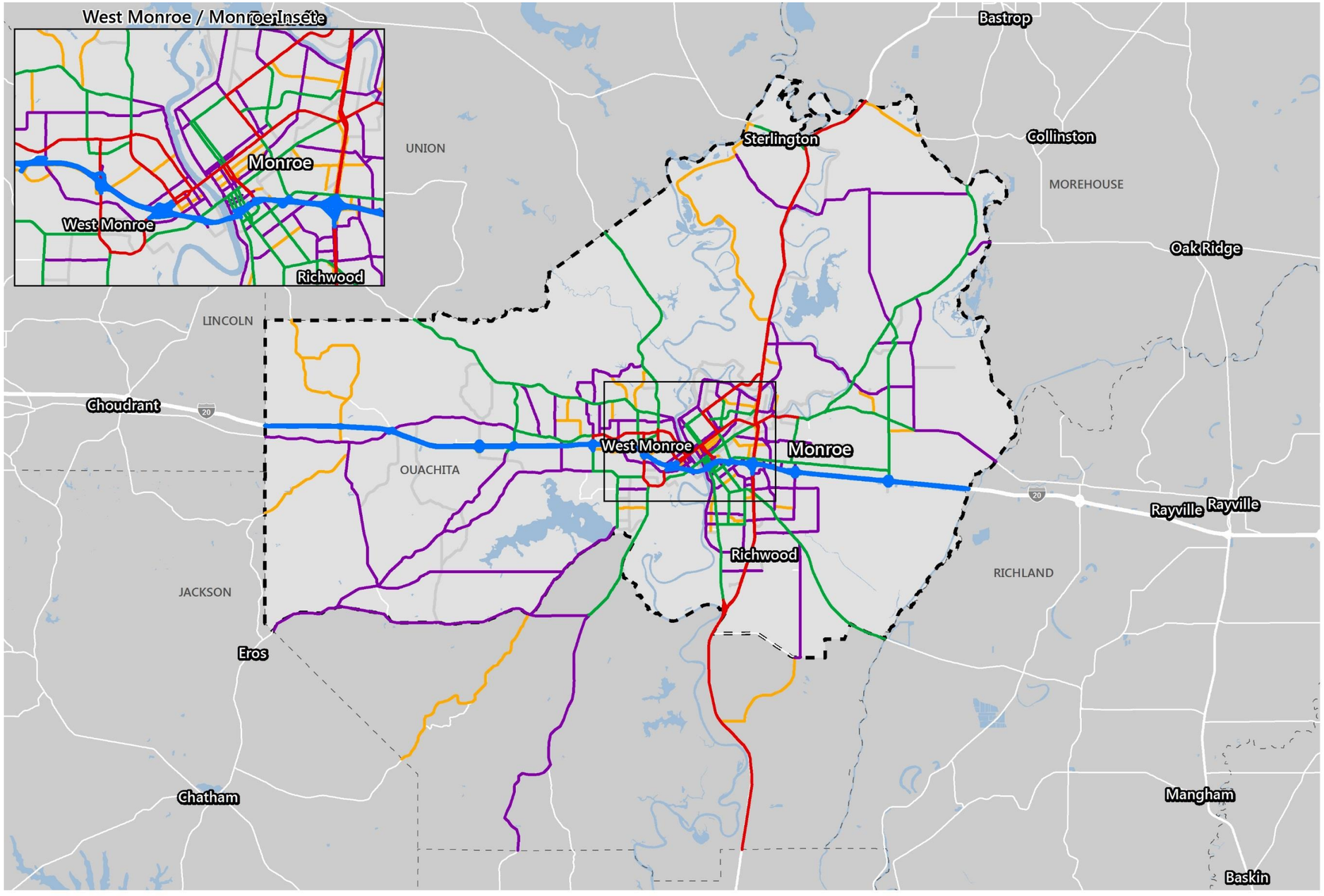
Table 2.2: Roadway Model Network Lane Mileage by Functional Class, 2018

Functional Class	Centerline Miles		Lane Miles	
	Miles	Percent	Miles	Percent
Interstate	28.4	5.3%	145.1	10.8%
Principal Arterial	54.5	10.1%	215.9	16.0%
Minor Arterial	109.2	20.3%	270.0	20.0%
Major Collector	196.3	36.4%	412.2	30.6%
Minor Collector	78.7	14.6%	158.3	11.7%
Local	72.3	13.4%	146.4	10.9%
Total	539.4	100.0%	1,347.8	100.0%

Note: Centerline miles do not include ramps.

Source: Monroe Travel Demand Model

Figure 2.1: Functional Classification of Roadways, 2018



Data Source: LADOTD

Disclaimer: This map is for planning purposes only.

2.3 Traffic and Congestion

664,273

Daily trips within the MPA

The number of daily trips estimated by the Travel Demand Model, by trip purpose, in 2018 is summarized in the graph below. Approximately three (4) percent of vehicle trips pass through the MPA. Internal commercial and freight vehicle trips (e.g., truck, taxi, etc.) account for about eight (8) percent of vehicle trips. The majority of vehicle trips in the MPA (54 percent) begin or end at home.

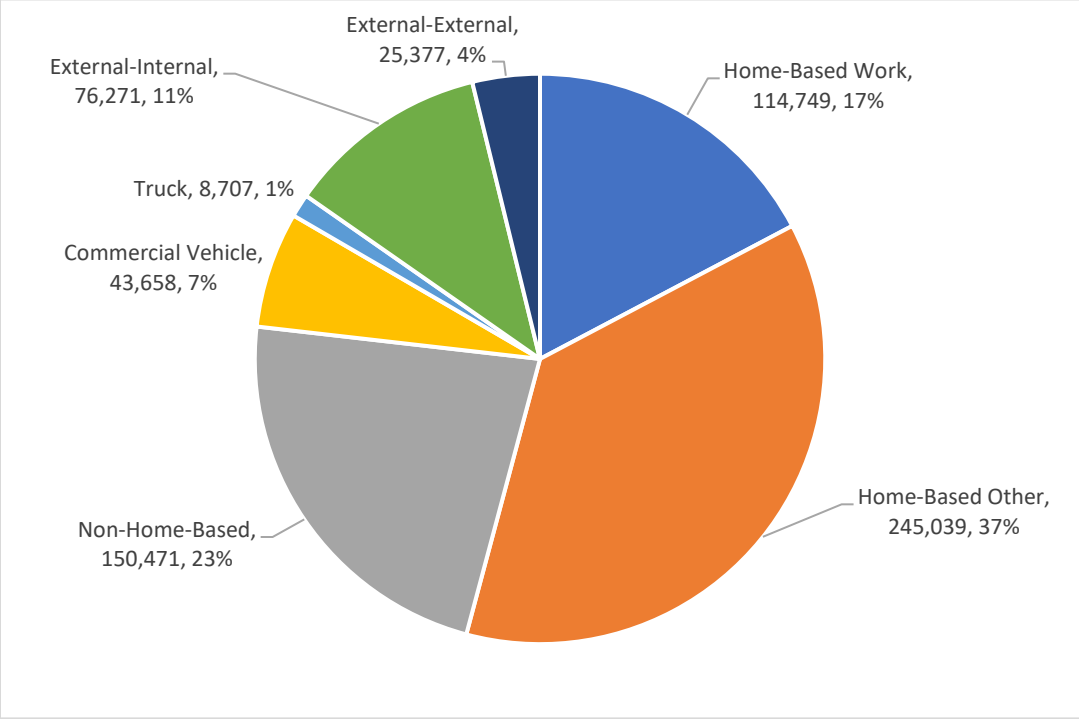


Table 2.3 displays how these trips are distributed onto the modeled transportation network. Most of the delay (nearly 48 percent) is estimated to occur on I-20. However, the principal and minor arterials experience the most vehicle miles travelled and vehicle hours travelled. There is comparatively little delay estimated to occur on collectors and local roads.

Table 2.3: Roadway System Travel Characteristics, 2018

Functional Class	Daily Vehicle Miles Travelled (VMT)		Daily Vehicle Hours Travelled (VHT)		Daily Vehicle Hours of Delay (VHD)	
	Number	Percent	Number	Percent	Number	Percent
Interstate	1,619,421	38.1%	32,613	32.7%	6,593	47.8%
Principal Arterial	1,045,751	24.6%	25,618	25.7%	3,814	27.7%
Minor Arterial	811,635	19.1%	21,170	21.2%	2,186	15.9%
Major Collector	619,306	14.6%	15,984	16.0%	1,050	7.6%
Minor Collector	84,425	2.0%	2,192	2.2%	66	0.5%
Local	68,627	1.6%	2,268	2.3%	74	0.5%
Total	4,249,165	100.0%	99,845	100.0%	13,784	100.0%

Source: Monroe MPO Travel Demand Model

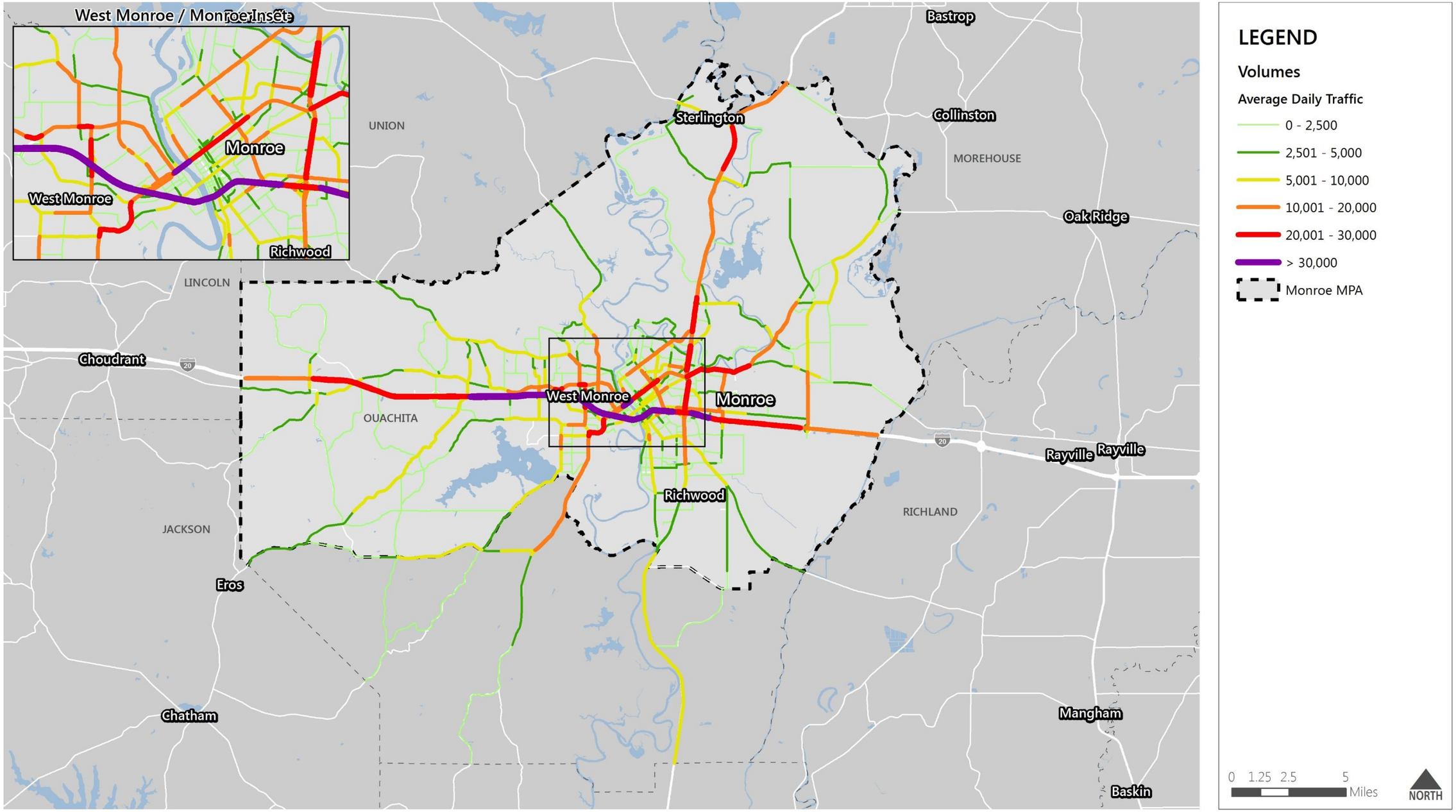
Figure 2.2 displays the vehicular traffic in the MPA, which is greatest on:

- I-20
- US 80 (Cypress St)
- US 80 (Desiard St)
- Lea Joyner Bridge
- LA 34 (Jonesboro Rd)
- Thomas Rd

These areas have estimated average daily volumes exceeding 25,000 vehicles.

Figure 2.3 displays the volume to capacity (V/C) ratios for the major roadways in the MPA. Currently, there are no roadway segments in the MPA that experience a V/C ratio of 1.0 or greater, representing congested segments. However, many segments within the MPA (summarized in Table 2.4) experience V/C ratios that suggest they could experience congestion in the future. Most of these segments are near the intersections of roadways and/or at interstate interchanges with high traffic volumes. This suggests that peak period congestion is currently an issue in the Monroe MPA.

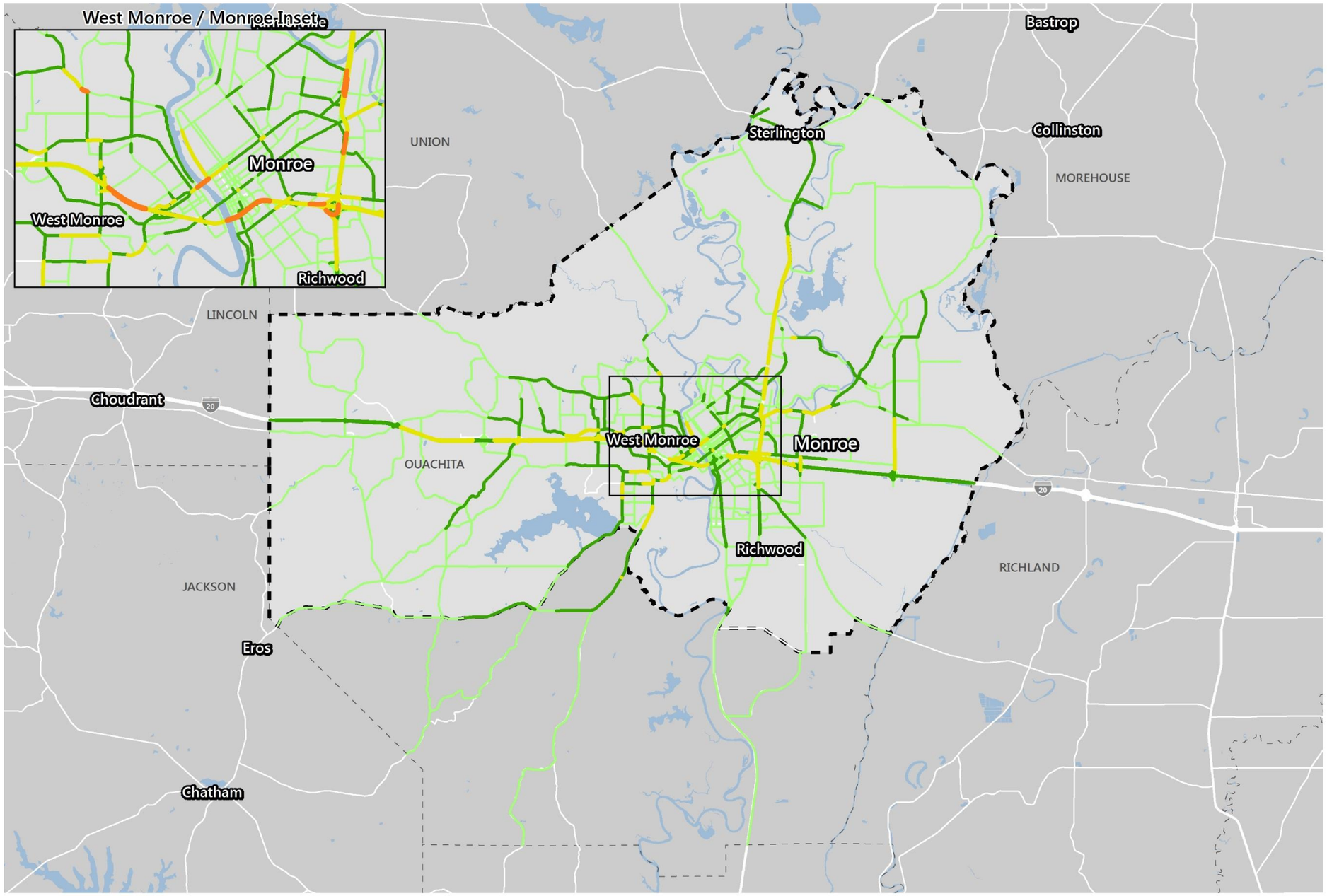
Figure 2.2: Average Daily Traffic on Roadways, 2018



Data Source: Travel Demand Model

Disclaimer: This map is for planning purposes only.

Figure 2.3: Existing Roadway Congestion, 2018



Data Source: Travel Demand Model

Disclaimer: This map is for planning purposes only.

Table 2.4: Roadway Corridors with Volumes Exceeding Capacity, 2018

Roadway	Location	Length
I-20 Westbound	Well Rd to US 165	6.02
I-20 Eastbound	Well Rd to US 165	6.02
I-20 WB Off Ramp	@ LA 546	0.21
I-20 EB On Ramp	@ LA 546	0.26
I-20 WB Off Ramp	I-20 to 0.11 miles west	0.11
I-20 WB On Ramp	0.26 miles east of I-20 to I-20	0.26
I-20 EB Off Ramp	I-20 to US 165	0.76
US 80 (Lea Joyner Bridge)	Cypress St to Riverside Dr	0.36
US 80 (Desiard St)	Kansas Ln to Chatham St	0.42
US 165 NB	Desoto St to Loop Rd	0.46
US 165 NB	Forsythe Bypass to Fink's Hideaway Rd	1.23
US 165 SB	I-20 to Louberta St	0.57
US 165 SB	Renwick St to US 165 SB On Ramp	0.36
US 165 SB	Northeast Dr to Loop Rd	0.40
US 165 SB	Forsythe Bypass to Fink's Hideaway Rd	1.23
LA 34 (Jonesboro Rd)	Winks Ln to Banks Ln	1.03
LA 546	I-20 EB Ramps to I-20 WB Ramps	0.22
LA 616	Kiroli Rd to Warner Dr	0.10
Forsythe Bypass	US 165 SB to US 165 NB	0.01

Source: Monroe MPO Travel Demand Model

2.4 Roadway Reliability

Most of the region's roadways do not have daily volumes that exceed their daily capacities. However, there may still be congestion issues at specific times, notably peak periods. Travel time reliability is a measure of how congested travel times compare to free-flow conditions. The Level of Travel Time Reliability (LOTTR) is defined as:

$$\text{Segment LOTTR} = \frac{\text{"Longer" 80th Percentile Travel Time}}{\text{"Normal" 50th Percentile Travel Time}}$$

The LOTTR of each roadway segment is calculated for four time periods (including AM and PM peaks), with the worst LOTTR being used to determine segment reliability. The most recent LOTTR data available, year 2019, was obtained from FHWA's National Performance Management

Research Data Set (NPMRDS). Roadway segments with an LOTTR less than 1.5 are defined by the FHWA as reliable. Figure 2.4 displays the LOTTR of the monitored segments within the MPA.

It should be noted that the current NPMRDS for the Monroe MPA does not meet the full Enhanced NHS, which is reflected in this report. This is due to the reporting cycle of the NPMRDS data and recent updates to the Enhanced NHS by the FHWA. The Federal Register states that the MPO is only responsible for reporting what the NPMRDS displays.

The NPMRDS data shows that both the Interstate and non-Interstate NHS systems within the MPA are fairly reliable.

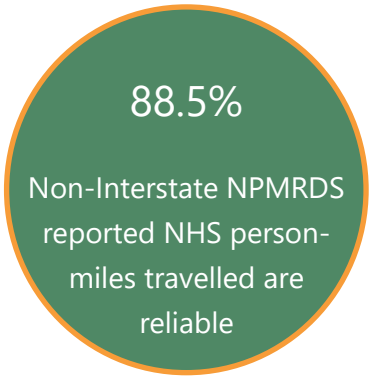
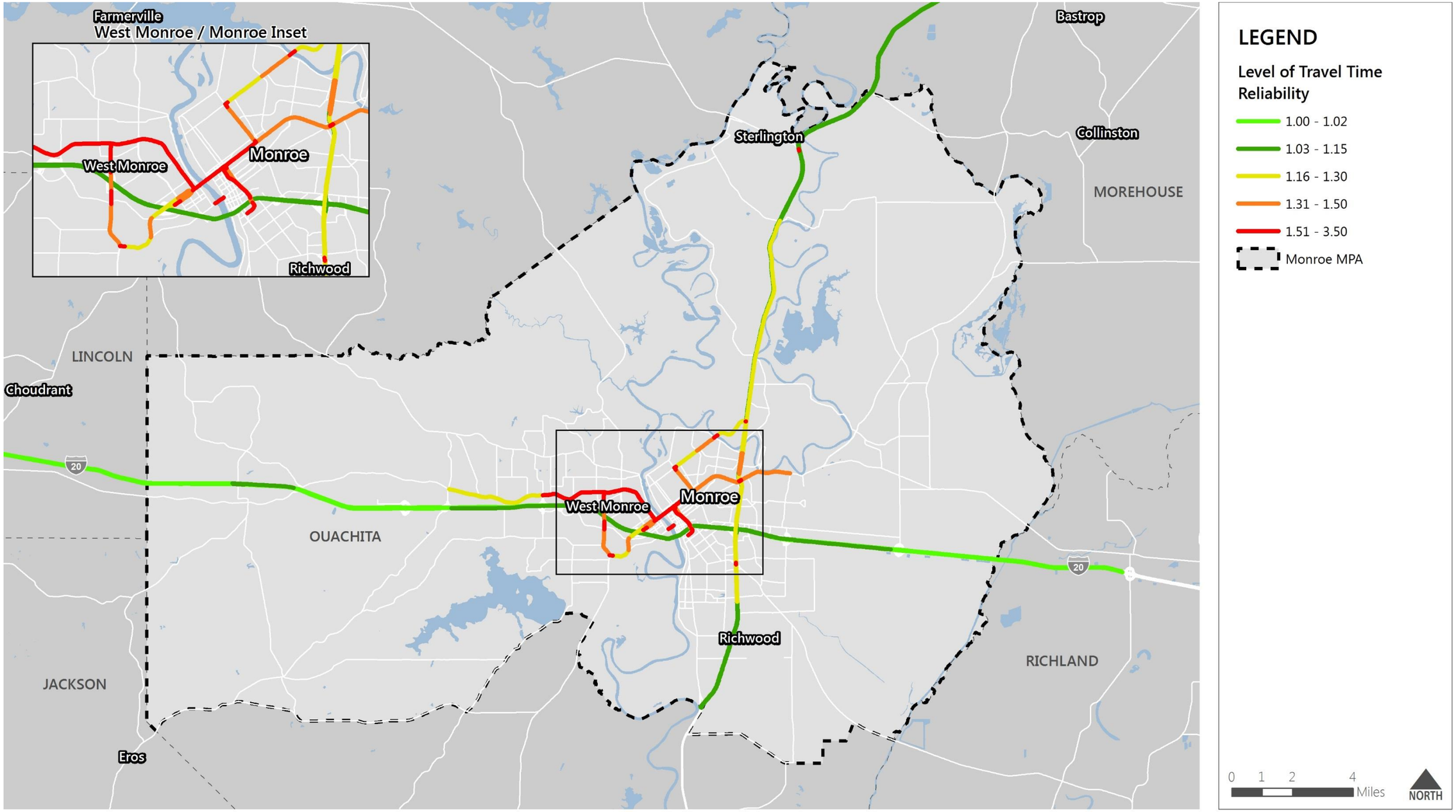


Figure 2.4: Level of Travel Time Reliability (LOTTR) on National Highway System (NHS) Routes, 2019



Data Source: NPMRDS

Disclaimer: This map is for planning purposes only.

2.5 Pavement Conditions

Maintaining sufficient pavement conditions ensures that roadways operate at their full capacity. Good pavement conditions provide roadways users with safe, comfortable travel experiences, while minimizing vehicle wear and tear.

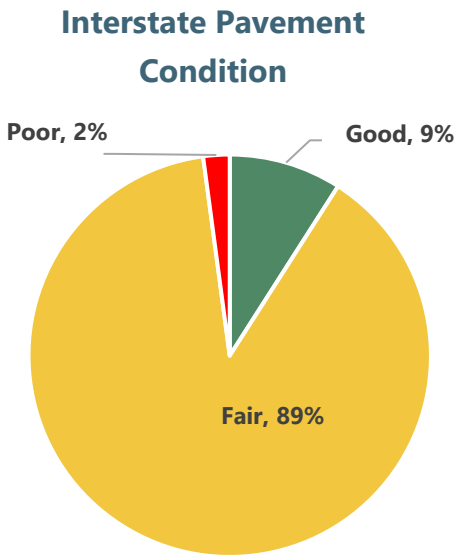
Results from the public participation survey showed that road and bridge conditions were one of the public's top priorities.

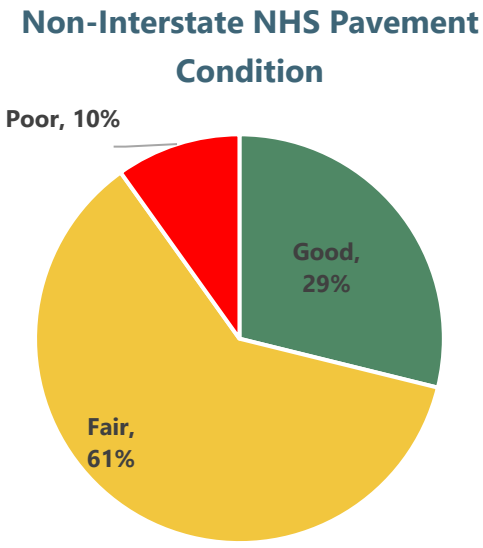
Pavement condition ratings for the MPA's roadways were obtained from data submitted by the Louisiana Department of Transportation and Development (LADOTD) and found in the Highway Performance Monitoring System (HPMS). The HPMS is a national level highway information system that includes data on the:

- extent,
- condition,
- performance, and
- use and operating characteristcs of the nation's highways.

The HPMS data is a sample dataset collected across the entire federal-aid eligible system for interstate, arterial, and collector networks.

The HPMS pavement condition is based on the International Roughness Index (IRI), cracking, rutting, and faulting.



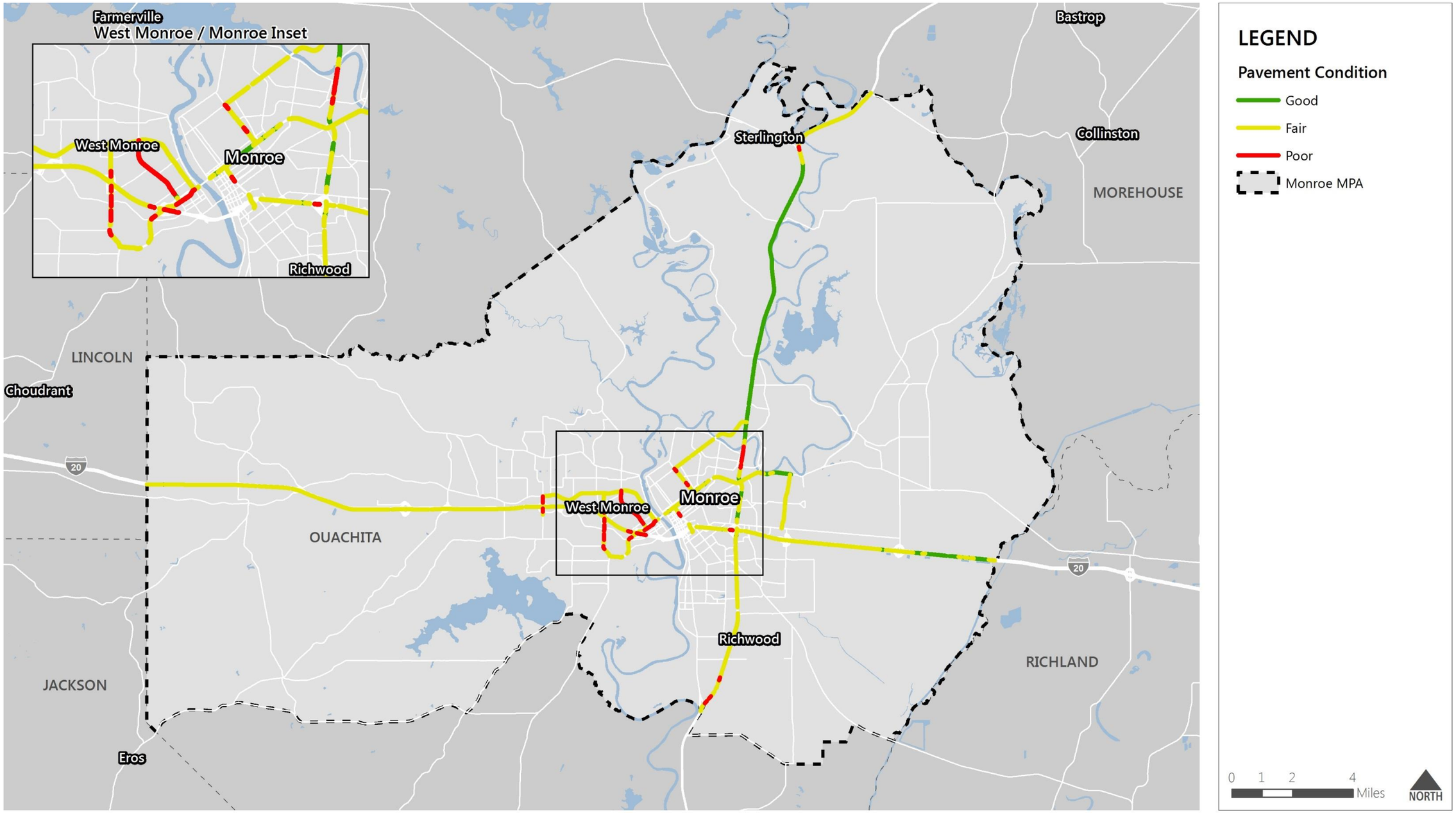


The data displayed in the above charts shows that currently two (2) percent of Interstate lane-miles within the MPA ranked as Poor. Currently, ten (10) percent of Non-Interstate NHS pavements in the MPA rank as poor.

Figure 2.5 illustrates the most recent pavement condition data for the LADOTD monitored roadways within the MPA. Poor pavement conditions within the MPA occur at various points along:

- I-20 at the LA 34 interchange
- US 165 between US 80 and Webster St
- LA 34 between I-20 and US 80/LA 15
- LA 143 between US 80/LA 15 and LA 34
- LA 617 between New Natchoitches Rd and I-20
- LA 3249 between I-20 and US 80/LA 15
- LA 840-6 (N 18th St) between US 80 and Forsythe Ave

Figure 2.5: Roadway Pavement Conditions, 2018



Data Source: NPMRDS

Disclaimer: This map is for planning purposes only.

2.6 Bridge Conditions

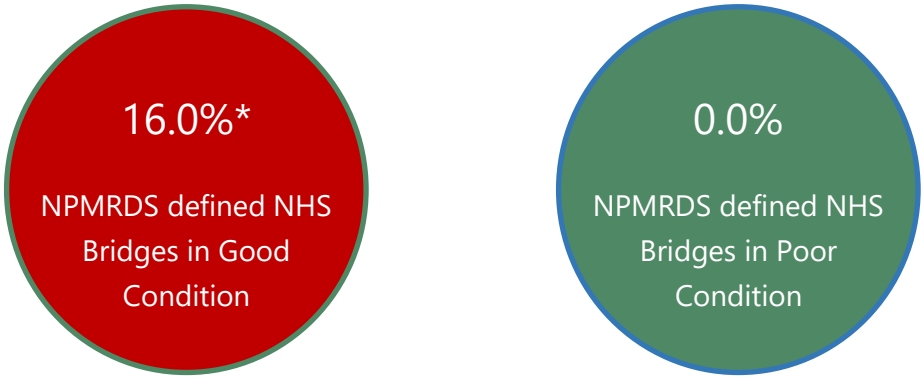
Bridges are a critical part of the overall transportation network. They must be maintained and upgraded as needed to ensure that they are not safety or environmental hazards, bottlenecks, or limitations to freight movement.

Bridges serve as important connections over waterways, provide grade separation between roadways and other transportation facilities, and connect transportation facilities to each other.

There are nearly 275 bridges within, or in close proximity to, the Monroe MPA. Most of these cross waterways. However, bridges can also be structures that cross over other roadways and railroads.

Bridge Conditions and Scoring

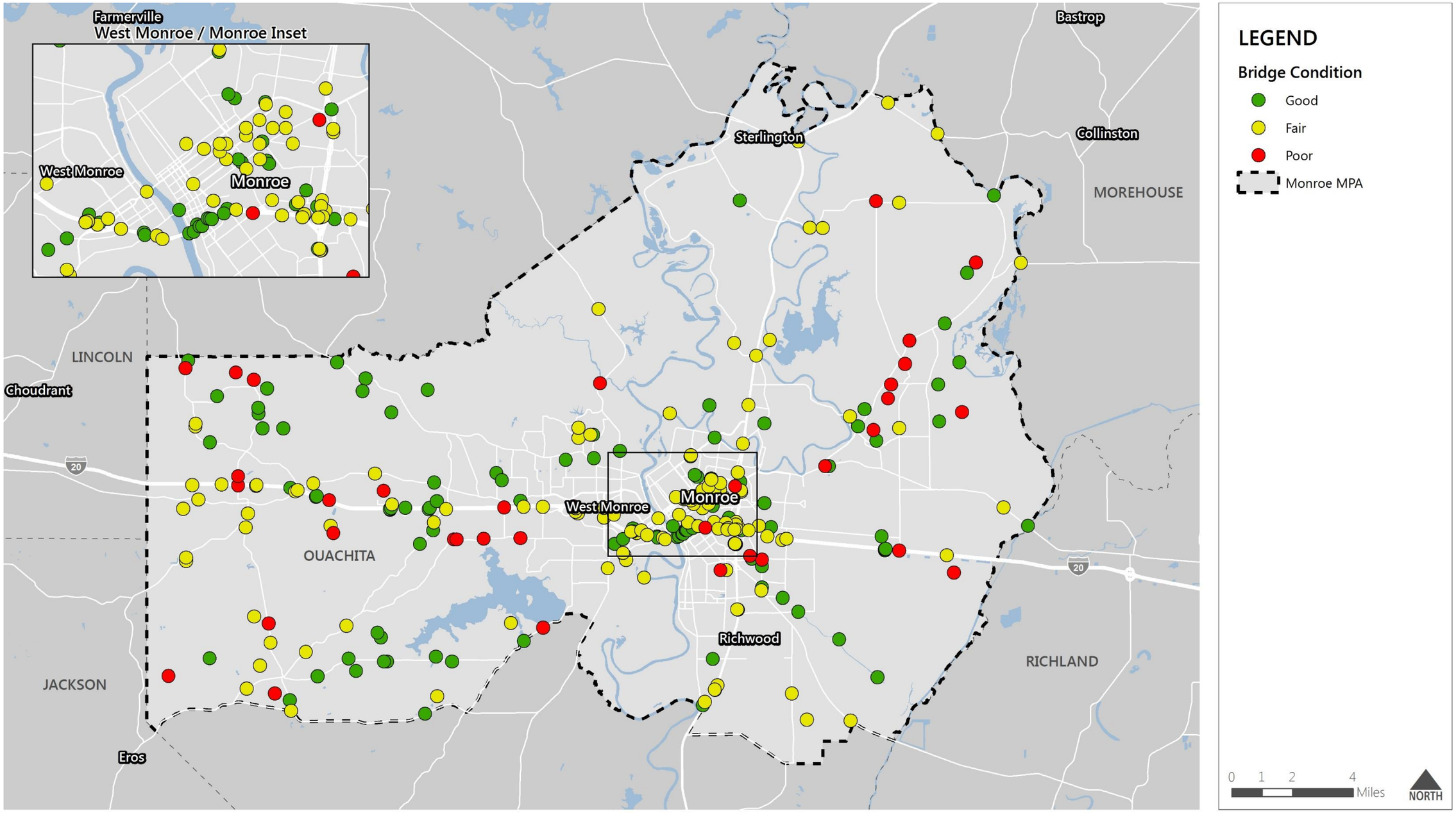
The National Bridge Inventory (NBI) provides bridge conditions for all bridges in the United States with public roads passing above or below them. The NBI also defines bridges to include bridge-length culverts. The condition of the bridge is determined by the lowest rating of deck, superstructure, substructure, or culvert. If the lowest rating of these categories is greater than or equal to seven (7), the bridge is classified as good. If the score of the bridge is less than or equal to four (4), the classification is poor.



***Falls outside of LADOTD state target**

Figure 2.6 displays the condition of each bridge within the MPA. It should be noted that these include bridges that are a part of the National Highway System (NHS) and bridges that are not.

Figure 2.6: Bridges Conditions in the MPA, 2018



Data Source: National Bridge Inventory

Disclaimer: This map is for planning purposes only.

Structurally Deficient and Functionally Obsolete Bridges

All bridges in the nation are evaluated to determine if they are "structurally deficient". Structural deficiency is characterized by deteriorated conditions of significant bridge elements and potentially reduced load-carrying capacity. A structurally deficient bridge typically requires significant maintenance and repair to remain in service. These bridges would eventually require major rehabilitation or replacement to address the underlying deficiency. These bridges are those that are defined as having a score of four (4) or less on any of the scoring components described above. There are 35 structurally deficient bridges in the MPA, none of which are on the reported sections of the NHS.

2.7 Roadway Safety

The Metropolitan Transportation Plan (MTP) safety analysis focused on gathering and analyzing available safety data and identifying hazardous locations. Due to the limited scope of this study, location-specific recommendations for the identified hazardous locations have not been developed.

> "Disclaimer: This document and the information contained herein is prepared solely for the purpose of identifying, evaluating, and planning safety improvements on public roads which may be implemented utilizing federal aid highway funds; and is therefore exempt from discovery or admission into evidence pursuant to 23 U.S.C. 409."

Supporting Documents

Highway Safety Improvement Program (HSIP)

The FAST Act requires each state to maintain an annually updated Highway Safety Improvement Program (HSIP). The HSIP must include the FHWA performance measures for roadway safety and the development of a Strategic Highway Safety Plan (SHSP). The required safety performance measures, state targets, and the Metropolitan Planning Organization's (MPO) existing performance are discussed in the MPO's Performance Report.

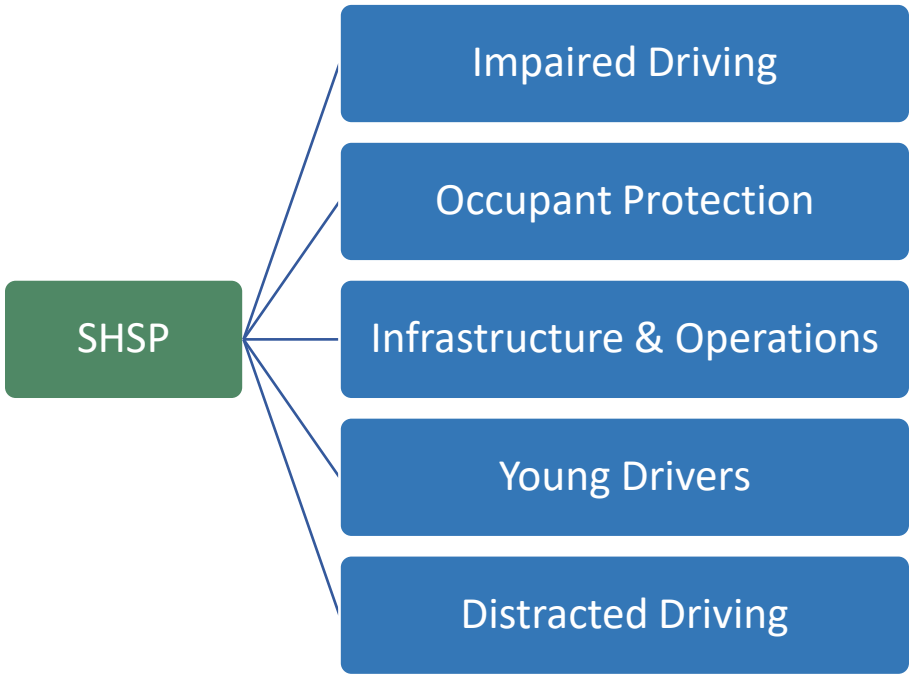
2017

Most Recent SHSP

Strategic Highway Safety Plan (SHSP)

A SHSP is a statewide coordinated safety plan developed and maintained by each state to reduce fatalities along all state highways and public roads. The SHSP[1], developed by the Louisiana Department of Transportation and Development (LADOTD), uses the 4Es of traffic safety; Engineering, Enforcement, Emergency Response, and Education. The SHSP also identifies strategies and emphasis areas for analysis and investment. The LADOTD SHSP emphasis areas are shown in Figure 2.7.

Figure 2.7: 2017 SHSP Emphasis Areas



Crash Impacts

According to the most recent Fatal Accident Crash Reporting System (FARS) data, an average of 36,019 people were killed annually from 2014 through 2018. Every crash, regardless of the severity, costs money and time in damages, emergency services, and delays. These costs affect both governments and taxpayers. One of the goals of the MTP process is to improve travel safety by reducing the risk of crashes on the roadways. This was accomplished by analyzing the data and determining the most hazardous locations in the MPA.

[1] http://www.destinationzerodeaths.com/Images/Site%20Images/ActionPlans/SHSP.pdf

The crash records used in the analysis were obtained from LADOTD and cover all reported crashes from 2014 through 2018.

The crash records include the:

- Severity
- Location
- DUI involvement
- Vehicle type
- Time of day
- Number of fatalities or severe injuries
- Roadway surface condition
- Collision type

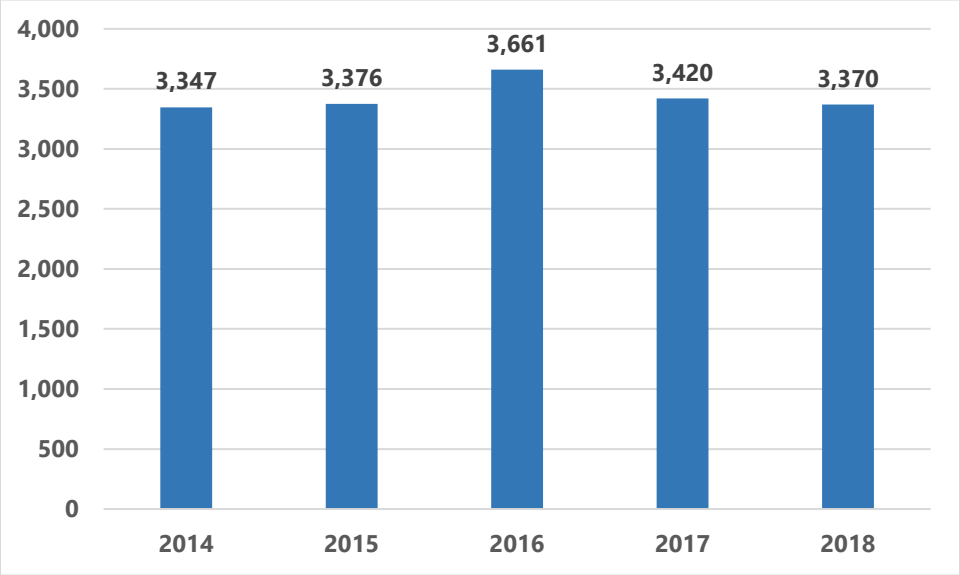
MPA Crash Trends

This section discusses the observed trends regarding all crashes that occurred within the MPA during the analysis period.

Crashes by Year

From 2014 through 2018, there were a total of 17,174 crashes within the MPA. Figure 2.8 displays the total number of crashes within the MPA by year.

Figure 2.8: MPA Crashes by Year, 2014 - 2018



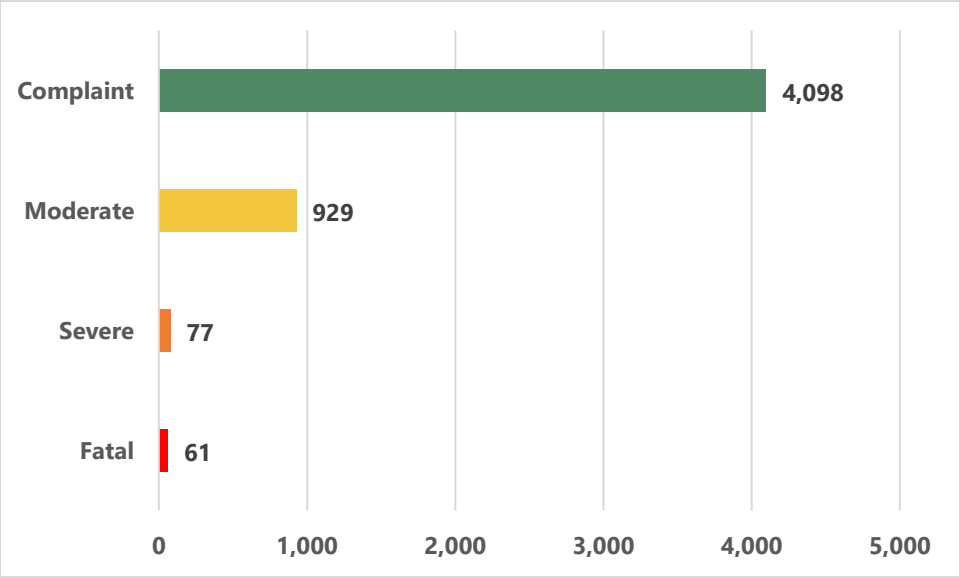
Crash Severity

Crash severity reveals the extent to which crashes in the MPA pose a safety risk to roadway users. Within the MPA, there were 61 fatal crashes and 77 life-threatening (severe injury) crashes during the analysis period. Less than one (1) percent of the total crashes resulted in a fatality or severe injury. Figure 2.9 displays the severity of the fatal/injury crashes within the MPA.

69.9%

Crashes with Property Damage Only

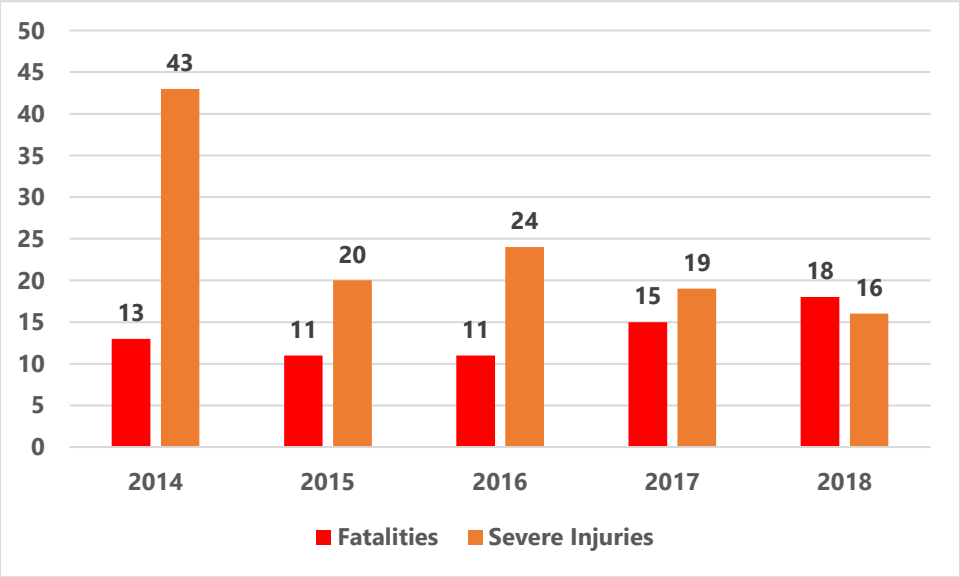
Figure 2.9: Severity of Fatal/Injury Crashes, 2014 – 2018



Source: LADOTD, 2020

From 2014 through 2018, the fatal and life-threatening crashes resulted in 68 deaths and 122 severe injuries. The total fatalities and severe injuries, by year, during this time period are shown in Figure 2.10.

Figure 2.10: Fatalities and Severe Injuries; 2014 – 2018



30

Fatalities from DUI crashes

Source: LADOTD, 2020

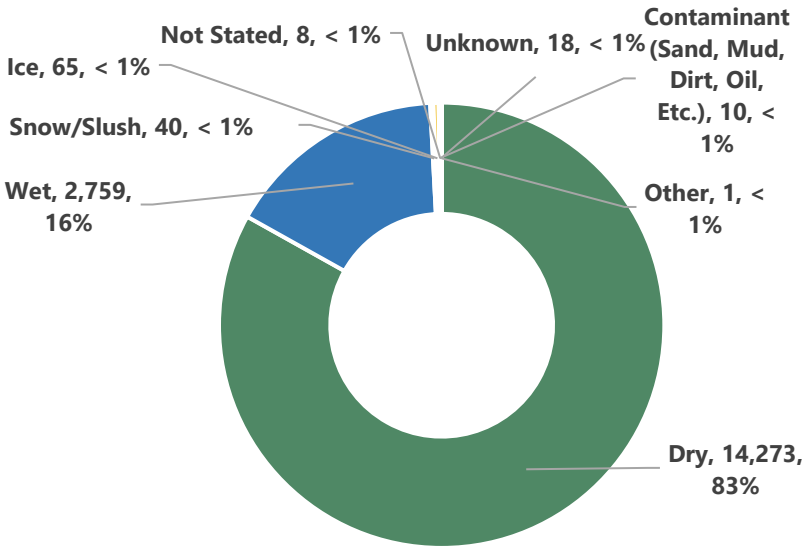
Driving Under the Influence (DUI) Crashes

From 2014 through 2018, there were 445 crashes that involved drivers under the influence of a substance (alcohol, drugs, etc.). This means that less than three (3) percent of the crashes were related to DUI. However, these crashes also resulted in 43 percent of the fatalities within the area.

Crash Times

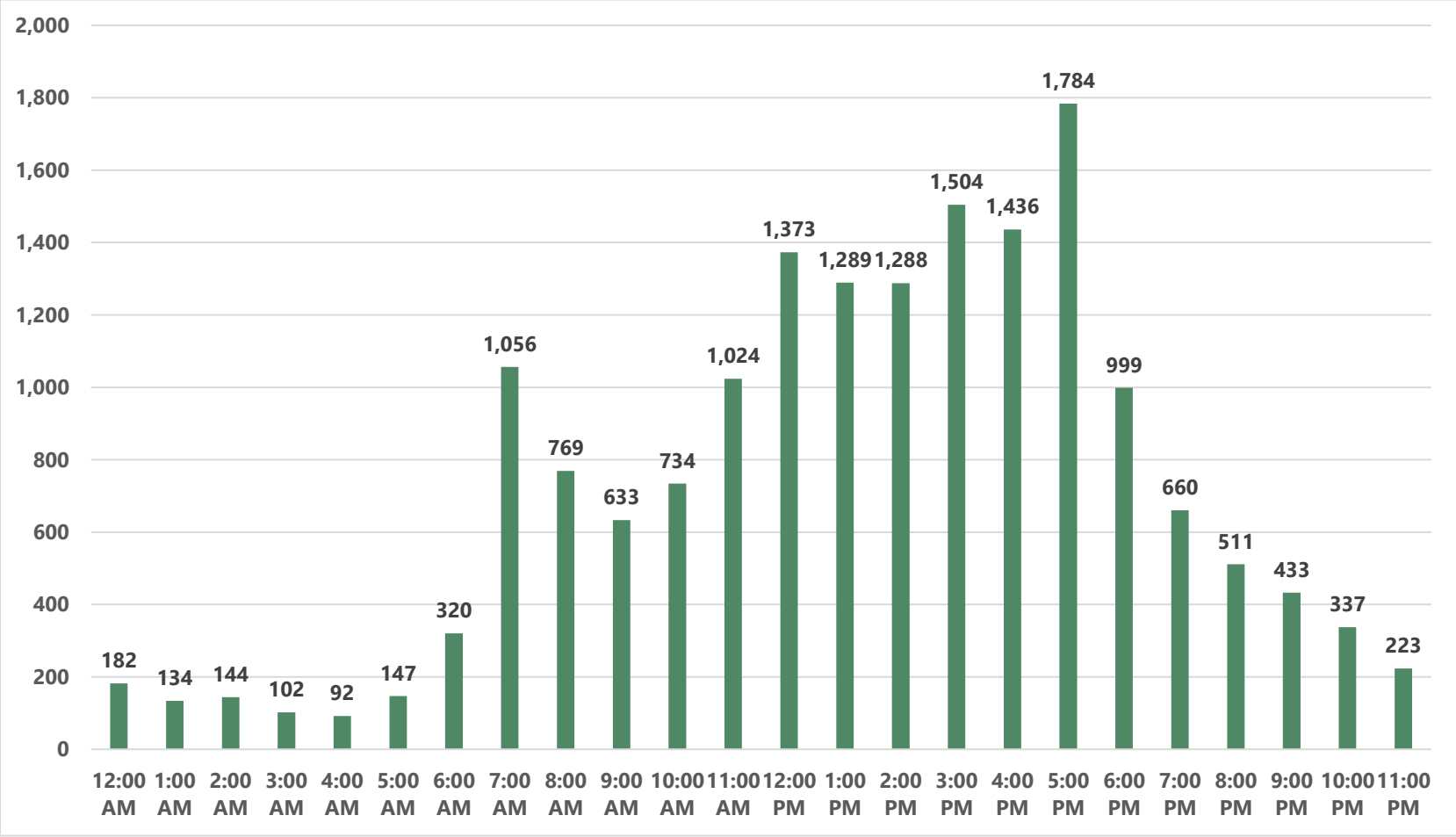
Identifying when crashes occur can assist with developing countermeasures for crashes affected by lighting, congestion, or other factors. Within the MPA, less than 20 percent of the crashes occur during nighttime hours. However, nearly 28 percent of the MPA's crashes occur from 3:00 PM to 6:00 PM. This is likely the result of high traffic volumes when children are released from school or when people are leaving work to return home. The hour in which the crashes occurred is displayed in Figure 2.11.

Roadway Surface Condition



The roadway surface can also contribute to a crash through adverse conditions such as rain, oil, debris, or other surfaces. These conditions temporarily reduce roadway safety and can result in a crash. However, more than 83 percent of the crashes occurred during dry conditions. This means the roadway surface condition is not a contributing factor in the vast majority of crashes.

Figure 2.11: Crashes by Hour, 2014 – 2018



Source: LADOTD, 2020

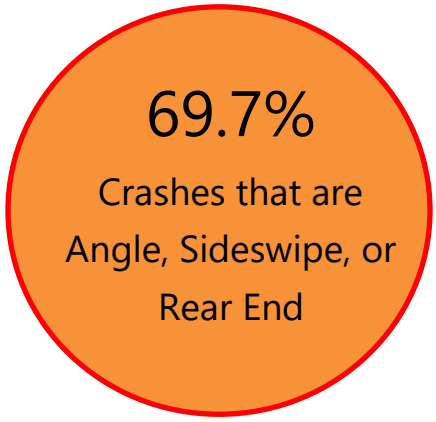
Collision Type

This study also considers collision types that occurred. Table 2.4 displays the crashes by collision type.

Table 2.5: Crashes by Collision Type, 2014 – 2018

Collision Type	Total
Non-Collision with Motor Vehicle (NCWMV)	2,034
Rear End	7,114
Head On	167
Right Angle	2,629
Left Turn-e	397
Left Turn-f	833
Left Turn-g	358
Right Turn-h	307
Right Turn-i	79
Sideswipe (same direction)	2,002
Sideswipe (opposite direction)	218
Other	1,036
Total	**17,174**

Source: LADOTD, 2020



Crash Locations

The nature of this study is only to identify trends; thus, it did not attempt to analyze each hazardous location and corresponding crash records for specific solutions. However, it features an identification of locations that experience the highest crash frequencies or rates. Crash frequencies reflect how often crashes occur at a given location and are expressed in crashes per year. Crash rates reflect the amount of crashes compared to the traffic volumes a roadway experiences and are expressed as crashes per million vehicle miles traveled for roadway segments. Intersection crash rates are expressed as crashes per million vehicles entering the intersection.

The hazardous locations shown in this report are not a ranking of these locations, but merely a list developed for informational purposes.

Segment Crashes

For this study, roadway segments are defined in two ways:

- A roadway link between two significant roadways.
- A roadway link between a significant roadway and a specific distance from that point.

Crashes on segments can occur due to roadway design, pavement condition, lighting, or other factors. A segment identified in this analysis should be further analyzed in additional studies to determine what contributes to the high crash frequency and/or crash rate it experiences. These studies should also be used to develop site-specific countermeasures.

Crash Frequencies

Table 2.5 displays the roadway segments in the MPA that have the highest crash frequencies and a breakdown of the severity of the crashes. These locations are shown in Figure 2.12.

9.4% of MPA crashes occur on the top 20 crash frequency segments.

Crash Rates

Crash rates for the study area were based on the model network layer and existing year (2018) volumes obtained from the Monroe travel demand model. The length of each segment and the corresponding daily traffic volumes from the model are used in the crash rate equation.

The segment crash rate equation is:

$$Segment\ Crash\ Rate = \frac{N * 10^6}{365 * ADT * L}$$

Where: Segment Crash Rate = crashes per million vehicle miles traveled

N = average annual crash frequency of the segment

ADT = average daily traffic of the segment based on the 2018 Travel Demand Model

L = length of the model segment in miles

Table 2.6 displays the roadway segments in the MPA that have the highest crash rates. These locations are shown in Figure 2.13.

Table 2.6: Top 20 Crash Frequency Segments and Severity, 2014 - 2018

Route	Location	Length (Miles)	Total Crashes	Average Annual Crash Frequency	Fatal	Severe Injury	Moderate Injury	Complaint of Pain	Property Damage Only
I-20 Westbound	0.17 miles east of LA 617 (Thomas Rd) to 0.24 miles west of LA 617 (Thomas Rd)	0.41	194	38.8	0	0	7	39	148
I-20 Eastbound	LA 546 (Cheniere Drew Rd) to LA 3249 (Well Rd)	2.82	106	21.2	0	0	3	23	80
I-20 Westbound	0.43 miles east of LA 34 (Stella St) to 0.28 miles west of LA 34 (Stella St)	0.71	97	19.4	0	1	6	20	70
I-20 Westbound	0.2 miles east of Coleman Ave to 0.19 miles west of Coleman Ave	0.39	96	19.2	1	1	7	17	70
I-20 Westbound	St. John St to Coleman Ave	0.35	95	19	1	0	4	29	61
I-20 Eastbound	0.44 miles west of LA 617 (Thomas Rd) to 0.29 miles east of LA 617 (Thomas Rd)	0.73	92	18.4	0	1	5	18	68
I-20 Westbound	LA 3249 (Well Rd) to LA 546 (Cheniere Drew Rd)	2.76	90	18	1	0	2	17	70
I-20 Eastbound	0.08 miles west of Coleman Ave to 0.32 miles east of Coleman Ave	0.40	89	17.8	0	0	7	13	69
US 80 (Louisville Ave)	Lamy Ln to 0.34 miles west	0.34	86	17.2	1	1	3	24	57
I-20 Eastbound	0.27 miles west of LA 34 (Stella St) to 0.45 miles east of LA 34 (Stella St)	0.72	78	15.6	0	0	6	12	60
I-20	Jackson St to US 165 (Ouachita Ave)	0.40	72	14.4	0	1	4	20	47
LA 617 (Thomas Rd)	I-20 West Ramps to I-20 East Ramps	0.22	70	14	0	0	3	6	61
I-20 Eastbound	0.20 miles west of LA 594 (Texas Ave) to 0.23 miles east of LA 594 (Texas Ave)	0.43	67	13.4	0	0	2	15	50
LA 594 (Millhaven Rd)	Huenefeld Rd to 1.57 miles south	1.57	60	12.6	0	0	6	13	44
US 165 (Martin Luther King Jr Dr)	Louberta St to 0.15 miles north	0.15	62	12.4	0	0	2	23	37
I-20 Eastbound	LA 617 (Thomas Rd) to LA 34 (Stella St)	0.66	60	12	0	0	4	12	44
US 80 (Louisville Ave)	Lamy Ln to 0.19 miles east	0.19	60	12	0	1	3	23	33
I-20 Westbound	LA 34 (Stella St) to LA 617 (Thomas Rd)	0.78	51	10.2	0	0	5	10	36
I-20 Eastbound	US 165 (Ouachita Ave) to 0.25 miles east	0.25	48	9.6	0	0	5	11	32
I-20 Eastbound	0.40 miles west of LA 617 (Thomas Rd) to 1.33 miles west of LA 617 (Thomas Rd)	0.93	43	8.6	0	0	2	6	35
Total	--	--	1,616	323.2	4	6	86	351	1,172

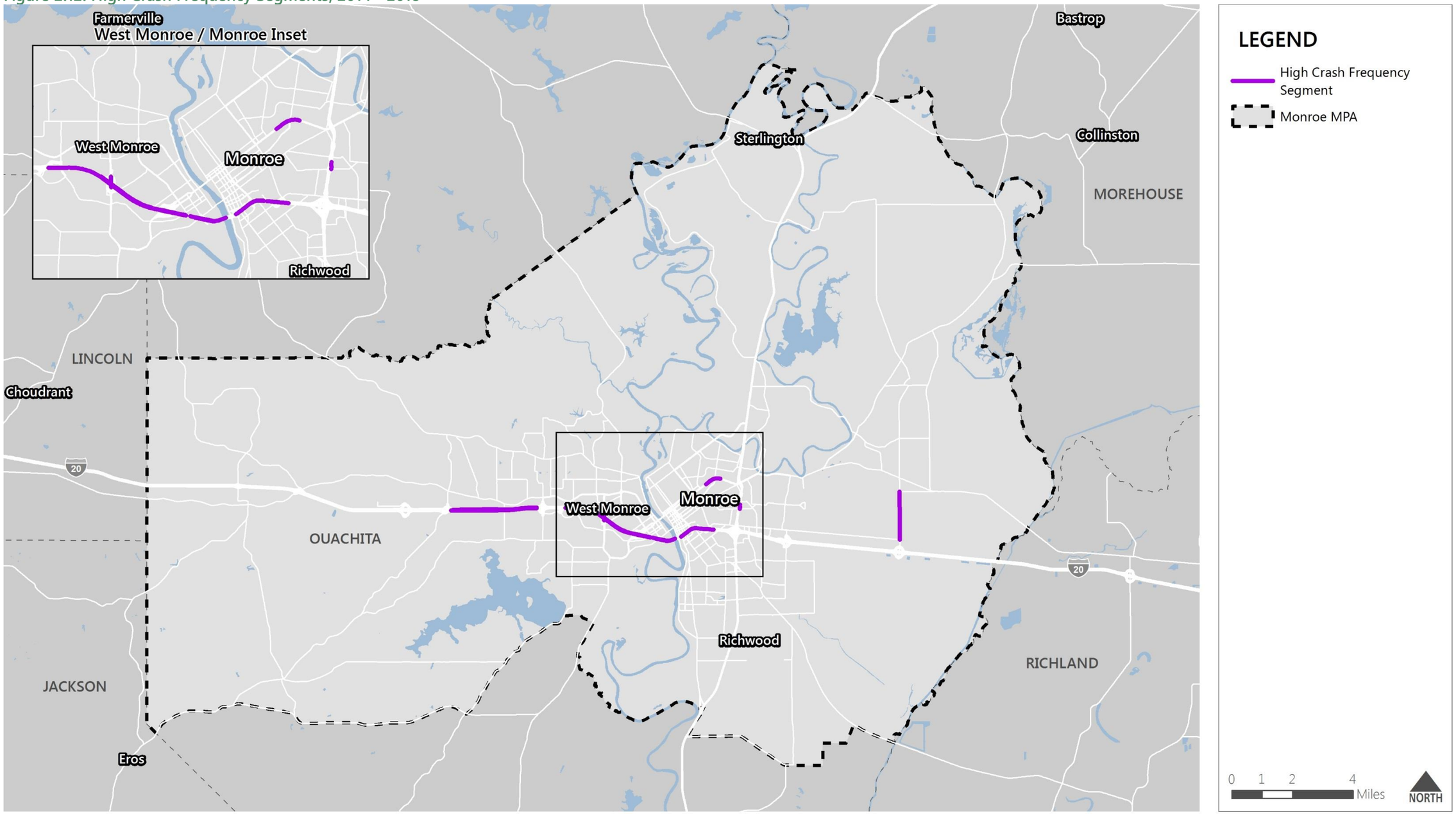
Source: LADOTD, 2020

Table 2.7: Top 20 Crash Rate Segments, 2014 - 2018

Route	Location	Total Crashes	Average Annual Crash Frequency	ADT	Length (mi)	Crash Rate
US 165 (Martin Luther King Jr Dr) North Service Rd	Reese St to Louberta St	30	6.0	513	0.24	134.54
US 165 Northbound	Off-Ramp to US 80/US 165 BUS (Louisville Ave)	24	4.8	3,171	0.17	24.88
Sterlington Rd	Concordia St to Franklin St	11	2.2	2,376	0.11	23.10
US 80	Calhoun Rd to LA 151	12	2.4	987	0.33	20.25
Garrett Rd	Austin St to 0.23 miles east of Austin St	15	3.0	2,265	0.23	16.06
Washington St	Newcombe St to US 80/US 165 BUS (Louisville Ave)	28	5.6	4,413	0.24	14.45
Northeast Dr	0.20 miles west of Bon Aire Dr to Bon Aire Dr	8	1.6	2,061	0.16	13.57
US 165 (Martin Luther King Jr Dr) South Service Rd	Harvester Rd to US 165 Underpass	18	3.6	3,327	0.24	12.48
I-20 Eastbound	Off-Ramp to LA 594 (Texas Ave)	3	0.6	861	0.17	11.40
Peacnland Mall Dr	Powell Ave to I-20 Westbound Off-Ramp	2	0.4	786	0.13	10.97
Constitution Dr	Commercial Pkwy to Constitution Cir	2	0.4	836	0.12	10.94
W Flowood Dr	Holiday Dr to Old Sterlington Rd	2	0.4	777	0.15	9.51
Evergreen St	Rosewood St to E Olive St	2	0.4	619	0.19	9.36
S 8th St	LA 15 (Winnsboro Rd) to Temple Dr	5	1.0	1,453	0.20	9.21
US 80/US 165 BUS (Louisville Ave)	Washington St/Lamy Ln to Plaza Blvd	60	12.0	18,737	0.19	9.10
Bon Aire Dr	Northeast Dr to Peyton Dr	9	1.8	2,058	0.27	8.90
Old Darbonne Rd	Kiroli Rd to Elmwood Dr	5	1.0	1,124	0.28	8.83
Camp Rd	Vocational Pkwy to Oglesby Rd	5	1.0	520	0.64	8.28
LA 617 (Thomas Rd)	I-20 West Ramps to I-20 East Ramps	70	14.0	21,767	0.22	8.09
I-20 Eastbound	On-Ramp from Garrett Rd	4	0.8	1,029	0.27	7.92

Source: LADOTD, 2020

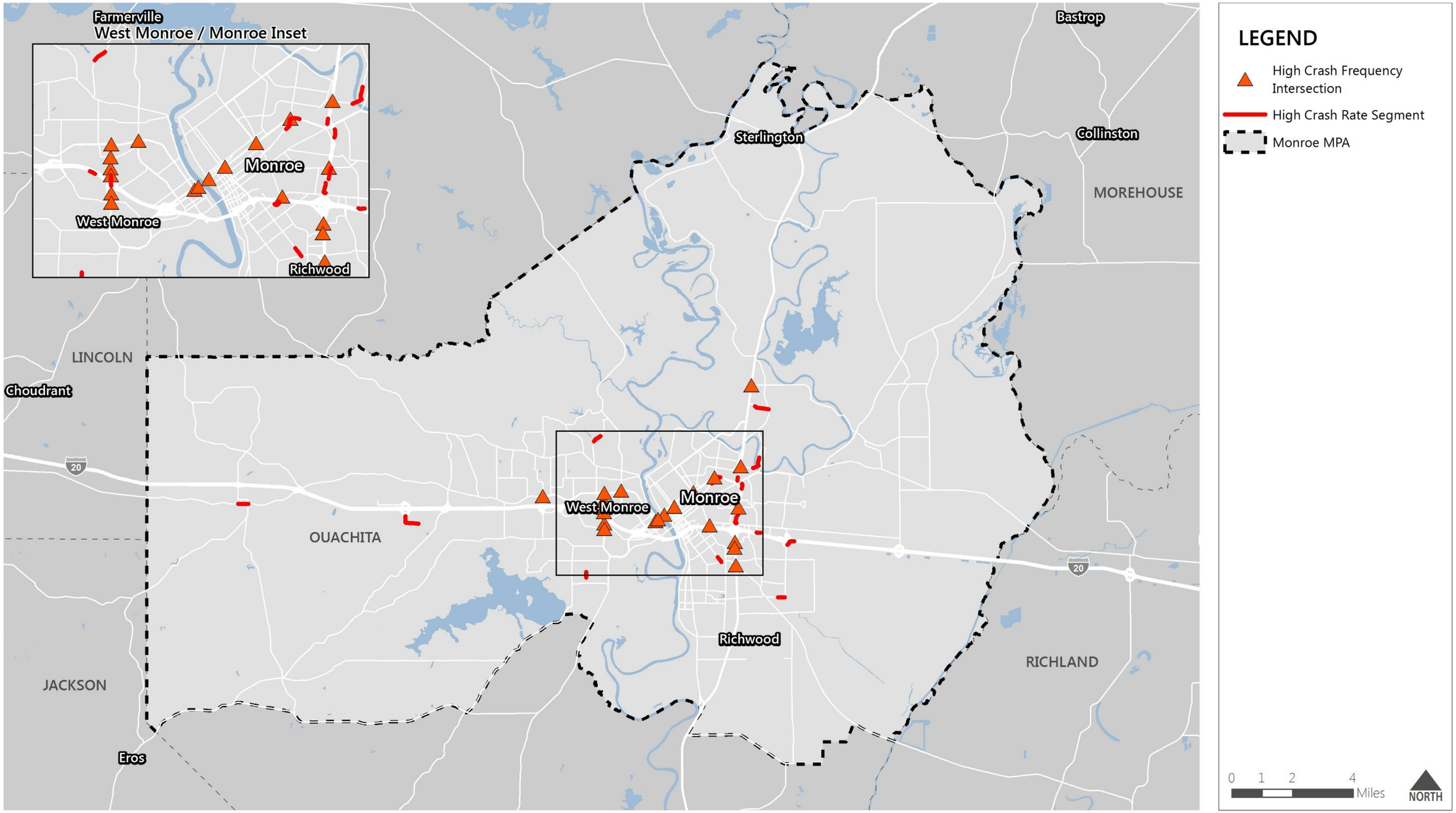
Figure 2.12: High Crash Frequency Segments, 2014 - 2018



Data Source: LADOTD, 2020

Disclaimer: This map is for planning purposes only.

Figure 2.13: High Crash Rate Segments, 2014 – 2018



Data Source: LADOTD, 2020

Disclaimer: This map is for planning purposes only.

Intersection Crashes

There were nearly 11,000 intersection crashes in the MPA from 2014 to 2018.

66.3% of crashes in the MPA occur at intersections

Crash Frequencies

Table 2.7 shows the 21 intersections in the MPA with the highest crash frequency and their severity. Table 2.8 shows the collision types that occurred at these intersections. These locations are also displayed in Figure 2.12

Additional studies should be conducted on these intersections to identify the cause of the crashes and how to reduce the severity and types of crashes they experience.

25.6% of intersection crashes occur at the Top 20 crash frequency locations

Crash Rates

The intersection crash rate equation is:

$$Intersection\ Crash\ Rate = \frac{N * 10^6}{365 * ADT}$$

Where:

Intersection Crash Rate = crashes per million vehicles entering

N = average annual crash frequency of the intersection

ADT = average daily traffic entering the intersection based on the 2018 Travel Demand Model

Table 2.9 shows the ten (10) intersections with the highest crash frequencies in the study area and their corresponding crash rates.

Table 2.8: Top 21 Intersections with High Crash Frequency by Severity, 2014 - 2018

Intersection	Total Crashes	Average Annual Crash Frequency	Fatal	Severe Injury	Moderate Injury	Complaint of Pain	Property Damage Only
I-20 WB at LA 617 (Thomas Rd)	213	42.6	0	0	8	35	170
US 80/US 165 BUS (Louisville Ave) at LA 840-6 (N 18th St)	201	40.2	0	2	13	54	132
LA 617 (Thomas Rd) at Glenwood Dr	200	40.0	0	1	6	30	163
US 165 (Martin Luther King Junior Dr) at Louberta St	200	40.0	0	0	10	59	131
LA 34 (Bridge St) at US 80/LA 15 (Cypress St)	177	35.4	0	0	14	18	145
US 80/US 165 BUS (Louisville Ave) at Washington St/Lamy Ln	163	32.6	0	0	14	45	104
LA 617 (Thomas Rd) at McMillan Rd	157	31.4	0	0	3	23	131
LA 594 (Texas Ave) at 18th St Overpass	146	29.2	0	0	5	47	94
US 80 (Cypress St) at LA 617 (Thomas Rd)	139	27.8	0	0	5	22	112
US 80 (Cypress St) at LA 3249 (Well Rd/Wallace Dean Rd)	137	27.4	0	0	3	30	104
US 165 (Sterlington Rd) at Finks Hideaway Rd	132	26.4	0	1	2	42	87
LA 617 (Thomas Rd) at Constitution Dr/Basic Dr	126	25.2	0	1	4	26	95
LA 617 (Thomas Rd) at Downing Pines Rd/Old Natchitoches Rd	122	24.4	0	0	10	15	97
US 165 (Martin Luther King Junior Dr) at LA 15 (Winnsboro Rd)	120	24.0	0	3	10	34	73
US 165 (Martin Luther King Junior Dr) at East St	116	23.2	1	2	7	32	74
LA 34 (Bridge St) at Trenton St	114	22.8	0	0	9	17	88
US 165 (Sterlington Rd) at Northeast Dr	114	22.8	0	0	5	28	81
US 165 (Martin Luther King Junior Dr) at Century Blvd	114	22.8	0	2	7	39	66
US 80 (Louisville Ave/Lea Joyner Bridge) at Riverside Dr	113	22.6	0	0	3	35	75
US 80 (Cypress St) at LA 143 (N 7th St)	110	22.0	0	0	1	14	95
US 80 (Louisville Ave) at US 165 BUS/LA 15 (N 6th St)	110	22.0	0	0	8	20	82
Total	3,024	604.8	1	12	147	665	2,199

Source: LADOTD, 2020

Table 2.9: Top 21 Intersections with High Crash Frequency by Collision Type, 2014 - 2018

Intersection	Total Crashes	Average Annual Crash Frequency	NCWMV	Rear End	Head On	Right Angle	Left Turn-e	Left Turn-f	Left Turn-g	Right Turn-h	Right Turn-i	Sideswipe (same direction)	Sideswipe (opposite direction)	Other
I-20 Westbound at LA 617 (Thomas Rd)	213	42.6	2	199	0	4	1	2	0	0	0	4	0	1
US 80/US 165 BUS (Louisville Ave) at LA 840-6 (N 18th St)	201	40.2	7	98	2	19	4	9	7	5	2	32	2	14
LA 617 (Thomas Rd) at Glenwood Dr	200	40.0	4	80	2	26	2	19	4	8	0	42	1	12
US 165 (Martin Luther King Junior Dr) at Louberta St	200	40.0	2	132	0	30	5	5	2	2	1	7	3	11
LA 34 (Bridge St) at US 80/LA 15 (Cypress St)	177	35.4	4	43	1	43	12	11	4	3	0	47	1	8
US 80/US 165 BUS (Louisville Ave) at Washington St/Lamy Ln	163	32.6	1	58	1	44	4	18	6	5	1	13	1	11
LA 617 (Thomas Rd) at McMillan Rd	157	31.4	2	73	0	24	1	7	6	15	1	22	0	6
LA 594 (Texas Ave) at 18th St Overpass	146	29.2	3	93	1	11	0	25	4	1	0	6	0	2
US 80 (Cypress St) at LA 617 (Thomas Rd)	139	27.8	1	47	2	23	1	13	4	3	1	42	0	2
US 80 (Cypress St) at LA 3249 (Well Rd/Wallace Dean Rd)	137	27.4	1	82	2	20	3	12	5	1	0	7	1	3
US 165 (Sterlington Rd) at Finks Hideaway Rd	132	26.4	2	82	0	19	2	5	4	4	0	7	0	7
LA 617 (Thomas Rd) at Constitution Dr/Basic Dr	126	25.2	2	81	0	17	0	6	2	0	0	15	1	2
LA 617 (Thomas Rd) at Downing Pines Rd/Old Natchitoches Rd	122	24.4	2	76	1	24	2	7	0	1	0	5	0	4
US 165 (Martin Luther King Junior Dr) at LA 15 (Winnsboro Rd)	120	24.0	2	55	1	17	5	17	5	2	0	9	1	6
US 165 (Martin Luther King Junior Dr) at East St	116	23.2	5	44	0	42	2	7	1	0	0	6	1	8
LA 34 (Bridge St) at Trenton St	114	22.8	6	61	1	10	1	4	3	2	0	21	1	4
US 165 (Sterlington Rd) at Northeast Dr	114	22.8	0	64	1	14	5	6	2	2	0	14	0	6
US 165 (Martin Luther King Junior Dr) at Century Blvd	114	22.8	7	67	0	8	1	4	2	4	0	13	2	6
US 80 (Louisville Ave/Lea Joyner Bridge) at Riverside Dr	113	22.6	3	39	3	35	0	2	1	5	2	13	3	7
US 80 (Cypress St) at LA 143 (N 7th St)	110	22.0	1	34	0	22	12	2	3	0	0	24	0	12
US 80 (Louisville Ave) at US 165 BUS/LA 15 (N 6th St)	110	22.0	7	55	1	17	1	11	4	5	0	5	0	4
Total	3,024	604.8	64	1,563	19	469	64	192	69	68	8	354	18	136

Source: LADOTD, 2020

Table 2.10: Top 10 High Crash Frequency Intersections and Crash Rates, 2014 – 2018

Intersection	Total Crashes	Average Annual Crash Frequency	ADT	Crash Rate
I-20 Westbound at LA 617 (Thomas Rd)	213	42.6	28,482	4.10
US 80/US 165 BUS (Louisville Ave) at LA 840-6 (N 18th St)	201	40.2	39,425	2.79
LA 617 (Thomas Rd) at Glenwood Dr	200	40.0	28,129	3.90
US 165 (Martin Luther King Junior Dr) at Louberta St	200	40.0	46,185	2.37
LA 34 (Bridge St) at US 80/LA 15 (Cypress St)	177	35.4	35,070	2.77
US 80/US 165 BUS (Louisville Ave) at Washington St/Lamy Ln	163	32.6	24,237	3.69
LA 617 (Thomas Rd) at McMillan Rd	157	31.4	20,911	4.11
LA 594 (Texas Ave) at 18th St Overpass	146	29.2	21,843	3.66
US 80 (Cypress St) at LA 617 (Thomas Rd)	139	27.8	31,047	2.45
US 80 (Cypress St) at LA 3249 (Well Rd/Wallace Dean Rd)	137	27.4	27,048	2.78

Source: LADOTD, 2020

2.8 Roadway Security

While safety and security are closely related, they are differentiated by the cause of the harm from which the transportation system and its users are being protected.

Safety encompasses the prevention of unintentional harm to system users or their property. This includes vehicular crashes, train derailments, slope failures, sudden destruction of roadways, or non-motorized user injuries. Security involves the prevention, management, and response to intentional harm to the transportation system or its users. This includes:

- theft or dismemberment of elements of the transportation infrastructure,
- assault on users of the system, or
- large-scale attacks intended to completely disrupt the movement of people and goods.

Security concerns can include natural disasters, acts of violence, and terrorism.

MPO Role in Security

The MPO's main role in planning for security is to coordinate with relevant agencies, such as

- emergency management officials
- police and sheriff's departments
- fire departments
- other first responders

MPOs can take certain measures to improve security prevention, protection, response, and recovery.

Prevention

When discussing security, prevention refers to efforts to limit access to resources that may be compromised or efforts to increase surveillance. Examples of prevention measures include:

- access control systems
- Closed Circuit Television (CCTV) systems
- security alarms
- fencing
- locks
- architectural barriers

The design of facilities and public spaces can also incorporate features that deter security breaches.

Protection

High vulnerability risk facilities should have additional design measures considered. These measures would mitigate potential security risks, should they occur. Protection efforts could also include law enforcement where necessary, such as theft, damage to traffic equipment, etc.

Response

Redundancy of transportation facilities should be encouraged in capital project planning. This assists in emergency evacuations or detours should a particular segment of the transportation network become unavailable. The use of Intelligent Transportation Systems (ITS) to control traffic signals and other controls also assists in responding to security.

Recovery

Transportation decision-makers should be familiar with both short-term and long-term recovery plans for the MPA. This includes everything from evacuations to restoring local businesses and neighborhoods. LADOTD has dedicated evacuation routes and both Ouachita Parish and the

City of Monroe have their own emergency management bodies and hazard mitigation plans. More information can be found on each agency's website at:

Ouachita Parish Homeland Security and Emergency Preparedness

https://www.oppj.org/departments/homeland_security/index.php

City of Monroe Emergency Preparedness

https://monroela.us/government/mayors-office/emergency-preparedness

Key Security Participants

As stated previously, the MPO coordinates with relevant agencies and is in a support role when security issues arise. The MPO can serve as a medium of communication between the various agencies involved. Several key participants to the security management process have been identified below.

State and Local Governments

LADOTD's Emergency Operations department manages statewide emergency transportation and public works/engineering services, ensuring Louisiana residents have access to:

- Motorist Assistance Patrol,
- evacuation routes, and
- emergency perepardness tools through Louisiana's Get a Game Plan program.

Information on LADOTD's Emergency Operations department can be found at:

http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Operations/Emergency_Operations/Pages/default.aspx

Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)

An additional provider for emergency management in the state is GOHSEP. The mission of GOHSEP is:

> "To lead and support Louisiana and its citizens to prevent, prepare for, recover from, and mitigate against man-made or natural disasters that threaten our State."

The vision of GOHSEP is:

> "To be a center of excellence for emergency management and homeland security known for leadership, innovation, and service for the benefit of Louisiana, its citizens, and all other stakeholders."

The GOHSEP website (http://gohsep.la.gov/) provides information and planning to the public and the emergency management communities. This site focuses on continuous development and timely and accurate data.

University of Louisiana at Monroe

The University maintains several documents related to safety and security on campus. These documents allow the University to react to several types of emergencies, including hurricanes, tornadoes, severe thunderstorms, flooding, and winter storms.

More information can be found at:

https://www.ulm.edu/safety/manual_emergency_response.html

Additional MPO Measures

Each MPO is ultimately responsible for crafting a security policy consistent with its goals, state guidance, and the FAST Act. Security must also be considered during the establishment of future MPO goals and the support for MPO funding priorities. The following presents potential areas of focus, recognizing that hurricane evacuation is a primary concern within the Monroe Urbanized Area.

Use of MPO Transportation Model to Assess Evacuation Plans

The TransCAD regional model can be modified to simulate evacuation events. This can be used to test the effectiveness of existing plans or to improve plans for routing traffic through the MPO region.

Use of Area Transit Systems to Support Evacuation Events

The MPO will work with local transit providers to investigate opportunities for the use of transit vehicles to provide for the evacuation of transit dependent populations.

Integration of Intelligent Transportation Systems (ITS) in Evacuation Planning

The MPO supports investment in ITS technologies. The MPO understands the need to study and assess how this technology can be used to assist evacuees in their decision-making and expedite their progress during evacuation events.

Integration of Hurricane Evacuation Purpose and Need in Planning for Future Roadway Improvements

As the MTP projects are refined within the context of the LADOTD Construction Program, project features will be reviewed for consistency with a hurricane evacuation purpose and need. Every hurricane produces a unique evacuation event. Evacuees are influenced by the amount of

notice provided in advance of the storm's landfall, as well as the projected storm path and intensity. Information on hurricane evacuation routes and procedures can be found at:

http://gohsep.la.gov/Portals/0/Documents/Prevent/2016EmergencyGuide_English.pdf

Strategic Highway Network (STRAHNET)

The STRAHNET is a portion of the NHS considered vital to the nation's strategic defense. The current STRAHNET is about 61,000 miles long and links military installations with roadways that provide for the mobility of strategic military assets. All Interstate highways, including I-20 within the MPA, are included as part of the STRAHNET. Within the MPA, I-20 is the only STRAHNET route.

The STRAHNET routes need additional considerations, which include maintenance of bridge capability, pavement conditions, and congestion management. The use of ITS along these corridors, particularly dynamic message signs, will allow for better management of the traffic related to military convoys.

3.0 Freight

3.1 Introduction

The movement of freight throughout the MPA affects both the regional and national economy. The region is a major generator of freight, as well as a distribution and processing center for many goods. It is home to many freight facilities including Class I railroads and major highways.

3.2 Supporting Plans and Goals

Federal

Increasingly, federal legislation has provided incentives for states to focus on freight transportation investments. The provisions embodied in the 2015 *Fixing America's Surface Transportation Act* (FAST Act) established new dedicated freight programs and funding sources, intended to address freight needs that produce public benefits.

National Multimodal Freight Policy

The FAST Act establishes a national policy of maintaining and improving the condition and performance of the National Multimodal Freight Network ("the Network") to ensure that the Network provides a foundation for the U.S. to compete in the global economy. The FAST Act specifies goals associated with this national policy related to the condition, safety, security, efficiency, productivity, resiliency, and reliability of the Network, and to reduce the adverse environmental impacts of freight movement on the Network. These goals are to be pursued in a manner that is not burdensome to State and local governments.

National Freight Strategic Plan

The FAST Act requires the U.S. Department of Transportation (DOT) to establish (and publish on its website) a national freight strategic plan. The DOT will develop (and update) the plan in consultation with state DOTs, MPOs, and other appropriate public and private transportation stakeholders. Within five (5) years of completing the national freight strategic plan, and every five (5) years thereafter, DOT must update the plan and publish it on its website.

National Multimodal Freight Network

The FAST Act directs DOT to establish a National Multimodal Freight Network (NMFN)[2] to:

- Assist States in strategically directing resources toward improved system performance for the efficient movement of freight on the Network
- Inform freight transportation planning
- Assist in the prioritization of Federal investment
- Assess and support Federal investments to achieve the goals of the National Multimodal Freight Policy established in 49 U.S.C. 701010 and of the National Highway Freight Program described in 23 U.S.C. 167.

Within five (5) years of the initial designation, and every five (5) year thereafter, DOT must redesignate the NMFN.

State Freight Plans

To receive funding under the National Highway Freight Program (23 U.S.C. 167), the FAST Act requires each state develops a state freight plan, which must comprehensively address the state's freight planning activities and investments (both immediate and long-range). A state may develop its freight plan either separately from, or incorporated within, its statewide strategic long-range transportation plan required by 23 U.S.C. 135. Among other requirements, a state freight plan must:

- Cover a five-year forecast period
- Be fiscally constrained
- Include a "freight investment plan" with a list of priority projects
- Describe how the State will invest and match its National Highway Freight Program funds

Each state must update its freight plan at least every five (5) years and may update its freight investment plan more frequently than the overall freight plan.

[2] https://www.transportation.gov/sites/dot.gov/files/docs/State_interimMFN_landscape_Louisiana_alt_text.pdf

State

The *Louisiana Freight Mobility Plan*[3] is designed to meet the requirements of the FAST Act. Additionally, it is intended to serve the unique needs of the LADOTD and its partners to improve freight transportation by identifying needs, recommending policies, and devising implementation strategies. The *Plan* considers highway, rail, aviation, and port and waterway needs. It also describes the pipeline system but does not provide investment or policy recommendations for it.

A key part of freight planning is the development of goals and objectives that form the core of the Freight Plan. The following goal areas were established after reviewing the National Freight Policy goals and statewide plans with a freight component, stakeholder input gathered during the development of the 2015 Statewide Transportation Plan (STP), and input from the Freight Advisory Committee.

- Economic Competitiveness and Efficiency
    - Improve the freight transportation system for better economic efficiency, productivity, and competitiveness
- Safety and Security
    - Improve the safety, security, and resilience of the freight transportation system
- Infrastructure Preservation and Maintenance
    - Improve and maintain the freight transportation system to ensure a state of good repair
- Environmental Stewardship
    - Reduce adverse environmental and community impacts of the freight system
- Performance and Accountability
    - Use advanced technology, performance management, innovation, competition, and accountability to assist with congestion mitigation, operations, and maintenance of the freight transportation system

MPO

Freight goals for the Monroe MTP are currently in development. These goals, once established, will support the national goals outlined above, those of the *Louisiana Freight Mobility Plan*, and the LRTP Goals and Objectives.

[3] Louisiana Freight Mobility Plan
http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Misc_Documents/Louisiana%20Freight%20Mobility%20Plan%2004-09-18%20FINAL.PRINT%20EDITION.pdf

3.3 Trucking

The MPA contains several roadways that serve freight. Within the MPA, two (2) roadways are part of the National Primary Freight Network (NPFN)[4] and the NMFN: I-20, and the segment of US 165 between US 80 and 0.34 miles south of I-20.

There is one (1) intermodal connector within the MPA[5]. It connects I-20 to the Monroe Regional Airport via Garret St, LA 594, and Kansas Ln (ID: LA24A). In addition to the NMFN, there are several LADOTD designated freight corridors in the MPA, shown in Table 3.1. The criteria for each LADOTD freight corridor tier are described in the *Louisiana Freight Mobility Plan*.

Table 3.1: MPA Significant Freight Truck Corridors

Roadway	Description	LADOTD Tier
	The primary West to east corridor in the MPA; connects west to Shreveport, LA and Dallas, TX and connects east to Vicksburg, MS and Jackson, MS.	1
	The original West to east corridor in the MPA; parallels I-20 through the MPA.	3
	The primary South to north corridor in the MPA; connects south to Alexandria and north to Bastrop; has one business route in Monroe.	1 and 3
	Business Route of US 165; connects Downtown Monroe south to US 165	3
	Louisiana's northernmost cross-state West to east highway; connects Sterlington in the northern part of the MPA west to US 167 at Bernice and east to Bastrop via US 165.	3
	Connects the Monroe MPA southeast towards Winnsboro and northwest towards Farmerville; concurrent with US 80 in West Monroe.	3
	Connects the Monroe MPA southwest towards Winnfield; passes near the Port of Greater Ouachita.	3
	Connects LA 34 to I-20 and US 80 in West Monroe.	3

[4] https://ops.fhwa.dot.gov/freight/infrastructure/ismt/state_maps/states/louisiana.htm
[5] https://www.fhwa.dot.gov/planning/national_highway_system/intermodal_connectors/louisiana.cfm

Table 3.2 displays the MPA's intermodal terminal facilities that serve freight truck needs. The MPA also contains several trucking establishments which provide local and long-distance trucking services. The intermodal facility and major trucking establishments in the MPA are shown in Figure 3.1.

Table 3.2: Intermodal Terminal Facilities for Trucks

Name	Modes Served	City
Monroe Warehouse Co.	Rail & Truck	Monroe
Yellow-Monroe LA-Terminal	Rail & Truck	Monroe

Source: Bureau of Transportation Statistics, National Transportation Atlas

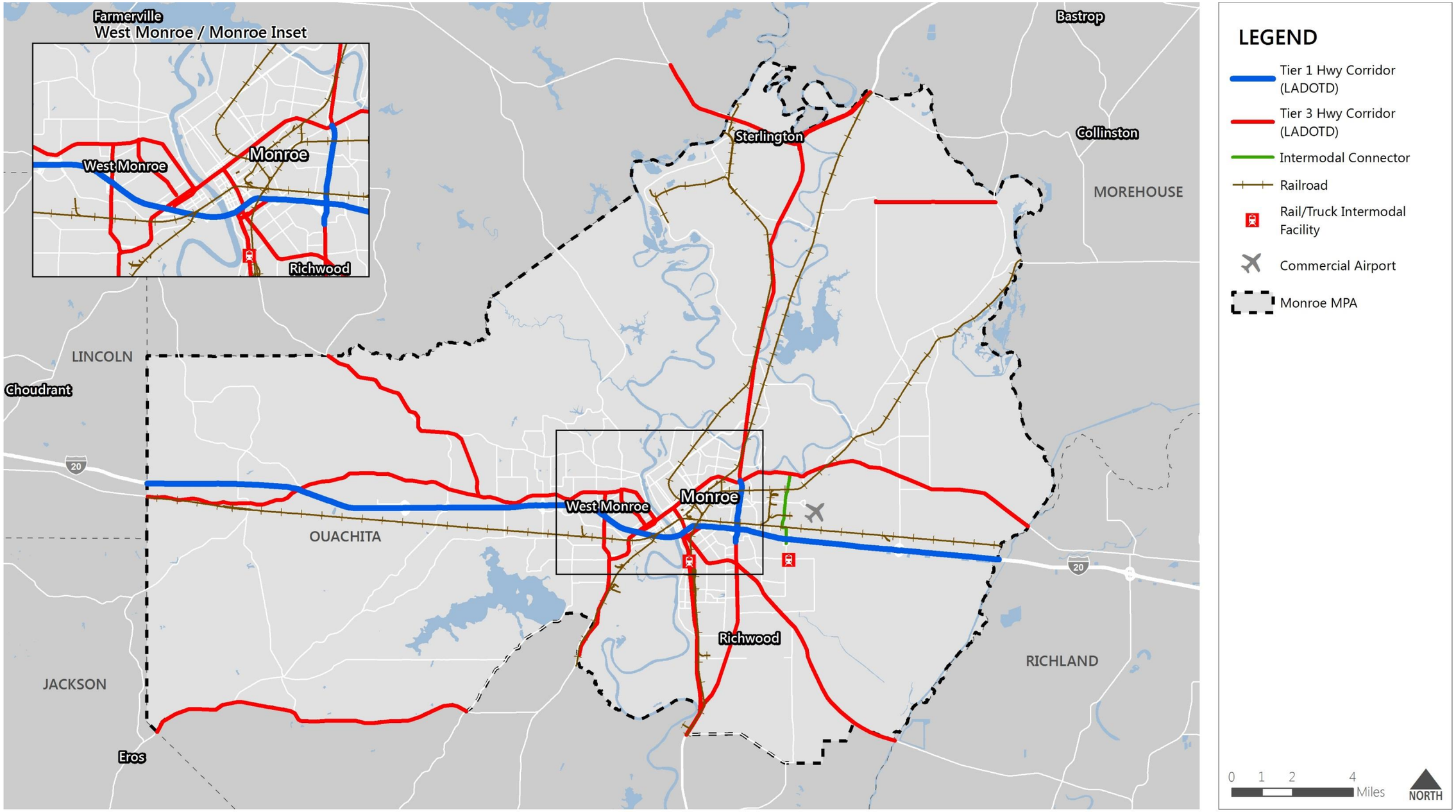
Volumes

To better understand the MPA's freight needs, the travel demand model's daily truck volumes were used, and these estimated volumes are illustrated in Figure 3.2.

The estimated freight truck volumes suggest that freight truck traffic is highest on:

- I-20
- US 165 north of I-20
- US 80 Lea Joyner Bridge
- LA 617 (Thomas Rd) between Old Natchitoches Rd and Glenwood Dr

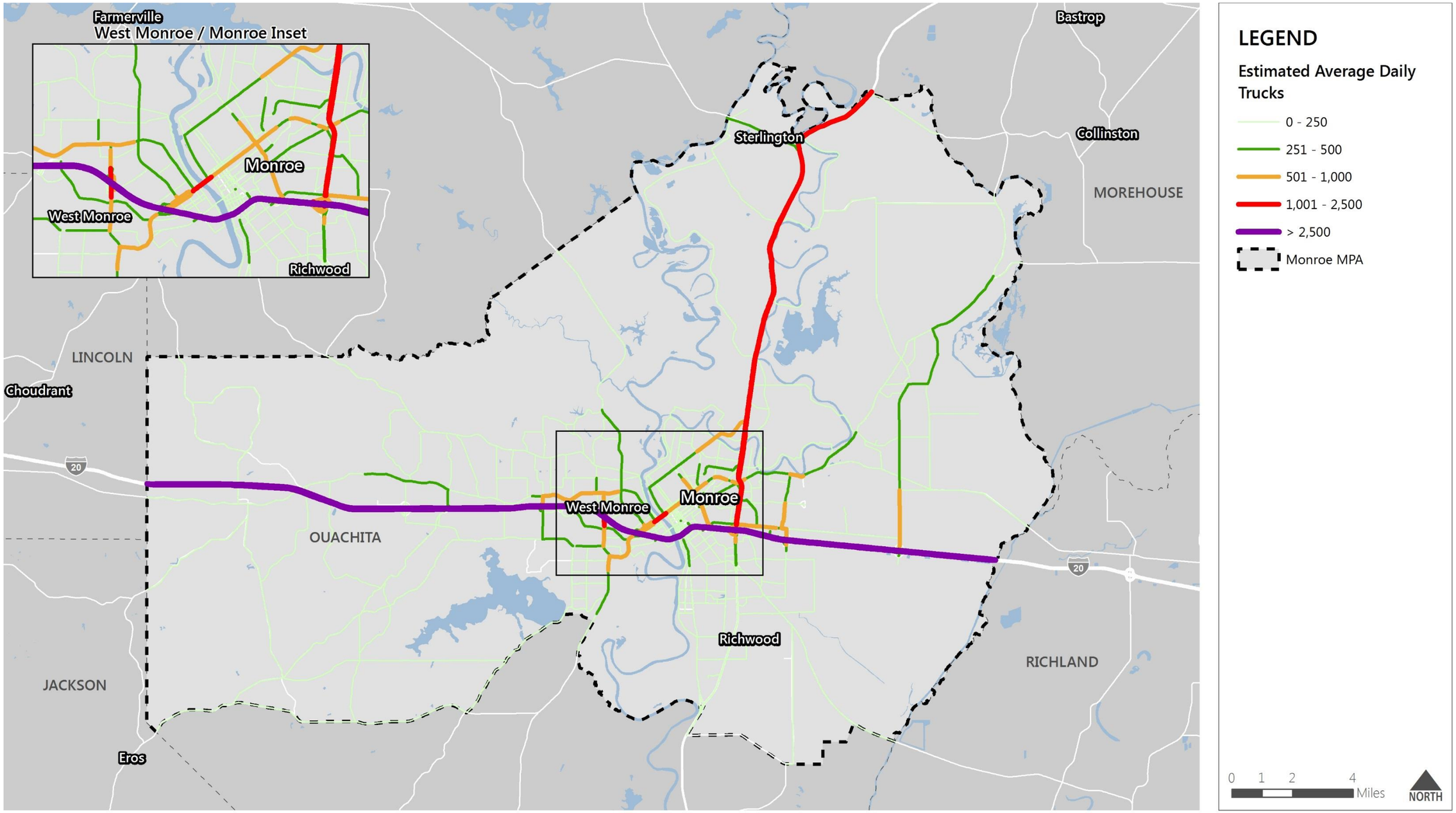
Figure 3.1: Freight Truck Network and Facilities



Data Source: 2019 National Transportation Atlas; USDOT; LADOTD

Disclaimer: This map is for planning purposes only.

Figure 3.2: Freight Truck Traffic, 2018



Data Source: Travel Demand Model

Disclaimer: This map is for planning purposes only.

Commodity Flows

Because of Monroe's size, the FHWA's Freight Analysis Framework (FAF) commodity flow data is not available for the Monroe MPA. However, we can glean some information from the State of Louisiana commodity flows. While the amount of actual commodities being moved through an area likely vary considerable throughout the state, the means of transporting freight is more uniform.

Table 3.3 shows that, in Louisiana, the truck mode accounts for nearly 30 percent of all freight tonnage originating in Louisiana.

Table 3.3: Means of Transporting Freight Originating in Louisiana, 2018

Mode	Thousand Tons	Percent
Pipeline	309,237	34.9%
Truck	265,598	30.0%
Water	211,176	23.8%
Rail	53,858	6.1%
No domestic mode	26,354	3.0%
Multiple modes & mail	18,358	2.1%
Other and unknown	1,291	0.1%
Air (include truck-air)	19	<0.1%
Total	885,892	100.0%

Source: Freight Analysis Framework 4

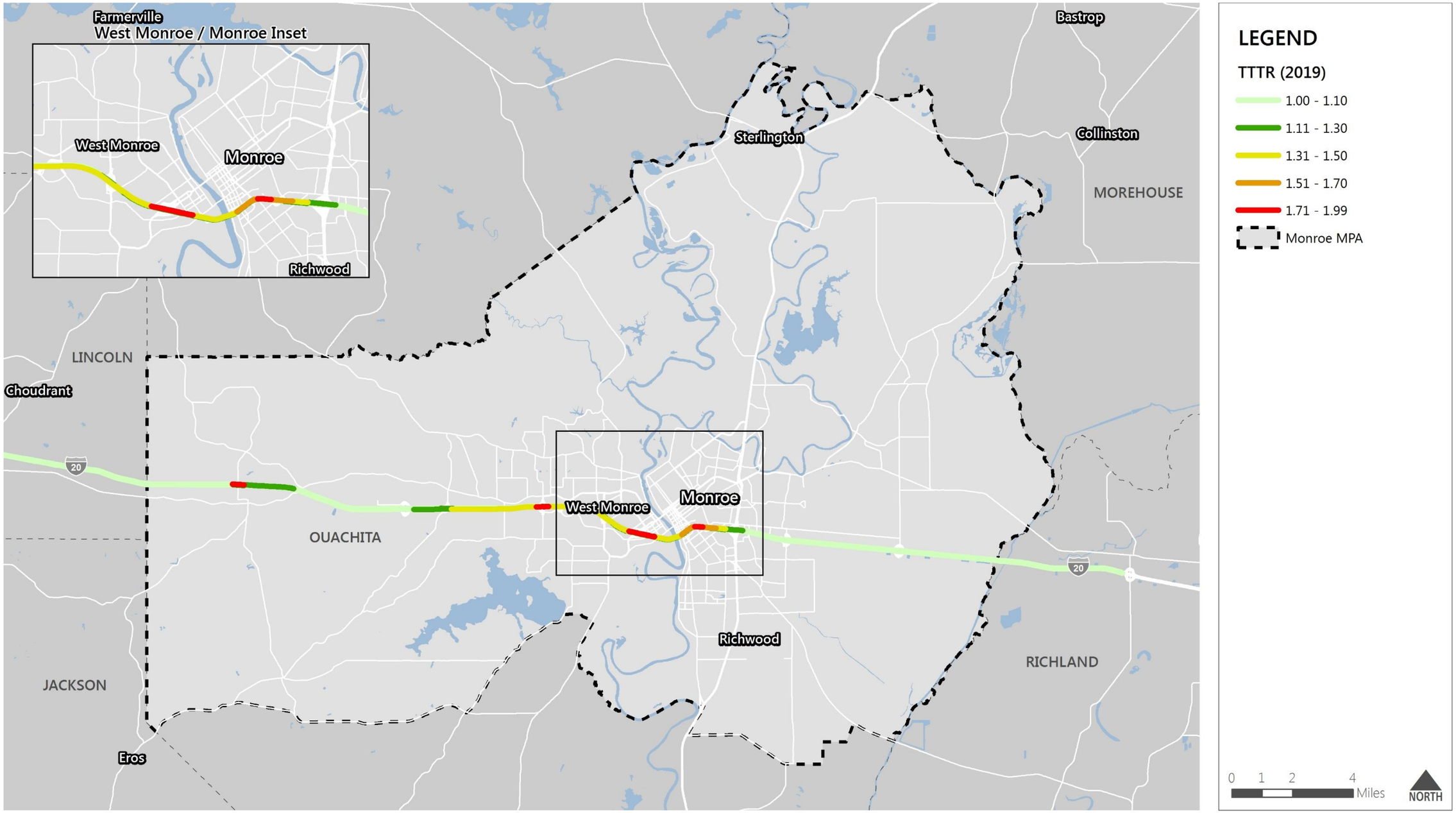
Truck Travel Time Reliability

The FHWA has established a freight performance measure to capture truck travel time reliability on the MPA's Interstate highway system: the Truck Travel Time Reliability (TTTR) index[6]. The 2019 TTTR on each I-20 segment is shown in Figure 3.4. The state's freight performance measures, and the MPO's progress towards them, are discussed in the MPO's Performance Report.

The 2019 NPMRDS data indicates that I-20, the MPA's only Interstate, has an overall TTTR of 1.14.

[6] https://www.fhwa.dot.gov/tpm/rule/pm3/freight.pdf

Figure 3.3: Truck Travel Time Reliability, 2019



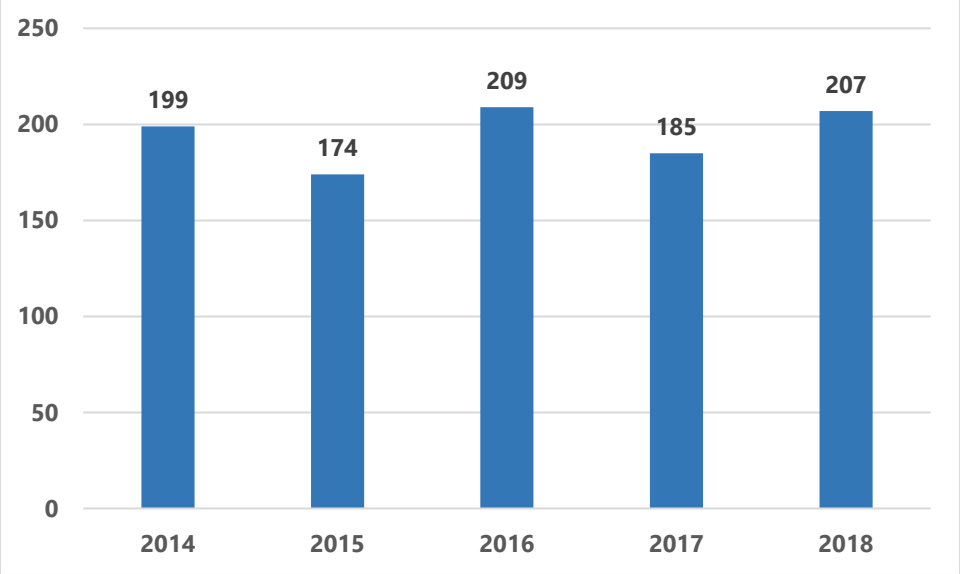
Data Source: NPMRDS

Disclaimer: This map is for planning purposes only.

Safety

Crashes involving heavy vehicles were analyzed using crash records from 2014 to 2018 obtained from LADOTD. A total of 974 crashes involving heavy vehicles occurred within the Monroe MPA during the five-year study period. Figure 3.4 shows the number of heavy vehicle crashes during the study period.

Figure 3.4: Heavy Vehicle Crashes by Year, 2014 - 2018



Source: LADOTD, 2020

Between 2014 and 2018, fatal crashes involving heavy vehicles comprised less than one (1) percent of heavy vehicle crashes. However, nearly seven (7) percent of all fatal crashes in the study area involved a heavy vehicle.

Since heavy vehicle crashes represented just six (6) percent of the total crashes during the study period, many locations experienced few, if any, heavy vehicle crashes. The intersections and segments with the greatest number of heavy vehicle crashes in the MPA are shown in Table 3.4 and Table 3.5, respectively.

Table 3.4: Top Heavy Vehicle Crash Frequency Intersections

Intersection	Number of Crashes (2014 – 2018)
LA 34 at Natchitoches St	14
LA 34 (Stella St) at LA 143 (N 7th St)	11
US 165 (Martin Luther King Jr Dr) at Century Blvd	10
LA 34 (Jonesboro Rd) at Bancroft Blvd/Reagan St	8
LA 617 (Thomas Rd) at Downing Pines Rd/Old Natchitoches Rd	8
LA 617 (Thomas Rd) at Glenwood Dr	8
US 165 (Martin Luther King Jr Dr) at Louberta St	8
US 80/LA 15 (Cypress St) at LA 34 (Stella St/Mill St)	7
Nutland Rd at Hadley St	6
LA 34 (Jonesboro Rd) at LA 617 (Thomas Rd)	6
US 165 (Martin Luther King Jr Dr) at Center St	6
LA 617 (Thomas Rd) at New Natchitoches Rd/Ridge Rd	6
LA 594 (Millhaven Rd) at Kansas Ln	6
US 80 (Cypress St) at LA 546 (Cheniere Drew Rd)	6
US 80 (Louisville Ave) at Washington St/Lamy Ln	6

Source: LADOTD, 2020

Table 3.5: Top Heavy Vehicle Crash Frequency Segments

Route	Segment	Number of Crashes (2014 – 2018)
I-20 Westbound	On-Ramp from St John St to Off-Ramp to S 5th St	21
I-20 Westbound	Off-Ramp to S 5th St to On-Ramp from S 5th St	16
I-20 Eastbound	Off-Ramp to LA 617 (Thomas Rd) to On-Ramp from LA 617 (Thomas Rd)	16
I-20 Eastbound	On-Ramp from Hall St to On-Ramp from US 165 BUS/LA 15 (Ouachita Ave)	15
I-20 Eastbound	Off-Ramp to S 2nd St to On-Ramp from S 3rd St	14
I-20 Westbound	1.53 miles east of Off-Ramp to LA 546 to Off-Ramp to LA 546	14
I-20 Eastbound	Lincoln Parish Line to Off-Ramp to LA 151	13
I-20 Eastbound	On-Ramp from Russell Sage Rd to Richland Parish Line	11
I-20 Eastbound	On-Ramp from Garrett Rd to 1.68 miles east of On-Ramp from Garrett Rd	11
I-20 Eastbound	On-Ramp from LA 546 to 1.59 miles east of On-Ramp from LA 546	11

Source: LADOTD, 2020

3.4 Railways

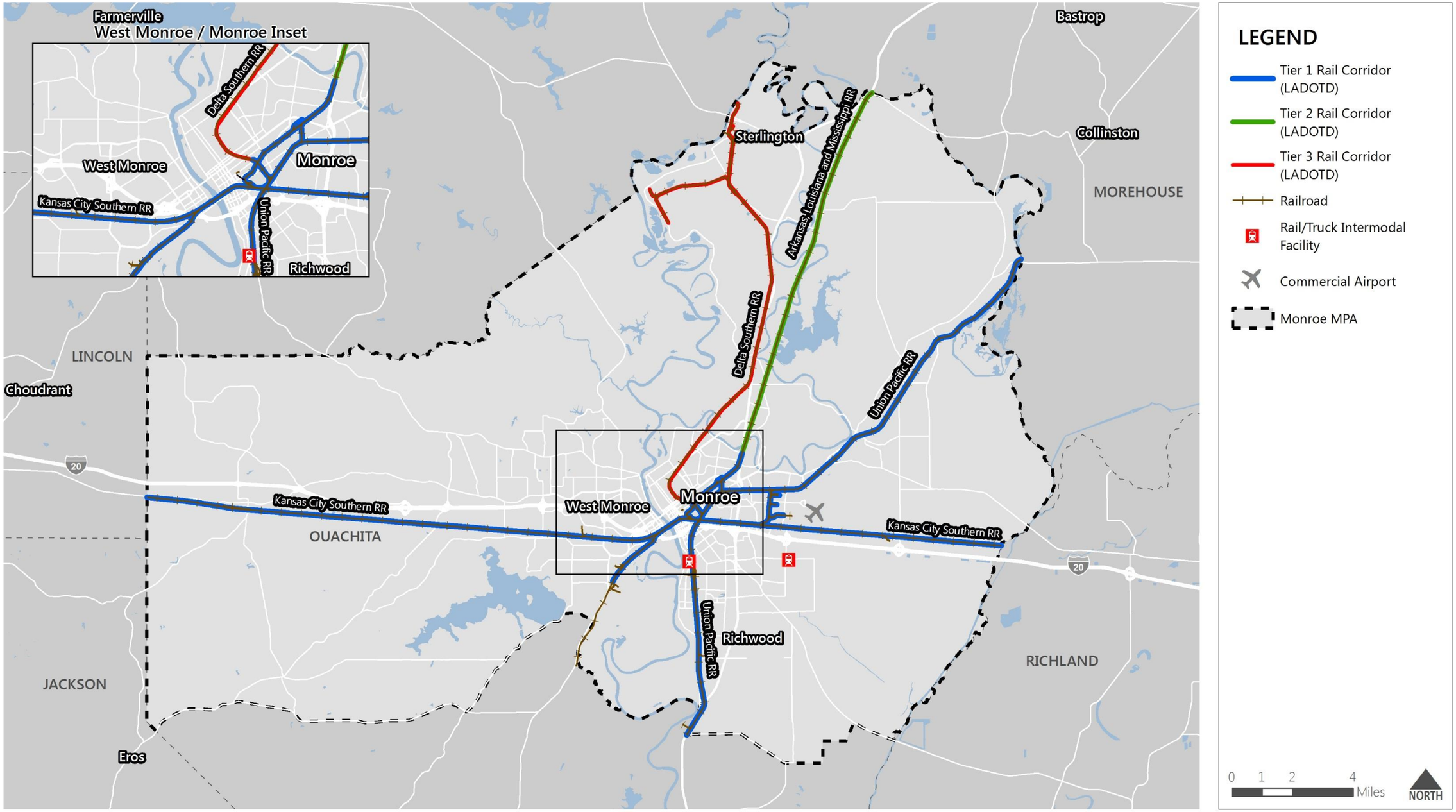
There are approximately 87 miles of railroad tracks in the MPA. Most of the MPA's railroads are Class I railroads. The NPFN does not include railroads. However, the Class I railroads are part of the NMFN. The significant freight railroads within the MPA are summarized in Table 3.6. The criteria for each LADOTD freight corridor tier are described in the *Louisiana Freight Mobility Plan*.

Table 3.6: Significant Freight Rail Corridors in the MPA

Railroad	Abbreviation	Description	LADOTD Tier
	KCS	The main east-west Class I railroad in the MPA; parallels I-20 and US 80; connects west towards Shreveport and east towards Vicksburg, MS.	1
	UP	The main north-south Class I railroad in the MPA; mostly parallels US 165; connects south towards Alexandria and north towards Pine Bluff, AR.	1
	ALM	Short Line of the KCS Railway and the UP Railroad in Monroe; connects Monroe to Bastrop and north into Arkansas.	2
	DSRR	Short Line of the UP Railroad in Monroe; connects Monroe to the line's northern terminus in Sterlington.	3

The intermodal terminal facilities listed in Table 3.2 also serve freight rail. Figure 3.5 displays the MPA's railroads and the intermodal terminal facilities.

Figure 3.5: Freight Rail Network and Facilities



Data Source: 2019 National Transportation Atlas; USDOT; LADOTD

Disclaimer: This map is for planning purposes only.

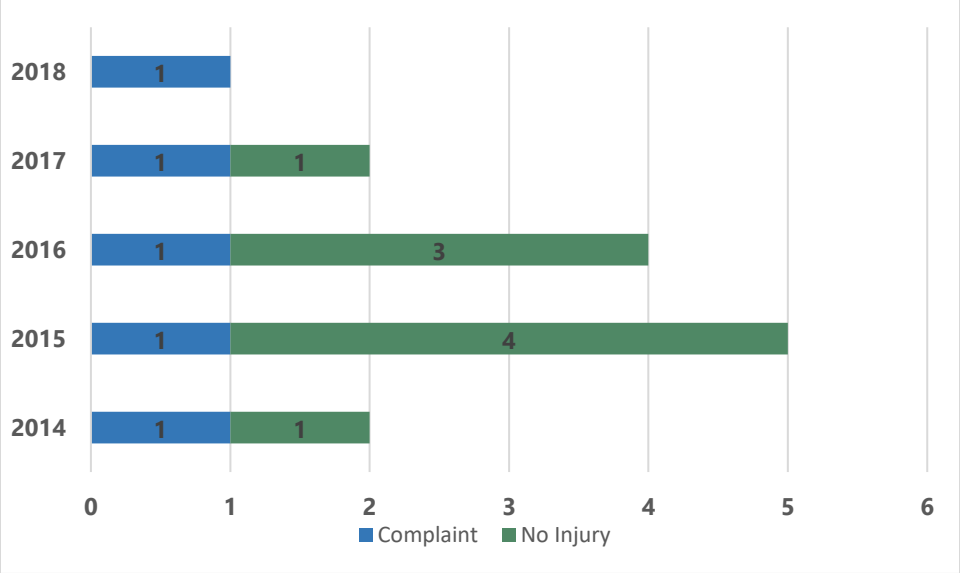
Commodity Flows

As shown in Table 3.3, approximately six (6) percent of freight tonnage that originated in Louisiana in 2018 was transported by rail.

Rail-Automobile Collisions

Between 2014 and 2018, there were 14 crashes involving an automobile and a train. Figure 3.6 shows the breakdown of these crashes by severity.

Figure 3.6: Freight Rail Crashes by Year by Severity, 2014 - 2018



Source: LADOTD, 2020

Nine (9) automobile-train crashes occurred at crossings with KCS tracks, two (2) occurred at crossings with ALR tracks, two (2) occurred at crossings with DSRR tracks, and one (1) occurred at crossings with UP tracks. Twelve (12) of the crashes were in or near Monroe, and two (2) were in West Monroe. Four (4) crashes occurred at the crossing of Vicksburg St and KCS Railroad in Monroe. The other crossings where a crash occurred between 2014 and 2018 has one (1) crash at each crossing.

Train Incidents

According to the Federal Rail Administration (FRA), between 2015 and 2019, there were four (4) reported train incidents in the MPA. Incidents include collisions, derailments, and other events involving the operation of on-track equipment and causing reported damage above an established threshold. Table 3.7 summarizes the train incidents in the MPA.

Table 3.7: Train Incidents

Date	Nearest City	Railroad	Type of Incident	Primary Cause	Severity
April 22, 2015	West Monroe	KCS	Derailment	Cross level of track irregular (not at joints)	No Injury
October 3, 2015	Monroe	KCS	Derailment	Worn flange (LOCOMOTIVE)	No Injury
March 19, 2016	Monroe	KCS	Other Impact	Kicking or dropping cars, inadequate precautions	No Injury
June 16, 2018	West Monroe	KCS	Derailment	Interference (other than vandalism) with railroad operations by nonrailroad employee	No Injury

Source: Federal Rail Administration

Railroad Crossings Control Devices

To avoid collisions, warning/control devices are required at highway-railroad grade crossings. Warning devices are either passive or active. Passive devices include crossbucks, yield or stop signs, and pavement markings. Active devices include flashing lights, bells, and gates, in addition to most passive warning devices. Table 3.8 shows the breakdown of the MPA's public at-grade highway-railroad crossings.

Table 3.8: MPA Public At-Grade Highway-Railroad Crossings

Crossing Type	Number
Active (Flashing lights and gates)	41
Active (Flashing lights, no gates)	22
Passive (Crossbucks and Stop/Yield Signs Only)	69
Total	132

Source: Federal Rail Administration

LADOTD has developed a State highway-rail grade crossing action plan, the *Louisiana Highway/Rail Grade Crossing Safety Action Plan*[7], as required under 49 CFR 234.11.

[7] https://safety.fhwa.dot.gov/hsip/xings/docs/la-sap.pdf

3.5 Air Cargo

Inventory

Historically, only a small amount of freight is typically shipped by air. However, the commodities transported this way tend to be high-value and time sensitive. Also, airports tend to serve as distribution and manufacturing hubs.

There is one public use airport in the MPA: Monroe Regional Airport in Monroe. The airport is located east of Downtown Monroe and north of I-20. In addition to serving freight, the airport has commercial flights to Atlanta, Dallas, and Houston. The total number of aircraft based at Monroe Regional Airport and the aircraft operations are shown in Table 3.9.

Table 3.9: Based Aircraft and Aircraft Operations at Monroe Regional Airport

Based Aircraft	Aircraft Operations	Operations for 12 months ending
26	28,725	December 31, 2019

Source: Federal Air Administration

Commodity Flows

Cargo data is not readily available for Monroe Regional Airport.

3.6 Waterway Network

Inventory

The MPA's water freight needs are served by the Ouachita River, an inland navigable waterway corridor through the MPA that is part of the NMFN. However, the river is not part of the Federally Designated Marine Highway system. The nearest waterways that are designated as a Marine Highway are the Red River (M-49) and the Mississippi River (M-55).

There is one port in the MPA, the Port of Greater Ouachita. This shallow-draft inland port is located south of Downtown Monroe at mile marker 164 on the west bank of the Ouachita River. The port serves several types of cargo, including bulk cargo, container cargo, and project cargo.

Rail facilities at the port include 9,000 feet of heavy rail with one full double-track unit-train loop and one shorter double-track loop. Additionally, a network of access roads throughout the facility allow for the efficient movement of truck traffic into, out of, and within the port.

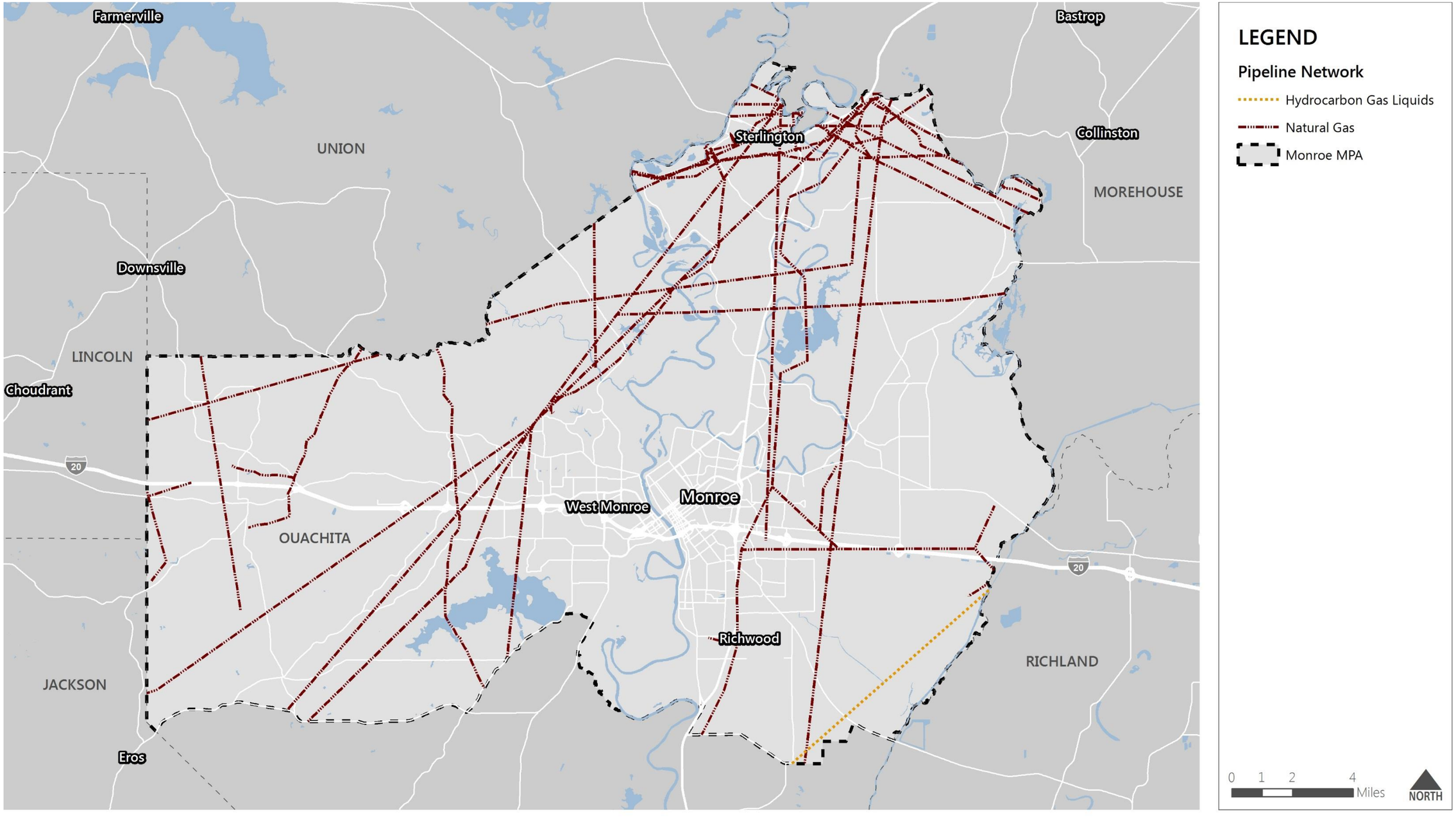
Commodity Flows

According to the U.S. Army Corps of Engineers (USACE) Waterborne Statistics, approximately 184,000 tons of freight moved on the Ouachita River within the MPA in 2018.

3.7 Pipeline Network

The MPA's pipeline network consists of 550 miles of natural gas and hydrocarbon gas liquid pipelines as of 2018. By length, approximately 96 percent of pipelines in the MPA carry natural gas, and the remaining four (4) percent carry hydrocarbon gas liquids. The MPA's pipeline network is shown in Figure 3.7.

Figure 3.7: MPO Pipeline Network, 2018



Data Source: Energy Information Administration

Disclaimer: This map is for planning purposes only.

4.0 Bicycle and Pedestrain

4.1 Introduction

Bicycling offers another form of non-motorized transportation to people who cannot or choose not to drive and is often discussed alongside pedestrian conditions. However, bicycling differs from walking in trip purposes. According to the 2017 National Household Travel Survey, in small urbanized areas like Monroe 24 percent of bicycling trips were to work, compared to 14 percent of walking trips. Bicycling has become more utilitarian over time, with only 13 percent of trips purposes for work in 2009. Multiuse paths and bike lanes are great for riders, however crash severity can be higher for bicyclists which operate as vehicles alongside motorized traffic.

When encouraged on a large-scale, walking and bicycling can reduce congestion and improve air quality. But even in a region like the Monroe MPO that largely relies on motorized transportation, both recreational and utilitarian walking and bicycling can greatly benefit three critical community components: equity; health; and local economy.

Equity Benefits

Vulnerable populations, such as low-income households, minorities, children, persons with disabilities, and older adults typically own fewer vehicles and have longer commutes. Designing communities and transportation systems for cars can exclude these residents and place essential services or employment out of reach. Walking and bicycling are sometimes the only available and affordable transportation choice to these residents.

Considering the cost of purchasing, maintaining, fueling and insuring a vehicle, walking and bicycling can save significant transportation costs to families. In Ouachita Parish, almost 22 percent of the population lives in poverty[8] and would greatly benefit from the cost-savings of active transportation.

Accessibility can also be expanded if walking and bicycling is integrated with the transit system. This can be accomplished by adding bicycle parking, adding bicylcle racks to buses, multiuse paths, bikes lanes, and crosswalks by bus stops..

Health Benefits

It is well known that the number of overweight and obese Americans has reached epidemic proportions. According to the Center for Disease Controls, nearly 40% of adults aged 20 and

[8] American Community Survey, 2018, 5-Year Estimates

older in America are diagnosed with obesity[9], which can lead to diabetes, heart disease, high health care costs, and a lower quality of life.

Regular physical activity is one critical component in reducing obesity. An accessible, safe, and well-connected active transportation network provides pedestrians and bicyclists this physical activity during both utilitarian and recreational trips.

Economic Benefits

National research has shown that pedestrian and bicycle friendly communities attract new residents. Research conducted by the National Association of Realtors and American Strategies show that in 2017, six in ten respondents would pay more to live in a walkable community[10]. According to active transportation advocate Advocacy Advance, bicycle infrastructure can increase jobs, tourism, and local sales while decreasing bicycle collisions. Additionally, large-scale active transportation can reduce needs for expensive parking lots and lower healthcare costs associated with lack of exercise[11].

4.2 Bicycle and Pedestrian Facility Coverage

Pedestrian Facilities

A sidewalk inventory was not available for the Monroe MPA. Imagery from Google Earth and visits to the area showed that sidewalks were largely present in the downtown areas of Monroe and West Monroe and along most major roads, with the exception of much of US-165. These sidewalks are in varying conditions and often lack crosswalks. Some new sidewalks have recently been constructed along roads like Arkansas Road in West Monroe and University Drive in Monroe. Most of the ULM campus is covered by sidewalks and even has a pedestrian footbridge across Bayou Desiard. Outside of these areas, sidewalks appear sporadically. Sterlington largely lacks sidewalks and Richwood has a small number of sidewalks like Dellwood Drive.

For recreation, many of the region's parks like Forsythe Park and Kiroli Park have walking paths and more are in planning stages.

Bicycle Facilities

A bicycle facility inventory was not available. Imagery from Google Earth and visits to the area showed that the MPA largely lacks bicycle infrastructure. There are a few bicycle friendly paths

[9] Center for Disease Control, 2015-2016, https://www.cdc.gov/nchs/fastats/obesity-overweight.htm
[10] National Association of Realtors and American Strategies, 2017, https://www.nar.realtor/sites/default/files/documents/2017%20Topline%20Results.pdf
[11] Darren Flusche, "Bicycling Means Business," 2012, https://www.advocacyadvance.org/the-economic-benefits-of-bicycle-infrastructure/

located in or near parks in Monroe. Near Monroe, the Forsyth Park to Northside Loop and Forsyth Park trail are both listed as recommended bike routes by the Louisiana State Official Travel website[12].

West Monroe has been constructing more bicycle lanes and paths as part of its 2018 Bicycle and Pedestrian Master Plan. Since the approval of the plan bike lanes, several have been added on neighborhood roads, such as Ridge Avenue and Olympic Drive[13], and more are in the planning process.

Both residents and local leaders have demonstrated increased support in improving this network. Bicycle stores The Bike Source and Fleet Feet as well as the tourism agency Discover Monroe-West Monroe have all hosted community bicycling events[14] [15]. Recent plans from the cities of Monroe and West Monroe and ULM for pedestrian and bicycle improvements are described in Section 4.6.

Bike-Sharing and Scooter-Sharing

In recent years shared mobility options like bike-sharing and scooter-sharing have become commonplace in urban areas throughout the country. However, there are currently no bike-share or scooter-share services in the Monroe MPO. These transportation services are provided publicly, privately, or through public-private partnerships and can be either dock-based or dockless. They can also be powered manually or electric.

Today, the markets for these shared mobility options are mostly in urban centers or in major activity centers like universities. Because these services are usually available to users by the minute or hour, they are typically used for relatively short, one-way trips.

Due to the rapid expansion of these services and a lack of associated infrastructure improvements (e.g. bike facilities or scooter lanes), there have been many reported conflicts with drivers and pedestrians. While some cities have tried introducing regulations and improving infrastructure to mitigate those conflicts; many cities have banned these services altogether.

4.3 Existing Traffic and Usage Patterns

Pedestrian and bicycle traffic counts for the Monroe MPA are not available. However, national data shows that active transportation are generally not popular mode choices. The 2017

[12] https://www.louisianatravel.com/bike/trails-routes
[13] https://www.thenewsstar.com/story/news/local/2019/05/24/cycling-safety-priority-west-monroe-addition-new-bike-lanes/3767244002/
[14] https://www.facebook.com/pg/thebikesource/events/?ref=page_internal
[15] https://www.facebook.com/events/603666099836911/

National Household Travel Survey (NHTS) estimates that, each day, about 16 percent of the U.S. population makes a trip by walking and 3 percent by bicycling. This percentage tends to decrease in less urbanized areas. Table 4.1 shows that the Monroe Urbanized Area has less people who bike or walk to work than the national average.

Table 4.1: Means of Transporting to Work in Urbanized Areas

Mode	National Average	State Average	Ouachita Parish	Monroe Urbanized Area
Drove Alone	76.4%	82.7%	86.8%	84.1%
Carpooled	9.2%	9.4%	8.4%	9.9%
Rode Transit	5.1%	1.3%	1.0%	1.3%
Biked	0.6%	0.5%	0.2%	0.2%
Walked	2.7%	1.8%	0.8%	1.2%
Other	6.0%	4.3%	2.8%	3.3%

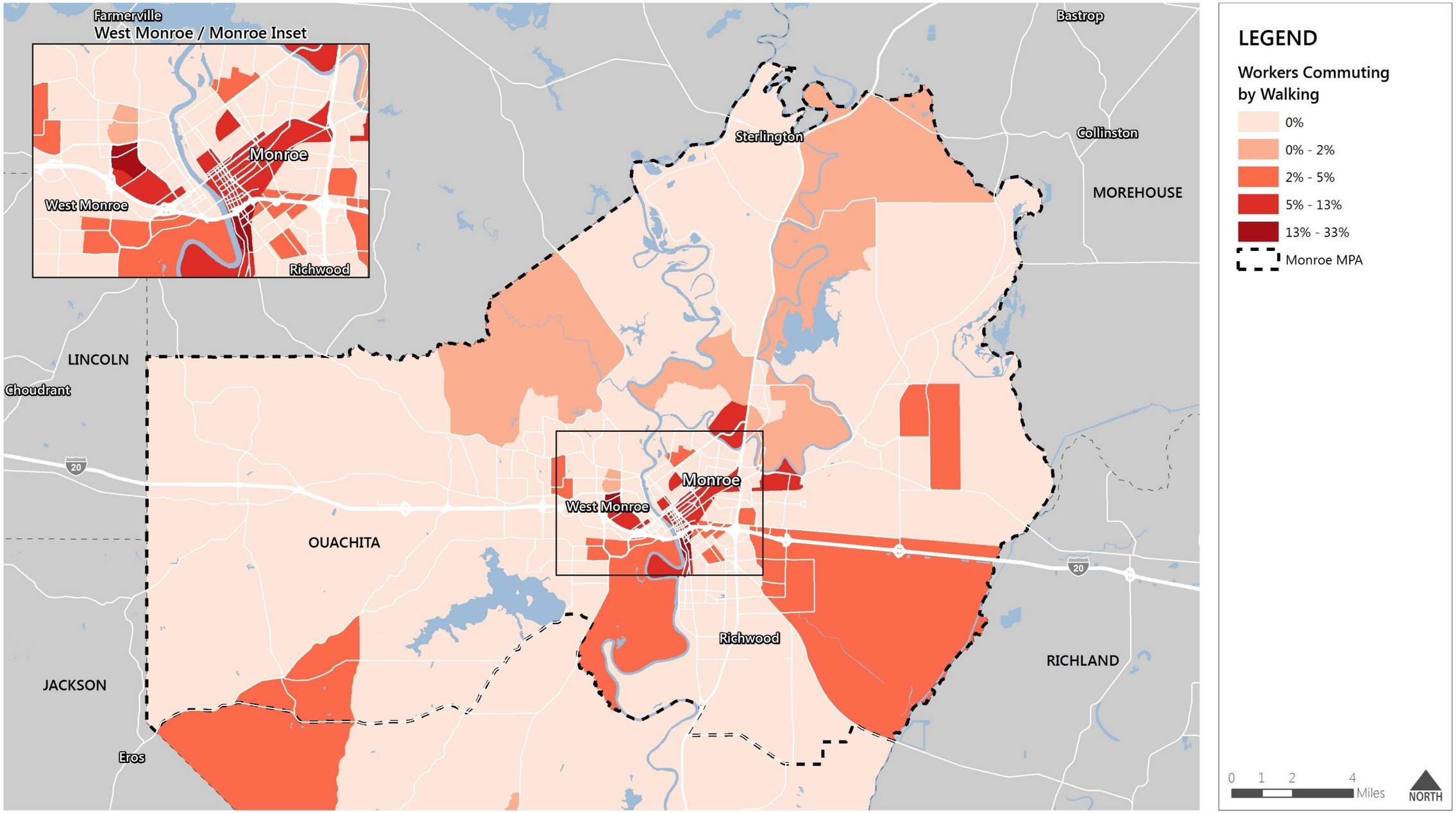
Source: Census Bureau, 2017 American Community Survey 5-year estimates

Walking or bicycling to work has significantly decreased over the decades as accessibility to cars and urban sprawl increased. From 1970 to 2015, the national percentage of commuters walking to work decreased from 7.6 percent to 2.8 percent[16]. Similarly, a 2011 report from the National Center for Safe Routes to School found that the percent of children aged five to fourteen years that usually walked or bicycled to school dropped from 48 percent in 1969 to 13 percent in 2009.

Although active transportation has decreased over time, communities have been seeing increased interest. While only 1.4 percent of residents in the Monroe Urbanized Area commute by walking or biking on average, this percentage increases in specific neighborhoods with vulnerable populations, university students, or denser land uses. Figures 4.1 and 4.2 show how the percentage of commuters who bike or walk to work vary among census block groups. Currently, downtown Monroe and West Monroe have the highest percentage of bicycle and pedestrian commuters. Bicycle use is most prevalent around the University of Louisiana at Monroe.

[16] National Household Geographic Systems, 1970-2000; American Community Survey, 2017 (5-Year Estimates)

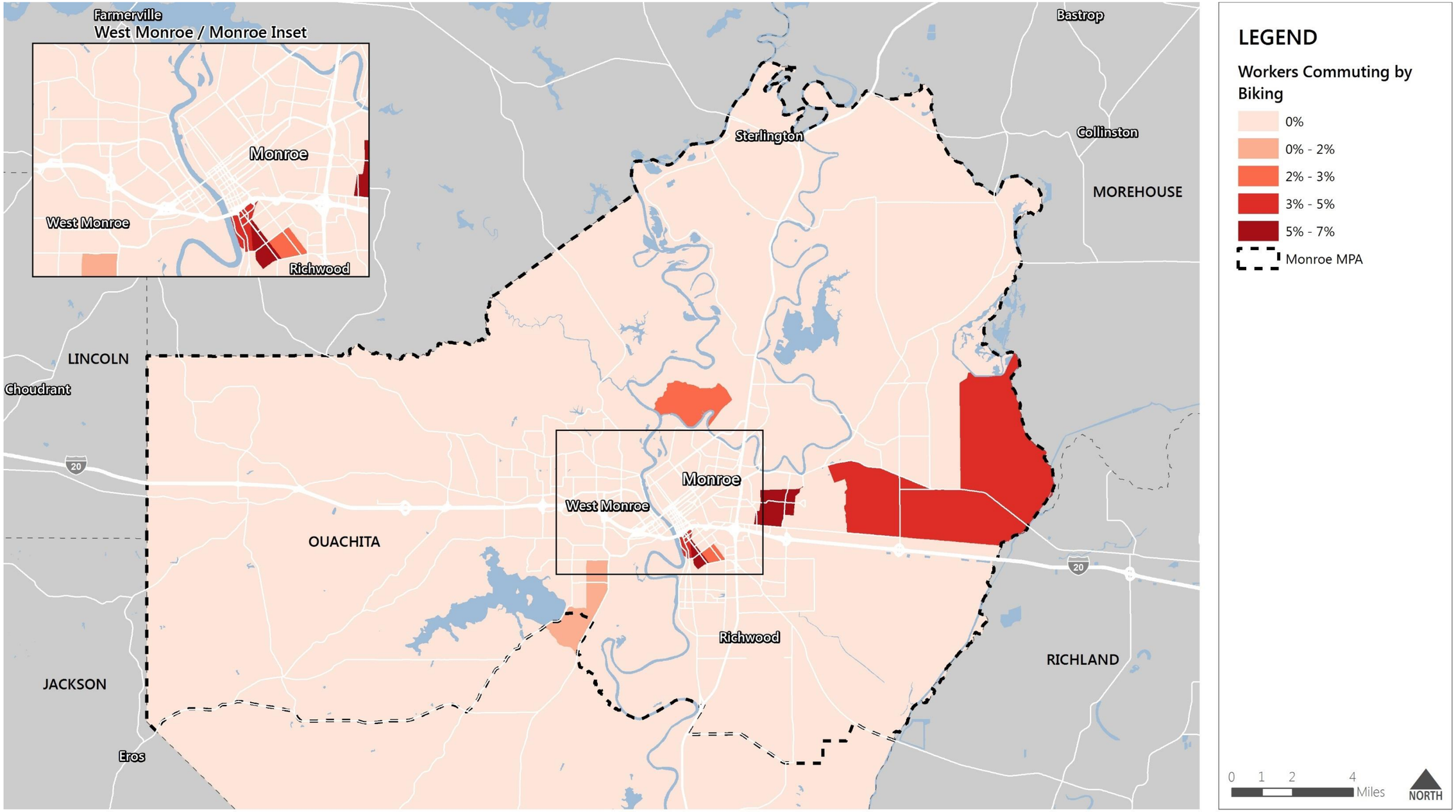
Figure 4.1: Commuting by Walking



Data Source: Census Bureau; 2017 American Community Survey (5-year)

Disclaimer: This map is for planning purposes only.

Figure 4.2: Commuting by Biking in the Region



Data Source: Census Bureau; 2017 American Community Survey (5-year)

Disclaimer: This map is for planning purposes only.

4.4 Regional Bicycle and Pedestrian Demand Analysis

Latent Demand Score Analysis

In order to better understand the existing potential demand for pedestrian and bicycle trips, a latent demand score analysis was conducted that attempts to illustrate potential demand based on characteristics of the built environment, location of major attractors, and demographics.

The demand analysis is the same for pedestrians and bicyclists. The mapping exercise used fine-grained information to assess an area's potential demand for pedestrian or bicycle trips based on a 0-100 scale. Points were awarded based on the factors summarized in Table 4.2.

Table 4.2: Latent Demand Score Criteria

Factor	Measure	Maximum Points
Land Use	Population, jobs, and students per acre[1]	40
Demographic	Senior (65+) and youth (<18) population per acre	15
	Households with no vehicle available or on-campus housing unit[2] per acre	25
Travel Environment	Intersections per square mile[3]	20
	Total Possible Points	100

Notes: [1] Includes all students K-12 and university
[2]On-campus housing units calculated by dividing group quarters dorm population by 2.2.
[3]Intersections with at least 4 segments are weighted 2x.

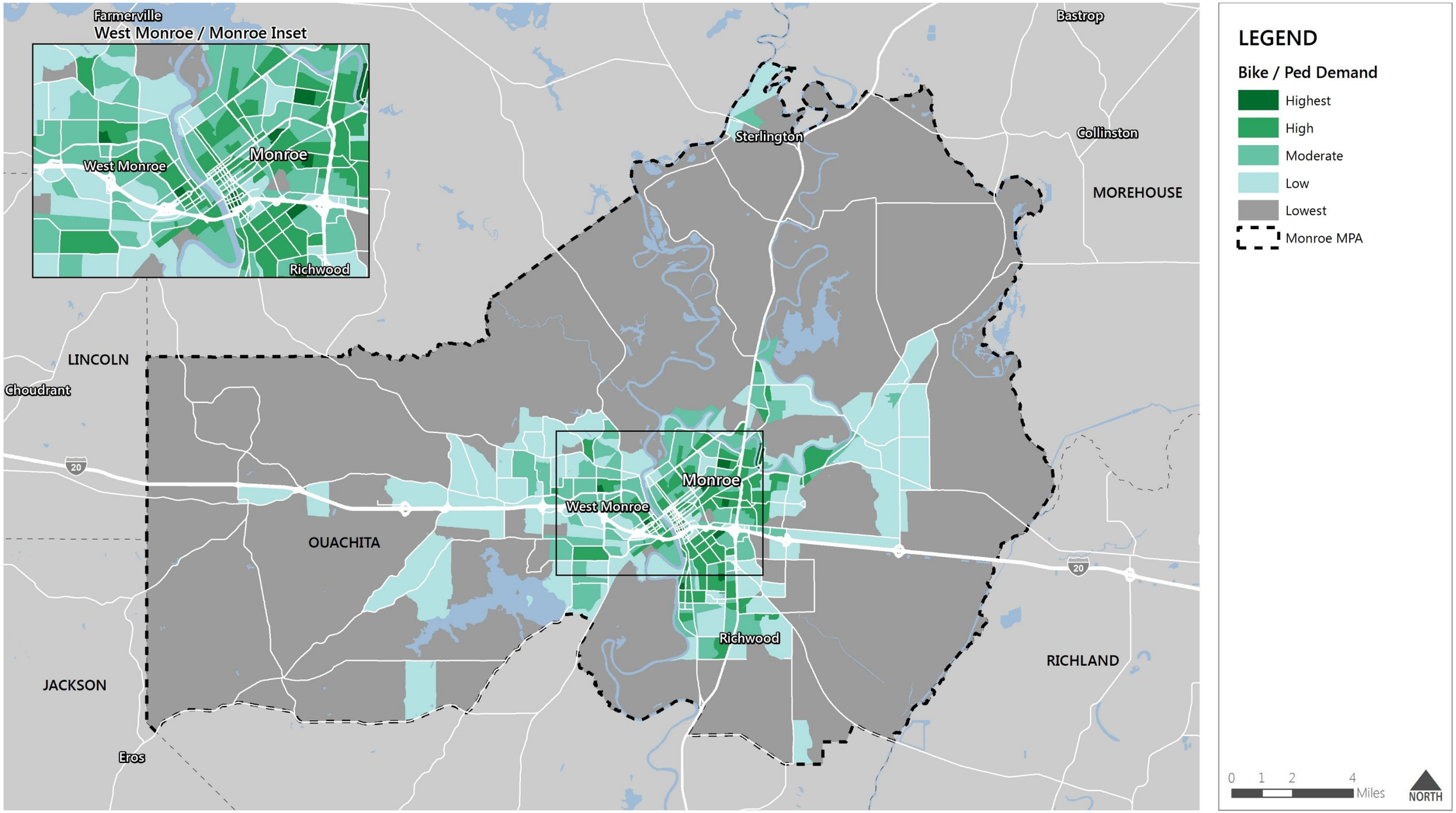
Findings

Figure 4.3 shows the results of the latent demand score analysis. Again, this exercise reflects relative potential demand, not absolute demand. Simply put, it shows which areas are more likely to have high or low demand relative to all other areas within MPA. It does not attempt to quantify the actual number of bicycle or pedestrian trips occurring in these areas.

The analysis indicates that the greatest potential bicycle and pedestrian demand occurs around:

- Most of downtown Monroe and West Monroe
- The University of Louisiana at Monroe and surrounding area
- Area around Richwood and US-165
- Area around Warren Drive in West Monroe
- Area around St. Francis Medical Campus North
- Area around Brownsville in West Monroe
- Area in Claiborne by Cypress Street and Wallace Road

Figure 4.3: Bicycle and Pedestrian Demand in the Region



Data Source: Census Bureau; MPO Staff; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

4.5 Bicycle and Pedestrian Safety

Between 2014 and 2018, there were 107 pedestrian crashes and 331 bicycle crashes in the Monroe MPO area.

Despite the efforts of many American cities to promote more walkable cities, pedestrian and bicycle crashes and fatalities are on the rise nationally. According to the Pedestrian and Bicycle Information Center, there were 5,977 pedestrians and 783 bicyclists killed in crashes with motor vehicles in the United States in 2017[17]. Compared to motorists, bicyclists and pedestrian are more vulnerable when crashes happen. Less than three (3) percent of all crashes in the MPA involved either a pedestrian or a bicyclist from 2014-2018. However, that percentage increases to 46% when considering fatal and serious injury (F+SI) crashes only.

To address the nation-wide pedestrian and bicycle crashes, Federal Highway Administration (FHWA) developed the Focused Approach program to provide targeted training and technical assistance to cities and states with the highest number of pedestrian and bicycle fatalities. In Louisiana, Baton Rouge and New Orleans are both named as Focus Cities, and therefore have received resources to develop their bicycle and pedestrian safety action plans from FHWA. It is recommended for local communities to seek opportunities to develop their own safety action plans if they believe the potential of such initiatives.

Many communities are moving to incorporate Vision Zero policies, a multi-pronged approach to changing the built environment, enforcement policies, and influencing behavior to reduce and eventually eliminate traffic deaths and major injuries. The policies focus on the 4Es of the transportation safety - education, enforcement, engineering, and emergency response. This vision is in line with the Louisiana Strategic Highway Safety Plan's vision – Destination Zero Deaths.

[17] http://www.pedbikeinfo.org/factsfigures/facts_safety.cfm

Bicycle Collision Data

Between 2014 and 2018, 107 bicycle collisions were reported in the Monroe MPA. Of these collisions, seven (7) percent resulted in a fatality or severe injury. This fatality rate is higher than the national or state average rates.[18] Three (3) of the four (4) fatalities occurred in the dark with continuous street lights and one (1) in the dark without street lights. Three (3) of the four (4) fatalities occurred at intersections.

4
Bicycle fatalities from 2014 through 2018

Pedestrian Collision Data

29
Pedestrian fatalities from 2014 through 2018

Between 2014 and 2018, 331 pedestrian collisions were reported in the Monroe MPA. Of these collisions, 17 percent resulted in a fatality or severe injury. Of the fatalities, 28 percent occurred at intersections, 38 percent occurred in the dark without street lights, and 31 percent occurred in the dark with either continuous or intersection street lights.

Table 4.3 shows that in 2017 the Monroe MPA rates of pedestrian and bicyclist fatalities were more than double the national average.[19] Unfortunately, pedestrian fatalities in the Monroe MPA then doubled from six in 2017 to twelve in 2018.

Figure 4.4 maps where high concentrations of bicycle and pedestrian crashes occurred from 2014 to 2018. This heat map was created by analyzing the points of bicycle and pedestrian crashes to construct an interpolated surface showing the density of occurrence. Each raster cell is assigned a density value and the entire layer is visualized using a gradient. Thus, darker areas represent areas showing geographic clustering of crashes. Bicycle and pedestrian crashes were aggregated to provide a significant sample size for analysis.

[18] National Highway Traffic Safety Administration, 2019
https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812765
[19] National Highway Traffic Safety Administration, 2019
https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812681

Table 4.3: Bicycle and Pedestrian Fatality Rates, 2017

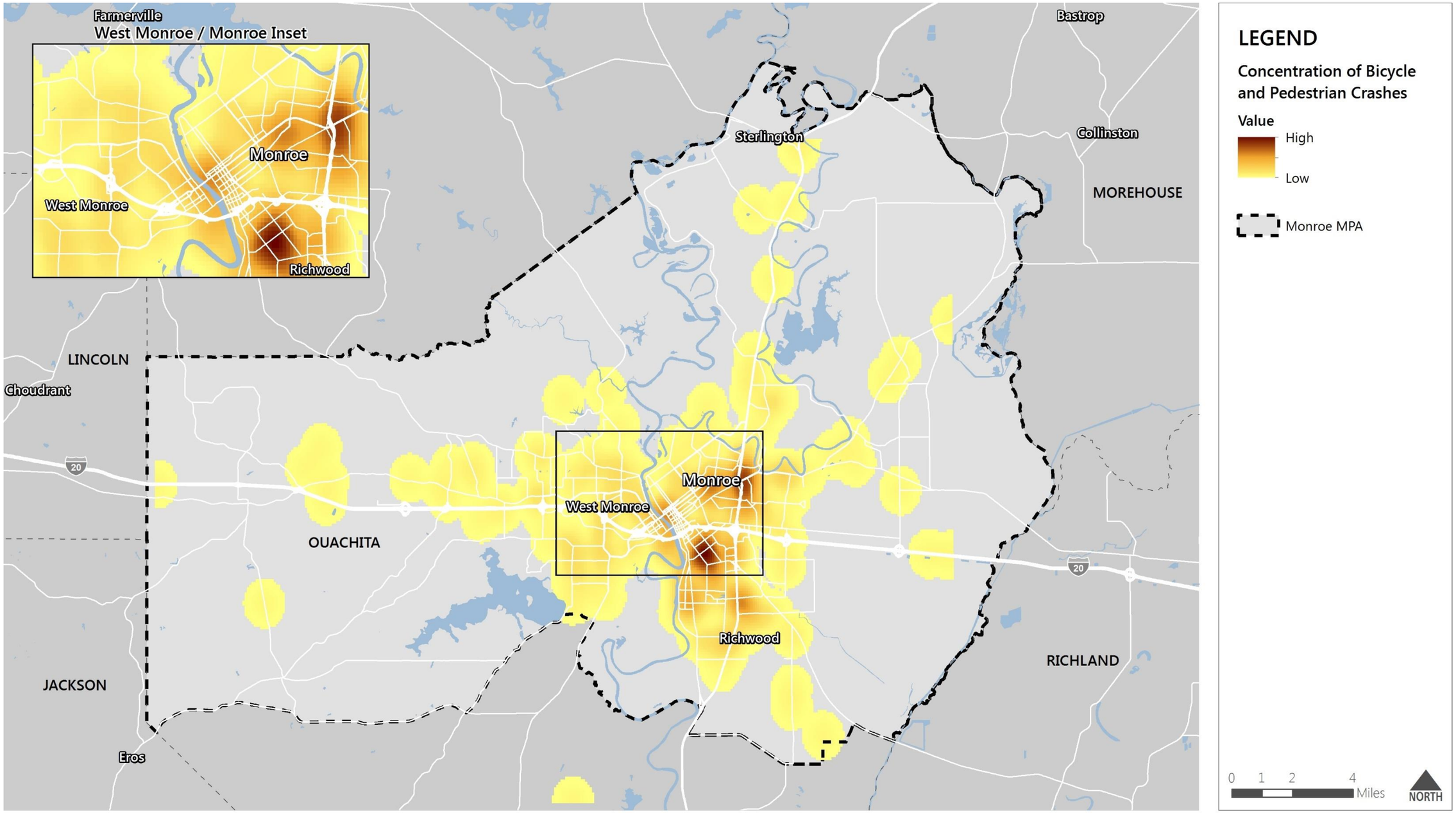
Place	Pedestrian Fatalities per 100,000 People	Bicyclist Fatalities per 1 Million People
U.S.	1.8	2.4
Louisiana	2.4	4.7
Monroe MPO	3.8	6.4

Source: NHTSA, 2017; ACS 2017

The heat map shows that from 2014-2018 crashes were most concentrated near:

- the downtown Monroe area
- 2nd Street in Monroe
- the Lea Joyner Bridge
- the intersection of US-165 and US-80
- and Washington Street.

Figure 4.4: Concentration of Bicycle and Pedestrian Crashes



Data Source: Louisiana Highway Safety Comission, 2014-2018

Disclaimer: This map is for planning purposes only.

4.6 Existing Plans

Efforts have emerged from government agencies to add bike lanes, maintain sidewalks, and create a safer and more supportive environment for biking and walking. The following plans include ideas for bicycle and pedestrian improvements:

Monroe MPO: The Monroe Urbanized Area Metropolitan Transportation Plan, completed in 2015, did not list pedestrian or bicycle improvements in its project prioritization list but does include a map of several potential bicycle routes and concepts.

City of Monroe: In 2008 the city completed its *Monroe Comprehensive Plan*. The plan provides some concepts for pedestrian and bicycle improvements such as:

- Streetscape improvements along DeSiard Street
- A riverfront boardwalk along the Ouachita River
- A waterfront greenway that connects to a citywide greenway
- An urban greenway that connects the waterfront to the city's south side neighborhoods
- A trail along the right-of-way of Martin Luther King Jr. Drive
- Pedestrian trails to help with neighborhood infill in south Monroe
- Improve pedestrial walkways and connections to nearby neighborhoods in Pargoud Boulevard Park, Orange Street Park, Sherrouse Park, Lexington Street Park, Lincoln Park, Lamyville/Magnolia Park, and Jasmine Park.

City of West Monroe: In 2018 the city adopted their *Bicycle and Pedestrian Master Plan Phase 1*, which added bicycle and pedestrian improvements to already funded on-going projects[20]. The Phase 1 plan is only the beginning of a larger effort to enhance and preserve the wetlands areas and green space across the city. Since the approval of the plan in 2018, bike lanes were added on neighborhood roads, such as Ridge Avenue and Olympic Drive[21].

[20] https://www.knoe.com/video?vid=497636331
[21] https://www.thenewsstar.com/story/news/local/2019/05/24/cycling-safety-priority-west-monroe-addition-new-bike-lanes/3767244002/

***University of Louisiana at Monroe*:** The 2013 *ULM Campus Facilities Master Plan* looks to make the following pedestrian improvements:

- expanded pedestrian paths throughout campus
- a bayou-centric pedestrian path
- three new crosswalks across University Drive
- considering decommissioning some vehicular alleyways and parking lots
- street trees and signage along major roads
- traffic calming devices with embellished pedestrian crosswalks at major roads.

5.0 Public Transit

5.1 Introduction

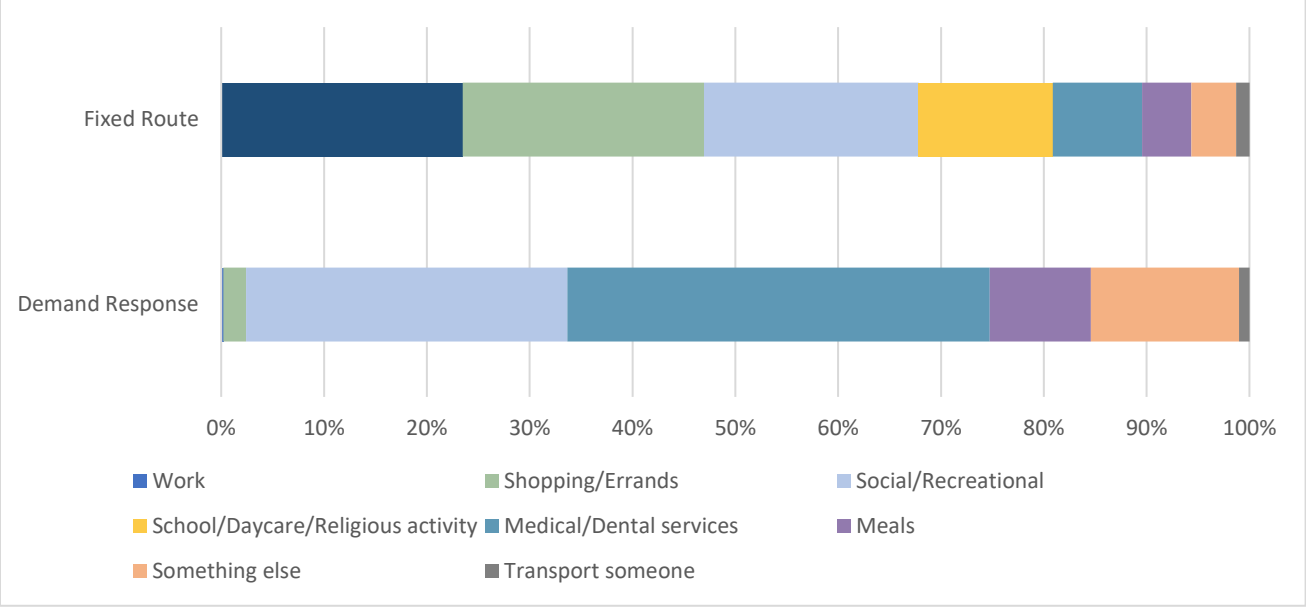
Public transit provides people with access to the places they need to go – work, school, grocery stores, medical facilities, and other destinations. For those that have no other choice, either because of economic or physical limitations, it is a lifeline service. For others, it reduces the burden of transportation costs and serves as a convenient alternative to driving.

Public transit also has significant benefits for the entire community as it can increase local business access to skilled workers, reduce congestion and emissions, reduce urban sprawl, and foster walkable communities.

Still, in small metropolitan areas like the Monroe area, public transit accounts for a small percentage of all trips– less than two (2) percent according to the 2017 National Household Travel Survey.

For those that do use public transit in these areas, trip purposes vary substantially. People riding fixed routes are primarily traveling for work, shopping, or social/recreational purposes. People using demand response services are overwhelmingly traveling for medical or social/recreational purposes. However, trip purpose patterns will ultimately depend on the availability of the service.

Figure 5.1: Trip Purposes for Transit Riders in Small Metro Areas



Note: Small Metro Area = under 250,000 residents
Source: 2017 National Household Travel Survey

5.2 Monroe Transit System

The City of Monroe, operating as Monroe Transit System (MTS), provides fixed bus service and complementary paratransit service within the city. MTS is the primary public transit provider in the Monroe MPA.

Fixed Bus Route Service

Monroe Transit operates ten (10) bus routes within city limits. Eight (8) routes run Monday through Saturday from 6:30 a.m. to 6:30 p.m., except the Twin City Mall route begins at 10:15 a.m. on Saturday. Two (2) routes run Monday through Friday:

- The Park Ave route runs 7:00 a.m. to 5:00 p.m.
- The North Monroe route runs 7:00 a.m. to 9:00 a.m. and 2:40 p.m. to 4:30 p.m.

Three (3) fixed routes have on-demand extensions:

- Park Ave to Lowndes Route;
- White/Powell to the Monroe Regional Airport
- North Monroe route to the NE Louisiana Veterans Home.

The routes run every 50 minutes with all routes beginning at the Monroe Terminal on Catalpa Street. Table 5.1 displays the route frequencies and Figure 5.2 shows the routes.

Bus fares are $1.25 for adults, $.90 for students, $.50 for elderly, disabled, or Medicare riders, and free for children. Transfers are free. Adult day passes are available for $3.00 and a monthly pass with unlimited rides costs $42.50.

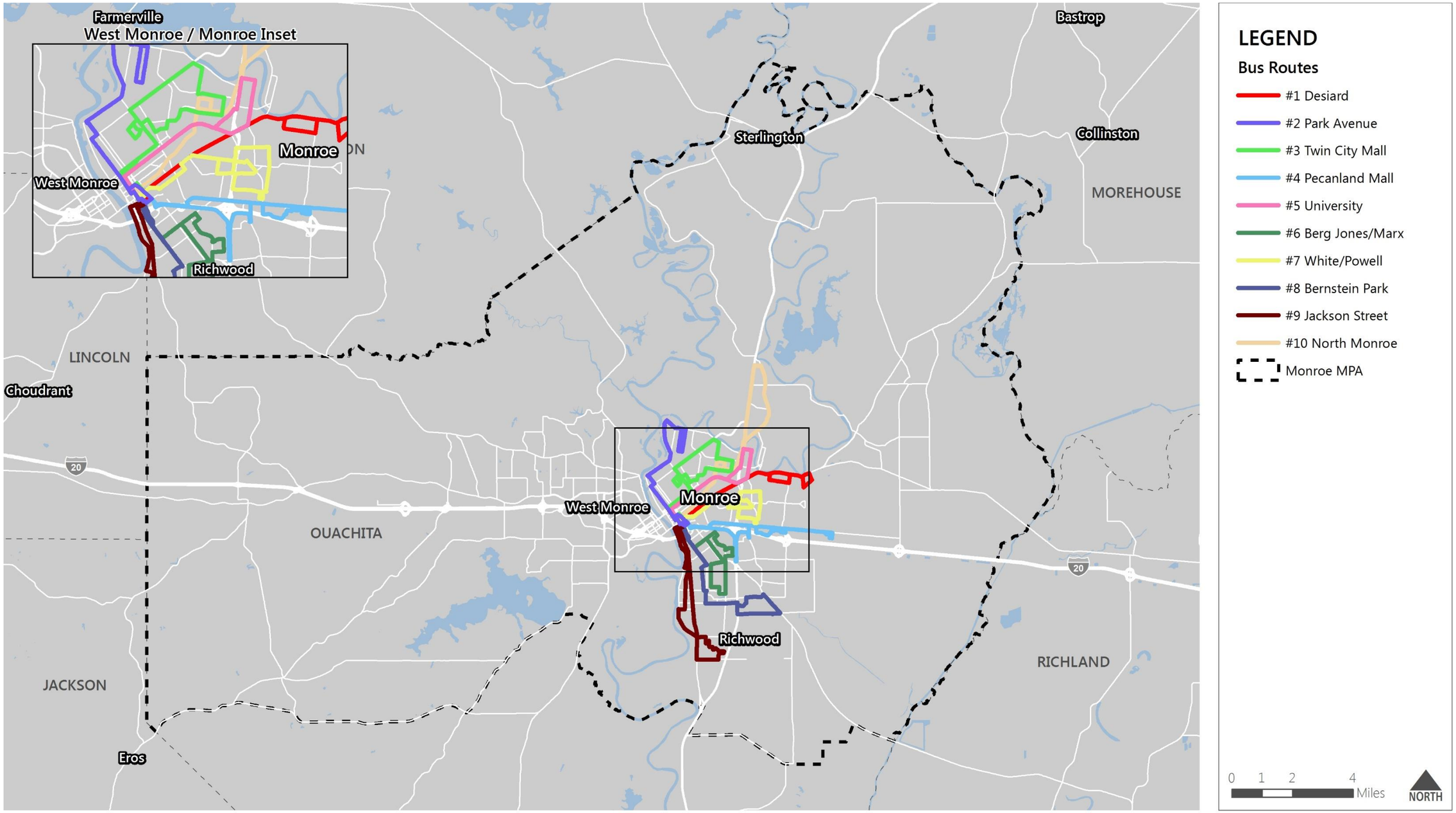
Table 5.1: Monroe Transit Bus Routes and Frequencies

Route	Frequency	Days
1-Desiard	Every 50 minutes	Monday-Saturday 6:30 a.m.-6:30 p.m.
2-Park Ave	Every 50 minutes	Monday-Friday 7 a.m.-5 p.m. *
3-Twin City Mall	Every 50 minutes	Monday-Friday 6:30 a.m.-6:30 p.m.; Saturday service begins 10:15 a.m.-
4-Pecanland Mall	Every 50 minutes	Monday-Saturday 6:30 a.m.-6:30 p.m.
5-University	Every 50 minutes	Monday-Saturday 7:20 a.m.-6:30 p.m.
6-Berg Jones/Marx	Every 50 minutes	Monday-Saturday 6:30 a.m.-6:30 p.m.*
7-White/Powell	Every 50 minutes	Monday-Saturday 6:30 a.m.-6:30 p.m.
8-Berenstein Park	Every 50 minutes	Monday-Saturday 6:30 a.m.-6:30 p.m.
9-Jackson St	Every 50 minutes	Monday-Saturday 6:30 a.m.-6:30 p.m.
10-North Monroe	Every 50 minutes	Monday-Friday 7:15 a.m.-9:00 a.m.; 2:45 p.m.-4:30 p.m.

*On-Demand Service available for extensions of route

Source: City of Monroe

Figure 5.2: Monroe Transit Fixed Route System



Data Source: City of Monroe

Disclaimer: This map is for planning purposes only.

Paratransit Service

On-demand service is available for senior citizens and qualified individuals with disabilities.

Service is provided within 3/4 mile of the fixed routes east of the Ouachita River during the same days and hours of service as the fixed route system: Monday through Saturday, from 6:30 a.m. to 6:30 p.m. Service can either be subscription based or reserved up to three days in advance. A one-way ride costs $2.50.

Ridership Trends

In recent years, ridership for fixed route service has decreased. Additionally, the fixed route Night Rider service was cut in January 2018. Fixed route ridership without Night Rider routes has declined by 11 percent since 2015. This mirrors the national trend of transit ridership decline, largely attributed to a strong economy and historically low automobile loan rates. Unlike fixed route ridership, paratransit ridership has significantly increased since 2015. Table 5.2 shows ridership trends since 2014.

The University Route served the highest ridership in 2019 with a daily average of 426 riders. This is followed by the Jackson St Route with a daily average of 379 riders and Desiard with 342. Paratransit accounts for about 19 trips a day. Table 5.3 lists 2019 ridership per route.

Table 5.4 shows how ridership varies greatly by month. Ridership for 2019 peaked in the months of March, August, and October, while the lowest ridership was in April, June, and July. This trend has loosely correlates with when university is in session.

Table 5.2: Monroe Transit Annual Ridership by Mode, 2014 – 2018

Mode	2015	2016	2017	2018	2019	2015-2019 Change
Fixed Route	799,472	905,887	924,013	772,889	713,114	▼
Paratransit	8	3,056	8,872	6,749	5,779	▲
Night Rider[1]	86,600	78,855	86,840	1,513	0	▼
Total	886,080	987,798	1,019,725	781,151	718,893	▼

[1]Discontinued January 2018

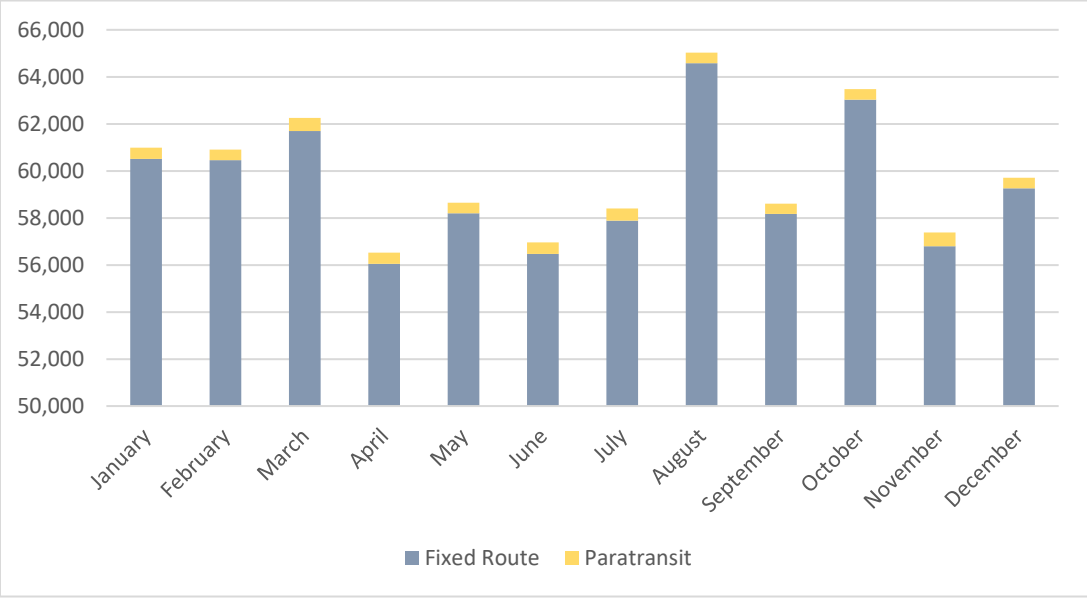
Source: City of Monroe

Table 5.3: Monroe Transit Average Daily Ridership by Route/Service, 2019

Route/Service	Average Daily Ridership[1]
Desiard	342
Park Avenue	29
Twin City Mall	268
Pecanland Mall	200
University	426
Berg Jones/ Marx	313
White/Powell	201
Berenstein Park	204
Jackson St	379
North Monroe	34
Fixed Route Total	2,396
Paratransit	19
Total	2,415

[1] Average Daily Ridership based on service days and holidays listed in the Monroe Transit Guide
Source: City of Monroe

Figure 5.3: 2019 Monroe Monthly Transit Ridership



Source: City of Monroe, from January to December 2019

Operating Trends

The Monroe transit system serves a larger proportion of its population than many other similar sized cities. Monroe Transit is generally more productive and cost efficient than peers while providing comparable amounts of service (see Section 5.9 Peer Transit Analysis). Despite these strengths, Table 5.4 shows that Monroe Transit has been decreasing service and ridership since 2014.

Night Rider service was cut in January 2018, but the daytime fixed routes also experienced a large net loss in ridership. Annual operating costs decreased by about $100,000 between October 2017 to October 2018. Despite the decrease in operating expenses, operating expense per boarding increased.

Paratransit ridership has experienced a different trend- steadily increasing from 2014 to 2017 but sharply decreasing by almost 60 percent from 2017 to 2018. Despite this decrease in ridership the service maintained a similar amount of vehicle revenue hours, thus decreasing its productivity. This decrease is worth investigating whether it will continue as a trend.

Table 5.4: City of Monroe Transit- Fixed Route Service

General Performance	2014	2015	2016	2017	2018	Change Since 2014
Service Area Population[1]	49,455	49,529	49,361	48,938	48,663	▼
Passenger Trips	1,192,007	1,121,325	1,116,808	1,053,444	921,372	▼
Total Operating Expense	$4,254,688	4,856,213	$4,863,093	$5,062,181	$4,759,061	▲
Service Supply and Quality						
Vehicles Operated in Maximum Service	15	15	13	13	13	▼
Vehicle Revenue Miles	783,258	732,448	729,981	729,985	597,147	▼
Vehicle Revenue Hours	56,152	52,892	47,735	47,785	39,217	▼
Average Age of Fleet	6	6	7	6	8	▲
Service Consumption						
Passenger Trips per Capita	24.1	22.6	22.6	21.5	18.9	▼
Passenger Trips per Revenue Mile	1.52	1.53	1.53	1.44	1.54	▲
Passenger Trips per Revenue Hour	21.23	21.20	23.40	22.05	23.49	▲
Efficiency						
Operating Expense per Capita	$86.03	$98.05	$98.52	$103.44	$97.80	▲
Operating Expense per Passenger Trip	21.23	21.20	23.40	22.05	23.49	▲
Operating Expense per Revenue Mile	$5.43	$6.63	$6.66	$6.93	$7.97	▲
Operating Expense per Revenue Hour	$75.77	$91.81	$101.88	$105.94	$121.35	▲
Farebox Recovery						
Fare Revenue	$604,726	$591,871	$576,121	$569,789	$525,753	▼
Farebox Recovery Ratio	14.2%	12.2%	11.8%	11.3%	11.0%	▼

[1] Service Area Population is population of the city of Monroe from the ACS Demographic and Housing Estimates

Source: National Transit Database

Table 5.5: City of Monroe Transit- Demand Service

General Performance	2014	2015	2016	2017	2018	Change Since 2014
Service Area Population[1]	49,455	49,529	49,361	48,938	48,663	▼
Passenger Trips	9,345	10,384	12,023	13,793	8,762	▼
Total Operating Expense	$325,134	$360,563	$372,295	$425,612	$322,522	▼
Service Supply and Quality						
Vehicles Operated in Maximum Service	2	2	3	3	3	▲
Vehicle Revenue Miles	59,214	64,113	63,258	64,373	58,898	▼
Vehicle Revenue Hours	5,538	5,600	5,537	5,763	5,527	▼
Average Age of Fleet	6	7	6	1	3	▼
Service Consumption						
Passenger Trips per Capita	0.19	0.21	0.24	0.28	0.18	▼
Passenger Trips per Revenue Mile	0.16	0.16	0.19	0.21	0.15	▼
Passenger Trips per Revenue Hour	1.69	1.85	2.17	2.39	1.59	▼
Efficiency						
Operating Expense per Capita	$6.57	$7.28	$7.54	$8.70	$6.63	▲
Operating Expense per Passenger Trip	$34.79	$34.72	$30.97	$30.86	$36.81	▲
Operating Expense per Revenue Mile	$5.49	$5.62	$5.89	$6.61	$5.48	▼
Operating Expense per Revenue Hour	$58.71	$64.39	$67.24	$73.85	$58.35	▼
Farebox Recovery						
Fare Revenue	$18,545	$20,619	$22,262	$27,165	$18,127	▼
Farebox Recovery Ratio	5.7%	5.7%	6.0%	6.4%	5.6%	▼

[1] Service Area Population is population of the city of Monroe from the ACS Demographic and Housing Estimates

Source: National Transit Database

5.2 Other Local Public Transit Providers

West Ouachita Public Transit (WOPT)

The West Ouachita Public Transit (WOPT) operates out of West Monroe and provides subscription/deviated and demand response service with origins in Western Ouachita Parish. Service runs from 7:30 a.m. until 4:30 p.m. Monday through Friday and fares are based on trip destination. Despite the population slightly decreasing since 2014 the number of passenger trips and vehicle revenue miles has increased. Operating expense more than doubled since 2014 and while fare revenue increased, the farebox recovery ratio decreased.

Table 5.6: West Ouachita Public Transit Operating Trends

General Performance	2014	2015	2016	2017	2018	Change Since 2014
Service Area Population[1]	13,073	13,032	13,031	12,874	12,756	▼
Passenger Trips	31,063	27,419	30,303	31,066	33,368	▲
Total Operating Expense	$166,163	$167,979	$193,561	$459,060	$416,260	▲
Service Supply and Quality						
Vehicles Operated in Maximum Service	11	11	10	10	11	-
Vehicle Revenue Miles	124,988	127,737	148,146	132,222	133,305	▲
Vehicle Revenue Hours	11,679	10,455	12,116	10,385	11,555	▼
Average Age of Fleet	N/A	6	5	6	4	▼
Service Consumption						
Passenger Trips per Capita	2.4	2.1	2.3	2.4	2.6	▲
Passenger Trips per Revenue Mile	.2	0.2	0.2	0.2	0.3	▲
Passenger Trips per Revenue Hour	2.7	2.6	2.5	3.0	2.9	▲
Efficiency						
Operating Expense per Capita	$12.71	$12.89	$14.85	$35.66	$32.63	▲
Operating Expense per Passenger Trip	$5.35	$6.13	$6.39	$14.78	$12.47	▲
Operating Expense per Revenue Mile	$1.33	$1.32	$1.31	$3.47	$3.12	▲
Operating Expense per Revenue Hour	$14.23	$16.07	$15.98	$44.20	$36.02	▲
Farebox Recovery						
Fare Revenue	$8,443	$10,296	$10,154	$12,498	$14,350	▲
Farebox Recovery Ratio	5.1%	6.1%	5.2%	2.7%	3.4%	▼

[1] Service Area Population is population of the city of West Monroe from the ACS Demographic and Housing Estimates

Source: National Transit Database

Ouachita Council on Aging

The Ouachita Council on Aging is a non-profit supporting Ouachita residents above the age of 60. They transport seniors to their senior center and non-emergency medical destinations. The service operates on-demand from 8:00 a.m. to 4:30 p.m. Monday through Friday and is donation based.

ARCO

ARCO is a non-profit that supports people of all ages with developmental and intellectual disabilities and provides transportation within Ouachita Parish to employment, recreation, medical, and other destinations based on the person's plan of care. The service has twelve vehicles and operates 5:30 a.m. to midnight daily.

5.3 Coordination of Services

In 2018 OCOG updated the Human Services Coordinated Transportation Plan for the publicly funded human services transportation programs in the 11 parishes of the North Delta region. This plan determines transit gaps and coordination opportunities among these transportation programs and develops strategies to rectify the identified shortfalls and coordination issues. This plan identified the following key findings for existing conditions in the North Delta Region:

- There is a currently a high demand for these services, and this demand is expected to significantly increase by seniors in coming years. Demand will also increase by residents with disabilities, living below the Federal Poverty Level, or living in rural areas.
- Current coordination among agencies needs significant improvement. When evaluating options to improve coordination, options will be selected that are most likely to meet the identified needs and improve safety and quality of service.

5.4 Safety and Security

As a recipient of federal transportation funds, MTS and WOPT are required to report safety and security events occurring on a transit right-of-way, in a transit revenue facility, in a transit maintenance facility, or involving a transit revenue vehicle.

Tables 5.7 and 5.8 shows MTS and WOPT's reported safety and security events from the last five (5) years of available data. Table 5.9 compares their incidence rates to the national and state averages of other urbanized area providers. MTS has had no reported incidents during this time period, comparing very well against the state and national averages. WOPT had two events and one injury during the last five years

Table 5.7: Monroe Transit System Safety and Security Events, 2015 – 2019

	2014	2015	2016	2017	2018	Total
All Events	0	0	0	0	0	0
Fatalities	0	0	0	0	0	0
Injuries	0	0	0	0	0	0

Source: National Transit Database

Table 5.8: West Ouachita Safety and Security Events, 2015 – 2019

	2014	2015	2016	2017	2018	Total
All Events	0	1	1	0	0	2
Fatalities	0	0	0	0	0	0
Injuries	0	1	0	0	0	1

Source: National Transit Database

Table 5.9: Safety and Security Events per 100,000 Vehicle Revenue Miles, 2014 – 2018

	MTS	WOPT	Louisiana Urbanized Area Providers	U.S. Urbanized Area Providers
All Events	0.00	0.30	451	264
Fatalities	0.00	0.00	2	2
Injuries	0.00	0.15	508	338

Note: Data comes from Full and Reduced Reporters for Urbanized Area Providers for Municipal Bus and Demand Response services.

Source: National Transit Database

5.5 Transit Asset Inventory

All transit agencies receiving federal funding are required to submit asset inventory data, condition assessments, performance targets, and a narrative report to the National Transit Database annually in addition to developing a Transit Asset Management (TAM) plan. Agencies report their information to the FTA and are recorded in the National Transit Database. Monroe Transit, West Ouachita Public Transit, and ARCO submit this information to the FTA for the Monroe MPA.

Federal TAM regulations require transit agencies to address the four (4) asset categories shown in Table 5.10, as applicable to the agency. Table 5.11 lists the vehicles in the rolling stock of the three agencies and the number that are past useful life. Table 5.12 lists the equipment inventory, relevant to just MTS and ARCO. Each agency sets a target percentage of vehicles whose age exceeds the Useful Life Benchmark (ULB) to measure their performance. Each vehicle type has its own ULB target due to unique operating and maintenance characteristics.

For facilities, the TAM performance measure is the percentage of facilities rated under 3.0 using FTA's TERM software (3.0 indicates adequate condition). Table 5.13 lists the facility inventory for Monroe Transit and WOSC.

Useful Life Benchmark: The expected lifecycle of a capital asset for a particular transit provider's operating environment, or the acceptable period of use in service for a particular transit provider's operating environment.

Note: ULB is distinct from the useful life definition used in FTA's grant programs.

Table 5.10: Transit Asset Management Performance Measures

Asset Category	FTA established Performance Measure	Reported by		
		MTS	WOSC	ARCO
Rolling Stock	% of revenue vehicles exceeding ULB[1]	Yes	Yes	Yes
Equipment	% of non-revenue service vehicles exceeding ULB	Yes	No	Yes
Facilities	% of facilities rated under 3.0 on the TERM scale	Yes	Yes	No
Infrastructure	% of track segments under performance restriction	No	No	No

[1] ULB = Useful Life Benchmark; TERM is software used to rate facility conditions

Source: National Transit Database, 2018; LA DOTD, 2018

Table 5.11: Transit Rolling Stock Inventory and Performance

Reporter	Vehicle Type	Active Vehicles with ULB Reported	Active Vehicles Past Useful Life	% Past Life
MTS	Bus	23	3	13.0%
	Cutaway	15	4	26.7%
WM	Bus	1	0	0.0%
	Cutaway	10	4	40.0%
ARCO	Cutaway	1	1	100.0%
	Minivan	9	2	22.2%
	Van	1	1	100.0%

Source: National Transit Database, 2018

Table 5.12: Transit Equipment Inventory and Performance

Reporter	Vehicle Type	Total	ULB (years)	% Exceeding ULB
MTS	Automobiles	4	1	25.0%
	Trucks and other Rubber Tire Vehicles	3	0	0.0%
ARCO	Automobiles	2	1	50%

Source: National Transit Database, 2018

Table 5.13: Monroe Transit Facility Inventory and Performance

Reporter	Asset Category	Facilities with Condition Assessment	Facilities with Condition Rated Below 3	% Under 3.0 on TERM Scale
MTS	Bus Transfer Centers	1	0	0.0%
	Combined Administrative and Maintenance Facility	1	0	0.0%
	General Purpose Maintenance Facility/Depot	1	0	0.0%
WM	General Purpose Maintenance Facility/Depot	1	0	0.0%

Source: National Transit Database, 2018

5.6 Intercity Public Transit

The Monroe MPA is served by one (1) intercity transportation provider: Greyhound.

Greyhound provides intercity bus service at a curbside stop on Catalpa Street in Downtown Monroe. This service provides connections to locations throughout the nation. Fares vary depending upon accommodations and travel itinerary. More information can be found at www.greyhound.com

5.7 Transportation Network Companies

A Transportation Network Company (TNC) is a private company that matches passengers with vehicles, via websites and mobile apps. These are also referred to as ride-hailing services and Uber and Lyft are the largest of these service providers. Currently, both Uber and Lyft serve the Monroe area

While these transportation services are not public transit, TNCs are increasingly partnering with the public sector to test new ways to provide public, or subsidized, transportation. These "pilot programs" are still evolving but many focus on providing trips in low-demand areas or times of day or for people with disabilities.

5.8 Regional Transit Demand Analysis

Transit Demand Analysis

The regional demand analysis uses a GIS-based approach to identify the level of transit service supported throughout the Monroe MPA. There are a number of factors that can be analyzed to evaluate and predict transit demand in an area. Given the availability of data and regional scope of the 2045 MTP, the transit demand analysis focused on the following factors:

Residential density – A higher concentration of housing for residents and visitors in an area creates more potential transit riders in an area. This is especially true of very dense areas, where other factors, such as parking availability or congestion, may further influence demand.

Employment density – A higher concentration of employment in an area creates more potential transit riders in an area. Some studies argue that employment density is more important for predicting ridership than residential densities.

Activity density – In areas with both residential areas and employment, it is necessary to consider a combined density.

Low-income household density – Low-income persons are more likely to ride transit due to a greater likelihood that they do not have regular access to a vehicle or seek to minimize travel by automobile for economic reasons.

Transit-supportive employment density – Certain industries attract transit riders at higher level than average. This is partly because some industries, such as retail and food services, employ a disproportionately large number of low-wage jobs. But it is also important to note that industries like healthcare and higher education often cluster employees at relatively dense "campuses" that can be well served by transit.

Density of adults without a vehicle – Persons without access to a vehicle are more likely to ride transit due to a lack of other options. A person may lack a vehicle because of economic reasons, physical or mental ability, or because of a decision to live a car-free lifestyle.

Table 5.14 shows the Transit Demand Analysis criteria and measurements. For each density criterion, an area's value is calculated. Before being assigned a level of service tier, all criteria values are multiplied by an area's street connectivity factor. Based on these adjusted values, levels of service tiers are then assigned, based on industry standard thresholds.

Figure 5.4 illustrates the results of this analysis and the distribution of transit demand throughout the region.

Based upon Figure 5.4, there are nine (9) areas that can support transit that runs every fifteen minutes. A very large portion of Monroe and West Monroe can support transit running every 30 to 60 minutes. The areas with the highest demand are:

- St. Francis Medical Center and downtown Monroe
- Area around The Oaks Nursing Center and Brookshire's Grocery
- Glenwood Regional Medical Center
- Area between Peach and Beauregard Streets and South 8th and 10th Ave
- Area between 21st Ave, Louisville Ave, and Washington Ave
- University of Louisiana at Monroe
- Area off Swayze Street between Renwick and Louberta St
- Area off Louisville Ave by Hudson Ln, N 6th and N 3rd Ave

Currently Monroe Transit serves all of the previously mentioned high-demand areas except for the Glenwood Regional Medical Center which is located in West Monroe. However, these routes run about only once an hour. There are also many areas that currently are not served by Monroe Transit but could support 30-60 minute services. These areas include a large portion of West Monroe above the interstate and of Monroe north of Forsythe Avenue.

Table 5.14: Transit Demand Analysis Criteria and Level of Service Thresholds

Criteria	Measurement	Transit Level of Service				
		On-Demand	Flexible	60 min.	30 min.	15 min.
Residential Density	Households per acre	0 to 1	1 to 2	2 to 4	4 to 7	7+
Employment Density	Employment and college enrollment per acre	0 to 5	5 to 10	10 to 25	25 to 50	50+
Low-Income Residential Density	Households using food stamps per acre	0 to 0.33	0.33 to 0.66	0.66 to 1.33	1.33 to 2.33	2.33+
Transit Supportive Employment Density	Employment per acre for industries with high percentage of workers riding transit	0 to 2.5	2.5 to 5	5 to 12.5	12.5 to 25	25+
Residential Vehicle Availability	Households without vehicle per acre	0 to 0.25	0.25 to 0.5	0.5 to 1	1 to 1.75	1.75+
Activity Density	Sum of residential and employment density values	0 to 3.75	3.75 to 7.5	7.5 to 18.75	18.75 to 37.5	37.5+
Street Connectivity	Percent of intersections that are four-way	33%-50%, multiply values by 1.25; >50%, multiply values by 1.5				

[1] Dorms were converted to households assuming an average of 2.2 people per dorm and assumed to be twice as likely as the regional average to receive food stamps or lack a car

[2] Industries with high percentage of workers riding transit included NAICS codes: 44-45, 61, 62, 71, and 72

Transit-Dependent Populations

In order to ensure that the needs of the transit-dependent population are being addressed by the transit demand analysis, the concentration of various transit-dependent populations were mapped.

Figure 5.5 illustrates the concentration of households without regular access to a vehicle. Four areas stood out as having between 1.2 and 2.2 households per acre without access to a vehicle:

- Area between Louisville Ave, Newcombe St, N 21st St, and Washington St
- Area between Renwick St, Louberta St, Swayze St, and S 28th St
- Area around St. Francis Medical Center-Downtown- above and below Wood St, bounded by S Grand St, Hall St, and Desiard St
- Area bounded by Winnsboro Rd, Burg Jones Ln, S 6th St, and McGee St

Large portions of Monroe have a high concentration of households without vehicles. Some areas that stand out are below I-20 and to the west of US-165 and around the university above Millhaven Road on both sides of US-165

Figure 5.6 depicts the concentration of low-income households. The pattern of these households is similar to those lacking vehicles, except there are more block groups with a higher concentration of poverty. These areas are mostly in:

- Monroe below I-20 and west of US-165
- Monroe between Louberta St and Washington St by US-165
- Monroe around the university.

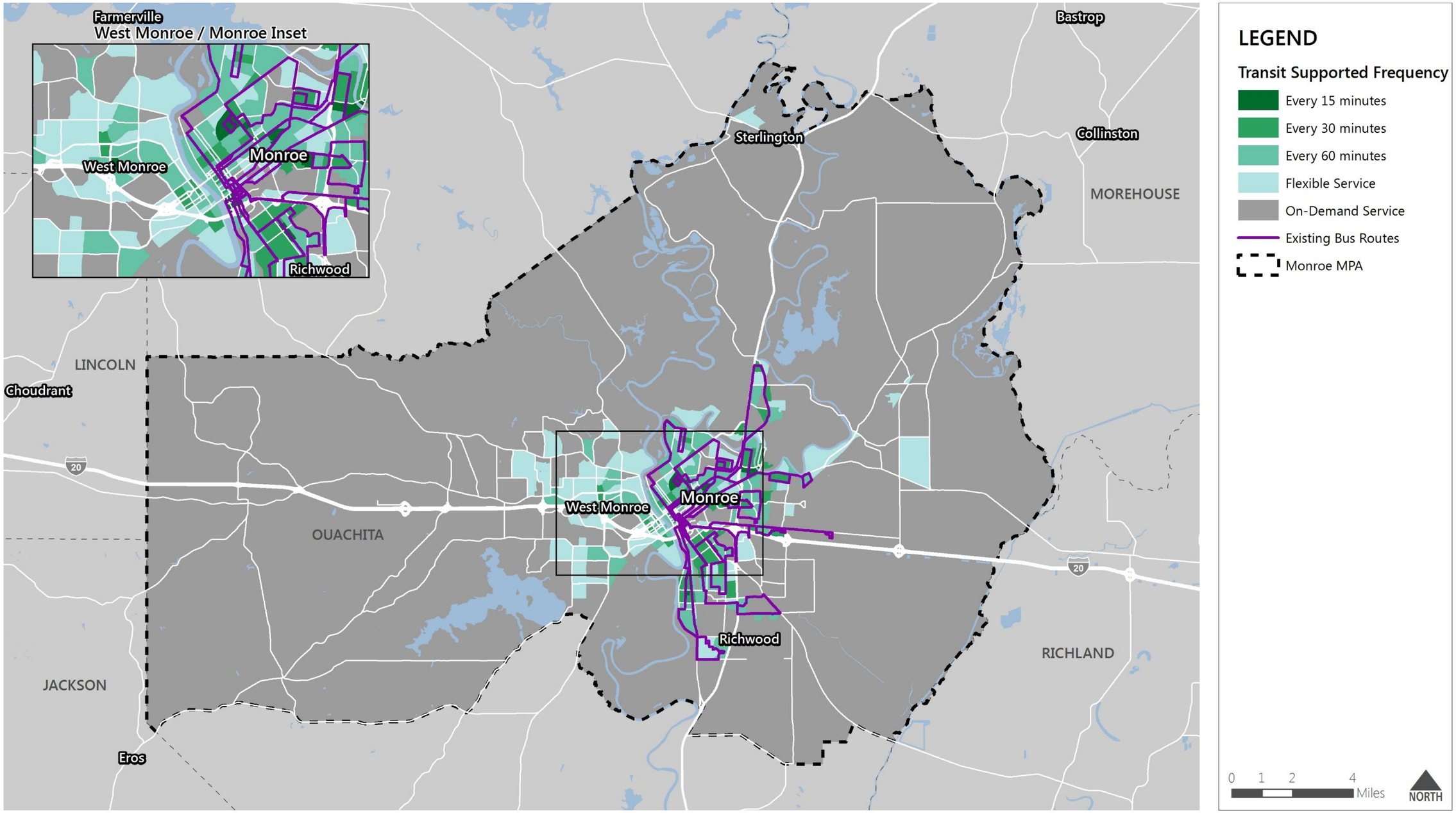
Figure 5.7 shows the concentration of households that include people with disabilities. These households rely on transit due to physical or mental limitations. The highest concentrations are similar to the concentration of households without a vehicle. However, additional neighborhoods with high concentrations include:

- Area in southeast Monroe between Nutland Rd and Oregon Trail
- Area in northwest Monroe between S College Ave, Sherrouse St, and the railroad
- Area bounded by Lowery St, Desiard St, Blanks Ave, and Kansas Ln
- Area in north Monroe bounded by Forsythe Bypass, Northgate Dr, and US-65 N
- Area in West Monroe bounded by Cypress St, Warren Dr, Landrum St.

Additionally, this population differs from those without vehicles or who are low-income in that there is a greater prevalence in West Monroe, the outer edges of Monroe, Claiborne, and Richwood.

Figure 5.8 shows the concentration of persons aged 65 or older. Similar to people with disabilities, this population is more likely to rely on transit due to physical or mental limitations. These concentrations mimic those areas with a high concentration of people with disabilities, except that there are fewer households with seniors around the university but more in northern Monroe above Forsythe Avenue and in the northwest section of West Monroe. The highest concentration of households with seniors occurs between N 18th St and Glenmar Ave where many apartments and The Oaks Nursing Center are located.

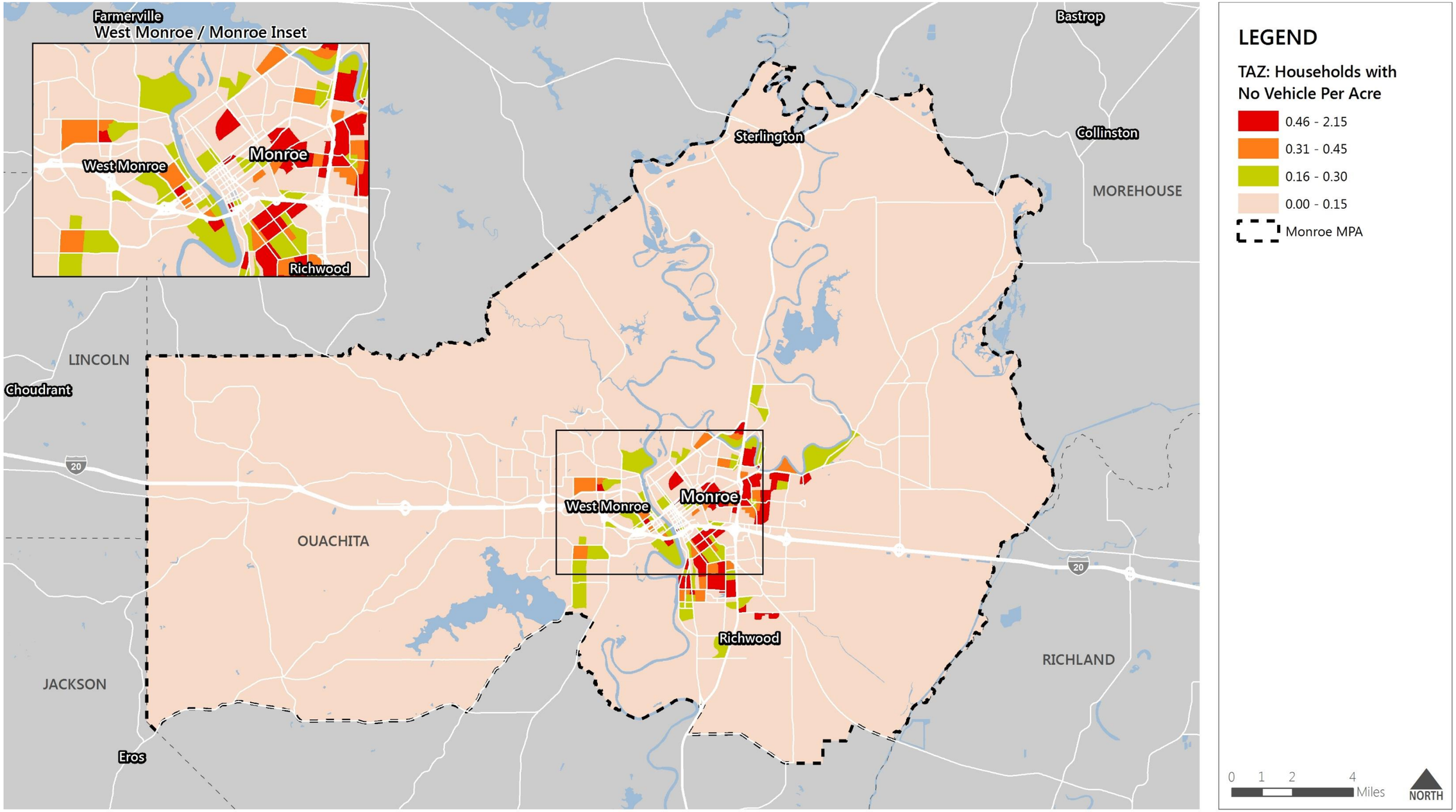
Figure 5.4: Regional Transit Demand Analysis



Data Source: Census Bureau; MPO Staff; City of Monroe; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

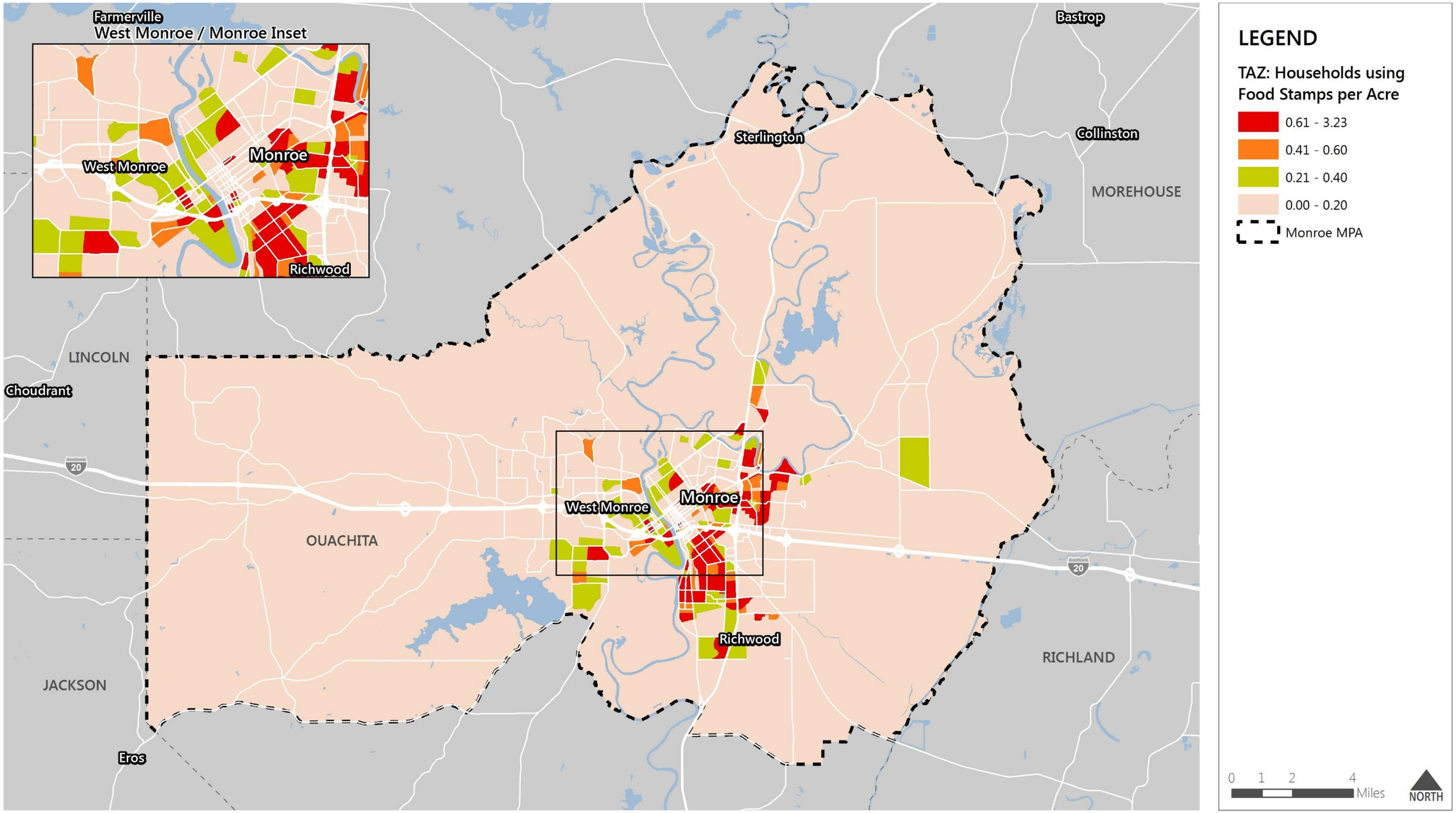
Figure 5.5: Concentration of Households with No Vehicle



Data Source: Census Bureau; 2017 American Community Survey; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

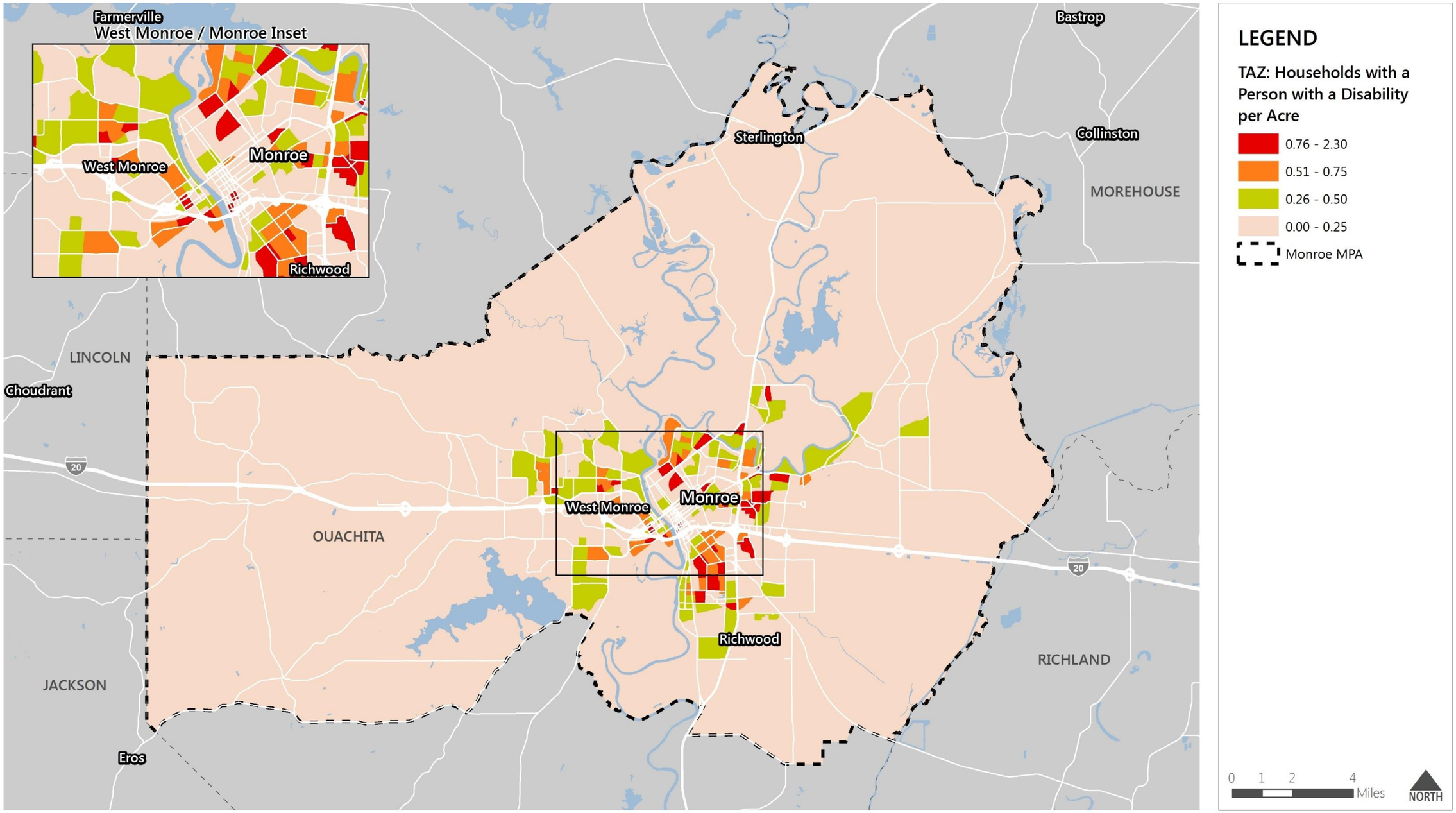
Figure 5.6: Concentration of Low-Income Households



Data Source: Census Bureau; 2017 American Community Survey; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

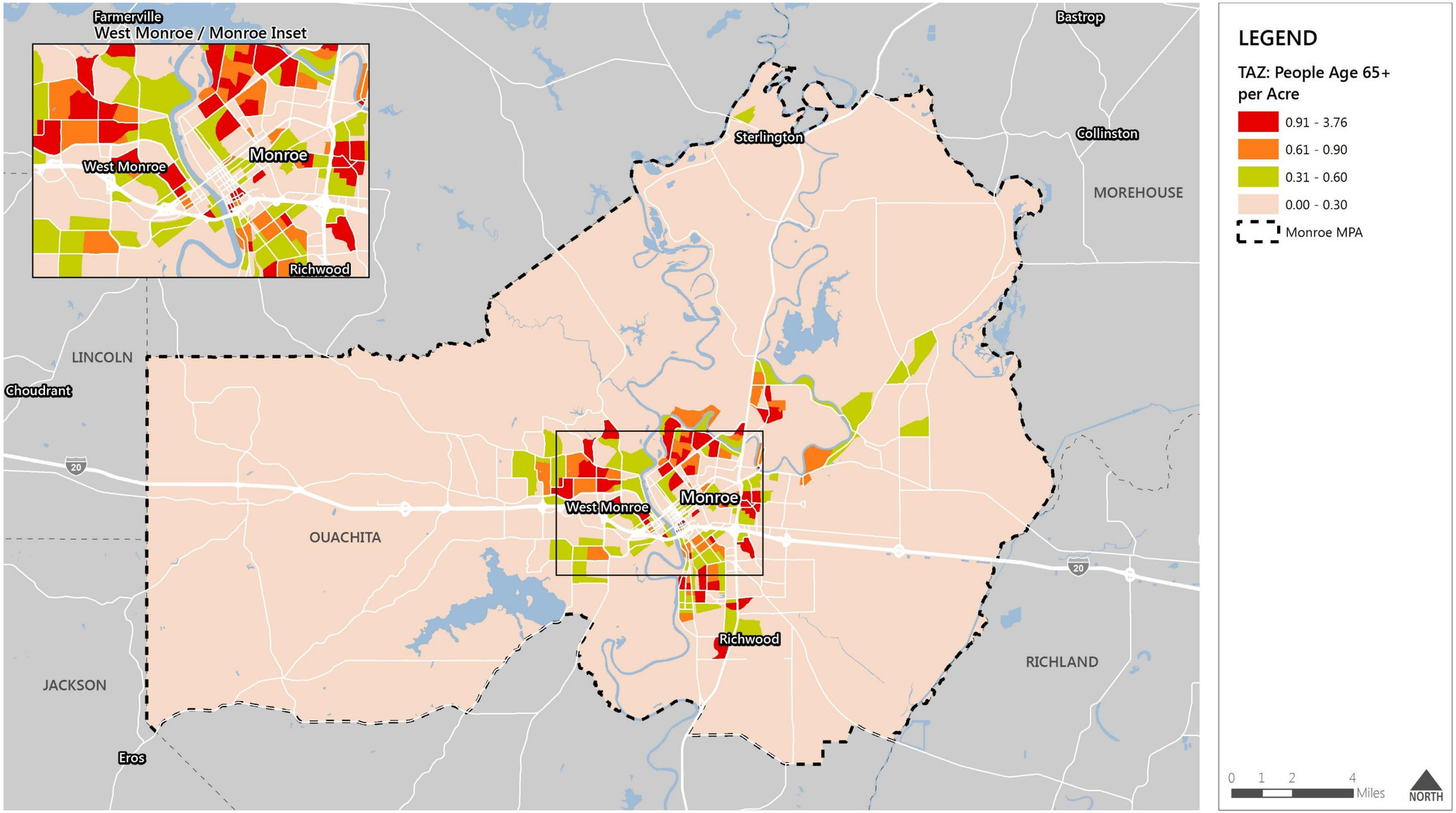
Figure 5.7: Concentrations of People with Disabilities



Data Source: Census Bureau; 2017 American Community Survey; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

Figure 5.8: Concentrations of Senior Population



Data Source: Census Bureau; 2017 American Community Survey; Neel-Schaffer, Inc.

Disclaimer: This map is for planning purposes only.

5.9 Peer Transit Analysis

A peer comparison analysis is a benchmarking tool that allows an area to compare itself to areas with similar conditions. Ideally, the peer group has elements in common with the transit system studied such as population of area served, geographical location (state or region), and type of services offered.

The goal of this peer analysis is to compare the performance of the Monroe Transit System fixed-route service to peers.

Because this is a regional long-range transportation plan, the criteria to select peer systems is somewhat different from the typical criteria used by transit agencies in short-range transit development plans. Thus the peer selection criteria is based off characteristics of the urbanized area rather a particular agency.

Peer Selection Criteria

The utilized selection criteria were intended to highlight urban areas very similar to the Monroe, LA urbanized area in terms of urban structure, land use patterns, and demographics. These three factors, outside of the type and level of transit service provided, are the primary drivers of transit demand and barriers. By selecting peer areas relative to Monroe in these regards, we can highlight areas that operate under similar constraints but producing different results. This is a beginning step that may involve further exploring transit service in other areas and learning from their decisions.

The selection criteria include:

- location in the South;
- urbanized area size;
- urbanized area population density;
- urbanized area's share of MSA population;
- similar college/university influence;
- similar low-income population;
- similar influence of military and retirement communities; and
- comparable transit service.

Table 5.15 shows the demographics and urban sprawl index of the five (5) selected peer areas using these criteria. The selection criteria and methodology are further outlined below.

Table 5.15: Characteristics of Selected Peer Urbanized Areas

Urbanized Area	Urbanized Area Population	Population Density[1]	% University Students	% Aged 65+	% Households Receiving Food Stamps
Monroe, Louisiana	117,503	1,433	26	14	18
Peer Average	105,990	1,236	23	14	16
Alexandria, Louisiana	84,567	1,281	25	14	19
Florence, South Carolina	91,884	1,294	28	15	17
Lake Charles, Louisiana	147,337	1,160	22	14	13
Longview, Texas	100,173	1,207	18	14	16

[1]People Per Square Mile

Source: Census Bureau ACS 2013-2017 5-Year Estimates

Urbanized Area Size

Urbanized areas must be the only urbanized area in a Metropolitan Statistical Area (MSA) or Combined Statistical Area (CSA) and have a population range between 82,000 and 152,750. That population corresponds to an urbanized area with a population within 30 percent of the Monroe urbanized area.

Geographic Location

The areas outside of the Southeast were removed. State and local transit funding is much lower in the Southeast and the public perception of transit is much poorer.

Population Density

Urbanized areas were then selected that fell within 25 percent of Monroe's population density (number of people per square mile of the urbanized area). Levels of sprawl or dense populations can affect the efficiency of transit, making this an important criterion for peers.

High Low-Income Population

Urbanized areas with a percentage of all households receiving food stamps that was significantly different from that of the Monroe urbanized area were excluded. Significant was defined as within 30 percent of the Monroe urbanized area percentage.

Similar Influence of Higher Education, Military, and Retirement Communities

College students and seniors are often more likely to use transit because they lack financial or physical access to cars. Monroe is home to the University of Louisiana at Monroe with its large population of college students. The analysis considered urbanized areas whose percentage of population enrolled in college was within 30 percent of the Monroe UZA's college population. The remaining areas were within 25 percent of the percent of Monroe's population aged 65 or above. Military was the last special population to be considered that affect transit demand. None of these areas have a large military presence.

Table 5.16: Selected Peer Urbanized Areas

Urbanized Area	Urban Fixed Route Systems
Monroe, Louisiana	Monroe Transit System
Alexandria, Louisiana	Atrans
Florence, South Carolina	Pee Dee RTA
Lake Charles, Louisiana	Lake Charles Transit System
Longview, Texas	City of Longview Transit

Source: National Transit Database

Peer and Longitudinal Analysis

Table 5.17 provides relevant transit operations information for all fixed route, urban transit services operating in the selected peer regions. Figures 5.9-5.11 show the trends in Monroe from 2014-2018 per service indicator and compares Monroe's performance in 2018 to the peer group. The following trends can be gleaned from this information:

- Level of Service
    - Monroe transit provides above average service compared to its peers. It provided the highest number of revenue hours and miles of the peer group. Only Alexandria and Florence, both smaller areas, provide more service per capita.
    - From 2014-2018 Monroe decreased its total vehicle revenue miles and revenue hours despite a small increase in population. Although Monroe is outperforming its peers, it has been decreasing its service provided.
- Productivity
    - By all measures, Monroe is the most productive provider compared to its peers. Its number of passenger trips per revenue hour and revenue mile are well above the average and its passenger trips per capita are more than twice the peer group average.

  - Total passenger trips in Monroe have decreased from 2014-2018. Passenger trips per revenue mile and hour have slightly risen, but that is because level of service has decreased. Similar to level of service, while Monroe's productivity outperforms its peers, it has been experiencing a downward trend in ridership and productivity.

- Cost Efficiency
  - Monroe Transit is less cost-effective than most of its peers except for Lake Charles. However, its costs are below average when looking at cost per passenger trip due to its relatively higher productivity.
  - Despite the cutback in level of service, operating expenses for Monroe have increased from 2014-2018.

Overall, when compared to the selected peer regions, Monroe Transit provides an average amount of service but has significantly higher passenger trips. Monroe Transit is more cost effective than its peers considering its higher boarding rate, but lower than its peers when considering the amount of service it provides. Despite performing stronger than its peers, Monroe has seen decreased level of service, productivity, and cost efficiency since 2014.

Table 5.17: Peer Fixed Route System Trends, 2018

Indicator	Alexandria	Florence	Lake Charles	Longview	*Peer Average*	Monroe
General System Statistics						
Urbanized Area Population[1]	84,567	91,884	147,337	100,173	***105,990***	117,503
Urbanized Area Square Miles	66	71	127	83	***87***	82
Urbanized Area Population Density	1,281	1,294	1,160	1,207	***1,236***	1,433
Vehicles Operated in Maximum Service	8	25	5	5	***11***	13
Vehicle Revenue Miles	470,525	548,967	168,231	313,815	***375,385***	597,147
Vehicle Revenue Hours	33,825	33,068	12,937	19,440	***24,818***	39,217
Passenger Trips[2]	560,798	249,030	273,991	249,671	***333,373***	921,372
Annual Operating Expense	$2,536,457	$2,574,406	$2,317,195	$1,622,194	***2,262,563***	$4,759,061
Level of Service						
Vehicle Revenue Miles per Capita	5.68	6.13	1.17	3.17	*4.04*	5.12
Vehicle Revenue Hours per Capita	0.41	0.37	0.09	0.2	*0.27*	0.34
Productivity						
Passenger Trips per Revenue Mile	1.19	0.45	1.63	0.8	*1.02*	1.54
Passenger Trips per Revenue Hour	16.58	7.53	21.18	12.84	*14.53*	23.49
Passenger Trips per Capita	6.77	2.78	1.91	2.52	*3.50*	7.91
Cost Efficiency						
Operating Expense per Vehicle Revenue Mile	$5.39	$4.69	$13.77	$5.17	*$7.26*	$7.97
Operating Expense per Vehicle Revenue Hour	$74.99	$77.85	$179.11	$83.45	*$103.85*	$121.35
Operating Expense per Passenger Trips	$4.52	$10.34	$8.46	$6.50	*$7.46*	$5.17

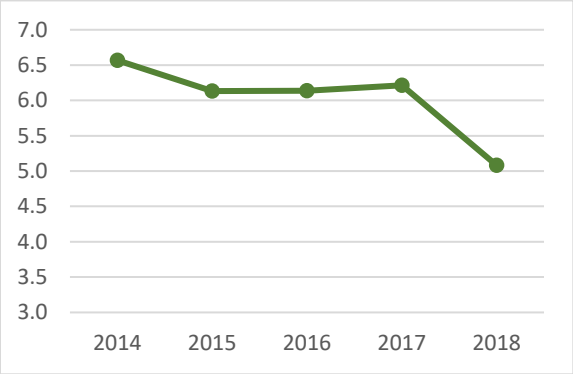
[1]Population comes from 2013-2017 ACS

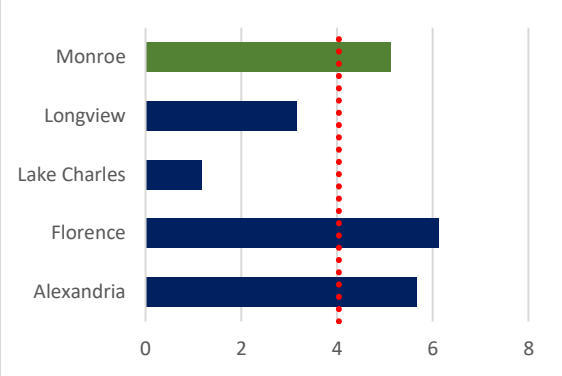
[2]Unlinked Passenger Trips

Source: National Transit Database

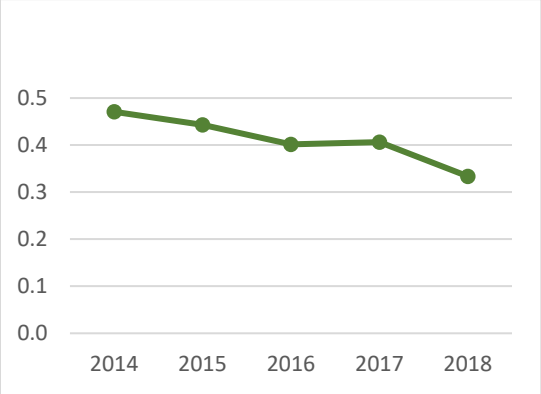
Figure 5.9: Level of Service Indicators

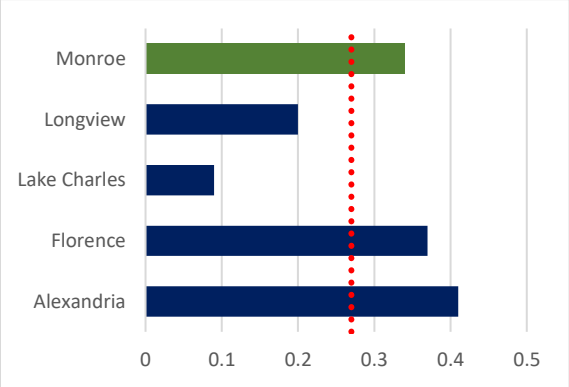
Vehicle Revenue Miles per Capita





Vehicle Revenue Hours per Capita

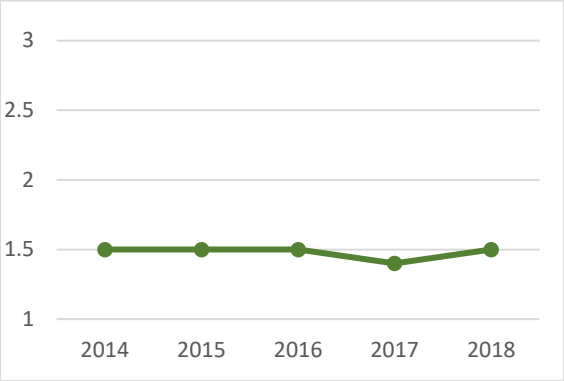


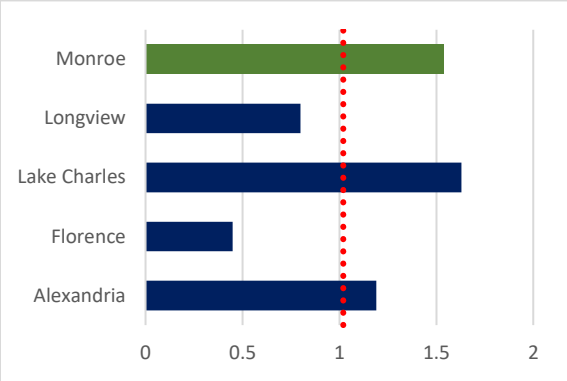


••• Peer Average

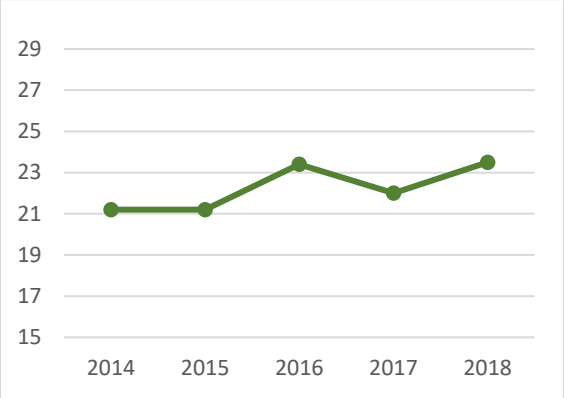
Figure 5.10: Productivity Indicators

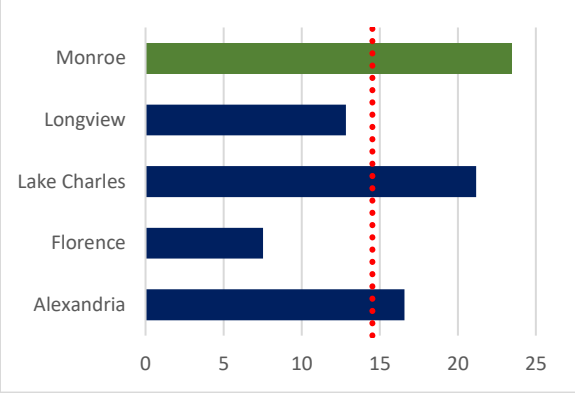
Passenger Trips per Revenue Mile



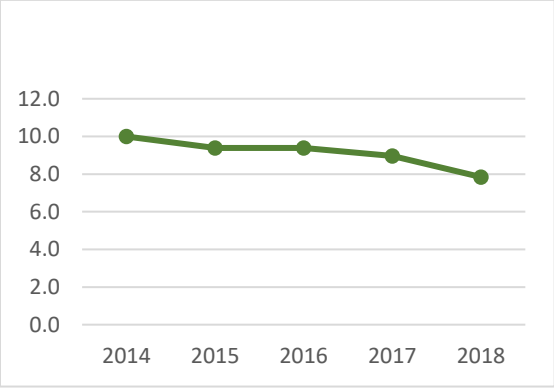


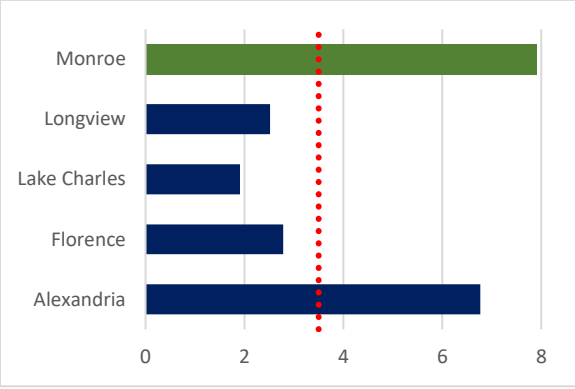
Passenger Trips per Revenue Hour





Passenger Trips per Capita

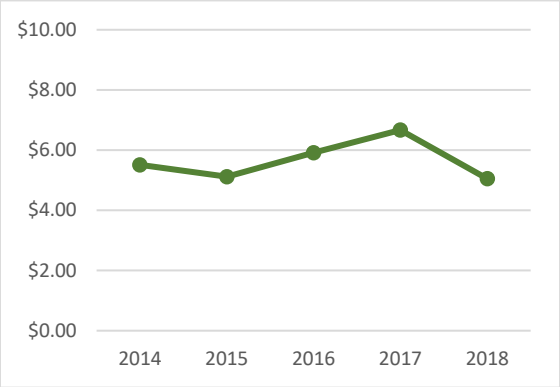


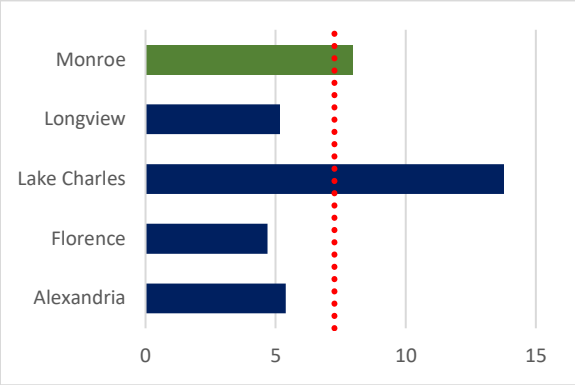


••• Peer Average

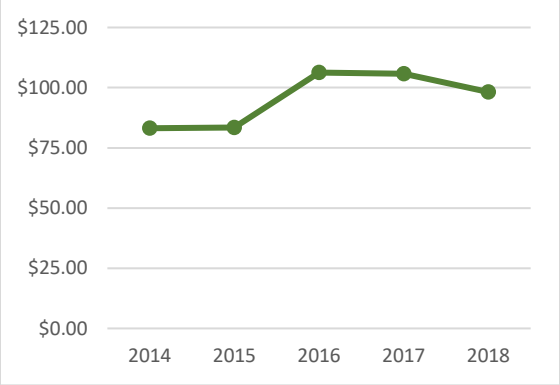
Figure 5.11: Cost Efficiency Indicators

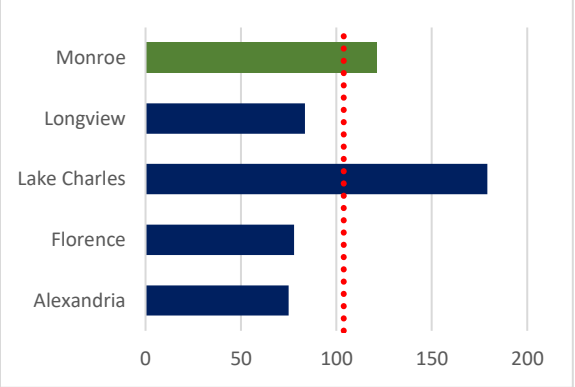
Operating Expense per Vehicle Revenue Mile



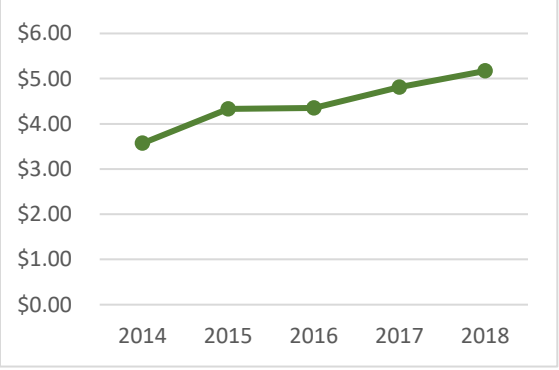


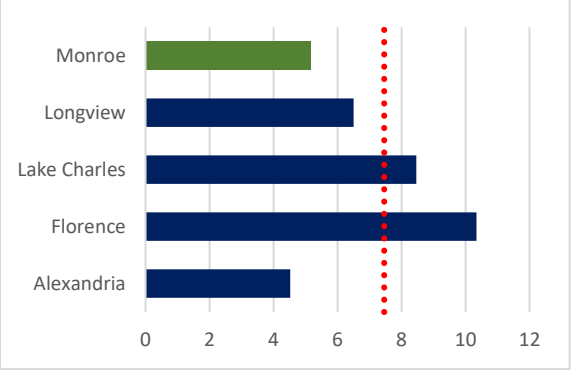
Operating Expense per Vehicle Revenue Hour





Operating Expense per Passenger Trip





••• Peer Average